Malawi

Fourth Integrated Household Survey (IHS4)

2016-2017

Basic Information Document

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ACRONYMS

ADD	Agricultural Development Division
ADMARC	Agricultural Development and Marketing Corporation
CAPI	Computer Assisted Personal Interviewing
DFID	Department for International Development
EA	Enumeration Area
FAO	Food and Agriculture Organization of the United Nations
GTZ	German Development Corporation
IFAD	International Fund for Agricultural Development
IHPS	Integrated Household Panel Survey 2013
IHS1	First Integrated Household Survey 1997-1998
IHS3	Second Integrated Household Survey 2004-2005
IHS3	Third Integrated Household Survey 2010-2011
IHS4	Fourth Integrated Household Survey 2016-2017
LSMS	Living Standards Measurement Study
LSMS-ISA	LSMS–Integrated Surveys on Agriculture
MCC	Millennium Challenge Corporation
MGDS	Malawi Growth and Development Strategy
MDG	Millennium Development Goal
MK	Malawi Kwacha
NACAL	National Census of Agriculture and Livestock
NSO	National Statistical Office of Malawi
PHC	Population and Housing Census
PSU	Primary Sampling Unit
SDG	Sustainable Development Goal
TA	Traditional Authority
WFP	World Food Programme
WMS	Welfare Monitoring Survey

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1.00 INTRODUCTION

The Integrated Household Survey (IHS) is one of the primary instruments implemented by the Government of Malawi through the National Statistical Office (NSO; www.nso.malawi.net) to monitor and evaluate the changing conditions of Malawian households. The IHS data have, among other insights, provided benchmark poverty and vulnerability indicators to foster evidence-based policy formulation and monitor the progress of meeting the Millennium Development Goals (MDGs), Sustainable Development Goals (SDGs) as well as the goals listed as part of the Malawi Growth and Development Strategy (MGDS). While previous rounds of the IHS program have been implemented every 6-7 years, starting with the latest round of data collection, the upcoming IHS rounds will be fielded every 3 years as in line with the NSO vision of collecting poverty data on a more frequent basis.

The First Integrated Household Survey (IHS1) was implemented with technical assistance from the International Food Policy Research Institute (IFPRI) and the World Bank (WORLD BANK). The IHS1 was conducted in Malawi from November 1997 through October 1998 and provided for a broad set of applications on policy issues regarding households' behavior and welfare, distribution of income, employment, health and education. The Second Integrated Household Survey (IHS2; microdata.worldbank.org/index.php/catalog/2307) was implemented with technical assistance from the WORLD BANK in order to compare the current situation with the situation in 1997-98, and to collect more detailed information in specific areas. The IHS2 fieldwork took placed from March 2004 through February 2005.

The **Third Integrated Household Survey** (**IHS3**; microdata.worldbank.org/index.php/catalog/1003**)** expanded on the agricultural content of the IHS2 and was implemented from March 2010 to March 2011 under the umbrella of the World Bank Living Standards Measurement Study – Integrated Surveys on Agriculture (LSMS-ISA) initiative, whose primary objective is to provide financial and technical support to governments in sub-Saharan Africa in the design and implementation of nationally-representative multi-topic panel household surveys with a strong focus on agriculture. For more information regarding the LSMS-ISA, please visit www.worldbank.org/lsms.

A sub-sample of IHS3 sample enumeration areas (EAs) (i.e. 204 EAs out of 768 EAs) was selected prior to the start of the IHS3 fieldwork with the intention to (i) visit a total of 3,246 households in these EAs twice to reduce recall associated with different aspects of agricultural data collection (ii) track and resurvey these households in 2013 as part of the **Integrated Household Panel Survey 2013 (IHPS;** microdata.worldbank.org/index.php/catalog/2248**)**. The LSMS-ISA initiative also provided technical and financial assistance to the design and implementation of the IHPS, alongside DFID, Norway and Government of Malawi funding for the exercise. The IHPS main fieldwork took place during the period of April-October 2013, with residual tracking operations in November-December 2013.

The purpose of this document is to provide a basic overview of the latest round of data collection, the **Fourth Integrated Household Survey 2016/17 (IHS4)** which was implemented in the period of April 2016-April 2017, covering 779 EAs throughout Malawi.

Though this document covers the cross-sectional IHS4, the NSO, in parallel with the IHS4 operations, also implemented the Integrated Household Panel Survey 2016 as a follow up to the IHPS 2013. The IHPS 2016 subsample covered a national sample of 102 EAs (out of the 204 baseline IHS3 panel EAs), and was conducted during the first half of IHS4 fieldwork. The IHPS 2016 will be released as a separate project under the World Bank Microdata Library, with the corresponding data, basic information documentation, questionnaires, manuals and other field materials.

The IHS4 2016/17 and the IHPS 2016 were both implemented on Android tablets, using the computer-assisted personal interviewing (CAPI) platform that was built using the open-access World Bank *Survey Solutions* software (www.worldbank.org/capi; solution.worldbank.org)

Throughout the design and implementation of the IHS4 and the IHPS 2016, the NSO received technical assistance from the World Bank LSMS-ISA initiative. The financial support to the IHS4 was provided by Government of Malawi (GoM), the United States Agency for International Development (USAID) through the World Bank LSMS-ISA initiative, and the Millennium Challenge Corporation (MCC).

2.00 SURVEY DESIGN

2.10 SAMPLING DESIGN

The IHS4 sampling frame for the cross-sectional component is based on the listing information and cartography from the 2008 Malawi Population and Housing Census (PHC). The sampling frame excludes the population living in institutions, such as hospitals, prisons and military barracks; includes the three major regions of Malawi, namely North, Center and South; and is stratified into rural and urban strata. The urban strata include the four major urban areas: Lilongwe City, Blantyre City, Mzuzu City, and the Municipality of Zomba. All other areas are considered as rural areas, and each of the 27 districts were considered as a separate sub-stratum as part of the main rural stratum. Previous rounds of the IHS have excluded the island district of Likoma since it only represents about 0.1 percent of the population of Malawi, and the corresponding cost of enumeration is relatively high, however in an effort for the survey to represent the entire country Likoma was included in the IHS4 for the first time. Due to the small size of Likoma, for stratification purposes, it was combined with the district of Nkhata Bay. Although it will be represented in the national-level survey results, Likoma should not be considered as a separate domain of analysis for the IHS4. Hence, the IHS4 strata are composed of 32 districts in Malawi.

