INTRODUCTION 1

Key Findings

- The 2011 Uganda Demographic and Health Survey (UDHS) is a nationally representative survey of 10,086 households with 9,247 women age 15-49 and 2,573 men age 15-54.
- The 2011 UDHS is the fifth comprehensive survey conducted in Uganda as part of the worldwide Demographic and Health Surveys project.
- The primary purpose of the UDHS is to furnish policymakers and planners with detailed information on fertility and family planning; infant, child, adult, and maternal mortality; maternal and child health; nutrition; and knowledge of HIV/AIDS and other sexually transmitted infections.
- In all selected households, women age 15-49 and children age 6-59 months were tested for anaemia and for vitamin A deficiency.

1.1 HISTORY, GEOGRAPHY, AND ECONOMY

History

Uganda's first elections were held on 1 March 1961 and the country obtained independence from Britain in 1962. Uganda became a republic in 1963 and maintained its British Commonwealth membership. There was conflict between supporters of a centralized state and supporters of a loose federation and a strong role of the tribally-based local kingdoms. In February 1966, the Prime Minister Milton Obote suspended the constitution, removed the president and the vice president, and abolished traditional kingdoms. In 1963, a new constitution proclaimed Uganda a republic and gave President Obote greater power.

In 1971, a military coup led by armed forces commander Idi Amin Dada overthrew President Obote's government. Amin became the President, dissolved the parliament, and amended the constitution to give himself absolute power. During Amin's rule, there was economic decline, social disintegration, and open human rights and ethnic violations. The Ugandan army attacked Tanzania because of a border dispute involving Ugandan exiles who had a camp close to the Ugandan border of Mutukula. In 1978, the Tanzanian armed forces fought against Amin's troops that invaded the Tanzanian territory. In return, the Tanzanian army, helped by Ugandans in exile, started a war against Amin's troops and in April 1979 captured Kampala and forced Amin and his remaining forces to flee to Libya.

After Amin's removal, there was a succession of leaders before the return of President Milton Obote in 1980. The security forces of Uganda had one of the world's worst human rights records under President Obote. He ruled until July 1985, when an army brigade took over and proclaimed a military government. Obote fled to exile in Zambia. The new government was headed by the former defense force commander General Tito Okello. The Okello government carried out a brutal counterinsurgency in an attempt to destroy the support for the National Resistance Army (NRA) led by Yoweri Kaguta Museveni.

Despite negotiations between the Okello government and the NRA and an agreement to a cease-fire in late 1985, the NRA continued the resistance and seized Kampala and the country in late January 1986, forcing Okello's forces to flee to Sudan. The NRA organized a government and proclaimed

Museveni as president. The new government ended human rights abuses of earlier governments in Uganda, instituted broad economic reforms, and started political liberalization and freedom of the press.

The armed resistance against the government has continued since 1986 in northern areas of the country, such as Acholiland. Some of the rebel groups include the Uganda People's Democratic Army, the Holy Spirit Movement, and the Lord's Resistance Army, headed by Joseph Kony, which carried out widespread abduction of children to serve as soldiers or sex slaves. Peace has however started returning to the Northern region and people originally living in internally displaced peoples camps have started settling in their villages.

Geography

The republic of Uganda is located in East Africa and lies astride the equator. It is a landlocked country that borders Kenya to the east, Tanzania to the south, Rwanda to the southwest, the Democratic Republic of Congo to the west, and South Sudan to the north. The country has an area of 241,039 square kilometres and is administratively divided into 112 districts. Uganda has a decentralized system of governance and several functions have been ceded to the local governments. However, the central government retains the role of formulating policy, setting and supervising standards, and providing national security.

Uganda has a favourable climate because of its relatively high altitude. The Central, Eastern, and Western regions of the country have two rainy seasons per year, with relatively heavy rains from March through May and light rains from September through December. The level of rainfall decreases as one travels northward, turning into just one rainy season a year. The soil fertility varies accordingly, being generally fertile in the Central and Western regions and becoming less fertile as one moves to the east and the north. Because climate varies, Uganda’s topography ranges from tropical rain forest vegetation in the south to savannah woodlands and semi-arid vegetation in the north. Climate determines the agricultural potential and thus the land’s capacity to sustain human population; population densities are high in the Central and Western regions and decline towards the north.

Economy

The economy is predominantly agricultural, with the majority of the population dependent on subsistence farming and light agro-based industries. The country is self-sufficient in food, although its distribution is uneven over all areas. Coffee remains the main foreign exchange earner for the country. During the period immediately following independence, from 1962 to 1970, Uganda had a flourishing economy with a 5 percent growth Gross Domestic Product (GDP) per annum; this contrasted with a population growth rate of 2.6 percent per annum. In the 1970s through the early 1980s, Uganda faced a period of civil and military unrest, resulting in the destruction of the economic and social infrastructure. The growth of the economy and the provision of social services such as education and health care were seriously affected.

Since 1986, however, the government has introduced and implemented several reform programmes that have steadily reversed prior setbacks and aimed the country towards economic prosperity. Between 2006 and 2011, the country’s growth in GDP varied between 5.6 percent and 7.1 percent a year (UBOS, 2006a).

1.2 POPULATION

In the past, most demographic statistics in Uganda were derived from population censuses, which began in 1948. Subsequent censuses have been held in 1959, 1969, 1980, 1991, and 2002. In addition, Demographic and Health Surveys have been conducted in 1988-1989, 1995, 2000-2001, 2006, and most recently in 2011, the subject of the present report. Additional demographic data have been obtained from other surveys devoted to specific subjects.

Civil registration was made compulsory in Uganda in 1973. However, its coverage is incomplete, and it is therefore not viable as a source of demographic statistics. Efforts to streamline the system were made between 1974 and 1978, but the achievements from this effort were later frustrated by the economic and civil instability.

Table 1.1 presents several demographic indices compiled from the population censuses of 1969 through 2002. Over that period, the population has increased as a result of high fertility and declining mortality. The annual population growth rate between 1969 and 1980 was 2.7 percent, which decreased to 2.5 percent between 1980 and 1991. Instability in Uganda during the early 1980s may have contributed to this decline. The annual population growth rate increased to 3.2 percent between the 1991 census and the 2002 census. The level of urbanization is still low but has been increasing over time. In 2002, a little more than 12 percent of the population lived in urban areas (UBOS, 2006a).

Table 1.1 Basic demographic indicators

Selected demographic indicators, Uganda 1969-2002

Indicator	1969	1980	1991	2002
Population (thousands)	9,535.1	12,632.2	16,672.7	24,227.3
Intercensal growth rate (percent)	3.9	2.7	2.5	3.2
Density (population/kilometre^2)	48	64	85	124
Percent urban	6.6[a]	6.7	9.9	12.3
Life expectancy				
Male	46.0	u	45.7	48.8
Female	47.0	u	50.5	52.0
Total	46.5	u	48.1	50.4

u = Unknown (not available)
[a] The 1969 data are based on a different definition of urban
Source: UBOS, 2006b

1.3 POPULATION AND HEALTH POLICIES

National Population Policy

Uganda's first explicit National Population Policy was promulgated by the government in 1995. That policy elaborated clear strategies with an overall goal of contributing to the improvement of the quality of life of the people of Uganda. Since its foundation, a number of lessons have been learnt. Some important targets were achieved, but others were not. There have also been some major challenges and opportunities at local, regional, and international levels, which need to be taken into account as the country moves forward.

It is against this backdrop that the government began to revise the National Population Policy to accommodate new and emerging challenges. The revised policy is a clarion call to plan for and invest in the increasing population, so that the country's human capital develops to its full potential. Only then can Ugandans hope to benefit from an increasing population as a demographic 'bonus' instead of a demographic 'burden' (POPSEC, 2008). A National Population Action Plan was also developed and rolled out at the subnational level.

Health Policy

The first Health Sector Strategic Plan (HSSP I) for Uganda covered the period 2000/01 to 2004/05. The plan helped to guide the government of Uganda in its health sector investments, which were led by the Ministry of Health, health development partners (HDPs), and other stakeholders over this period. Continuous monitoring through quarterly and mid-term reviews helped to assess key achievements and challenges during the implementation of HSSP I and formed the basis for the development of HSSP II for the period 2005/06 to 2009/10. HSSP II was completed in June 2010.

The government of Uganda, with the stewardship of the Ministry of Health (MOH), developed the second National Health Policy (NHP II) to cover a ten-year period from 2010/11 to 2019/20. The third Health Sector Strategic Plan (HSSP III) was developed to operationalize the NHP II and the health sector component of the National Development Plan (NDP) 2010/11-2014/15, which is the overall development plan for Uganda.

The HSSP III provides an overall framework for the health sector. Its major aim is to contribute towards the overall development goal of the government of Uganda by accelerating economic growth to reduce poverty.

1.4 OBJECTIVES OF THE 2011 UDHS SURVEY

The 2011 Uganda Demographic and Health Survey (UDHS) was designed to provide information on demographic, health, and family planning status and trends in the country. Specifically, the UDHS collected information on fertility levels, marriage, sexual activity, fertility preferences, breastfeeding practices, and awareness and use of family planning methods. In addition, data were collected on the nutritional status of mothers and young children; infant, child, adult, and maternal mortality; maternal and child health; awareness and behaviour regarding HIV/AIDS and other sexually transmitted infections; and levels of anaemia and vitamin A deficiency.

