

The Uganda National Panel Survey (UNPS) 2011/12

Basic Information Document

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Acronyms

BHPS	British Household Panel Survey
EA	Enumeration Area
GoU	Government of Uganda
GPS	Global Positioning System
ISCO	International Standard Classification of Occupations
ISIC	International Standard Industrial Classification
LC1	Local Council 1
LSMS-ISA	Living Standards Measurement Study – Integrated Surveys on Agriculture
NAADS	National Agricultural Advisory Services
NDP	National Development Plan
NDS	National Development Strategy
NSDS	National Service Delivery Surveys
PSID	Panel Study of Income Dynamics
UBOS	Uganda Bureau of Statistics
UDHS	Uganda Demographic and Health Survey
UNHS	Uganda National Household Survey
UNPS	Uganda National Panel Survey
UMPC	Ultra Mobile Personal Computer
CAPI	Computer Assisted Personal Interviews
CWEST	Capture With Enhance Survey Technology

Tables of Contents

ACRONYMS	II
LIST OF TABLES	2
1.0 OVERVIEW	3
1.1 SURVEY OBJECTIVES	3
1.2 SURVEY DESIGN	4
2 SURVEY QUESTIONNAIRES – REVIEW OF SECTIONS	5
2.1: EXPLANATORY NOTES BY SECTION – HOUSEHOLD QUESTIONNAIRE	6
Section 1A: Household Identification Particulars.....	6
Section 1B: Staff Details and Survey Time.....	6
Section 2: Household Roster.....	6
Section 3: General Information on Household Members	8
Section 4: Education.....	8
Section 5: Health	8
Section 6: Child Nutrition and Health	8
Section 8: Labour Force Status.....	9
Section 9: Housing Conditions, Water and sanitation.....	9
Section 10: Energy Use.....	9
Section 11: Other Household Incomes	10
Section 12: Non-agricultural Enterprises/Activities.....	10
Section 14: Household Assets	10
Section 15: Household Consumption Expenditure.....	10
Section 16: Shocks and Coping Strategies.....	11
Section 17: Welfare Indicators and Food Security	11
Section 18: Transport Services	11
2.2: EXPLANATORY NOTES BY SECTION – AGRICULTURE & LIVESTOCK QUESTIONNAIRE	13
Section 1A: Household Identification Particulars.....	13
Section 1B: Staff details and survey time	13
Section 2: Current land Holdings and land that the household has access through use rights	13
Section 3A & 3B: Agricultural and labour inputs.....	14
Section 4A & 4B: Crops grown and type of seeds used.....	14
Section 5A & 5B: Quantification of Agricultural Production.....	14
Sections 6A, 6B & 6C: Livestock ownership	14
Section 7: Livestock Inputs	14
Section 8: Livestock Products	15
Section 9: Extension Services.....	15
Section 10: Farm Implements and Machinery	15
This section collected information on agricultural implements and machinery. It collects information in regard to ownership and estimated value both in cash and in kind of the implements and it has a reference period of 12 months.	15
2.4: EXPLANATORY NOTES BY SECTION – COMMUNITY QUESTIONNAIRE	17
Section 1: Community Identification Particulars	17
Section 2: Availability of services within the community.....	17
Section 3: Education (Primary).....	17
Section 4: Health services.....	17
Section 5: Works and Transport.....	17
2.5: EXPLANATORY NOTES BY SECTION – WOMAN QUESTIONNAIRE	21

Section 2A: Contraception	21
Section 2B: Birth History	21
3 OTHER RELATED INSTRUCTIONS/CODES	22
3.1: AREA MEASUREMENT USING GLOBAL POSITIONING SYSTEM (GPS).....	22
3.2: OTHER CODES	22
4 FIELD WORK ORGANIZATION	23
4.0: TRACKING	24
4.1: TRACKING OF HOUSEHOLDS	24
4.2: TRACKING OF SPLIT-OFFS.....	25
5 LINKING UNHS 2005/06 & UNPS 2009/10 & UNPS 2010/11& 2011/12	26
6 REFERENCES	27
ANNEX 2: CROP CODES	29
ANNEX 3: CONFIDENTIAL INFORMATION, GEOSPATIAL VARIABLES	30

LIST OF TABLES

Table 1 : Organization of the UNPS 2011/12 Household Questionnaire	12
Table 2 : Organization of the UNPS 2011/12 Agriculture Questionnaire	16
Table 3 : Organization of the UNPS 2011/12 Community Questionnaire	19
Table 4 : Organization of the UNPS 2011/12 Woman's Questionnaire.....	21
Table 5: EA Probability of Selection	Error! Bookmark not defined.
Table 6: Summary Statistics on Heads of Missing Households vs. Missing Individuals.....	Error! Bookmark not defined.

1.0 Overview

Uganda has experienced strong economic growth over the past two decades, and has made great strides towards improving the quality of life and access to services. In order to continue to promote pro-poor economic growth, the Government of Uganda (GoU) developed the National Development Plan (NDP) and a Joint Budget Support strategy as part of the implementation of the National Development Strategy (NDS).

The GoU recognizes the need for adequate data collection to effectively monitor outcomes of the National Development Strategy (NDS). For this purpose, the Uganda Bureau of Statistics (UBOS) is implementing the Uganda National Panel Survey (UNPS) program, with financial and technical support from the Government of Netherlands, and the World Bank Living Standards Measurement Study – Integrated Surveys on Agriculture (LSMS-ISA) project.

The UNPS is a multi-topic panel household survey that commenced in 2009/10. One of the primary uses of the UNPS is to inform policymaking in advance of the Budget, through descriptive reports that are made ready in time for the initial work on sector budget framework papers.

In order to measure socio and economic dynamics, UNPS began collecting data in 2009/10. This was followed by additional rounds of data collection in 2010/11 and 2011/12.

1.1 Survey Objectives

The UNPS aims at producing annual estimates in key policy areas and at providing a platform for experimenting with and assessing of national policies and programs. Explicitly, the objectives of the UNPS include:

1. To provide information required for monitoring the National Development Strategy, of major programs such as National Agricultural Advisory Services (NAADS) and General Budget Support, and also to provide information to the compilation of the National Accounts (e.g. agricultural production);
2. To provide high quality nationally representative information on income dynamics at the household level and provide annual information on service delivery and consumption expenditure estimates to monitor poverty and service outcomes in interim years of other national survey efforts, such as the Uganda National Household Survey (UNHS), Uganda Demographic and Health Survey (UDHS) and National Service Delivery Surveys (NSDS);

3. To provide a framework for low-cost experimentation with different policy interventions to e.g. reduce teacher absenteeism, improve ante- and post-natal care, or assessing the effect of agricultural input subsidies;
4. To provide a framework for policy oriented analysis and capacity building substantiated with the UGDR and support to other research which will feed into the Annual Policy Implementation Review; and
5. To facilitate randomized impact evaluations of interventions whose effects cannot currently be readily assessed through the existing system of national household surveys.

1.2 Survey Design

The UNPS is carried out annually, over a twelve-month period (a “wave”) on a nationally representative sample of households, for the purpose of accommodating the seasonality associated with the composition of and expenditures on consumption. The survey is conducted in two visits in order to better capture agricultural outcomes associated with the two cropping seasons of the country. The UNPS will therefore interview each household twice each year, in visits approximately six months apart.

Starting in 2009/10, the UNPS set out to track and interview 3,123 households that were distributed over 322 enumeration areas (EAs), selected out of the 783 EAs that had been visited by the Uganda National Household Survey (UNHS) in 2005/06. The UNPS EAs covered all 34 EAs visited by the UNHS 2005/06 in Kampala District, and 72 EAs (58 rural and 14 urban) in each of the (i) Central Region with the exception of Kampala District, (ii) Eastern Region, (iii) Western Region, and (iv) Northern Region.