A stratified two-stage sample design was used for the IHS4.

2.11 FIRST STAGE SELECTION

At the first stage, the primary sampling units (PSUs), which were the census EAs defined for the 2008 PHC, were selected. Table 1 shows the distribution of the urban and rural EAs and households across districts in accordance with the 2008 PHC. Given the variability in the number of households per EA, the EAs were selected with probability proportional to size (PPS) within each district at the first sampling stage, where the measure of size was based on the number of households in the 2008 Malawi Census frame.

The first level of stratification of the sampling frame of EAs corresponds to the geographic domains of analysis defined for the IHS4, which are the districts of Malawi. It can be seen in Table 1 that some of the districts only have a few urban EAs. For this reason, it was not practical to establish separate urban and rural strata within each district. Instead, the EAs within each district were ordered by type of area as well as geographic codes (administrative area and EA codes) in order to provide implicit stratification by urban and rural areas, and to improve the geographic representativeness of the systematic sample of EAs.

Table 1: Distribution of EAs and Households by District, Urban/Rural Areas as in the 2008 PHC

	Urban		Rural		Total		
Stratum	**No. EAs**	**No. HHs.**	**No. EAs**	**No. HHs.**	**No. EAs**	**No. HHs.**	**% HHs.**
Chitipa	11	2,924	205	34,856	216	37,780	1.30%
Karonga	37	8,574	370	49,234	407	57,808	2.00%
Nkhata Bay	12	2,276	229	39,993	241	42,269	1.40%
Rumphi	12	3,847	156	32,190	168	36,037	1.20%
Mzimba	20	4,203	825	138,777	845	142,980	4.80%
Likoma	2	299	9	1,721	11	2,020	0.10%
Mzuzu City	102	26,858	0	0	102	26,858	0.90%
Kasungu	29	8,964	486	118,301	515	127,265	4.30%
Nkhotakota	16	5,010	177	57,458	193	62,468	2.10%
Ntchisi	6	1,555	204	45,873	210	47,428	1.60%
Dowa	18	4,479	450	117,405	468	121,884	4.10%
Salima	22	6,089	416	71,442	438	77,531	2.60%
Lilongwe, Rural	0	0	1,173	275,194	1,173	275,194	9.30%
Mchinji	12	3,570	374	93,639	386	97,209	3.30%
Dedza	15	4,489	486	141,389	501	145,878	4.90%
Ntcheu	11	3,306	468	110,485	479	113,791	3.80%
Lilongwe City	458	153,717	0	0	458	153,717	5.20%
Mangochi	25	8,473	614	177,442	639	185,915	6.30%
Machinga	19	5,303	436	109,833	455	115,136	3.90%
Zomba, Rural	0	0	584	142,394	584	142,394	4.80%
Chiradzulu	2	592	334	70,968	336	71,560	2.40%
Blantyre, Rural	0	0	381	80,879	381	80,879	2.70%
Mwanza	9	3,445	80	18,573	89	22,018	0.70%
Thyolo	12	2,405	674	139,634	686	142,039	4.80%
Mulanje	17	3,243	658	124,174	675	127,417	4.30%
Phalombe	3	1,117	316	75,562	319	76,679	2.60%
Chikwawa	16	2,830	380	95,205	396	98,035	3.30%
Nsanje	14	4,227	241	48,373	255	52,600	1.80%
Balaka	17	5,037	275	70,619	292	75,656	2.60%
Neno	3	366	157	25,049	160	25,415	0.90%
Zomba City	79	19,041	0	0	79	19,041	0.60%
Blantyre City	418	154,782	0	0	418	154,782	5.20%
TOTAL	1,417	451,021	11,158	2,506,662	12,575	2,957,683	100.00%

The sample size for a household survey such as the IHS4 is determined by the accuracy required for the survey estimates for each domain, as well as by the logistical, timing and resource constraints. The accuracy of the survey results depends on both the sampling error, which can be measured through variance estimation, and the nonsampling error, which results from all other sources of error, including response and measurement errors as part of the survey process. The sampling error is inversely proportional to the square root of the sample size. On the other hand, the nonsampling error may increase with the sample size, since it is more difficult to control the quality of a larger operation. It is, therefore, important that the overall sample size be manageable for quality and operational control purposes. This is especially important given the challenge of collecting accurate information on household income and expenditures, as well as crop area and production.

The IHS3 data were used for estimating the sampling errors and design effects for key survey indicators, and for measuring the efficiency of the sample design to improve the sampling methodology for the IHS4. Based on a review of the results of the sampling errors for the IHS3 estimates of average consumption per household and poverty, as well as the resource constraints and issues of quality control, it was decided that the same sample size and allocation for the IHS3 sample design would be used for the IHS4. At the same time, the sampling design ensured that there was no overlap in the sample EAs between the IHS3 and the IHS4, so the EAs that had been previously selected for the IHS3 were excluded from the frame of EAs in each stratum prior to the first stage selection for IHS4. It was also decided to continue with the selection of 16 households per EA used in the IHS3. This had been originally decreased from 20 sample households per EA for the IHS2 in order to reduce the design effects. During the IHS3, it was found that interviewing 16 households per sample EA was effective in terms of the logistics of the fieldwork. Another consideration in maintaining the sample size of IHS3 was that the number of sample EAs allocated to each district has to be a multiple of 12 in order to distribute the sample EAs within each district to the 12 months of the year. The number of IHS4 sample EAs and households by district, urban and rural stratum, is presented in Table 2.