The 2011 UDHS is a follow-up to the 1988-1989, 1995, 2000-2001, and 2006 UDHS surveys, which were implemented by the Statistics Department of Ministry of Finance and Planning, and later by the Uganda Bureau of Statistics (UBOS). The specific objectives of the 2011 UDHS were as follows:

- To provide data at the national and subnational level that would allow the calculation of demographic rates, particularly fertility and infant mortality rates
- To analyse the direct and indirect factors that determine the level of and trends in fertility and mortality
- To measure the level of contraceptive knowledge and practice of women and men by method, by urban-rural residence, and by region
- To collect data on knowledge and attitudes of women and men about sexually transmitted infections and HIV/AIDS, and to evaluate patterns of recent behaviour regarding condom use
- To assess the nutritional status of children under age 5 and women by means of anthropometric measurements (weight and height), and to assess child feeding practices
- To collect data on family health, including antenatal visits, assistance at delivery, breastfeeding, immunizations, and prevalence and treatment of diarrhoea and other diseases among children under age 5
- To measure vitamin A deficiency in women and children, and to measure anaemia in women, men, and children
- To measure key education indicators, including school attendance ratios and primary school grade repetition and dropout rates
- To collect information on the extent of disability
- To collect information on the extent of gender-based violence

This information is essential for informed policy-making and planning, monitoring, and evaluation of health programmes in general and reproductive health programmes in particular, at both the national and regional levels. A long-term objective of the survey was to strengthen the technical capacity of the National Statistics Office to plan, conduct, process, and analyse data from complex national population and health surveys.

The 2011 UDHS provides national and regional estimates on population and health that are comparable to data collected in Uganda's four previous DHS surveys and similar surveys in other developing countries. Data collected in the 2011 UDHS add to the large and growing international database of demographic and health indicators.

1.5 ORGANIZATION OF THE SURVEY

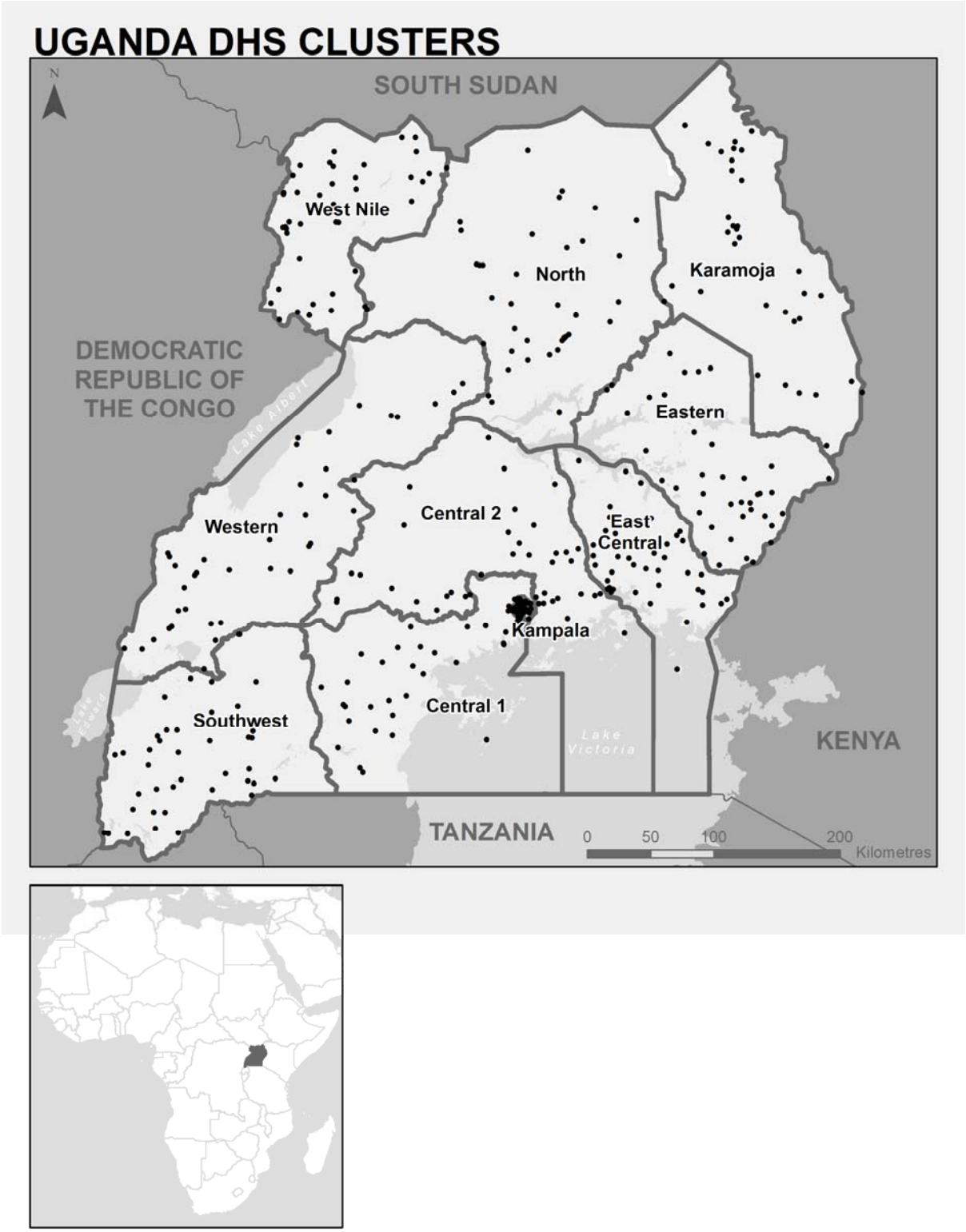
The Uganda Bureau of Statistics (UBOS) was the major implementer of the survey. Other agencies and organizations that facilitated the successful implementation of the survey through their technical support include the Ministry of Health, Makerere University School of Public Health, and the Biochemistry Department of Makerere University. A multi-sect oral Technical Working Committee was also constituted to provide technical backstopping. The same team was also responsible for questionnaire design, training, and report writing. Financial assistance was provided by the government of Uganda, USAID/Uganda, the United Nations Population Fund (UNFPA), the United Nations Children's Fund (UNICEF), the World Health Organization (WHO), the UK Government and Irish Aid-the Government of Ireland.

In addition, ICF International provided limited technical assistance in data processing and report production through the MEASURE DHS project, a USAID-funded program supporting the implementation of population and health surveys in countries worldwide. The UDHS Technical Working Committee, composed of members drawn from the Ministry of Health, the Population Secretariat, and various development partners, oversaw technical issues related to the survey, such as questionnaire design, training, and report writing.

1.6 SAMPLE DESIGN

The sample for the 2011 UDHS was designed to provide population and health indicator estimates for the country as a whole and for urban and rural areas separately. Estimates were also reported for the 10 regions of Uganda shown in Figure 1.1.

Figure 1.1 **Map of Uganda DHS clusters**



A representative sample of 10,086 households was selected for the 2011 UDHS. The sample was selected in two stages. In the first stage, 404 enumeration areas (EAs) were selected from among a list of clusters sampled for the 2009/10 Uganda National Household Survey (2010 UNHS). This matching of samples was done to allow linking of the 2011 UDHS health indicators to poverty data from the 2010 UNHS. The clusters in the UNHS were selected from the 2002 Population Census sample frame.

In the second stage of sampling, households in each cluster were selected from a complete listing of households, which was updated prior to the survey. Households were purposively selected from those listed. All households in the 2010 UNHS that were in the 404 EAs were included in the UDHS sample.

All women age 15-49 who were either permanent residents of the households or visitors who slept in the households the night before the survey were eligible to be interviewed. In addition, in a subsample of one-third of households selected for the survey, all men age 15-54 were eligible to be interviewed if they were either permanent residents or visitors who slept in the household on the night before the survey. Details about the sample design are presented in Appendix A. An additional sample was selected for administration of the Maternal Mortality Module.

1.7 QUESTIONNAIRES

Four types of questionnaires were used in the 2011 UDHS: the Household Questionnaire, the Woman's Questionnaire, the Maternal Mortality Questionnaire, and the Man's Questionnaire. These questionnaires were adapted from model survey instruments developed by ICF for the MEASURE DHS project and by UNICEF for the Multiple Indicator Cluster Survey (MICS) project. The intent was to reflect the population and health issues relevant to Uganda. Questionnaires were discussed at a series of meetings with various stakeholders, ranging from government ministries and agencies to nongovernmental organizations (NGOs) and development partners. The questionnaires were translated into seven major languages: Ateso, Ngakarimojong, Luganda, Lugbara, Luo, Runyankole-Rukiga, and Runyoro-Rutoro.

The Household Questionnaire was used to list all the usual members and visitors who spent the previous night in the selected households. Basic information was collected on the characteristics of each person listed, including his or her age, sex, education, relationship to the head of the household, and disability status. For children under age 18, survival status of the parents was determined. Data on the age and sex of household members were used to identify women and men eligible for an individual interview. In addition, the Household Questionnaire 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 bednets.

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

- Background characteristics (age, education, media exposure, etc.)
- Birth history and childhood mortality
- Knowledge and use of family planning methods
- Fertility preferences
- Antenatal, delivery, and postnatal care
- Breastfeeding and infant feeding practices
- Vaccinations and childhood illnesses
- Marriage and sexual activity
- Woman's work and husband's background characteristics
- Awareness and behaviour regarding AIDS and other sexually transmitted infections (STIs)

- Adult mortality, including maternal mortality
- Knowledge of tuberculosis and other health issues
- Gender-based violence

The Maternal Mortality Questionnaire was administered to all eligible women age 15-49 in 35 additional households in 394 out of 404 EAs. It collected data on maternal mortality using the Sibling Survival Module (commonly referred to as the 'Maternal Mortality Module').