Within each stratum, the UNPS EAs were selected from the UNHS 2005/06 EAs with equal probability, and with implicit stratification by urban/rural and district (in this order), except for the rural portions of the ten districts that were oversampled by the UNHS 2005/06. In these districts, the probabilities were deflated, to bring them back to the levels originally intended. Since IDP (internally displaced people) camps are now mostly unoccupied, the extra EAs in IDP camps are not a part of the UNPS subsample. This allocation strives for reasonably reliable estimates for the rural portion of each region, and for the set of urban areas out of Kampala as a whole, as well as the best possible estimates for Kampala that can be expected from a subsample of the UNHS 2005/06. Therefore, the UNPS strata of representativeness include (i) Kampala City, (ii) Other Urban Areas, (iii) Central Rural, (iv) Eastern Rural, (v) Western Rural, and (vi) Northern Rural.

Prior to the start of the 2009/10 field work, 2 UNPS households were also randomly selected in each EA for the purposes of tracking baseline individuals that moved away from original locations since the UNHS 2005/06.

In the UNPS 2010/11, the concept of Clusters instead of EAs was introduced. A cluster represents a group of households that are within a particular geographical area up to parish level. This was done due to split-off households that fall outside a particular EA but could still be reached and interviewed if they fell within the same parish as the EA.

The initial UNPS sample will be subject to three consecutive waves of data collection after which, parts of the sample will start to be replaced by new households extracted from the updated sample frames developed by the UBOS as part of the 2012 Uganda Population and Housing Census.

In addition, the UNPS will fit within the Long Term Census and Household Survey Program and therefore both the questionnaires and the timing of data collection will be coordinated with the current surveys and census implemented by UBOS. To suit its multiple objectives, the UNPS comprises a set of survey instruments, namely:

- Household Questionnaire,
- Woman Questionnaire,
- Agriculture Questionnaire, (administered to the subset of UNPS households engaged in agricultural activities) including a Livestock component added in 11/12,
- Community Questionnaire, and
- Market Questionnaire (not conducted in 11/12).

2 Survey Questionnaires – Review of Sections

As mentioned earlier, the UNPS had six questionnaires namely: Household Questionnaire; Woman Questionnaire; Agriculture Questionnaire; Fisheries Questionnaire; Community Questionnaire and Market Questionnaire. Each of these questionnaires is divided into a number of sections and the level of observation for each section varies accordingly.

Unlike the 2009/10 survey where all the questionnaires were administered on paper, the UNPS 2010/11 and 2011/12 Household, Agriculture, Community and Woman questionnaires were administered using computer assisted personal interview (CAPI) software - CWest and SurveyBe applications – which capture the data directly during interviews. The questionnaires were preloaded onto ultra mobile personal computers (UMPCs) and as a result there was no need for field data entry for these modules.

The tables 1-4 below provides an overview of the sections of the Household, Agriculture, Community and Woman questionnaires, associated data files, and key identifiers.

2.1: Explanatory notes by section – Household Questionnaire

For some households, during Visit 1 only the household roster (Section 2) of the Household Questionnaire was collected. In such cases, the rest of the Household Questionnaire was completed six months later during the Visit 2. For a more detailed explanation, see section 4.0.

Section 1A: Household Identification Particulars

Information in this section was distributed by the Headquarters staff to the field teams before starting data collection. Names and codes pertaining to the selected Enumeration Areas (EAs) were provided by UBOS to the team leaders prior to fieldwork. An EA generally does not have its own name but is known by the name of the Local Council 1 (LC1) that is associated with it.

Section 1B: Staff Details and Survey Time

The Supervisors and interviewers were required to record their particulars in this section. Time taken to conduct interviews was recorded. The data also include the date on which the household questionnaire was administered in full.

In the data, Sections 1A and 1B have been consolidated, and many of the variables are withheld from public dissemination to maintain the confidentiality of respondents. The public dataset includes a few additional variables for user reference, including variable *comm* which indicates the EA Community that the Household belonged to in 2005/06 and variable *wave* which indicates when the household was created. When wave is 0, the household is one of the original households from the 2005/06 Survey. When wave is 1, this indicates the household split off from an original 2005/06 household and was first interviewed as an independent unit in 2010/11. When wave is 2, this split off happened in 2011/12; when wave is 3 it happened in 2012/13.

Section 2: Household Roster

The purpose of this section is to:

- (i) Identify all persons who are members of the household;
- (ii) Provide basic demographic information such as age, sex and marital status of each household member; and
- (iii) Identify any changes to household members between the first and second visit

The respondent for this section was mainly the household head. In the absence of the household head the next person who is acting as household head would be interviewed. ***It was a requirement that respondents must be a usual member of the household and should be capable of providing all the***

necessary information about other members of the household. Other household members also helped in providing information or details on particular questions concerning them.

In UNPS 2011/12, a **household** was defined as a group of people who have ***normally*** been living and eating their meals together for at least 6 of the 12 months preceding the interview. Therefore, the member of the household is defined on the basis of their usual place of residence.

Section 3: General Information on Household Members

This section captured general information on all members of the household specifically on:

- (i) Parents of household members who sometimes do not live in the same dwelling as the household members.
- (ii) The salient moves (migration status) made by members of the household.
- (iii) Malaria indicators: use and treatment of mosquito nets.

The respondents for questions in the first half of this section (columns (1) – (7)) were all members of the household below 18 years while the questions in the second half applied to all members of the household. To the extent possible each person was asked directly. If someone was not available or too young to answer then the household head, spouse, or another well-informed member of the household would answer these questions.

Section 4: Education

The objective of this section was to measure the level of education or formal schooling of all household members aged 5 years and above, and to collect educational expenditures associated with each. Information was mainly collected on (i) the literacy status of household members – i.e. member of the household who could read and write; (ii) the educational attainment of each respondent and the type of school attended; and (iii) amount spent on education of household member's during the past 12 months.

Section 5: Health

This section collected information on illness and injuries among household members during the past 30 days, use of health facilities and medical expenses for treating the illnesses or injuries. The respondents for the section were all members of the household, but parents or a knowledgeable adult (preferably female) could answer for young children.

Section 6: Child Nutrition and Health

These questions were asked with a view of obtaining a better picture of the diversity of the child's diet. Only children aged from 0 to 59 months and living with a mother or caretaker in the sampled households are eligible for the questions. The questions were answered by the mothers /caretakers of the children because they are considered more knowledgeable about the children. Height and weight measurements were obtained for all children aged 6 to 59 months using anthropometric equipment.

Section 8: Labour Force Status

This section starts with a screen to determine which respondents should be asked about employment and which should be asked the questions that address labor force participation, unemployment, and job search. It also determined the reason for absence for those people who had a job or business but were not at work the previous week. All household members aged 5 years and older were classified into three broad groupings i.e. employed, unemployed, and not in the labor force.

Employed persons were defined as those who were working at a paid job or business or who were working unpaid at a household business or farm **for at least one hour during the reference week**, or who did not work during the reference week but held a job or had a business from which they were temporarily absent.

Unemployed persons were classified as those individuals who did not work at all during the reference week and who were not absent from a job, but who actively looked for work during the past four weeks and were available to work in the reference week. Persons who were on layoff from a job to which they expected to return and were available to work during the reference week are also classified as unemployed, even if they did not actively look for work. The sum of the employed and the unemployed constituted the **labor force**. (*Persons **not in the labor force** were those who were neither employed nor unemployed. They did not work, they were not absent from work and they did not actively look for work in the past four weeks*).

Section 9: Housing Conditions, Water and sanitation

Data from this section was aimed at measuring the quality of housing occupied by the household currently. Information was collected on the type of dwelling, occupancy status, the physical characteristics of the dwelling, and access to basic services (including water, electricity and sanitation). A dwelling was defined as a building or a group of buildings in which the household lived. It could be a hut, a group of huts, a single house, a group of houses, an apartment, several one-room apartments, etc.