Table 2: Distribution of IHS4 Sample EAs and Households by District, Urban/Rural Areas

	Total		Urban		Rural	
District	**EAs**	**Households**	**EAs**	**Households**	**EAs**	**Households**
NORTHERN REGION	155	2491	37	592	118	1899
Chitipa	24	384	2	32	22	352
Karonga	24	384	3	48	21	336
Nkhatabay	24	383	2	32	22	352
Rumphi	24	384	3	48	21	336
Mzimba	24	380	1	16	23	368
Likoma	11	192	2	32	10	160
Mzuzu City	24	384	24	384	0	0
CENTRAL REGION	264	4220	46	736	218	3484
Kasungu	24	384	2	32	22	352
Nkhota kota	24	383	2	32	22	352
Ntchisi	24	383	1	16	23	368
Dowa	24	384	1	16	23	368
Salima	24	384	2	32	22	352
Lilongwe	36	575	0	0	36	576
Mchinji	24	384	1	16	23	368
Dedza	24	384	1	16	23	368
Ntcheu	24	383	0	0	24	384
Lilongwe City	36	576	36	576	0	0
SOUTHERN REGION	360	5736	59	944	301	4792
Mangochi	24	383	1	16	23	367
Machinga	24	384	1	16	23	368
Zomba	24	384	0	0	24	384
Chiradzulu	24	383	1	16	23	367
Blantyre	24	380	0	0	24	380
Mwanza	24	380	2	32	22	348
Thyolo	24	380	0	0	24	380
Mulanje	24	384	1	16	23	368
Phalombe	24	382	0	0	24	382
Chikwawa	24	384	1	16	23	368
Nsanje	24	384	2	32	22	352
Balaka	24	384	2	32	22	352
Neno	24	376	0	0	24	376
Zomba City	24	384	24	384	0	0
Blantyre City	24	384	24	384	0	0
TOTAL	779	12447	142	2272	637	10175

At the first sampling stage, the IHS4 sample EAs were selected within each stratum (district) systematically with PPS from the ordered list of EAs in the sampling frame. The measure of size for each EA was based on the total number of households listed in the 2008 PHC. The sampling frame of census EAs for each district was sorted by urban/rural classification, administrative area and EA code. Using systematic sampling, this ordering of the sample EAs will provide a high level of geographic

implicit stratification. Within each district, the following first stage sample selection procedures were used:

a) Cumulate the measures of size (number of households) down the ordered list of EAs within the district. The final cumulated measure of size will be the total number of households in the frame for the district (M_h).

b) To obtain the sampling interval for district h (I_h), divide M_h by the total number of EAs to be selected in district h (n_h) specified in Table 4: $I_h = M_h/n_h$.

c) Select a random number (R_h) between 0 and I_h. The sample EAs in district h will be identified by the following selection numbers: $S_{hi} = R_h + [I_h \times (i - 1)]$, rounded up, where i = 1, 2, ..., n_h

d) The i-th selected EA is the one with a cumulated measure of size closest to S_{hi} but not less than S_{hi}.

Given the systematic selection of EAs with PPS at the first sampling stage, the subsample of EAs for each quarter of the IHS4 data collection were then selected from the full sample systematically with equal probability.

2.12 SECOND STAGE SELECTION

Following the selection of the IHS4 sample EAs, a listing of households was conducted in each sample EA to provide the sampling frame for the second stage selection of households. A random systematic sampling was used to select 16 primary households and 5 replacement households from the household listing for each sample EA. While the original sample design provided a total household sample size of 12,480 (780 EAs with 16 households sampled per EA), data from 33 interviews that had been conducted was lost through technical difficulties with the data collection platform, representing 0.26 percent of the sample.[1] The final sample of 12,447 households is able to provide district-level representativeness and a reasonable level of precision for key socioeconomic and agricultural indicators. The sample of households in each EA was selected using the following procedures:

a) All the eligible households are assigned a serial number from 1 to M'_{hi}, the total number of households listed in the EA.

b) To obtain the sampling interval for the selection of households within the sample EA (I_{hi}), divide M'_{hi} by 16, and maintain 2 decimal places.

c) Select a random number (R_{hi}) with 2 decimal places, between 0.01 and I_{hi}. The sample households within the sample EA will be identified by the following selection numbers: $S_{hij} = R_{hi} + [I_{hi} \times (j-1)]$, rounded up to the next integer, where j = 1, 2, 3,..., 16

d) The j-th selected household is the one with a serial number equal to S_{hij}.

As in previous rounds, during the course of fieldwork it was necessary to select replacement households in place of the originally sampled households that could not be interviewed. Table 3 shows the reasons for replacement.

[1] One household each was lost in Nkhatabay, Nkhotakota, Ntchisi, Lilongwe, Ntcheu, Mangochi, Chiradzulu; two households were lost in Phalombe; 4 households were lost in Mzimba, 4 in Blantyre, 4 in Mwanza, 4 in Thyolo and 8 in Neno. Attempts were made to return to the EAs with interviews lost to either re-interview the same household or replace the households but in these scenarios costs were too high to do so.

Table 3: Reason for Original Household Replacement

DISTRICT	Reason for Original Household Replacement						
	Dwelling found but no HH member could be located	Dwelling found but respondent refused	Dwelling found but appears unoccupied	Dwelling found but not a residential building	Dwelling destroyed	Dwelling not found	Total dwellings replaced
NORTHERN REGION	68	20	32	1	8	7	136
Chitipa	11	3	2	1	1	3	21
Karonga	15	3	0	0	2	1	21
Nkhatabay	3	2	10	0	2	0	17
Rumphi	20	0	10	0	0	0	30
Mzimba	5	2	3	0	1	0	11
Likoma	2	2	3	0	1	1	9
Mzuzu City	12	8	4	0	1	2	27
CENTRAL REGION	68	28	15	4	8	9	132
Kasungu	8	3	2	0	0	0	13
Nkhota kota	3	2	0	0	0	0	5
Ntchisi	7	5	0	1	1	0	14
Dowa	13	1	0	2	0	1	17
Salima	7	1	0	0	0	1	9
Lilongwe	7	2	3	0	3	0	15
Mchinji	3	2	0	0	0	0	5
Dedza	6	1	0	0	0	1	8
Ntcheu	4	1	0	0	0	0	5
Lilongwe City	10	10	10	1	4	6	41
SOUTHERN REGION	177	38	36	14	14	10	189
Mangochi	4	0	0	1	1	0	6
Machinga	16	4	2	3	0	2	27
Zomba	16	3	2	2	1	0	24
Chiradzulu	10	3	7	2	2	0	24
Blantyre	9	3	2	0	2	1	17
Mwanza	18	1	1	0	0	0	20
Thyolo	6	1	4	5	1	0	17
Mulanje	2	1	1	0	1	2	7
Phalombe	3	0	2	0	1	0	6
Chikwawa	14	3	2	0	1	0	20
Nsanje	15	3	1	0	0	1	20
Balaka	8	6	2	0	1	1	18
Neno	19	4	0	0	0	0	23
Zomba City	19	0	7	1	2	2	31
Blantyre City	18	6	3	0	1	1	29
TOTAL	313	86	83	19	30	26	557