The Man's Questionnaire was administered to all eligible men age 15-54 years in every third household in the 2011 UDHS sample. The Man's Questionnaire collected information similar to that in the Woman's Questionnaire but was shorter because it did not contain a detailed reproductive history or questions on maternal and child health.

1.8 ANTHROPOMETRY, ANAEMIA, AND VITAMIN A TESTING

The 2011 UDHS included height and weight measurements, testing for anaemia, and blood sample collection on filter paper cards for vitamin A testing in the laboratory. The protocol for anaemia testing and for the blood specimen collection for vitamin A testing was similar to that used in the 2006 UDHS.

Height and Weight Measurement

Height and weight measurements were carried out on eligible women age 15-49 and children under age 5 in all selected households, and eligible men age 15-54 in one-third of the households. Weight measurements were obtained using lightweight, SECA mother-infant scales with a digital screen that were designed and manufactured under the guidance of UNICEF. Height measurements were carried out using a measuring board. Children younger than 24 months were measured for height while lying down, and older children were measured while standing.

Anaemia Testing

Blood specimens were collected to test for anaemia in all children age 6-59 months, women age 15-49 years, and men age 15-54 years who voluntarily consented to the testing. Blood samples were drawn from a drop of blood taken from a finger prick (or a heel prick in the case of young children with small fingers) and collected in a microcuvette.

Haemoglobin analysis was carried out on site using a battery-operated portable HemoCue analyzer. Results were given verbally and in writing. Parents of children with a haemoglobin level under 7 grams per decilitre (g/dl) were instructed to take the child to a health facility for follow-up care. Likewise, non-pregnant women, pregnant women, and men were referred for follow-up care if their haemoglobin level was below 7 g/dl, 9 g/dl, and 9 g/dl, respectively. All households in which testing was conducted were given a brochure explaining the causes and prevention of anaemia. Resulting data were adjusted for altitude prior to being tabulated.

Vitamin A Testing

Blood specimens were collected by the health technicians to test for vitamin A in all women age 15-49 who consented and all children age 6-59 months whose parent or responsible adult consented. The protocol for the blood specimen collection and analysis was based on the anonymous linked protocol developed for the MEASURE DHS project. This protocol allows the merging of the vitamin A test results with the socio-demographic data collected from the individual questionnaires (after removal of all identifying information).

The health technicians explained the procedure, the confidentiality of the data, and the fact that the vitamin A test results would not be made available to the respondent. If a respondent consented to the vitamin A testing, a maximum of three blood drops from the finger prick were collected on a filter paper card to which a barcode label unique to the respondent was affixed. Respondents were asked whether they consented to having the laboratory store their blood sample for future unspecified testing. If the respondent did not consent to additional testing using their sample, the words 'no additional testing' were written on the filter paper card.

Each dried blood spot sample was given a unique barcode label in triplicate. The first copy was affixed to the filter paper card. The second copy was attached to the biomarker data collection page of the Household Questionnaire. The third copy of the barcode label was attached to the blood sample transmittal form to track the blood samples as they moved from the field to the laboratory. Blood samples were dried overnight and packaged for storage the following morning. Samples were periodically collected from the field and transported to the laboratory at the biochemistry department of Makerere University in Kampala to be logged in, checked, and stored. The vitamin A test results are shown in a separate report.

1.9 LISTING, PRETEST, MAIN TRAINING, FIELDWORK, AND DATA PROCESSING

Listing

A household listing operation was conducted in the 404 selected clusters and 10 regions for about three months, starting in April 2011. For this purpose, 18 listing staff were recruited from the UBOS head office to carry out the household listing and prepare the sketch map for each selected EA. A manual of instructions that described the listing and mapping procedures was prepared as a guideline, and the training involved both classroom demonstrations and field practice. Instructions were given on the use of global positioning system (GPS) units to obtain location coordinates for the selected clusters. The listing was performed by organizing the listing staff into six teams, with two listers per team. Six supervisors were also assigned from the UBOS offices to perform quality checks and handle all administrative and technical aspects of the listing operation. Rounds of supervision were also carried out to assess the quality of the field operation and to ensure proper listing.

Pretest

Before the start of fieldwork, the questionnaires were pretested in all seven local languages to make sure that the questions were clear and could be understood by the respondents. Thirty field workers, comprising of women and men were hired to conduct the pretest. They were trained from August 30, 2010, to September 14, 2010, on how to administer the UDHS survey questionnaires. Seven days of fieldwork and one day of interviewer debriefing and examination followed. Pretest fieldwork was conducted in two clusters each (one urban and one rural) in seven districts. The majority of pretest participants attended the 2011 UDHS training and served as field editors and team leaders in the survey.

A second pretest was undertaken to test the management and implementation of the computer-assisted field data editing (CAFE) program and, more specifically, to develop data editing guidelines for the 2011 UDHS. The 2011 UDHS marked the first time tablet computers were used to collect data from the field. The data file transfer process was tested using the internet file streaming system (IFSS) developed by the DHS programme, through which data from the field could be transferred to the UBOS main office via the internet.

Main Training

UBOS recruited and trained 146 field workers to serve as team supervisors, field editors, male and female interviewers, and reserve interviewers for the main survey. The training, which was conducted from 2 May 2011 to 1 June 2011, consisted of instruction regarding interviewing techniques and field procedures, a detailed review of questionnaires, tests, and instruction and practice in weighing and

measuring children. The training also included mock interviews and role plays among participants in the classroom and in the neighbouring villages. Team supervisors and editors were further trained in data quality control procedures and fieldwork coordination. The training mainly used the English questionnaires, while the translated versions were simultaneously checked against the English questionnaires to ensure accurate translation.

Fieldwork

Sixteen data collection teams were formed, each comprised of a team supervisor, a field editor, three female interviewers, one male interviewer, one health technician, and a driver. UBOS staff coordinated and supervised fieldwork activities. USAID/Uganda technical staff also participated in the fieldwork monitoring. A data validation team was formed for each of the 10 regions. Each data validation team included a field supervisor and three interviewers. An independent quality control team that was looking at survey protocol issues also visited the data collection teams. Data collection took place over a six-month period, from end of June 2011 to early December 2011. Fieldwork was carried out in six 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.

Data Processing

As mentioned above, questionnaire data were entered in the field by the field editors on each team and the files were periodically sent to the UBOS office by internet. All the paper questionnaires were also returned to UBOS headquarters in Kampala for data processing, which consisted of office editing, coding of open-ended questions, a second data entry, and finally, editing computer-identified errors. The data were processed by a team of eight data entry operators, two office editors, and one data entry supervisor. Data entry and editing were accomplished using CSPro software. The processing of data was initiated in August 2011 and completed in January 2012.

1.10 RESPONSE RATES

Table 1.2 shows household and individual response rates for the 2011 UDHS. A total of 10,086 households were selected for the sample, of which 9,480 were found to be occupied during data collection. Of these, 9,033 households were successfully interviewed, giving a household response rate of 95 percent.

Of the 9,247 eligible women identified in the selected households, interviews were completed with 8,674 women, yielding a response rate of 94 percent for women.

Of the 2,573 eligible men identified in the selected subsample of households for men, 2,295 were successfully interviewed, yielding a response rate of 89 percent for men.

Table 1.2 Results of the household and individual interviews

Number of households, number of interviews, and response rates, according to residence (unweighted), Uganda 2011

	Residence		
Result	Urban	Rural	Total
Household interviews			
Households selected	2,977	7,109	10,086
Households occupied	2,794	6,686	9,480
Households interviewed	2,551	6,482	9,033
Household response rate[1]	91.3	96.9	95.3
Interviews with women age 15-49			
Number of eligible women	2,805	6,442	9,247
Number of eligible women interviewed	2,562	6,112	8,674
Eligible women response rate[2]	91.3	94.9	93.8
Interviews with men age 15-54			
Number of eligible men	772	1,801	2,573
Number of eligible men interviewed	631	1,664	2,295
Eligible men response rate[2]	81.7	92.4	89.2

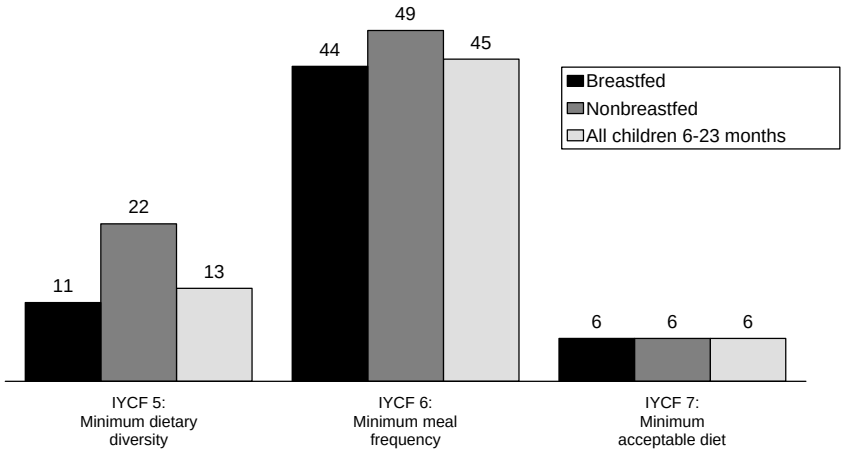
[1] Households interviewed/households occupied
[2] Respondents interviewed/eligible respondents

Response rates were higher in rural than in urban areas, with the rural-urban difference being more pronounced among men (92 and 82 percent, respectively) than among women (95 and 91 percent, respectively).