Section 10: Energy Use

Information obtained in this section aimed at measuring the access and utilization of energy fuels, especially for lighting and cooking.

Section 11: Other Household Incomes

This section gathered information on income transfers i.e. all incomes of household members other than that from paid and/or self-employment during the past 12 months.

Section 12: Non-agricultural Enterprises/Activities

This section collected information on the presence of non-agricultural household enterprises. It includes information on income and employment derived from non-agricultural household enterprises and identified which household member was responsible for each enterprise in terms of decision making and the allocation of income generated. It also covered the involvement of household enterprises in the credit market. The respondent for each enterprise was a member of the household best informed about the activities of the enterprise.

An enterprise was defined as any undertaking which is engaged in the production and/or distribution of some goods and/or services meant mainly for the purpose of sale, whether fully or partly.

Section 14: Household Assets

This section aimed at collecting data to estimate the value of household, farm and non-farm enterprise assets. It also collected information on ownership of assets.

Section 15: Household Consumption Expenditure

This section covered expenditures of the household with different reference periods depending on the frequency of purchases. It is separated into four parts which include: (a) food, beverages and tobacco; (b) non-durable goods and frequently purchased services; (c) semi-durable and durable goods and services; and (d) non-consumption expenditure.

The major emphasis of the section was mainly on consumption and not monetary expenditures. Although the two are very close, they are not the same. Household consumption expenditures in cash, kind or through barter were recorded for the household only. For bartered items the value of the item paid for (not the value one got in exchange) was recorded. Food, beverages or tobacco served to other members and guests in the household during the reference period were however included. The respondent for this section was the person (household member) who managed the household budget and was the best informed about the household's consumption expenditure.

Section 16: Shocks and Coping Strategies

Shocks were defined as events that happen suddenly. Usually they have a marked beginning and end. While they last for a short time, a few days or weeks, usually their effects are felt for a longer time. It was noted that a shock can be household specific or community wide. Examples of shocks include floods, rebel raids, livestock disease, fire, etc. For example, petty theft of household property was not considered as a shock.

Section 17: Welfare Indicators and Food Security

The purpose of this section was to collect information on vital needs and living conditions of households during the last 12 months. It provided additional information to assess household welfare. **Food security** was defined as the availability of food and one's access to it. A household was considered food secure when its occupants did not live in or fear of starvation.

Section 18: Transport Services

Information was collected on access to and use of transport services. These included access to road infrastructure. A **road** was defined as an open way for the passage of vehicles, persons or animals. **Trunk roads** are main roads maintained by the central government and they are normally connecting a district to other districts. These can either be tarmac or murram roads and they are normally six (6) metres and above in width. **District/Feeder roads** are major roads joining Trunk roads and are maintained by the district authorities. **Community roads** on the other hand are roads (excluding footpaths) connecting villages and are normally maintained by the communities themselves.

Table 1 : Organization of the UNPS 2011/12 Household Questionnaire

Section	Level of Observation	Data File	Key Identifiers
Household Identification Particulars	Household	GSEC1.dta	HHID
Household Roster	Individual	GSEC2.dta	PID
General Information on Household Members	Individual	GSEC3.dta	PID
Education	Individual	GSEC4.dta	PID
Health	Individual	GSEC5.dta	PID
Child Nutrition and Health	Individual	GSEC6A.dta	PID
Child Nutrition and Health cont'd	Treatment Type	GSEC6B.dta	PID h6q18
Child Nutrition and Health cont'd	Treatment Type	GSEC6C.dta	PID h6q23_1
Labour Force Status	Individual	GSEC8.dta	PID
Housing Conditions, Water and Sanitation	Household	GSEC9A.dta	HHID
Person collects water	Household	GSEC9B.dta	HHID
Energy Use	Household	GSEC10A.dta	HHID
Energy Use cont'd	Stove Type	GSEC10B.dta	HHID h10q8_1
Energy Use cont'd	Fuel Type	GSEC10C.dta	HHID h10q13_1
Other Household Income in Past 12 months	Income Type	GSEC11.dta	HHID h11aq03
Non-Agricultural Household Enterprises/Activities	Enterprise	GSEC12.dta	HHID h12q3a
Household Assets	Asset Type	GSEC14.dta	HHID h14q2
Household Consumption Expenditures – Food, Beverages and Tobacco (Last 7 days)	Consumption Item	GSEC15B.dta	HHID h15bq2
Food Fortification	Consumption Item	GSEC15BB.dta	HHID h15bqid
Household Consumption Expenditures – Non-Durable Goods and Frequently Purchased Services (Last 30 days)	Consumption Item	GSEC15C.dta	HHID h15cq2
Household Consumption Expenditures – Semi-durable and Durable Goods and Services (Last 365 days) & Non-Consumption Expenditures (Last 365 Days)	Consumption Item	GSEC15D.dta	HHID h15dq2
Shocks and Coping strategies	Shock Type	GSEC16.dta	HHID h16q00
Welfare and Food Security	Household	GSEC17A.dta	HHID
Welfare and Food Security cont'd	Month of Shock	GSEC17B.dta	HHID h17q10b
Welfare and Food Security cont'd	No Food Reason	GSEC17C.dta	HHID h17q11b
Transport Services and Road Infrastructure	Road Type	GSEC18.dta	HHID h18q1
Transport Services and Road Infrastructure cont'd	Household	GSEC18A.dta	HHID
Transport Services and Road Infrastructure cont'd	Activity	GSEC18B.dta	HHID h18q9

2.2: Explanatory notes by section – Agriculture & Livestock Questionnaire

The purpose of the agricultural module in the household survey was to give a better descriptive picture of Uganda's farm economy, and deeper insight into factors affecting farm incomes. These would include a better understanding of the influence of farmers' resources and marketing opportunities on farm-household income, and some sense of how farmers' situation has changed in the past few years.

The agriculture module was administered in two visits to the selected households. During the first visit, agricultural production data was collected on the first cropping season of 2011 (January – June 2011). The second visit collected agricultural production data on the second cropping season of 2011 (July – December 2011).

The main or first agricultural season normally refers to the growing cycle of temporary crops that are planted and harvested in the first half of the year, occasionally extending up to the end of June. It thus covers the period between January and June. The second agricultural season is generally the period between July and December. It should be noted that seasons are directly related to rains and only indirectly related to the growing cycle of crops. The first rains are generally longer than the second rains. However, it is also noted that some areas in Uganda have only one significant agricultural season.

Section 1A: Household Identification Particulars

Information in this section was distributed by the Headquarters staff to the field teams before starting data collection. Names and codes pertaining to the selected Enumeration Areas (EAs) were provided by UBOS to the team leaders prior to fieldwork. An EA generally does not have its own name but is known by the name of the LC1 that is associated with it.

Section 1B: Staff details and survey time

The Supervisors and interviewers were all required to record their particulars in this section. Time taken to conduct interviews was also recorded.

Section 2: Current land Holdings and land that the household has access through use rights

The purpose of this section was to have a complete list of all the parcels owned and/or operated as well as rented by the household during the first season of 2011 and the second season of 2011. This section captures information in two parts; Section 2 part A captures information concerning current land holdings and section 2 part B captures information pertaining to land that a household has access to through use rights. The questions were administered to households who had been involved in crop farming during the last completed and the current cropping seasons. Information was collected on agricultural land that

these households had access during the reference period. Issues of land tenure status and land user rights were also investigated. All of Section 2 is administered together, during Visit 1.

Section 3A & 3B: Agricultural and labour inputs

This section collected information on non-labor and labor input applications at the parcel-plot-level during the first cropping season (January-June 2011) and second cropping season (July –December 2011) in part A and B, respectively.

Section 4A & 4B: Crops grown and type of seeds used

The purpose of this section was to collect information on crop cover of parcels farmed by the household. Data was collected on crops planted by the household during the first cropping season (January-June 2011) and second cropping season (July –December 2011) on each plot on each parcel accessed by the household through ownership or user rights, in part A and B, respectively.