2.20 FIELDWORK ORGANIZATION

The IHS4 consists of four core questionnaire instruments; the Household Questionnaire, the Agriculture Questionnaire, the Fishery Questionnaire and the Community Questionnaire. While the details on the structure and scope of the questionnaire instruments will be provided in Section 2.3, they are briefly mentioned here since they are relevant for understanding the fieldwork organization.

Similar to the IHS3 set up, the cross-sectional households were visited only *once* during the IHS4. When they were visited, they received the Household Questionnaire in full, as well as Agriculture and Fishery questionnaires, if these were applicable. As part of the Agriculture Questionnaire, the cross-sectional households reported information on the last completed rainy season and the last completed dimba season. Depending on the timing of their interview, the reference rainy season could have been 2014/15 or 2015/16, while the reference dry season could have been 2015 or 2016.[2]

2.30 QUESTIONNAIRE DESIGN

The IHS4 questionnaire instruments are primarily modeled after the IHS3 with some modules and content altered, dropped or added. The modules and questions that have been added in either IHPS 2013 or IHS4 2016 are identified primarily by an underscore "_" in the questionnaire instruments.

2.31 HOUSEHOLD QUESTIONNAIRE

The Household Questionnaire is a multi-topic survey instrument and is near-identical to the content and organization of the IHS3. It encompasses economic activities, demographics, welfare and other sectoral information of households. It covers a wide range of topics, dealing with the dynamics of poverty (consumption, cash and non-cash income, savings, assets, food security, health and education, vulnerability and social protection). Although the IHS4 Household Questionnaire covers a wide variety of topics in detail it intentionally excludes in-depth information on topics covered in other surveys that are part of the NSO's statistical plan (such as maternal and child health issues covered at length in the Malawi Demographic and Health Survey).

Table 4 presents a list and description of the IHS4 Household Questionnaire modules. The modules were developed in extensive consultations with a wide set of stakeholders, including the World Bank LSMS, Statistics Norway, the UK Department for International Development (DFID), the Food and Agriculture Organization of the United Nations (FAO), the World Food Programme (WFP), the Millennium Challenge Corporation – Malawi Account (MCC-MA), the Department of Forestry, the Department of National Accounts, and the World Fish Center (WFC).

[2] Rainy agricultural season covers two calendar years. The start and end dates for the rains vary spatially, happening throughout the period of November-April. Agricultural season is inclusive of harvest; as such rainy agricultural season generally refers to the period of November-May for majority of the country, although earlier/later harvests are possible, depending on the type of crop, rainfall and other location-specific agronomic and climatic conditions.

Table 4: Contents of the IHS4 Household Questionnaire

Module	**Description**
Module A:	This module household identifiers, the sample weights, information on household location, date of interview, supervisor and enumerator codes. Additionally, this module contains filters for subsequent modules.
Module B: Household Roster	This module contains the roster of individuals living in the household, their gender, age, relationship to the household head, duration away from the household in past 12 months, number of days meals were taken in the household, where born, how long in this community, and information on the location and level of education of parents of every member, including ID's if in the household. For members over 12, information on religious affiliation, marital status and location of spouses is collected and identifies the ID of the spouse/s of a household member.
Module C: Education	The education module is asked of all individuals over 5 years in age and collects information on self-reported reading and writing ability, school attendance, highest class attended and highest qualification achieved, year and age of beginning school. If the individual is presently attending school, information on the type of school, distance, and costs are collected.
Module D: Health	The health module is administered to all individuals and collects information on: Illness or injury in the past 2 weeks, diagnosis source, and action taken, and disruption to normal activity; Health spending over the past 4 weeks; Hospitalization or stay in a traditional healer's in the last 12 months. For individuals over 5 years in age: Information on chronic difficulties and disruption to normal activities; chronic illness and diagnosis source. For women aged 12 to 49 years of age information on births in the last 24 months, prenatal health clinic visits and where the baby was born and who assisted at birth for last-born child is collected.
Module E: Time Use and Labour	The module is administered to all individuals 5 years or older. This module collects information on hours spent yesterday collecting water and wood; hours spent in the last 7 days spent on agriculture and non-agriculture activities; type of primary and secondary work, employers and wages over the last 12 months; participation in unpaid apprenticeships, casual (ganyu) labour, and other unpaid labour over the last 12 months. **New** in IHS4 in line with ILO definition of smallholder farmer: For households involved in agriculture 5 crops were captured in accordance with importance (importance defined as value addition in terms of non-market (consumption) or market (commercial sales) terms).
Module F: Housing	This module on housing is administered to the household head. It collects information on the characteristics of the dwelling, household fuel use, availability of electricity, telephone and water, toilet and rubbish facilities, and mosquito net use. In an attempt to improve data collected on land rights and ownership, this module contains **new** detailed questions on who owns the property and who has the right to sell or bequeath the property containing their dwelling. Additionally, enumerators were instructed to take GPS measurements of the property containing the dwelling as long as the dwelling was stand alone.
Module G:	This module collects information on all food consumed by the household in the past 7 days: in total and then classified as purchased (with price), own-