Among breastfed children age 6-23 months, 11 percent receive foods from at least four food groups, while 44 percent are fed the minimum number of times or more. In total, 6 percent of breastfed children are given foods from four or more groups and also are fed at least the minimum number of times per day.

Among nonbreastfed children in the same age group, 35 percent receive milk or milk products, 22 percent receive foods from at least four food groups, and 49 percent are fed the minimum number of times or more. Similar to breastfed children, 6 percent of nonbreastfed children are fed in accordance with IYCF practices (Figure 11.5).

Figure 11.5 IYCF indicators on minimum acceptable diet



11.3 PREVALENCE OF ANAEMIA IN CHILDREN

Anaemia is a condition characterised by a low level of haemoglobin in the blood. Haemoglobin is necessary for transporting oxygen to tissues and organs in the body. About half of the global burden of anaemia is due to iron deficiency. Iron deficiency, in turn, is largely due to an inadequate dietary intake of bioavailable iron, inadequate dietary iron during periods of increased iron requirements (such as pregnancy and infancy), and increased blood loss due to hookworm infestation and infections such as malaria. Nutritional anaemia includes anaemia due to deficiency in iron plus deficiencies in folate, vitamins B and B12, and certain trace elements involved with red blood cell production. Anaemia in children is associated with impaired mental and physical development and with increased morbidity and mortality. Anaemia can be a particularly serious problem for pregnant women, leading to premature delivery and low birth weight. WHO considers anaemia prevalence over 40 percent in a population to be a major public health problem, anaemia prevalence between 20 and 40 percent to be a medium-level public health problem, and between 5 and less than 20 percent to be a mild public health problem (WHO, 2001a).

Table 11.7 presents anaemia levels among children age 6-59 months, according to selected background characteristics. Haemoglobin was measured in 2,121 children (2,142 children, weighted) that account for 92 percent of all children. Unadjusted (i.e., measured) haemoglobin values are obtained using the HemoCue instrument. Given that haemoglobin requirements differ substantially depending on altitude,

an adjustment to sea-level equivalents has been made before classifying children by level of anaemia. These adjustments for altitude are reflected in Table 11.7.

About half of Ugandan children 6-59 months (49 percent) are anaemic. More than one of every five (22 percent) has mild anaemia, more than one in four (26 percent) has moderate anaemia, and 2 percent have severe anaemia. Anaemia prevalence is highest among children age 9-11 months (69 percent) and decreases steadily with age from 12 to 59 months. Fifty-one percent of children in rural areas have anaemia, compared with 38 percent of children in urban areas. Regional variation of anaemia in children ranges from 25 percent in Southwest to 70 percent in Karamoja. Anaemia among children generally decreases with increases in mother's education and wealth quintile.

Table 11.7 Prevalence of anaemia in children

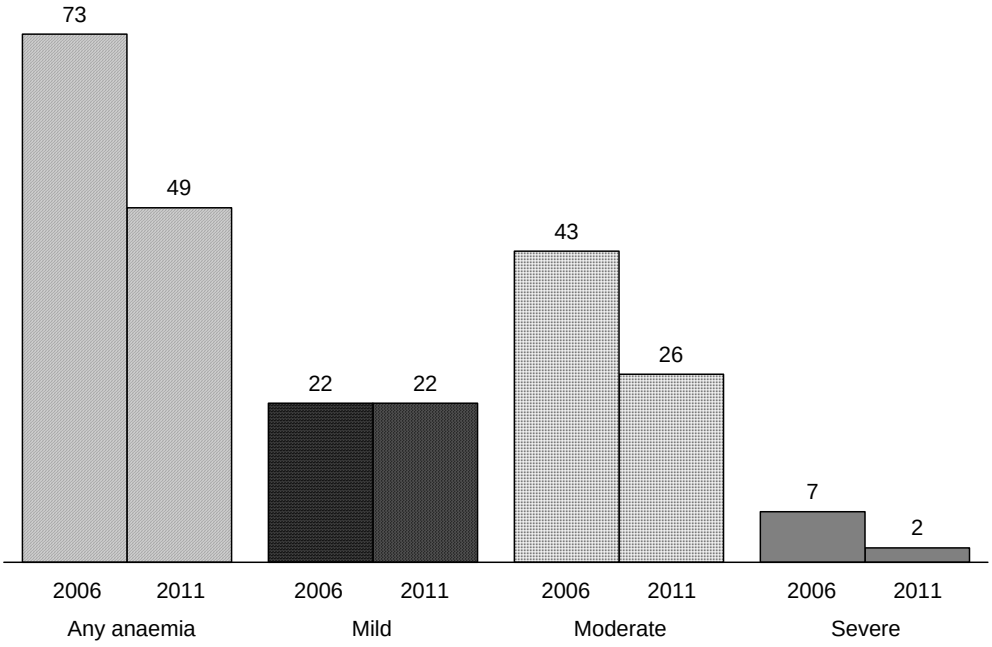
Percentage of children age 6-59 months classified as having anaemia, by background characteristics, Uganda 2011

Background characteristic	Anaemia status by haemoglobin level				
	Any anaemia (<11.0 g/dl)	Mild anaemia (10.0-10.9 g/dl)	Moderate anaemia (7.0-9.9 g/dl)	Severe anaemia (< 7.0 g/dl)	Number of children
Age in months					
6-8	67.0	22.3	41.3	3.4	124
9-11	68.5	24.6	41.6	2.3	120
12-17	65.2	32.1	29.6	3.5	250
18-23	54.6	20.4	32.3	2.0	265
24-35	49.4	21.6	26.7	1.2	444
36-47	40.5	21.3	19.0	0.1	480
48-59	36.8	19.3	16.5	1.0	459
Sex					
Male	50.2	22.1	27.0	1.0	1,064
Female	48.4	22.5	24.0	1.9	1,078
Mother's interview status					
Interviewed	50.3	22.1	26.6	1.6	1,796
Not interviewed but in household	58.8	32.2	26.6	0.0	106
Not interviewed and not in the household[1]	37.8	19.9	17.1	0.8	240
Residence					
Urban	38.0	19.3	18.3	0.4	265
Rural	50.9	22.7	26.5	1.6	1,877
Region					
Kampala	39.8	17.0	22.3	0.5	122
Central 1	56.8	27.0	29.1	0.7	209
Central 2	54.2	22.2	30.8	1.1	199
East Central	67.5	21.7	43.4	2.4	257
Eastern	54.6	22.3	28.9	3.4	419
Karamoja	69.5	34.7	34.6	0.2	79
North	34.0	21.1	12.6	0.4	178
West Nile	64.4	26.9	36.3	1.2	141
Western	38.6	22.3	14.9	1.4	285
Southwest	24.6	16.2	8.4	0.0	253
Mother's education[2]					
No education	49.9	24.7	25.0	0.2	253
Primary	52.0	21.4	28.7	1.9	1,238
Secondary +	47.2	24.7	21.1	1.4	395
Wealth quintile					
Lowest	59.0	23.6	33.1	2.4	477
Second	51.7	21.4	28.3	2.1	453
Middle	51.0	25.6	24.4	1.0	460
Fourth	42.8	19.2	22.5	1.1	394
Highest	38.2	21.0	16.6	0.5	357
Total	49.3	22.3	25.5	1.5	2,142

Note: Table is based on children who stayed in the household on the night before the interview and who were tested for anaemia. Prevalence of anaemia, based on haemoglobin levels, is adjusted for altitude using formulas in CDC, 1998. Haemoglobin in grams per decilitre (g/dl).
[1] Includes children whose mothers are deceased
[2] For women who are not interviewed, information is taken from the Household Questionnaire. Excludes children whose mothers are not listed in the Household Questionnaire.

The national anaemia prevalence estimate decreased substantially from 73 percent in 2006 to 49 percent in 2011 (Figure 11.6). This change is due largely to the drop in the prevalence of moderate anaemia.

Figure 11.6 **Trends in anaemia status among children under 5 years**



11.4 MICRONUTRIENT INTAKE AMONG CHILDREN

Micronutrient deficiency is a major contributor to childhood morbidity and mortality. Children can receive micronutrients from foods, food fortification, and direct supplementation. Table 11.8 summarises information collected in the 2011 UDHS on children's intake of vitamin A and iron, receipt of deworming medications, and whether they live in households with iodized salt.

Vitamin A is an essential micronutrient for the immune system that plays an important role in maintaining the epithelial tissue in the body. Severe vitamin A deficiency (VAD) can cause eye damage. VAD can also increase the severity of infections such as measles and diarrhoeal diseases in children and slow recovery from illness. Vitamin A is found in breast milk, other milks, liver, eggs, fish, butter, red palm oil, mangoes, papayas, carrots, pumpkins, and dark green leafy vegetables. The liver can store an adequate amount of the vitamin for four to six months. Periodic dosing (usually every six months) with vitamin A supplements is one method of ensuring that children at risk do not develop VAD.

Table 11.8 shows that 61 percent of the youngest children age 6-23 months living with their mothers consumed foods rich in vitamin A in the 24 hours preceding the interview. The proportion of children consuming vitamin A-rich foods increases with age (from 43 percent at 6-8 months to 67 percent at 18-23 months). Nonbreastfeeding children are more likely than breastfeeding children to consume foods rich in vitamin A (69 percent compared with 59 percent). Male children are slightly more likely to consume foods rich in vitamin A than female children (63 percent versus 60 percent). There are no major variations in children's consumption of foods rich in vitamin A in the past 24 hours and mother's age at birth or urban-rural residence. With regard to regions, children living in the Eastern region are most likely to consume foods rich in vitamin A (74 percent), while those in the Southwest region are least likely (50

percent). Mother's level of education and wealth do not have a clear relationship with consumption of foods rich in vitamin A by young children age 6-23 months.