Section 5A & 5B: Quantification of Agricultural Production

Information on agricultural production is collected at the parcel-plot-crop-level separately for the first cropping season (January-June 2011) and second cropping season (July –December 2011) in part A and B, respectively. This section also collects data on how the household used the harvested produce.

Sections 6A, 6B & 6C: Livestock ownership

The data on the ownership of (i) cattle and pack animals, (ii) small animals, and (iii) poultry and other animals are solicited in sections 6A, 6B, and 6C, respectively. Each section collects information on dynamics of household livestock ownership at animal-type level over a given reference period, earnings from animal sales, and expenditures on animal purchases. If the household cared for animals that belonged to others, interviewers were instructed to record only ownership, sales and purchases of animals the household was entitled to keep, for instance the baby goats or sheep that the household keeps in return for caring the flock.

Section 7: Livestock Inputs

The purpose of this section was to estimate expenditure on inputs on livestock i.e. the expenditures necessary to raise the animals. This ranges from breeding, feeding, watering housing, and animal health expenses incurred to raise the animals.

Section 8: Livestock Products

This section collected information on the production and sales of livestock by-products. The reference period was generally last 12 months for live stocks and three months for poultry (eggs). These are covered in different sections (8A-8E) including production of (Meat, Milk, Eggs, Dung and Animal power) respectively.

Section 9: Extension Services

The section collected information on agricultural technology and extension services. It covered access to extension services and access to and demand for agricultural technology. Extension workers were defined as individuals employed by the government or non-governmental organizations who work as an agricultural development agents for contacting and demonstrating improved farming methods to farmers. They are responsible for organizing, disseminating, guiding and introducing technical methods in agricultural production directly to farmers, and for facilitating farmers coming into contact with cultivation methods to promote agricultural production.

Section 10: Farm Implements and Machinery

This section collected information on agricultural implements and machinery. It collects information in regard to ownership and estimated value both in cash and in kind of the implements and it has a reference period of 12 months.

Table 2 : Organization of the UNPS 2011/12 Agriculture & Livestock Questionnaire

Section	Level of Observation	Data File	Key Identifiers
Household Identification Particulars	Household	AGSEC1.dta	HHID
Current Land Holdings - 1 st /2 nd Visit	Parcel	AGSEC2A.dta	HHID parcel ID
Land That the Household Has Access Through Use Rights - 1 st /2 nd Visit	Parcel	AGSEC2B.dta	HHID parcel ID
Agriculture and Labour Inputs – 1 st Visit	Parcel-Plot	AGSEC3A.dta	HHID parcel ID plot ID
Crops Grown and Types of Seeds Used – 1 st Visit	Parcel-Plot-Crop	AGSEC4A.dta	HHID parcel ID plot ID
Quantification of Production – 1 st Visit	Parcel-Plot-Crop	AGSEC5A.dta	HHID parcel ID plot ID
Agriculture and Labour Inputs – 2 nd Visit	Parcel-Plot	AGSEC3B.dta	HHID parcel ID plot ID
Crops Grown and Types of Seed Used – 2 nd Visit	Parcel-Plot-Crop	AGSEC4B.dta	HHID parcel ID plot ID
Quantification of Production – 2 nd Visit	Parcel-Plot-Crop	AGSEC5B.dta	HHID parcel ID plot ID
Livestock Ownership – Cattle and Pack Animals	Livestock Type	AGSEC6A.dta	HHID
Livestock Ownership – Small Animals	Livestock Type	AGSEC6B.dta	HHID
Livestock Ownership – Poultry and Others	Livestock Type	AGSEC6C.dta	HHID
Animal group roster	Livestock Type	AGSEC7A.dta	HHID AGroup_ID
Livestock Inputs	Livestock Input Type	AGSEC7B.dta	HHID AGroup_ID
Livestock Products	Livestock Product	AGSEC8(A-E).dta	HHID AGroup_ID
Extension Services	Extension Source	AGSEC9.dta	HHID
Farm Implements and Machinery	Implement item	AGSEC10.dta	HHID itmcd

2.4: Explanatory notes by section – Community Questionnaire

The community survey aimed at collecting information relating to communities residing in the sampled EAs. The administrative unit for collection of community data was mainly the LC1, although there were specific questions for the Sub-county Chief. The community survey information was collected by interviewing key informants within the institutions of interest. These included community members and heads of selected facilities.

Section 1: Community Identification Particulars

Most of the information in this section was obtained from headquarters by field teams before starting data collection. A provision was made to record details for each of the subsequent 4 sectors on which data was collected. These included names of respondents and responses status for each sector.

Section 2: Availability of services within the community

The purpose of this section was to obtain general information on the social infrastructure nearest to the community. Information was collected from community leaders. The social facilities on which data was collected included schools/other education facilities, banks, markets, agricultural and fisheries services, police and army facilities, various types of health facilities, water and sanitation facilities as well as works and transport services .

Section 3: Education (Primary)

Information for this section was provided by a knowledgeable school official preferably the headmaster or someone nominated by him/her. Data was collected on both the most popular and the nearest primary schools. These schools on which data was collected were not necessarily located within the LC1 covered.

Section 4: Health services

In this section, information was collected on the most commonly used public and private health facilities. The respondent for this section was an authorized or knowledgeable health official at the facility preferably the head of the facility. The health facility targeted would be a place that had qualified doctors/nurses/medical attendants for treating patients including dressing and emergency attention facilities and would in addition be selling medicines to patients. Individual doctors, practitioners, etc, doing only consultation, with very limited supply of medicines were excluded. However, Doctors with moderate treatment and medical attention facilities were included.

Section 5: Works and Transport

The respondent for this section was the sub-country chief. Information was mainly collected on the availability, use and maintenance of works and transport infrastructure.

Section 6: Community Characteristics, Groups, needs and resources

The respondent to this section is a group of community members. Information is collected on the number of households in the community and the how the land is used. Information is also collected on the different community groups, NGOS working within the community, the community needs, actions and achievements as well as communal resource management.

Table 3 : Organization of the UNPS 2011/12 Community Questionnaire

Section	Level of Observation	Data File	Key Identifiers
Identification Particulars	EA	CSEC1.dta	comcod c1aq4
Service Availability in LC1	Service type	CSEC 2a.dta	c1aq4c2aq2
Client satisfaction with health facilities	EA	CSEC 2b.dta	c1aq4
Water and Sanitation	EA	CSEC2c.dta	c1aq4
Types of toilets in Community	EA	CSEC2c_1.dta	c1aq4c2cq23a
Primary school identification and management	EA	CSEC3_1.dta	c1aq4
Availability of Facilities at School	Facility type	CSEC3a.dta	c1aq4c3asn
Condition of toilets at the School	EA	CSEC3b.dta	c1aq4
Water facilities at the School	Water facility type	csec3c.dta	c1aq4c3csn
Payment for Services by Parents/Guardians	Item	csec3d.dta	c1aq4c3dsn
Academic Performance of pupils in PLE	Year	csec3e.dta	c1aq4c3e
Incidence of leaving school prematurely	Year	csec3f.dta	c1aq4c3f
School meetings	Type of meeting	csec3g.dta	c1aq4c3gsn
Staffing at the School	Staffing position	csec3h.dta	c1aq4c3hsn
Supervision/Monitoring of School during last 12 months	Supervisor/monitor	csec3i.dta	c1aq4c3isn
Problems/constraints faced by School	Problem type	csec3j.dta	c1aq4c3jsn
Learner attendance, Teacher presence and qualifications and other classroom elements	Class	csec3k.dta	c1aq4c3kq51 visit
Accountability in school	EA	CSEC3L.dta	c1aq4
Addressing absenteeism in school	EA	CSEC3m.dta	c1aq4
Health facility identification & management. Work at Night. Availability of equipment/ services.	EA	CSEC4ab.dta	c1aq4
Services offered by Health facility	Service type	CSEC4c.dta	c1aq4c4csn
Common diseases reported at Health facility	EA	CSEC4d.dta	c1aq4
Common stock-outs reported by Health Facility	Drug supplies	csec4e.dta	c1aq4c4esn
Items bought by patients visiting the Health facility	EA	CSEC4f.dta	c1aq4