Consumption of food Over past one week	production, or gift and other sources. Additionally, this module collects information on number of days aggregated food categories were consumed by the household and number of days and meals taken in the household by children and adults.
Module H: Food Security	This module collects information on number of meals taken by adults and children in the household and restricted food intake in the past 7 days.
Module I: Non-food Expenditures	This module collects expenditures on non-food items over the past week and the past 1 month.
Module J: Non-Food Expenditures (3 months)	This module collects expenditures on non-food items over the past 3 months.
Module K: Non-Food Expenditures (12 months)	This module collects expenditures on non-food items over the past 12 month.
Module L: Durable Goods	This module collects information on ownership, quantity owned, age of items, current preserved market value, purchases of items in the last 12 months, and cost of items in the last 12 months for durable goods.
Module M: Farm Implements, Machinery and Structures	This module collects information on household ownership, quantity owned, age of items, perceived market value, item purchases in last 12 months, quantity purchased in last 12 months, asset value, use, and items rental and rental cost, for farm implements and structures. Additionally, for farm structures, information is collected on construction and cost of construction over the past 12 months.
Module N: Household Enterprises	This module collects information on non-agricultural family enterprises or trading business, specifically who manages/owns the enterprise, employees, enterprise operation periods, start-up capital and source, customers, business trends, sales revenue, expenditures, and profits.
Module O: Children Living Elsewhere	This module collects information on the age, sex, education, length away from household, current locations, activity status and occupation of children living outside the household. Additional information is collected on remittances to the household from children living outside the household.
Module P: Other Income	This module collects information on household income from interest, pensions, rentals, or other income over the past 12 months.
Module Q: Gifts Given Out	This module collects information on cash, food, or other in-kind items given by the household, in the past 12 months.
Module R: Social Safety Nets	This module collects information on receipts and value of social safety nets including, cash, food, or other aid from programs. Additionally this module collects information on household member recipients of the aid, decision making for aid received, and number of months aid was received.
Module S: Credit	This module collects information on household credit, specifically where the credit was acquired, who is responsible for the loan, reason credit was obtained, how much was borrowed, timing of loan, and expected pay-off. Additionally this module collect information on attempted credit and reasons for being turned down.

Module T: Subjective Assessment of Well-being	This module collects information on the respondent's assessment of his/her family's situation regarding food consumption, housing, clothing, health care, financial level, and income level. The intended respondent for this module is the head of household. Additionally this module asks the head of household about the number of changes of clothes owned, and bedding type.
Module U: Shocks & Coping Strategies	This module collects information on shocks on the household in the past 12 months such as crop disease, theft of livestock, death of family members. Respondents are asked to rank the 3 most severe shocks and report on the impact of the shock on income, assets, food production, food stocks and food purchases as well as what was done by the household in response to the shock.
Module V: Child Anthropometry	This module collects weight and height/length measurements as well as observed oedema for children of age 6-60 months. Additionally, this module collects information on child participation in nutrition programs and under five clinics.
Module W: Deaths in the Household	This module records information on family members who have died in the past two years and collects information on the type of work previously performed, age at death, and previous illness of deceased household member. It also collects information on the diagnosis source of cause of death and assets lost due to the death.
Module X: Filter Questions for Agriculture & Fishery	This module contains filter questions on the presence of agricultural, livestock and or fisheries in the household.
Network Roster	This module collects information on the characteristics of the networks of households such as friends, relatives, employers, government agencies and private institutions. This module has been part of the agriculture questionnaire starting in IHS3, but this is **new** as part of the household questionnaire because of the land ownership and rights questions presented in Module F: Housing.

2.32 AGRICULTURE QUESTIONNAIRE

All IHS4 households that are identified as being involved in agricultural or livestock activities were administered the Agriculture Questionnaire, which is primarily modelled after the IHS3 counterpart. The development of the agriculture questionnaire was done with input from the aforementioned stakeholders who provided input on the household questionnaire as well as outside researchers involved in research and policy discussions pertaining to the Malawian agriculture. The Agriculture Questionnaire allows, among other things, for extensive agricultural productivity analysis through the diligent estimation of land areas, both owned and cultivated, labor and non-labor input use and expenditures, and production figures for main crops, and livestock. Although one of the major foci of the agriculture data collection effort was to produce smallholder production estimates for major crops, it is also possible to disaggregate the data by gender and main geographical regions. Table 5 includes the descriptions of the modules. The IHS4 cross-sectional households supply information on the last completed rainy season (2014/2015 or 2015/2016) and the last completed dry season (2015 or 2016) depending on the timing of their interview.

Table 5: Contents of the IHS4 Agriculture Questionnaire

Module	**Description**
Module B_1: Garden Roster (Rainy Season)	This module was **originally developed as part of the IHPS 2013 (not present in the IHS3 2010/11) to better understand the organization of plots within gardens.** It collects basic information on gardens (munda) owned and/or cultivated by household members during the reference rainy season, specifically the area and GPS coordinates of each garden. **.**
Module B_2: Garden Details (Rainy Season)	This module was **new in the IHS4 2016/17** with respect to the IHS3 and IHPS 2013, and collects detailed information on the ownership status and rights held regarding gardens (munda) owned and/or cultivated by household members during the reference rainy season. **Previously ownership questions were asked at the plot-level, but this module was added to streamline the questionnaire given that ownership should not vary by plots within each garden.**
Module C: Plot Roster (Rainy Season)	This module contains the information of agriculture plots owned and/or cultivated by household members during the reference rainy season. More specifically, it reports the location and description and area of the plot.
Module D: Plot Details (Rainy Season)	This module collects detailed plot information (agricultural practices and plot characteristics, use of organic and inorganic fertilizers, use of pesticides/herbicides, and labor inputs) for the reference rainy season. This module also asks a series of questions on sustainable agriculture: trees, cover crops, crop residue disposal, land preparation.
Module E: Coupon Use (Rainy Season)	This module collects information about quantity/type of input coupons/vouchers and how they were obtained and used during the reference rainy season.
Module F: Other Inputs (Rainy Season)	This module collects information about the inputs used for cultivation and their costs, specifically pesticides and herbicides, during the reference rainy season. It elicits information on the main sources of the input purchased without coupons/vouchers, any input received for free, any input that was left over from a previous season and own-produced organic fertilizer.
Module G: Crops (Rainy Season)	This module collects information about the crops grown by the household on each plot during the reference rainy season such as the type of crop stand, area of plantation, the amount of seed used and when it was planted, and the details of the harvest. This module had **new questions added in 2016** on the primary variety cultivated on a plot for select crops (maize, tobacco, groundnuts, sweet potatoes, beans, soyabeans)[3]. Respondents further reported whether the primary variety was local vs. improved, recyclable, and when the seed was last purchased.