As noted, low iron intake can also contribute to anaemia. Also, iron is essential for cognitive development. Iron requirements are greatest at age 6-11 months, when growth is extremely rapid. As Table 11.8 shows, about one-third (34 percent) of children age 6-23 months consumed iron-rich foods in the 24 hours preceding the survey. Consumption of foods rich in iron increases from 23 percent at age 6-8 months to 37-38 percent among children 12-23 months. Nonbreastfeeding children are more likely than breastfeeding children to consume iron-rich foods (42 percent versus 32 percent). Further, consumption of iron-rich foods is more common in urban areas (45 percent) than in rural areas (32 percent). Children in Southwest and Karamoja are the least likely to consume iron-rich foods (10 percent, each), while those living in Kampala are the most likely (49 percent). Children whose mothers have some secondary education are more likely to consume iron-rich foods (37 percent) than those whose mothers have no education (26 percent). Similarly, wealth status is directly related to the consumption of foods rich in iron, with 28 percent of children in the lowest wealth quintile consuming foods rich in iron in the 24 hours before the survey compared with 42 percent of children in the highest wealth quintile.

The 2011 UDHS also collected data on vitamin A and iron supplementation for children age 6-59 months. Table 11.8 shows that almost six in ten children age 6-59 months (57 percent) received vitamin A supplements in the six months preceding the survey. Vitamin A supplementation does not show a clear pattern among children of different age cohorts, genders, mother's age at birth, urban-rural residence, or wealth. Vitamin A supplementation is higher among breastfeeding than nonbreastfeeding children (63 percent versus 55 percent). At the regional level, the proportion of children receiving vitamin A supplements is lowest in Central 1 (36 percent) and highest in Karamoja (74 percent). Mother's level of education is closely associated with children receiving vitamin A supplements; 54 percent of children whose mothers have no education received vitamin A supplements in the past six months compared with 63 percent of children whose mothers have more than a secondary education.

Iron supplementation coverage is generally low in Uganda. Only 7 percent of children age 6-59 months were given iron supplements in the seven days preceding the survey. It does not vary much by background characteristics, except for regional variations. Kampala and Southwest have the lowest coverage (4 percent each) compared with Karamoja, North, and West Nile regions that have the highest coverage (12 percent each).

Infection with helminths or intestinal worms has an adverse impact on the physical development of children and is associated with high levels of iron deficiency anaemia and other nutritional deficiencies. Regular treatment with deworming medication is a simple, cost-effective measure to address these infections. As Table 11.8 shows, half of children age 6-59 months received deworming medication during the six months preceding the survey. The likelihood of receiving deworming medication increases with the child's age, from 19 percent for children 6-8 months to 58 percent among those 18-23 months, after which it starts to decrease. It is lower among breastfeeding children (42 percent), children whose mother's age at childbirth was 15-19 (40 percent), and among rural children (49 percent). Karamoja (65 percent) has the highest proportion of children who received deworming medication, while East Central and Southwest (43 percent each) have the lowest proportion. The proportion of children 6-59 months receiving deworming medication increases with mother's education and household wealth.

Table 11.8 Micronutrient intake among children

Among youngest children age 6-23 months who are living with their mother, the percentages who consumed vitamin A-rich and iron-rich foods in the day or night preceding the survey, and among all children 6-59 months, the percentages who were given vitamin A supplements in the six months preceding the survey, who were given iron supplements in the past seven days, and who were given deworming medication in the six months preceding the survey, and among all children age 6-59 months who live in households that were tested for iodized salt, the percentage who live in households with iodised salt, by background characteristics, Uganda 2011

	Among youngest children age 6-23 months living with the mother:			Among all children age 6-59 months:				Among all children age 6-59 months living in households tested for iodised salt:	
Background characteristic	Percentage who consumed foods rich in vitamin A in past 24 hours[1]	Percentage who consumed foods rich in iron in past 24 hours[2]	Number of children	Percentage given vitamin A supple-ments in past 6 months	Percentage given iron supple-ments in past 7 days	Percentage given deworming medication in past 6 months[3]	Number of children	Percentage living in households with iodised salt[4]	Number of children
Age in months									
6-8	43.4	23.2	408	53.2	6.6	18.7	417	98.6	401
9-11	59.8	33.2	405	66.2	8.8	33.5	411	98.5	395
12-17	67.0	37.7	681	68.6	7.7	51.5	723	99.4	695
18-23	67.3	36.6	643	59.4	6.6	57.8	756	98.9	724
24-35	na	na	na	56.8	7.6	56.2	1,515	99.3	1,440
36-47	na	na	na	52.4	6.4	52.0	1,473	99.1	1,424
48-59	na	na	na	52.4	6.9	51.4	1,438	98.7	1,359
Sex									
Male	62.6	34.5	1,049	57.1	7.1	50.4	3,344	99.1	3,205
Female	59.9	32.9	1,087	56.5	7.1	50.1	3,389	99.0	3,232
Breastfeeding status									
Breastfeeding	59.1	31.5	1,681	63.1	7.8	41.9	1,821	99.1	1,738
Not breastfeeding	69.0	41.8	455	54.5	6.8	53.3	4,897	99.0	4,684
Mother's age at birth									
15-19	59.4	30.3	194	58.2	8.2	39.6	332	99.6	310
20-29	59.6	34.7	1,178	58.1	7.3	50.5	3,662	99.1	3,524
30-39	65.3	33.3	647	55.4	6.5	51.3	2,192	98.8	2,092
40-49	57.8	31.7	117	53.2	6.9	50.5	546	98.9	511
Residence									
Urban	61.7	45.2	285	57.7	7.0	59.8	947	99.2	905
Rural	61.2	31.9	1,851	56.7	7.1	48.6	5,786	99.0	5,532
Region									
Kampala	60.5	49.0	126	50.7	3.6	59.2	415	99.0	401
Central 1	68.0	43.8	212	36.2	5.9	46.8	649	99.6	617
Central 2	53.7	36.7	231	44.1	5.9	49.6	703	97.5	674
East Central	54.9	33.4	237	70.8	5.4	42.6	767	98.8	735
Eastern	73.9	45.0	382	71.0	9.9	56.5	1,162	100.0	1,105
Karamoja	68.1	9.8	82	73.7	12.3	64.5	260	99.8	229
North	58.6	25.9	202	59.4	11.6	48.2	606	100.0	592
West Nile	71.6	44.5	133	53.7	11.7	46.7	399	98.4	370
Western	56.3	30.8	282	60.0	4.7	52.7	978	98.4	947
Southwest	49.5	9.6	250	44.1	3.9	42.6	794	98.6	768
Mother's education									
No education	61.5	26.4	278	53.8	8.1	43.3	982	98.8	902
Primary	61.9	34.0	1,378	55.4	6.5	47.6	4,297	99.0	4,125
Secondary +	59.2	37.2	481	63.0	8.0	62.5	1,455	99.1	1,411
Wealth quintile									
Lowest	63.7	27.5	499	62.1	8.6	47.8	1,514	99.3	1,410
Second	63.3	33.4	469	58.3	7.8	48.7	1,423	99.2	1,372
Middle	58.1	32.3	415	50.8	5.9	43.9	1,350	98.8	1,288
Fourth	59.5	35.4	384	55.5	5.8	51.8	1,174	98.5	1,132
Highest	60.6	42.3	369	56.4	7.0	60.1	1,272	99.2	1,235
Total	61.2	33.7	2,136	56.8	7.1	50.2	6,733	99.0	6,437

Note: Information on vitamin A is based on both mother's recall and the immunization card (where available). Information on iron supplements and deworming medication is based on the mother's recall. Total includes 15 children with missing information on breastfeeding status.
na = Not applicable
[1] Includes meat (and organ meat), fish, poultry, eggs, pumpkin, red or yellow yams or squash, carrots, red sweet potatoes, dark green leafy vegetables such as spinach, amaranths, cassava, and bean leaves, mangoes, papayas, and other locally grown fruits and vegetables that are rich in vitamin A
[2] Includes meat (including organ meat)
[3] Deworming for intestinal parasites is commonly done for helminthes and for schistosomiasis.
[4] Excludes children in households in which salt was not tested.

Iodine deficiency has serious effects on body growth and mental development. The principal cause of iodine deficiency is inadequate iodine in foods. The fortification of salt with iodine is the most common method of preventing iodine deficiency. According to WHO, a country's salt iodisation programme is considered to be on a good track (poised to attain the goal of eliminating iodine deficiency) when 90 percent of the households are using iodised salt. To assess the use of iodised salt in Uganda, interviewers in

the 2011 UDHS asked households to provide a teaspoon of salt used for cooking. The salt was tested for iodine using the iodine rapid test kit.

As Table 11.8 shows, almost all children (99 percent) live in households that use iodised salt. There is no major variation by background characteristics.

11.5 IODISATION OF HOUSEHOLD SALT

Table 11.9 shows the percentage of households with salt tested for iodine content, the percentage of households without salt, and, among households with tested salt, the percentage with iodine present in the salt. Ninety-two percent of households had salt tested for iodine at the time of the interview. Of these households, 99 percent were using iodised salt. Because the presence of iodised salt in the households is almost universal, there is no major variation by background characteristics.