Table 3 (Cont'd)

Section	Level of Observation	Data File	Key Identifiers
Deliveries at the facility	EA	CSEC4g.dta	c1aq4
Validation of HMIS	Data element, period	csec4h.dta	c1aq4
Epidemic reporting	EA	CSEC4I.dta	c1aq4
General operations	EA	CSEC4J.dta	c1aq4
Sanitary Facilities Available at the Health Facility	EA	CSEC4K.dta	c1aq4
Access to Water at the Health facility	Water facility type	csec4l.dta	c1aq4c4lsn
Factors Limiting provision of Health Services	Limiting factor	csec4m.dta	c1aq4c4msn
Supervision/Monitoring of Health Facility	Supervisor/monitor	csec4n.dta	c1aq4c4nsn
Village Health Teams	EA	CSEC4O.dta	c1aq4
Staffing at the Health Facility	Positions	csec4p.dta	c1aq4c4psn
List of Medical Staff working at the Facility	Medical staff visit	csec4p_B.dta	c1aq4medical_staff_ID
Addressing absenteeism at the Facility	EA	CSEC4Q.dta	c1aq4
Accountability in the Health facility	EA	CSEC4r.dta	c1aq4
Works and Transport Respondent	EA	csec5_1.dta	c1aq4
Infrastructure availability and condition	Item type	csec5a.dta	c1aq4c5asn
Maintenance and Repair of Infrastructure	Item type	csec5b.dta	c1aq4c5bsn
Funding for Maintenance of Roads/Bridges/Culverts	Item type	csec5c.dta	c1aq4c5csn
Constraints faced in the maintenance/repair of roads	Item type	csec5d.dta	c1aq4c5dsn
Accountability in the subcounty and rating of overall performance of the subcounty administration	EA	csec5e.dta	c1aq4
Community characteristics	Type	csec6a.dta	c1aq4sn
Community groups	Group code	csec6b.dta	c1aq4code
NGOs in the community	ngo	csec6c.dta	c1aq4
Community Needs, Actions and Achievements	item	csec6d.dta	c1aq4itemcode
Communal Resource Management	resource	csec6e.dta	c1aq4code

2.5: Explanatory notes by section – Woman Questionnaire

The intention of the Woman module in the household survey was to gather information relating to knowledge and use of contraceptives among women as well as their birth history. This questionnaire was administered to all women aged 15-49 years in the households.

Section 1a: Household identification particulars

Using CAPI, the Woman Questionnaire is administered as a subset of the Household Questionnaire. As such, this section no longer exists on its own. Relevant variables needed to identify women in a household that are eligible to participate were essentially pre-loaded into the Woman Questionnaire via CAPI from the Household Questionnaire's Household roster.

Section 2A: Contraception

Information on contraceptives was collected by asking respondents about their knowledge and use of various methods that exist for avoiding or delaying pregnancy. The interviewers would ask the respondent about their knowledge of each method. They would go further to ask the respondent if they have ever used each of the methods and which ones (if any) that they are currently using with their partner.

Section 2B: Birth History

The purpose of this section was to obtain information on the birth history of respondents. Information was mainly collected on the number of children ever born, whether dead or alive, as well as birth information on last child born in the last five years (whether living or dead).

Table 4 : Organization of the UNPS 2011/12 Woman's Questionnaire

Section	Level of Observation	Data File	Key Identifiers
Contraception and Birth Related Issues: Contraception	Contraception Type	GSEC2A1W.dta	PID ws2q02
Birth History, Marital History	Individual	GSEC2B_2.dta	PID
Birth History: Birthing assistance	Assistant Type	GSEC2W.dta	PID w2bq9a

3 Other related instructions/codes

3.1: Area Measurement using Global Positioning System (GPS)

The GPS was mainly used in measuring parcels owned and/or operated by the selected households located within the EA and crop plot area for the respective cropping season of 2011. The GARMIN 12 hand-held Global Positioning System (GPS) equipment was used. The GPS equipment is in principle a high precision digital watch combined with a signal receiver. The field supervisors were responsible for ensuring availability of fully charged batteries for the GPS equipment and also ensuring that they were handled with great care and stored in a safe place when not in use. Details on GPS equipment were well documented and rigorous training about use of GPS was given to the interviewers before actual data collection. With CAPI, GPS measurements could be recorded in one of two ways. Ideally, GPS devices were directly connected to the UMPCs via a Bluetooth connection, thus allowing the GPS coordinates to be automatically stored. In cases where the Bluetooth connection was not working, enumerators were responsible for reading the GPS coordinates on the GPS device and manually entering those coordinates into the CAPI-based interview program.

3.2: Other Codes

There were a number of sections for which the respective codes could not fit within the cell/page where the question was located. For these questions, a separate code sheet was provided in the instructions manual. These code lists included:

- Reason for staying in the household for less than 12 months
- Highest level of education attained
- Current schooling status
- Ethnicity
- International Standard Classification of Occupations (ISCO)
- International Standard Industrial Classification (ISIC)
- Units of Quantity
- Crop Codes
- Condition and state of crops harvested

4 Field Work Organization

Prior to starting fieldwork enumerators and supervisors were re-trained for a period of approximately four weeks with many practical sessions to introduce the concept of CAPI (Computer Assisted Personal Interviews) using the CWEST and SurveyBe software on a newly introduced gadget known as the UMPC (ultra mobile personal computer). The supervisors and enumerators were trained in separate sessions so as to understand the role of each as well as to familiarize themselves with the new mode of data collection. The structure of the implementation of the UNPS 2011/12 wave consisted of 9 mobile field teams, each of which was comprised of a driver, a supervisor, and three enumerators. Each mobile team required a vehicle, UMPCs and GPS units for the enumerators, and anthropometric equipment (height and weight scales). All interview data was collected directly on the UMPCs using CWEST and SurveyBe. Given internet access, the supervisors sent the data electronically from the field at the conclusion of data entry for each EA and compilation of data collected from each cluster within the CWEST application.

The teams went on a two to three week-long trip each month. At the end of each trip, the teams reported back to Headquarters. The main field work, which lasted from November 2011 to October 2012, was comprised of two six-month phases. All households were visited once in each phase with a portion of split-off individuals identified in phase 1 being visited only once across the 12-month period with the visit taking place in phase 2. The latter was mostly due to long-distance tracking cases where the survey teams simply did not have adequate time to track the households as part of phase 1 operations.

The two-visit field work structure was designed to accommodate the difficulties associated with solicitation of information on agriculture in the presence of multiple agricultural seasons. As is well-known, Uganda has two agricultural seasons, the first running from February to July/August and the second from August/September to December. To collect accurate information for each of the two agricultural seasons and minimize recall associated with agricultural decisions that the survey seeks information on, the survey households with the exception of a portion of split-off cases noted above, were visited twice in the course of 12 months.

The dual visits also enabled splitting the questionnaire material and worked towards reducing respondent fatigue. In each cluster, approximately half of the households were randomly selected for the entire household questionnaire to be administered in visit 1. As far as the household questionnaire is concerned, these households only received a roster update in visit 2. The rest of the sample received only the household roster in visit 1 (along with the half of the agriculture questionnaire, assuming that they were agricultural households), and the rest of the household questionnaire along with the household

roster update in visit 2. This arrangement attempted to ensure an even distribution of households that reported information on household consumption in each month of the main field work. The information solicited from each household in visit 1 was fed forward for visit 2.