[3] In previous rounds only select crops (maize, tobacco, groundnuts, rice) were reported by crop. These varieties were integrated into the list of crop codes allowing for multiple observations of the same crop type (differentiated by variety) for a single plot. In the new setup, each crop will at most be listed once per crop with the primary variety identified. To make this work comparable to previous rounds the constructed code has been provided.

Module H: Seeds (Rainy Season)	This module collects information about seeds and how they were acquired during the rainy season. More specifically, it elicits information on the main sources of the seed purchased without coupons/vouchers, any seed received for free, and any seed that was left over from a previous season.
Module I: Sales/Storage (Rainy Season)	This module collects information on the quantity and value of crops sold, the main buyers/outlet, alternative uses, post-harvest losses and storage during the reference rainy season.
Module I_1: Garden Roster (Dry Season)	This module was **originally developed as part of the IHPS 2013 (not present in the IHS3 2010/11) to better understand the organization of plots within gardens.** It collects basic information on gardens (munda) owned and/or cultivated by household members during the reference rainy season, specifically the area and GPS coordinates of each garden**. All dry season gardens that were not already added as part of the rainy season garden roster are added here. This is done to avoid double counting land.**
Module I_2: Garden Details (Dry Season)	This module was **new** in the IHS4 2016/17 with respect to the IHS3 and the IHPS 2013, and collects detailed information on the ownership status and rights held regarding gardens (munda) owned and/or cultivated by household members during the reference dry season. **Previously ownership questions were asked at the plot-level, but this module was added to streamline the questionnaire given that ownership should not vary by plots within each garden.**
Module J: Plot Roster (Dry Season)	This module contains the information of agriculture plots owned and/or cultivated by household members during the reference dry (dimba) season. More specifically, it reports the location and description and area of the plot. Enumerators identify whether the plot of land was part of a rainy season or dry season garden.
Module K: Plot Details (Dry Season)	This module collects detailed plot information (agricultural practices and plot characteristics, use of organic and inorganic fertilizers, use of pesticides/herbicides, and labor inputs) for the reference dry (dimba) season.
Module L: Other Inputs (Dry Season)	This module collects information about the inputs used for cultivation and their costs, specifically pesticides and herbicides, during the reference dry (dimba) season. More specifically, it elicits information on the main sources of the input purchased without coupons/vouchers, any input received for free, any input that was left over from a previous season and own-produced organic fertilizer.
Module M: Crops (Dry Season)	This module collects information about the crops grown by the household on each plot during the reference dry (dimba) such as the type of crop stand, area of plantation, the amount of seed used and when it was planted, and the details of the harvest.
Module N: Seeds (Dry Season)	This module collects information about seeds and how they were acquired during the reference dry (dimba) season. More specifically, it elicits information on the main sources of the seed purchased without coupons/vouchers, any seed received for free, and any seed that was left over from a previous season.
Module O: Sales Storage (Dry Season)	This module collects information on the quantity and value of crops sold, the main buyers/outlet, alternative uses, post-harvest losses and storage during the reference dry (dimba) season.

Module O_1: Garden Roster Tree Crop Production	This module was **originally developed as part of the IHPS 2013 (not present in the IHS3 2010/11) to better understand the organization of plots within gardens.** It collects basic information on gardens (munda) owned and/or cultivated with tree crops by household members during the reference rainy season, specifically the area and GPS coordinates of each garden**. All tree/permanent gardens that were not already added as part of the rainy season or dry season garden rosters are added here. This is done to avoid double counting land.**
Module O_2: Plot Roster Tree Crop Production	This module collects basic information on plots owned and/or cultivated with tree crops by household members during the last 12 months, specifically the area and GPS coordinates of each plot. **It was added to the panel survey to improve on the unique identification of plots specifically used for tree/permanent crop cultivation and is now being maintained in the IHS4.**
Module P: Tree / Permanent Crop Production (Last 12 Months)	This module collects information on crop-stand, area planted, number of trees owned, pre-harvest losses, and amount harvested.
Module Q: Tree/Permanent Crop Sales/Storage (Last 12 Months)	This module collects information on amount sold (value of sales) / given out / used as input for crop by-product / lost / currently in storage.
Module R: Livestock	This module collects information on number currently owned, owners and responsible individuals in the household, inflow/outflow of livestock through various means in the past twelve months, vaccinations, expenditures in the past twelve months on various items
Module S: Livestock Products	This module collects information on amount produced, sales and expenditures.
Module T: Access to Extension Services	This module collects information on where households receive advice/ information on agriculture and how useful the source has been during the last 12 months.
Module U: Land Disposition	This module is **new** in IHS4 2016. This module collects information on any gardens (agricultural, residential, forest(ed), pasture/grazing land, mineral land) sold, given away, or lost in the last 10 years to understand when and how it was acquired and when and to whom they parted with the land. The gardens listed in this module do not correspond to any other gardens recorded in the questionnaire.
Module V: Land Tenure	This module is **new** in IHS4 2016. This module collects information on the tenure security on non-agricultural and agricultural land. For each piece of land owned by the household, respondents answer a series of questions on recent land disputes or disagreements, and the likelihood of future disagreements.
Network Roster	This module collects information on the characteristics of the networks of households such as friends, relatives, employers, government agencies and private institutions.