Table 11.9 Presence of iodized salt in household

Among all households, the percentage with salt tested for iodine content and the percentage with no salt in the household; and among households with salt tested, the percentage with iodized salt, according to background characteristics, Uganda 2011

	Among all households, the percentage:			Among households with tested salt:	
Background characteristic	With salt tested	With no salt in the household	Number of households	Percentage with iodized salt	Number of households
Residence					
Urban	88.0	12.0	1,691	98.7	1,489
Rural	92.3	7.7	7,342	99.1	6,775
Region					
Kampala	89.0	11.0	797	98.3	709
Central 1	91.5	8.5	1,140	99.6	1,043
Central 2	89.9	10.1	1,038	98.8	934
East Central	91.4	8.6	904	98.5	826
Eastern	91.2	8.8	1,226	100.0	1,118
Karamoja	81.3	18.7	306	99.8	249
North	95.5	4.5	757	100.0	723
West Nile	89.0	11.0	508	98.6	453
Western	94.3	5.7	1,228	98.5	1,159
Southwest	93.0	7.0	1,128	98.4	1,049
Wealth quintile					
Lowest	89.6	10.4	1,719	99.3	1,541
Second	91.9	8.1	1,767	98.7	1,624
Middle	92.0	8.0	1,672	98.8	1,538
Fourth	91.6	8.4	1,723	99.2	1,579
Highest	92.1	7.9	2,152	99.1	1,981
Total	91.5	8.5	9,033	99.0	8,263

11.6 NUTRITIONAL STATUS OF WOMEN AND MEN

The nutritional status of women and men was assessed by use of two anthropometric indices—height and body mass index (BMI). To derive those indices, the 2011 UDHS measured the height and weight of women age 15-49 and men age 15-59. Results are presented for women in Table 11.10.1 and for men in Table 11.10.2.

Short stature reflects previous poor socioeconomic conditions and inadequate nutrition during childhood and adolescence. In a woman, short stature is a risk factor for poor birth outcomes and obstetric complications. For example, short stature is associated with small pelvic size, which increases the likelihood of difficulty during delivery and the risk of bearing low birth weight babies. A woman is considered to be at risk if her height is below 145 cm.

BMI is used to measure thinness or obesity. BMI is defined as weight in kilograms divided by height in metres squared (kg/m^2). A BMI below 18.5 indicates thinness or acute undernutrition. A BMI

below 17 kg/m^2 indicates severe undernutrition and is associated with increased mortality. Low pre-pregnancy BMI, like short stature, is associated with poor birth outcomes and obstetric complications. A BMI of 25.0 or above indicates overweight or obesity.

Table 11.10.1 shows the percentage of women with height less than 145 cm, mean BMI, and the proportions of women falling into normal and high-risk categories, by background characteristics. Respondents for whom there was no information on height or weight and for whom a BMI could not be estimated are excluded from this analysis. The data analysis on BMI is based on 2,355 women age 15-49 years (2,316 weighted women), while the height analysis is based on 2,707 women (2,667 weighted women).

As shown in Table 11.10.1, just 2 percent of Ugandan women are below 145 cm in height. In general, height differs little with background characteristics.

The mean BMI for Ugandan women age 15-49 is 22.3 kg/m^2. There are no major differences in mean BMI by women's background characteristics.

Table 11.10.1 Nutritional status of women

Among women age 15-49, the percentage with height under 145 cm, the mean Body Mass Index (BMI), and the percentage with specific BMI levels, by background characteristics, Uganda 2011

	Height		Body Mass Index[1]								
				Normal	Thin			Overweight/obese			
Background characteristic	Percent-age below 145 cm	Number of women	Mean Body Mass Index (BMI)	18.5-24.9 (total normal)	<18.5 (total thin)	17.0-18.4 (mildly thin)	<17 (modera-tely and severely thin)	≥25.0 (total over-weight or obese	25.0-29.9 (over-weight)	≥30.0 (obese)	Number of women
Age											
15-19	1.9	645	21.5	74.2	14.3	10.4	3.9	11.5	10.5	1.0	583
20-29	1.8	967	22.2	73.8	10.1	8.1	2.0	16.1	13.4	2.7	785
30-39	1.5	670	22.8	65.4	10.3	8.5	1.8	24.4	16.8	7.5	575
40-49	0.8	385	22.8	59.3	13.4	11.0	2.4	27.3	20.2	7.1	374
Residence											
Urban	0.5	551	23.9	57.5	7.6	5.8	1.8	34.9	25.5	9.5	503
Rural	1.9	2,116	21.8	72.8	12.9	10.2	2.7	14.3	11.6	2.7	1,813
Region											
Kampala	0.8	263	24.4	51.9	7.7	5.3	2.4	40.4	27.4	13.0	241
Central 1	1.9	272	23.0	69.4	7.3	6.8	0.5	23.3	17.0	6.3	242
Central 2	1.5	267	22.6	71.4	8.2	7.1	1.1	20.4	16.8	3.6	233
East Central	0.0	272	21.9	72.3	11.9	8.3	3.6	15.7	14.4	1.4	224
Eastern	2.0	397	20.8	70.8	20.0	13.9	6.1	9.2	7.3	1.9	340
Karamoja	0.0	82	19.8	66.1	32.8	25.9	7.0	1.0	1.0	0.0	63
North	0.0	220	20.8	76.5	16.3	13.9	2.4	7.2	7.0	0.2	190
West Nile	0.5	163	20.5	74.6	20.9	18.0	2.8	4.5	4.0	0.6	139
Western	3.1	386	22.8	69.4	7.8	7.3	0.4	22.9	17.3	5.6	333
Southwest	3.3	345	23.1	72.2	4.8	3.1	1.7	23.0	18.9	4.1	311
Education											
No education	1.9	327	21.8	62.8	19.7	17.0	2.7	17.4	12.4	5.1	274
Primary	1.8	1,591	22.0	71.5	12.7	10.0	2.8	15.8	12.4	3.4	1,381
Secondary +	1.0	750	23.1	67.9	6.3	4.5	1.9	25.8	20.2	5.5	661
Wealth quintile											
Lowest	2.3	461	20.3	71.7	22.8	17.9	4.8	5.6	4.3	1.3	379
Second	1.9	476	21.3	72.9	18.3	14.6	3.7	8.8	7.2	1.6	389
Middle	2.2	484	22.0	78.1	9.0	6.9	2.1	13.0	10.3	2.7	422
Fourth	1.6	560	22.7	69.1	7.9	6.1	1.8	23.0	18.9	4.1	504
Highest	0.5	686	23.9	60.4	5.9	4.7	1.2	33.7	25.1	8.7	622
Total	1.6	2,667	22.3	69.5	11.7	9.2	2.5	18.8	14.6	4.2	2,316

Note: The Body Mass Index (BMI) is expressed as the ratio of weight in kilograms to the square of height in meters (kg/m^2).
[1] Excludes pregnant women and women with a birth in the preceding 2 months

Seven in ten Ugandan women have a normal BMI (between 18.5 and 24.9 kg/m^2). Overall, 12 percent of women are thin or undernourished (BMI less than 18.5 kg/m^2): 9 percent mildly thin (BMI

between 17.0-18.4 kg/m^2) and 3 percent moderately and severely thin (BMI less than 17.0 kg/m^2). Adolescents age 15-19 are somewhat more likely to be thin (14 percent) than older women. Rural women are more likely to be thin than urban women (13 percent versus 8 percent). Women residing in Karamoja are the most likely to be thin (33 percent), while women in Southwest are the least likely (5 percent). The percentage of women who are thin is inversely associated with education and wealth; uneducated women (20 percent) and those in the lowest wealth quintile (23 percent) are more likely to be thin than women with secondary or higher education or those in the highest wealth quintile (6 percent, each).

Overweight or obesity (BMI 25 kg/m^2 or above) is common among women in Uganda. Overall, 19 percent are overweight or obese (BMI 25 kg/m^2 or above), 15 percent are overweight and 4 percent are obese. The percentage of women who are overweight or obese increases with age, from 12 percent among women age 15-19 to 27 percent among those age 40-49. It is substantially higher among urban than rural women (35 and 14 percent, respectively). By region, women in Kampala are the most likely to be overweight or obese (40 percent), while women in Karamoja are the least likely (1 percent). The percentage of women who are overweight or obese increases substantially with education and wealth.

Figure 11.7 shows that the percentage of thin women has remained constant at 12 percent between the 2006 and 2011 UDHS surveys, while the percentage of overweight or obese women has increased from 17 to 19 percent.