In the UNPS 2011/12 a concept of waves, phases, visits, clusters and dynasties was adopted. Each of the 9 teams was assigned a cluster containing the households to be interviewed with in a particular visit. This cluster assignment was based on when the households contained in that cluster were interviewed in the previous wave, after which households were re-visited after six months.

4.0: Tracking

Tracking considers the mobility of the target population, the success with which those who move are found and interviewed, and the number of refusals. In the Uganda National Panel Survey 2011/12 tracking was done both at household- and individual-level. It aimed at locating all the 3123 original panel households and among these approximately 20% (2 households from each EA) was considered for individual tracking also known as split-offs tracking. It also included tracking of split offs that had been identified in the previous waves as well as the individuals that further moved away from the split off households.

4.1: Tracking of Households

The UNPS “tracked” all original households by attempting to locate the household members at their last known location including those that shifted from their original location in 2005/06 to another location either within the same EA or outside it. These latter cases are referred to as shifted households. An original household is the household interviewed in the 2005/06 baseline sample. As noted above, from the UNHS 2005/06, a total of 3,123 households were sampled as UNPS households.

Once the location of the original household was found, then the household would be interviewed. Failure to interview a household could be due to shifting to an unknown location, refusal or disintegration among others. Disintegrating means that each of the original household members had gone separate ways and none of them remained at the original location. If a household disintegrated, its members would only be tracked if it fell under the 20 percent sample for split-offs tracking otherwise none of the members of a disintegrated household would be tracked. If the tracked original household had new members as of the 2011/12 interview, the data on these individuals were solicited as well.

4.2: Tracking of Split-offs

As part of the management of individual/split-off tracking the UNPS chose to track a 20% sample households found in each of the 322 Enumeration Areas. The intention is to calibrate the size and composition of the sample of traceable split-offs (*currently referred to as tracking targets*) that will be actually tracked, so that it roughly compensates the losses due to attrition.

In the UNPS 2009/10, a random sub-sample of two households from each EA was drawn from the already sampled panel households. These two households were referred to as split-offs tracking targets. It was then identified if any of the household members in 2005/06 of these two households had left the household. These movers were referred to as split offs (tracking targets).

Once a split-off was identified, then it was tracked fully by first gathering all the contact information about this split-off/mover as well information on their new location from the original household members and any other knowledgeable person. This information was filled in a questionnaire called the individual tracking form. Based on the details filled in this questionnaire, the mover was contacted if contacts were available, traced based on the location details given by the original household or the contacted mover and then interviewed. The interviewed split-offs as well as the members of the new household that they had formed or had joined in by the time of the UNPS 2009/10 interview then became part of the UNPS sample and will be interviewed in every wave of the UNPS, even if they shift to alternative locations in subsequent waves.

The same procedure was followed in UNPS 2011/12 and individuals that further moved away from the tracked split-off households (from the 20% sample) were also tracked and interviewed and their households also joined the UNPS sample.

It should be noted that only individuals that were related to the household head such as spouse, biological children, parents of the head or spouse, etc (codes 1-7 of Section 2 Question 4 in the household questionnaire) were tracked. Servants, other relatives and non-relatives (codes 8-96) were not tracked.

For a split-off household that was tracked in 2009/10, the first 10 digits of the household identifier (HHID) attached to the new household in which the split-off was located in 2009/10 was the same as the household identifier for the household that the split-off was a part of in 2005/06 (i.e. parent household).

The last 2 digits of the 2009/10 split-off household identifier correspond to the 2005/06 roster line number for the split-off individual. In the event that multiple split-offs from the same parent household were found to be co-residing in 2009/10, the last 2-digits of the 2009/10 split-off household identifier correspond to the lowest UNHS 2005/06 roster line number among the split-offs.

For a split-off that moved and was tracked in 2011/12, the first digit of the household identifier (HHID) attached to the new household of the split-off represents the wave in which the split-off was identified as mover. The next digits represent the Person ID of the split-off in the household where he or she was previously dwelling. The parent household in 2005/06 can still be identified from the split-off's household ID by taking the next 10 digits after the first digit which represents the wave.

5 Linking UNHS 2005/06 & UNPS 2009/10 & UNPS 2010/11& 2011/12

As part of the dissemination package, the data from the UNHS 2005/06 sample covering 3,123 households and 322 EAs that were selected for the purposes of the UNPS 2009/10 are provided. Furthermore the data for UNPS 2009/10 is also provided.

The UNHS 2005/06 portion of the dissemination package includes the (i) Household, (ii) Agriculture, and (iii) Community data as well as the descriptive reports, questionnaires, and manuals. At the household-level the variable **tracking sample** as part of GSEC1.dta of the UNHS 2005/06 package identifies the **643** (out of 3,123) UNHS 2005/06 households were selected for split-off tracking prior to the start of the UNPS 2009/10 field work. The UNHS 2005/06 data that are provided could be linked with the UNPS 2009/10 data at the household-, individual- and community-levels through the unique household identifier (**HHID**), the unique individual identifier (**PID**), and the unique community identifier (**comm**), respectively.

Given the attrition at the household- and individual-level, and the addition of new households and individuals to the UNPS sample in accordance with the protocols described above, the household- and individual-level matches across the UNHS 2005/06 subsample and the UNPS 2009/10 and UNPS 2011/12 will not be perfect. The variable **wave** in GSEC1.dta indicates when a household “joined” the UNPS study: When wave is 0, the household is one of the original households interviewed in 2005/06. When wave is 1, 2, or 3, the household was formed in that wave by members moving or splitting off of from a household that existed in the previous wave.

6 References

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Annex 1. Codes for Unit of Quantity

No.	UNIT	CODE
1	Kilogram (kg)	01
2	Gram	02
3	Litre	03
4	Small cup with handle (Akendo)	04
5	Metre	05
6	Square metre	06
7	Yard	07
8	Millilitre	08
9	Sack (120 kgs)	09
10	Sack (100 kgs)	10
11	Sack (80 kgs)	11
12	Sack (50 kgs)	12
13	Sack (unspecified)	13
14	Jerrican (20 lts)	14
15	Jerrican (10 lts)	15
16	Jerrican (5 lts)	16
17	Jerrican (3 lts)	17
18	Jerrican (2 lts)	18
19	Jerrican (1 lt)	19
20	Tin (20 lts)	20
21	Tin (5 lts)	21
22	Plastic Basin (15 lts)	22
23	Bottle (750 ml)	23
24	Bottle (500 ml)	24
25	Bottle (350 ml)	25
26	Bottle (300 ml)	26
27	Bottle (250 ml)	27
28	Bottle (150 ml)	28
29	Kimbo/Cowboy/Blueband Tin (2 kg)	29
30	Kimbo/Cowboy/Blueband Tin (1 kg)	30
31	Kimbo/Cowboy/Blueband Tin (0.5 kg)	31
32	Cup/Mug (0.5 lt)	32
33	Glass (0.25 lt)	33
34	Ladle (100 g)	34
35	Table spoon	35
36	Tea spoon	36
37	Basket (20 kg)	37
38	Basket (10 kg)	38
39	Basket (5 kg)	39
40	Basket (2 kg)	40
41	Loaf (1 kg)	41
42	Loaf (500 g)	42
43	Buns (200 g)	43
44	Buns (100 g)	44