2.33 FISHERY QUESTIONNAIRE

The design of the IHS4 Fishery Wuestionnaire is identical to the questionnaire designed for IHS3. The IHS3 Fisheries Questionnaire was informed by the design and piloting of a fishery questionnaire by the World Fish Center (WFC), which was supported by the World Bank LSMS-ISA initiative for the purpose of assembling a fishery questionnaire that could be integrated into multi-topic household-surveys. The WFC piloted the draft instrument in November 2009 in the Lower Shire region, and the NSO team considered the revised draft in designing the IHS4 fishery questionnaire. Table 6 presents the list and description of the fishery questionnaire modules.

Table 6: Contents of the IHS4 Fishery Questionnaire

Module	**Description**
Module B: Fisheries Calendar	This module asks the respondent to indicate the status of fishing months for the community as either "high", "low", or "no fishing" months.
Module C & G: Fisheries Labour (Last High Season) (Last Low Season)	This module elicits information on household members' time allocation to fishing. Specifically, this module asks household members to record the number of weeks, days per week, and hours per day that they allocated to full-time fishing, part-time fishing, fish processing and or fish trading during the last high / low season respectively.
Module D & H: Fisheries Input (Last High Season) (Last Low Season)	This module collects information on inputs to fishing, including ownership, purchases, and rentals. Additionally, this module collects information on use of boats and engines, hired labor, and other inputs in high and low fishing season respectively.
Module E & I: Fisheries Output (Last High Season) (Last Low Season)	This module collects output from fishing activities and owned fishing equipment, including: total catch, sales, consumption, and revenue generated from renting fishing equipment out for high and low season respectively.
Module F & J: Fish Trading (Last High Season) (Last Low Season)	This module elicits information on purchases and sales associated with the household's fish trading activities, high and low season respectively, for the 5 main species of fish.

2.34 COMMUNITY QUESTIONNAIRE

The content of the IHS4 Community Questionnaire follows the content of the IHS3 and IHPS 2013 Community Questionnaires. A "community" is defined as the village or urban location surrounding the enumeration area selected for inclusion in the sample and which most residents recognize as being their community. The IHS4 community questionnaire was administered to each community associated with the 780 cross-sectional EAs.[4] Identical to the IHS3 approach, to a group of several knowledgeable residents such as the village headman, the headmaster of the local school, the agricultural field assistant, religious leaders, local merchants, health workers and long-term knowledgeable residents. The instrument gathers information on a range of community characteristics, including religious and ethnic background, physical infrastructure, access to public services, economic activities, communal resource

[4] One important note is that three community interviews were duplicated for the cross-sectional and panel community datasets. When teams approached these EAs they discovered that the communities overlapped to the extent that respondents would have been the same so only one community interview was conducted and matched to both EAs.

management, organization and governance, investment projects, and local retail price information for essential goods and services. Table 7 presents the list and description of the community questionnaire modules.

Table 7: Contents of the IHS4 Community Questionnaire

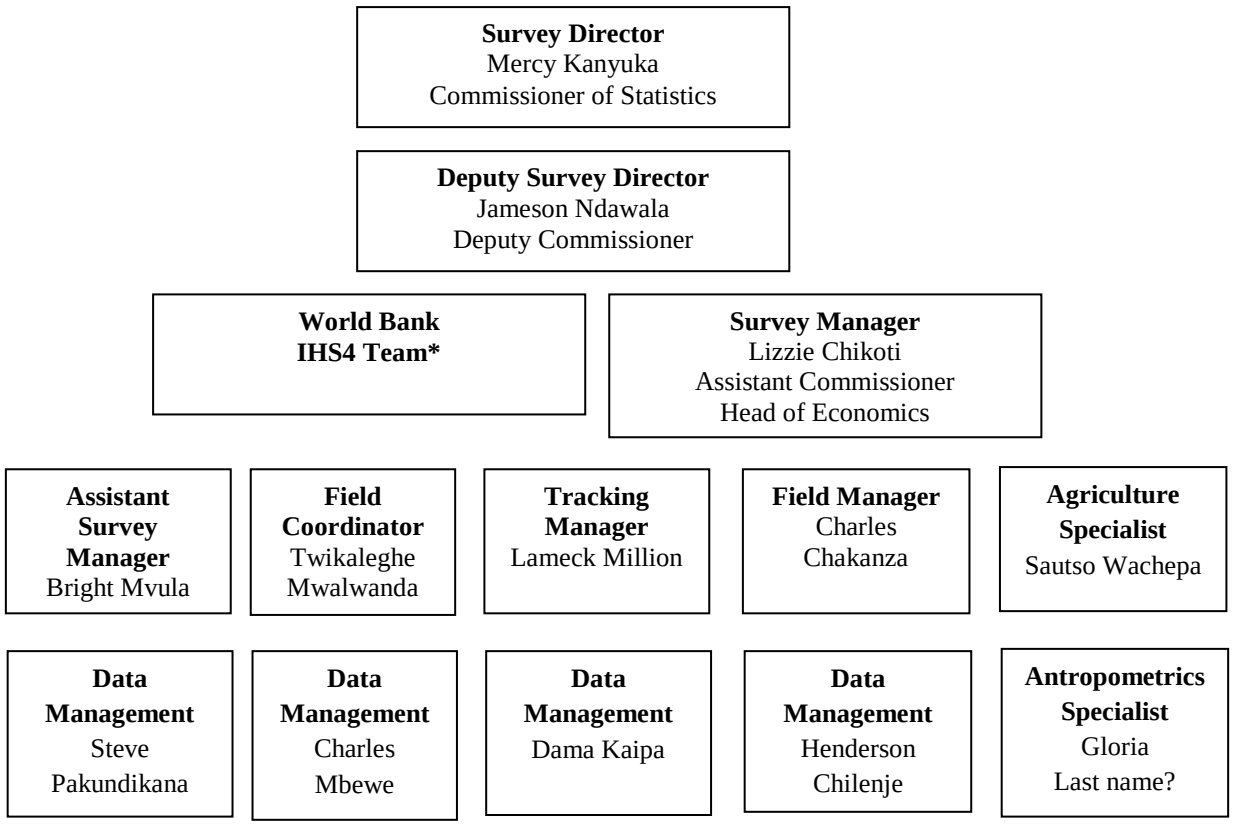
Module	**Description**
Module CB: Roster of Informants	This module lists the group of informants and their age, sex, positions in community, length of residence in the community, education and language spoken.
Module CC: Basic Information	This module collects basic characteristics of the community, including: population, number of households, major religions, languages spoken, common marriage types, land characteristics and use, number of registered voters and ability to address resource priorities.
Module CD: Access to basic Services	This module collects information on the community access to and characteristics of transportation networks, markets, ADMARC market, post office, telephone services, churches, schools, health services, and banking services.
Module CE: Economic Activities	This module collects basic information on the primary work activities of community members.
Module CF: Agriculture	This module collects basic information on the prevalence and type of agricultural activities and agricultural facilities.
Module CG: Changes	This module asks respondents to identify changes since 2010 that have made people worse off or better off, such as: drought, flood, changes in prices, changes in access to services, including health facilities, social services, schools, roads, transportation, among others. Additionally, respondent groups are asked to list when these major events occurred and what share of the community they affected.
Module CH: Community needs, Actions & Achievements	This module asks the respondent group to report on any needs (road and bridge maintenance/construction, school and health center improvement, piped water/boreholes/wells and maize mills construction, orphanage construction, public transportation and law enforcement improvement and the addition of agricultural/fishery/livestock extension services) that community members have expressed during the last 3 years. It then details whether or not the community members took any action to meet these needs and how they went about doing so.
Module CI: Communal Resource Management	This module collects information on communal resources owned by the community and how the rules of access are determined. It further elicits information about how compliance with these rules is enforced among both community members and outsiders.
Module CJ: Communal Organization	This module asks the informed respondent group to report on the presence in the community of listed organizations. It further collects information on the number of specific groups, meeting frequency, size of membership, female and younger adult participation.