Figure 11.7 Trends in nutritional status among women 15-49 years

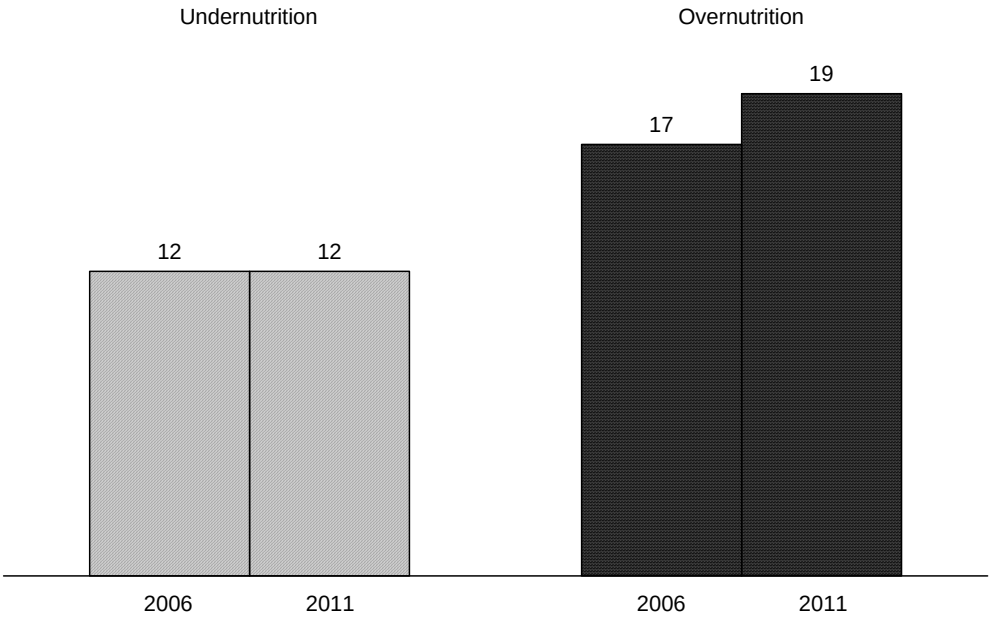


Table 11.10.2 presents the nutritional status of men. The mean BMI for Ugandan men age 15-49 is 20.6 kg/m^2. There is little difference in the mean BMI by background characteristics. Seventy-eight percent of Ugandan men age 15-49 have a normal BMI (between 18.5 and 24.9 kg/m^2). Eighteen percent are thin or undernourished (BMI less than 18.5 kg/m^2); 13 percent are mildly thin (BMI between 17.0 and 18.4 kg/m^2), and 5 percent moderately or severely thin (BMI less than 17.0 kg/m^2).

Young men age 15-19 are much more likely to be thin (33 percent) than their older counterparts (10-17 percent). Rural men are more likely to be thin (19 percent) than urban men (12 percent). Among regions, those residing in West Nile are most likely to be thin (34 percent), and those living in Central 2 are least likely (10 percent). There is no clear pattern in the relationship between education and the percentage of men who have a BMI of less than 18.5 kg/m^2. The percentage of men who are thin decreases with wealth, declining from 25 percent of men in the lowest wealth quintile to 14 percent of those in the highest wealth quintile.

Table 11.10.2 Nutritional status of men

Among men age 15-49, mean Body Mass Index (BMI), and the percentage with specific BMI levels, by background characteristics, Uganda 2011

	Body Mass Index								
		Normal	Thin			Overweight/obese			
Background characteristic	Mean Body Mass Index - BMI	18.5-24.9 (total normal)	<18.5 (total thin)	17.0-18.4 (mildly thin)	<17 (moderately and severely thin)	≥25.0 (total overweight or obese)	25.0-29.9 (overweight)	≥30.0 (obese)	Number of men
Age									
15-19	19.4	66.6	32.9	21.0	11.9	0.5	0.5	0.0	544
20-29	21.0	86.0	10.0	7.7	2.3	4.0	3.8	0.2	667
30-39	21.0	79.8	13.4	10.2	3.1	6.8	5.9	0.8	584
40-49	20.8	76.0	16.9	12.0	4.9	7.1	5.3	1.8	342
Residence									
Urban	21.5	76.1	12.4	8.5	3.9	11.5	9.8	1.7	426
Rural	20.3	78.2	19.2	13.5	5.7	2.6	2.3	0.3	1,711
Region									
Kampala	21.3	71.2	17.1	9.6	7.6	11.7	10.1	1.5	211
Central 1	20.7	85.2	12.4	8.6	3.8	2.4	2.1	0.2	208
Central 2	21.2	83.7	9.9	7.7	2.2	6.4	5.0	1.4	233
East Central	20.6	79.1	17.8	13.7	4.1	3.1	3.1	0.0	229
Eastern	20.1	78.6	20.3	13.5	6.8	1.0	0.9	0.1	286
Karamoja	19.4	65.0	33.1	21.9	11.2	1.9	1.9	0.0	53
North	20.0	76.6	20.6	17.3	3.3	2.8	2.8	0.0	199
West Nile	19.6	65.2	34.0	22.4	11.7	0.7	0.7	0.0	131
Western	20.7	81.7	14.0	11.4	2.6	4.3	2.8	1.5	317
Southwest	20.9	75.0	18.6	10.8	7.7	6.4	6.4	0.0	270
Education									
No education	20.7	82.9	14.8	11.7	3.1	2.3	2.3	0.0	87
Primary	20.3	76.3	20.9	15.0	5.8	2.8	2.6	0.3	1,292
Secondary +	21.0	79.7	13.1	8.3	4.8	7.2	6.1	1.2	758
Wealth quintile									
Lowest	19.7	75.1	24.5	19.3	5.2	0.3	0.3	0.0	341
Second	20.2	80.0	18.5	14.3	4.1	1.5	1.3	0.2	416
Middle	20.4	77.2	19.8	13.5	6.3	3.0	3.0	0.0	398
Fourth	20.9	80.9	14.6	7.9	6.7	4.5	3.6	0.8	480
Highest	21.4	75.2	14.3	9.9	4.4	10.5	9.0	1.5	501
Total 15-49	20.6	77.8	17.9	12.5	5.4	4.4	3.8	0.6	2,137
50-54	20.9	81.0	11.6	10.0	1.6	7.4	6.9	0.5	119
Total 15-54	20.6	77.9	17.5	12.4	5.2	4.5	4.0	0.6	2,256

Note: The Body Mass Index (BMI) is expressed as the ratio of weight in kilograms to the square of height in meters (kg/m^2).

Only 4 percent of men are overweight (BMI 25 kg/m^2 or above), while less than 1 percent are obese. The proportion of overweight or obese men is highest among urban men and those living in Kampala (12 percent each), men with secondary or higher education (7 percent), and men in the highest wealth quintile (11 percent).

11.7 PREVALENCE OF ANAEMIA IN WOMEN

Anaemia in pregnant women results in an increased risk of premature delivery and low birth weight. Table 11.11 presents anaemia prevalence among women age 15-49 based on haemoglobin levels, according to selected background characteristics. The raw measured values of haemoglobin were obtained using the HemoCue instrument and adjusted for altitude and smoking status.

Twenty-three percent of Ugandan women age 15-49 are anaemic, with 18 percent having mild anaemia, 5 percent having moderate anaemia, and less than 1 percent having severe anaemia. Prevalence of anaemia is higher among older women age 40-49 (27 percent), those with six or more children (28 percent), pregnant women (31 percent), and women who smoke (31 percent). Anaemia prevalence also varies by urban and rural residence; a higher proportion of women in rural areas are anaemic (24 percent) than those in urban areas (20 percent). Also, women in Karamoja have the highest prevalence of anaemia (43 percent, while women in Southwest have the lowest prevalence (11 percent). Prevalence of anaemia generally decreases as education and wealth status increases.

Table 11.11 Prevalence of anaemia in women

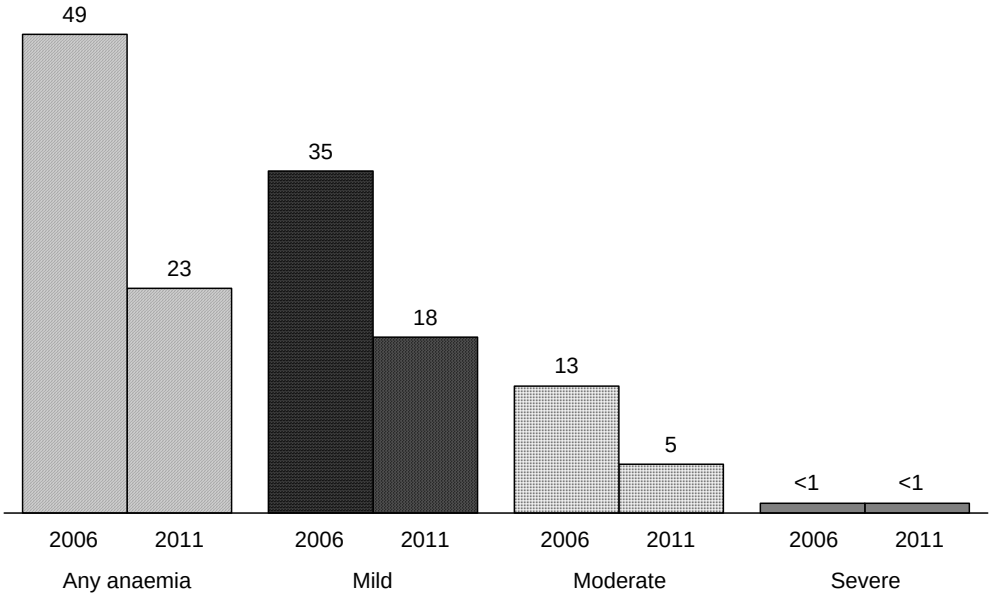
Percentage of women age 15-49 with anaemia, by background characteristics, Uganda 2011