No.	UNIT	CODE
44	Buns (100 g)	44
45	Buns (50 g)	45
46	Bathing soap (Tablet)	46
47	Washing soap (Bar)	47
48	Washing soap (Tablet)	48
49	Packet (2 kg)	49
50	Packet (1 kg)	50
51	Packet (500 g)	51
52	Packet (250 g)	52
53	Packet (100 g)	53
54	Packet (Unspecified)	54
55	Fish – Whole (Up to 1 kg)	55
56	Fish – Whole (1 - 2 kg)	56
57	Fish – Whole (Above 2 kg)	57
58	Fish - Cut piece (Up to 1 kg)	58
59	Fish - Cut piece (1 - 2 kg)	59
60	Fish - Cut piece (Above 2 kg)	60
61	Tray of 30 eggs	61
62	Ream	62
63	Crate	63
64	Heap (Unspecified)	64
65	Dozen	65
66	Bundle (Unspecified)	66
67	Bunch (Big)	67
68	Bunch (Medium)	68
69	Bunch (Small)	69
70	Cluster (Unspecified)	70
71	Gourd (1 – 5 lts)	71
72	Gourd (5 – 10 lts)	72
73	Gourd (Above 10 lts)	73
74	Gologolo (4 - 5 lts)	74
75	Calabash (1 - 5 lts)	75
76	Calabash (Above 5 lts)	76
77	Jug (2 lts)	77
78	Jug (1.5 lts)	78
79	Jug (1 lt)	79
80	Tot (50 ml)	80
81	Tot (sachet)	81
82	Tot (Unspecified)	82
83	Tobacco leaf (Number)	83
84	Pair	84
85	Number of Units (General)	85
86	Acre	86
87	Other Units (Specify)	99

Annex 2: Crop Codes

Ser. no.	Crop name	Crop code		Ser. no.	Crop name	Crop code
1	Wheat	111		31	Oranges	700
2	Barely	112		32	Paw paw	710
3	Rice	120		33	Pineapples	720
4	Maize	130		34	Banana food	741
5	Finger millet	141		35	Banana beer	742
6	Sorghum	150		36	Banana sweet	744
7	Beans	210		37	Mango	750
8	Field peas	221		38	Jackfruit	760
9	Cow peas	222		39	Avocado	770
10	Pigeon peas	223		40	Passion fruit	780
11	Chick peas	224		41	Coffee all	810
12	Groundnuts	310		42	Cocoa	820
13	Soya beans	320		43	Tea	830
14	Sunflower	330		44	Ginger	840
15	Simsim	340		45	Curry	850
16	Cabbage	410		46	Oil palm	860
17	Tomatoes	420		47	Vanilla	870
18	Carrots	430		48	Black wattle	880
19	Onions	440		49	Other	890
20	Pumpkins	450		50	Natural pastures	910
21	Dodo	460		51	Improved pastures	920
22	Eggplants	470		52	Fallow	930
23	Sugarcane	510		53	Bush	940
24	Cotton	520		54	Natural forest trees	950
25	Tobacco	530		55	Plantation trees	960
26	Irish potatoes	610		56	Bamboo	970
27	Sweet potatoes	620		57	Other forest trees	990
28	Cassava	630				
29	Yam	640				
30	Coco yam	650				

Annex 3: Confidential Information, Geospatial Variables

The Uganda National Panel Survey (UNPS) collects confidential information on respondents. The confidential variables include (i) names of the respondents to the household and community questionnaires, (ii) village names, (iii) descriptions of household dwelling and agricultural parcel locations, (iv) phone numbers of household members and their reference contacts, (v) GPS-based household and agricultural parcel locations, (vi) names of field staff. To maintain the confidentiality of our respondents, certain parts of the UNPS database have not been made publicly available.

To enhance the use of UNPS data, a set of geospatial variables has been generated using the georeferenced plot and household locations in conjunction with various geospatial databases that were available to the survey team. These include simple measures of distance, climatology, soil and terrain and other environmental factors. The variables are intended to provide some understanding of how geophysical characteristics vary across households and between communities.

All geospatial variables have been produced using the unmodified GPS data. Most of the underlying datasets are static (with exception of time-series), so the values should be largely unchanged relative to year 1, for non-mover households. Note that there may be some variation due to GPS data entry error, differences in data collection procedure, and technical limitations of the device. Geospatial variables are provided in the file *UGA_HouseholdGeovariables_Y1*.

UGA_HouseholdGeovariables_Y3

The household-level file, *UGA_HouseholdGeovariables_Y2*, contains a range of variables measuring (on the basis of the household dwelling) distance to other features, climatology, landscape typology, soil and terrain, and growing season parameters. The observations are uniquely identified by **HHID**.

This file also contains modified GPS coordinates, which enable users to generate their own spatial variables while preserving the confidentiality of sample household and communities. Following the method developed for the Measure DHS program, the coordinate modification strategy relies on random offset of cluster center-point coordinates (or average of household GPS locations by EA in the UNPS-Panel) within a specified range determined by an urban/rural classification. For urban areas a range of 0-2 km is used. In rural areas, where communities are more dispersed and risk of disclosure may be higher, a range of 0-5 km offset is used. An additional 0-10 km offset for 1% of rural clusters effectively increases the known range for all rural points to 10 km while introducing only a small amount of noise. Offset points are constrained at the state level, so that they still fall within the correct state for spatial joins, although boundary precision may be an issue for clusters located very close to the border.

In this wave of panel data collection some households are tracked to a new location. These include both local and long-distance moves, although a majority of tracked households are within 5 km of the original location. The public coordinates for new locations that are within 5 km of the original household location remain unchanged (modified coordinates of original sample EA). The public coordinates of tracked households that are more than 5 km from original location are assigned a new offset location, according to the method described above. Additionally, the distance from original location is provided for tracked households with new locations.

The result is a set of coordinates, representative at the cluster level, that fall within known limits of accuracy. Users should take into account the offset range when considering different types of spatial analysis. Analysis of the spatial relationships between locations in close proximity would not be reliable. However, spatial queries using medium or low resolution datasets should be minimally affected by the offsets. Zonal statistics (average or range of values within an area corresponding to the known range) could help minimize the effect of offsets when combining with large scale data or high resolution grids with a high degree of local variation.

Table: UGA HouseholdGeovariables_Y3

Theme	Source	Dataset Title	Variable Name	Variable Type	Reference Period	Resolution	Description	Web
	AICD & RAFU	Household Distance to Main Road	dist_road	Continuous	N/A	N/A	Household distance to nearest international or national trunk road (functional class A, B)	
	CityPop and UBOS	Household Distance to Towns	dist_popcenter	Continuous	2011	N/A	Household distance to nearest town of >20,000 based on 2011 projections from UBOS	http://www.citypop.de/
	USAID FEWSNET	Household Distance to Key Market Centers	dist_market	Continuous	N/A	N/A	Household distance to nearest major market (FEWSNET key market centers)	http://www.fews.net/Pages/marketcenter.aspx?loc=3&gb=ug&l=en
	Tracks for Africa, PADKOS	Household Distance to Border Posts	dist_borderpost	Continuous	N/A	N/A	Household distance to nearest land border crossing on main road	http://tracks4africa.co.za/listings/
	UN COD-FOD	Household Distance to District Capital	dist_admctr	Continuous	N/A	N/A	Household distance to the headquarter of the district of residence, according to 2006 district boundaries	http://cod.humanitarianresponse.info/
Climatology	UC Berkeley	WorldClim Bioclimatic Variables	af_bio_1	Continuous	1960-1990	0.008333 dd	Average annual temperature calculated from monthly climatology, multiplied by 10 (°C)	http://www.worldclim.org/bioclim
	UC Berkeley	WorldClim Bioclimatic Variables	af_bio_8	Continuous	1960-1990	0.008333 dd	Average temperature of the wettest quarter, from monthly climatology, multiplied by 10. (°C)	http://www.worldclim.org/bioclim
	UC Berkeley	WorldClim Bioclimatic Variables	af_bio_12	Continuous	1960-1990	0.008333 dd	Total annual precipitation, from monthly climatology (mm)	http://www.worldclim.org/bioclim
	UC Berkeley	WorldClim Bioclimatic Variables	af_bio_13	Continuous	1960-1990	0.008333 dd	Precipitation of wettest month, from monthly climatology (mm)	http://www.worldclim.org/bioclim
	UC Berkeley	WorldClim Bioclimatic Variables	af_bio_16	Continuous	1960-1990	0.008333 dd	Precipitation of wettest quarter, from monthly climatology (mm)	http://www.worldclim.org/bioclim
Landscape Typology	ESA and UC Louvain	GlobCover v 2.3	fsrad3_lcmaj	Categorical	2009	0.002778 dd	Majority landcover class within approximately 1km buffer	http://ionia1.esrin.esa.int/
	ESA and UC Louvain	GlobCover v 2.3	fsrad3_agpct	Continuous	2009	0.002778 dd	Percent under agriculture within approx 1 km buffer	http://ionia1.esrin.esa.int/
	IFPRI	IFPRI standardized AEZ based on elevation, climatology	ssa_aez09	Categorical		0.008333 dd	Agro-ecological zones created using WorldClim climate data and 0.0833dd resolution LGP data from IIASA.	http://harvestchoice.org/production/biophysical/agroecology

Theme	Source	Dataset Title	Variable Name	Variable Type	Reference Period	Resolution	Description	Web
Soil & Terrain	NASA	SRTM 90m	srtm_uga	Continuous		0.000833 dd	Elevation (m)	ftp://xftp.jrc.it/pub/srtmV4/arcasci/
	USGS	Slope (percent)	slopepct_uga	Continuous		0.008333 dd	Derived from 90m SRTM, aggregated to 1km block	http://pubs.usgs.gov/of/2007/1188/ , data provided USGS upon request
	AfSIS	Topographic Wetness Index	twi_uga	Continuous		0.000833 dd	Downloaded from AfSIS website. Derived from modified 90m SRTM. Local upslope contributing area and slope are combined to determine the potential wetness index: $WI = \ln(A_s / \tan(b))$ where A_s is flow accumulation or effective drainage area and b is slope gradient.	http://www.ciesin.columbia.edu/afsis/bafsis_fullmap.htm#
	LSMS-ISA	Terrain Roughness	srtm_uga_5_15	Categorical		0.000833 dd	Derived from 90m SRTM using 15 Meybeck relief classes and 5x5 pixel neighborhood	
	FAO	Harmonized World Soil Database	SQ1	Categorical		0.083333 dd	Nutrient availability	http://www.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/
	FAO	Harmonized World Soil Database	SQ2	Categorical		0.083333 dd	Nutrient retention capacity	http://www.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/
	FAO	Harmonized World Soil Database	SQ3	Categorical		0.083333 dd	Rooting conditions	http://www.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/
	FAO	Harmonized World Soil Database	SQ4	Categorical		0.083333 dd	Oxygen availability to roots	http://www.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/
	FAO	Harmonized World Soil Database	SQ5	Categorical		0.083333 dd	Excess salts	http://www.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/
	FAO	Harmonized World Soil Database	SQ6	Categorical		0.083333 dd	Toxicity	http://www.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/

Theme	Source	Dataset Title	Variable Name	Variable Type	Reference Period	Resolution	Description	Web
	FAO	Harmonized World Soil Database	SQ7	Categorical		0.083333 dd	Workability (constraining field management)	http://www.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/
Crop Season Parameters	NOAA CPC	Rainfall Estimates (RFE)	anntot_avg	Continuous	2001-2010	0.1 dd	Avg 12-month total rainfall (mm) for Jan-Dec	ftp://ftp.cpc.ncep.noaa.gov/fews/new algo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	wetQ_avg	Continuous	2001-2010	0.1 dd	Avg rainfall (mm) in wettest quarter within Jan-Dec, or Jan-Jun for bimodal	ftp://ftp.cpc.ncep.noaa.gov/fews/new algo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	wetQ_avgstart	Continuous	2001-2010	0.1 dd	Avg start of wettest quarter in dekads 1-36, where first week of January = 1	ftp://ftp.cpc.ncep.noaa.gov/fews/new algo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	anntot_2011	Continuous	2011	0.1 dd	12-month total rainfall (mm) in Jan-Dec, starting January 2011	ftp://ftp.cpc.ncep.noaa.gov/fews/new algo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	wetQ_2011	Continuous	2011	0.1 dd	Rainfall (mm) in wettest quarter within Jan-Dec 2011, or Jan-Jun for bimodal	ftp://ftp.cpc.ncep.noaa.gov/fews/new algo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	wetQstart_2011	Continuous	2001-2010	0.1 dd	Start of wettest quarter in dekads 1-36, where first week of January 2011 = 1	ftp://ftp.cpc.ncep.noaa.gov/fews/new algo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	wetQ2_avg	Continuous	2001-2010	0.1 dd	Avg rainfall in wettest quarter in second growing season Jul-Dec, bimodal only	ftp://ftp.cpc.ncep.noaa.gov/fews/new algo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	wetQ2_avgstart	Continuous	2011	0.1 dd	Avg start of wettest quarter in second growing season in dekads, bimodal only	ftp://ftp.cpc.ncep.noaa.gov/fews/new algo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	wetQ2_2011	Continuous	2011	0.1 dd	Rainfall (mm) in wettest quarter in second growing season of 2011, bimodal only	ftp://ftp.cpc.ncep.noaa.gov/fews/new algo_est_dekad/
	NOAA CPC	Rainfall Estimates (RFE)	wetQ2start_2011	Continuous	2011	0.1 dd	Start of wettest quarter in second growing season in dekads 19-36, bimodal only	ftp://ftp.cpc.ncep.noaa.gov/fews/new algo_est_dekad/

Theme	Source	Dataset Title	Variable Name	Variable Type	Reference Period	Resolution	Description	Web
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	rf_regime	Categorical	2001-2010	0.004176 dd	District-level assignment of predominantly bi-modal or uni-modal growing season, derived from phenology data	
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	eviarea_avg	Continuous	2001-2010	0.004176 dd	Avg total change in greenness in main, or first, growing season, avg by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	evimax_avg	Continuous	2001-2010	0.004176 dd	Avg EVI value at peak in main, or first, growing season, avg by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	grn_avg	Continuous	2001-2010	0.004176 dd	Avg onset of greenness increase in day of year 1-356, avg by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	sen_avg	Continuous	2001-2010	0.004176 dd	Avg onset of greenness decrease in day of year 1-356, avg by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	eviarea_2011	Continuous	2011	0.004176 dd	Total change in greenness within main, or first, growing season 2011	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	evimax_2011	Continuous	2011	0.004176 dd	EVI value at peak of greenness within main, or first, growing season 2011	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	grn_2011	Continuous	2011	0.004176 dd	Onset of greenness increase in day of year in 2011, avg by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	sen_2011	Continuous	2011	0.004176 dd	Onset of greenness decrease in day of year in 2011, avg by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	eviarea2_avg	Continuous	2001-2010	0.004176 dd	Avg total change in greenness in second growing season, avg by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	evimax2_avg	Continuous	2001-2010	0.004176 dd	Avg EVI value at peak in second growing season, avg by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005

Theme	Source	Dataset Title	Variable Name	Variable Type	Reference Period	Resolution	Description	Web
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	grn2_avg	Continuous	2001-2010	0.004176 dd	Avg onset of greenness increase in second growing season, avg by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	sen2_avg	Continuous	2001-2010	0.004176 dd	Avg onset of greenness decrease in second growing season, avg by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	eviarea2_2011	Continuous	2011	0.004176 dd	Total change in greenness within second growing season of 2011	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	evimax2_2011	Continuous	2011	0.004176 dd	EVI value at peak of greenness within second growing season of 2011	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	grn2_2011	Continuous	2011	0.004176 dd	Onset of greenness increase in second growing season of 2011, avg by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005
	NASA / Boston University	MOD12Q2 Land Cover Dynamics (PHENOLOGY)	sen2_2011	Continuous	2011	0.004176 dd	Onset of greenness decrease in second growing season of 2011, avg by district	ftp://e4ftl01.cr.usgs.gov/MOTA/MCD12Q2.005