Background characteristic	Not pregnant / Pregnant	Anaemia status by haemoglobin level: Any <12.0 g/dl / <11.0 g/dl	Mild 10.0-11.9 g/dl / 10.0-10.9 g/dl	Moderate 7.0-9.9 g/dl / 7.0-9.9g/dl	Severe <7.0 g/dl / <7.0g/dl	Number of women
Age						
15-19		18.9	14.9	2.9	1.1	632
20-29		23.3	18.2	4.6	0.5	948
30-39		24.5	19.0	5.4	0.1	650
40-49		26.8	18.9	7.1	0.8	381
Number of children ever born						
0		18.8	14.5	2.8	1.4	688
1		24.6	18.5	5.8	0.4	242
2-3		20.5	16.6	3.4	0.5	536
4-5		23.6	18.2	5.5	0.0	468
6+		28.4	21.2	6.9	0.3	677
Maternity status						
Pregnant		30.6	19.5	11.1	0.0	290
Breastfeeding		25.9	21.4	4.3	0.2	762
Neither		20.3	15.5	3.8	1.0	1,559
Smoking status						
Smokes cigarettes/tobacco		30.8	21.9	7.4	1.5	72
Does not smoke		22.8	17.6	4.7	0.6	2,538
Residence						
Urban		19.9	13.9	5.8	0.2	521
Rural		23.8	18.6	4.5	0.7	2,090
Region						
Kampala		19.6	14.1	5.3	0.3	246
Central 1		23.5	17.8	5.5	0.1	269
Central 2		30.9	23.3	6.1	1.6	259
East Central		29.9	23.1	6.4	0.4	272
Eastern		27.9	23.8	3.7	0.4	389
Karamoja		43.3	35.2	8.1	0.0	81
North		13.1	10.3	2.7	0.0	219
West Nile		32.3	26.4	5.5	0.5	163
Western		17.3	10.8	4.7	1.9	381
Southwest		11.4	8.5	2.9	0.0	333
Education						
No education		27.4	21.9	5.5	0.0	318
Primary		23.0	17.4	4.7	0.8	1,566
Secondary +		21.3	16.4	4.5	0.4	727
Wealth quintile						
Lowest		28.6	21.9	6.5	0.2	454
Second		26.4	22.1	4.3	0.0	467
Middle		19.0	14.4	4.4	0.2	478
Fourth		22.2	16.9	4.6	0.7	558
Highest		20.5	14.7	4.3	1.5	653
Total		23.0	17.7	4.8	0.6	2,610

Note: Prevalence is adjusted for altitude and for smoking status, if known, using formulas in CDC, 1998.

In comparison with the data from the 2006 UDHS, the prevalence of any anaemia has declined substantially from 49 percent to 23 percent. The prevalence of mild and moderate anaemia also has declined between the two surveys, from 35 percent to 18 percent, and from 13 percent to 5 percent, respectively (Figure 11.8).

Figure 11.8 Trends in anaemia status among women age 15-49 years



11.8 MICRONUTRIENT INTAKE AMONG MOTHERS

Adequate micronutrient intake by women has important benefits for both women and their children. A mother's nutritional status during pregnancy is important both for foetal development and for protection against maternal morbidity and mortality. Breastfeeding children benefit from micronutrient supplementation that mothers receive, especially vitamin A. Iodine deficiency is related to a number of adverse pregnancy outcomes, including abortion, foetal brain damage, congenital malformation, stillbirth, and prenatal death. Table 11.12 includes a number of measures that are useful in assessing the extent to which women are obtaining adequate intakes of vitamin A and iron.

More than four in ten mothers (42 percent) who gave birth in the five years preceding the survey received postpartum vitamin A supplements. The proportion of mothers that received vitamin A supplements does not vary much by age. Vitamin A supplements are more common in urban areas than rural areas (51 and 40 percent, respectively). More than six in ten women (63 percent) residing in Karamoja received vitamin A supplements, compared with about one in four women (23 percent) in Central 1. Educated women were more likely to have received vitamin A supplements during their last pregnancy—48 percent of women with secondary or higher education compared with 38 percent of women with no education. The likelihood of women receiving vitamin A supplements is highest among those in the lowest and highest wealth quintiles (47 and 48 percent, respectively).

About one in four women (24 percent) did not take any iron tablets during their last pregnancy. Sixty-one percent of women took them for fewer than 60 days, and 4 percent took them for 90 days or more during their last pregnancy. The percentage of women who took iron tablets for 90 or more days decreases somewhat with age and is higher among urban women (9 percent) and those residing in Kampala (10 percent). In general, the percentage of women who took iron tablets for 90 or more days increases as educational status and wealth index increase.

Half of mothers received deworming medication during their last pregnancy. Urban women were more likely than rural women to have taken deworming medication (54 percent compared with 49 percent). Among regions the proportion of women who received deworming medication ranges from 38 percent in East Central to 62 percent in West Nile. The percentage of women who received deworming medication generally increases with increasing education and wealth.

Iodine deficiency has adverse effects on all population groups, but women of reproductive age are often most affected. Table 11.12 shows the percentage of women with a child born in the five years preceding the survey who live in households using iodised salt. Nationally, 99 percent of women live in households with iodised salt. This percentage does not vary much by background characteristics.

Table 11.12 Micronutrient intake among mothers

Among women age 15-49 with a child born in the past five years, the percentage who received a vitamin A dose in the first two months after the birth of the last child, the percent distribution by number of days they took iron tablets or syrup during the pregnancy of the last child, and the percentage who took deworming medication during the pregnancy of the last child; and among women age 15-49 with a child born in the past five years and who live in households that were tested for iodised salt, the percentage who live in households with iodized salt, by background characteristics, Uganda 2011

	Among women with a child born in the past five years:								Among women with a child born in the past five years, who live in households that were tested for iodised salt:	
		Number of days women took iron tablets or syrup during pregnancy of last birth								
Background characteristic	Percentage who received vitamin A dose post-partum[1]	None	<60	60-89	90+	Don't know/ missing	Total	Percentage of women who took deworming medication during pregnancy of last birth	Number of women	Percentage living in households with iodised salt[2]	Number of women
Age											
15-19	40.6	23.9	60.1	3.6	5.4	7.1	100.0	50.3	370	99.6	347
20-29	43.6	22.2	63.5	2.9	4.2	7.2	100.0	51.2	2,535	99.1	2,438
30-39	40.6	26.9	58.1	2.5	3.8	8.7	100.0	50.2	1,594	98.9	1,518
40-49	38.6	27.8	56.7	2.5	1.6	11.4	100.0	41.8	470	99.0	445
Residence											
Urban	50.5	16.7	60.1	3.4	9.2	10.6	100.0	53.7	805	99.0	770
Rural	40.3	25.9	61.0	2.7	2.9	7.6	100.0	49.2	4,163	99.0	3,977
Region											
Kampala	52.4	15.8	58.4	4.0	10.1	11.6	100.0	51.5	358	98.9	347
Central 1	23.4	29.8	56.7	2.0	1.7	9.9	100.0	43.9	504	99.7	476
Central 2	36.8	22.3	52.9	2.5	4.9	17.4	100.0	51.2	507	98.1	487
East Central	41.0	29.3	62.4	1.0	1.1	6.2	100.0	37.6	532	98.5	512
Eastern	48.2	22.8	68.2	2.6	1.9	4.6	100.0	57.5	794	100.0	753
Karamoja	62.9	9.2	76.7	4.0	2.0	8.1	100.0	43.1	186	99.5	163
North	58.6	18.4	66.9	6.7	6.7	1.3	100.0	51.2	445	100.0	435
West Nile	55.6	12.9	68.7	3.8	7.5	7.1	100.0	61.9	299	98.7	276
Western	36.4	25.8	62.2	1.4	4.0	6.5	100.0	51.7	739	98.4	716
Southwest	29.3	37.4	46.6	2.8	3.0	10.1	100.0	46.7	604	98.5	583
Education											
No education	38.3	28.1	59.8	2.3	1.8	8.0	100.0	43.7	713	99.0	650
Primary	40.4	26.1	61.1	2.4	3.2	7.2	100.0	49.7	3,079	99.0	2,957
Secondary +	48.1	17.7	60.8	4.2	7.1	10.3	100.0	54.2	1,177	99.2	1,141
Wealth quintile											
Lowest	47.3	24.2	63.2	3.6	3.2	5.7	100.0	48.4	1,055	99.4	983
Second	40.3	26.2	61.6	2.2	3.0	7.0	100.0	48.3	1,026	99.1	982
Middle	36.6	28.7	58.8	2.1	3.8	6.5	100.0	47.1	963	98.9	918
Fourth	36.5	24.6	62.4	2.0	1.8	9.2	100.0	51.3	897	98.6	864
Highest	47.9	18.3	58.3	3.9	7.5	12.0	100.0	54.5	1,027	99.1	1,001
Total	41.9	24.4	60.9	2.8	3.9	8.1	100.0	49.9	4,968	99.0	4,748

[1] In the first two months after delivery
[2] Excludes women in households where salt was not tested

Half of mothers received deworming medication during their last pregnancy. Urban women were more likely than rural women to have taken deworming medication (54 percent compared with 49 percent). Among regions the proportion of women who received deworming medication ranges from 38 percent in East Central to 62 percent in West Nile. The percentage of women who received deworming medication generally increases with increasing education and wealth.

Iodine deficiency has adverse effects on all population groups, but women of reproductive age are often most affected. Table 11.12 shows the percentage of women with a child born in the five years preceding the survey who live in households using iodised salt. Nationally, 99 percent of women live in households with iodised salt. This percentage does not vary much by background characteristics.

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Among women age 15-49 with a child born in the past five years, the percentage who received a vitamin A dose in the first two months after the birth of the last child, the percent distribution by number of days they took iron tablets or syrup during the pregnancy of the last child, and the percentage who took deworming medication during the pregnancy of the last child; and among women age 15-49 with a child born in the past five years and who live in households that were tested for iodised salt, the percentage who live in households with iodized salt, by background characteristics, Uganda 2011

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Total	41.9	24.4	60.9	2.8	3.9	8.1	100.0	49.9	4,968	99.0	4,748

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