3.00 ORGANIZATION OF THE SURVEY

3.10 SURVEY MANAGEMENT

The IHS4 was executed by the National Statistical Office, under the direction of the Commissioner of Statistics and the IHS4 Management Team. The management team was responsible for questionnaire design, recruitment of personnel, training of personnel, and implementation of the survey. Figure 1 outlines the composition of the IHS4 Management Team.

Figure 1: IHS4 Management Team



Note: * Composed of Talip Kilic (Senior Economist), Heather Moylan (Survey Specialist), John Ilukor (Survey Specialist), Wilbert Vundru Drazi (Survey Solutions Computer-Assisted Personal Interviewing Specialist), Ardina Hasanbasri (Research Assistant), Fiona Nattembo (IHS4 Resident Advisor).

In addition, the IHS4 Technical Working Group (TWG) was established to oversee the technical aspects of the project, including the review of questionnaires following full stakeholder consultations and the sample design. The TWG met twice prior to the start of the fieldwork. The participants of the IHS4 TWG are representatives from the NSO, Ministry of Economic Planning and Development (MoEPD), the Ministry of Agriculture and Food Security, Ministry of Education, Ministry of Health, Department of Forestry, World Bank, Statistics Norway, DFID, Irish Aid, GTZ, MCC-Malawi Account, International Food Policy Research Institute (IFPRI), and WorldFish Center.

3.20 TRAINING OF FIELD STAFF

Field staff for the IHS4 was selected after advertisements were placed in the national newspapers advertising posts for enumerators. Interviews were conducted to determine the most qualified candidates.

Training instruction was given to the field staff by the IHS4 Management Team with help from World Bank LSMS-ISA team members. The training consisted of classroom instruction on the contents of the questionnaire, concepts and definitions, interview techniques and methods, and field practices in performing actual interviews to ensure that Enumerators fully understood the questionnaire. Training instructions are detailed in the Enumerator and Field Supervisor's Manuals.

At the end of the training session, trainees were assessed based on tests given during the training process and evaluations by the supervisory personnel. The best candidates were selected to be Field Supervisors, and 64 candidates were selected to be Field Enumerators. For each team one of the top enumerators was tagged as the "Assistant Supervisor" so that at least two people on the team were trained to use the World Bank *Survey Solutions* CAPI Platform Supervisor account, if need be.

3.30 PRE- ENUMERATION LISTING

Pre-enumeration listings were initiated before the start of Quarter 1 and Quarter 3. Mobile listing teams equipped with printed maps of select EAs were used to record all dwellings and the heads of households in the selected cross-sectional IHS4 EAs. Household counts per each listed enumeration areas were relayed to the NSO IHS4 Management, and were recorded. Where applicable, listing forms and maps were transferred directly to field teams after the completion of district listing activities.

3.40 FIELD TEAMS

The IHS4 fieldwork began in April 2016 and was administered simultaneously throughout the country until 30 April 2017. 17 field-based mobile teams consisting of 1 supervisor, 4 enumerators and 1 driver were assigned to cover specific districts. An 18th team served as the tracking team for the IHPS 2016 during the first half of the IHS4 fieldwork (further details are provided in the IHPS 2016 Basic Information Document), and then also focused on cross-section during quarters 3 and 4.

Each team supervisor received monthly enumeration assignment schedules on a quarterly basis throughout the fieldwork. Monthly enumeration assignments were further accompanied by (1) enumeration area maps, (2) completed listing forms, (3) the list of selected as well as replacement households to be interviewed in each EA (4) the Survey Solutions assignments for the selected EA from headquarters.[5]

3.41 FIELD SUPERVISORS

The IHS4 field based supervisors were responsible for managing the daily operations of their respective field based mobile team. Primary responsibilities included: (1) liaising with IHS4 management on schedules, field operation status, equipment status and needs, and special issues, (2) planning daily field operation schedules including coverage and transportation, (3) liaising with local authorities before commencing interview activities, (3) making Survey Solutions questionnaire assignments on CAPI and syncing completed interviews with their Supervisor account (4) reviewing incoming questionnaires for completion and accuracy, (5) syncing reviewed questionnaires with the Headquarters account, (6) reviewing error reports from Headquarters generated through Stata checking system and assigning

[5] Survey Solutions assignments for replacement households were made on request. To avoid a large number of assignments on the tablets at a time, EA assignments from headquarters were made approximately 48 priors to teams starting interviews in a new EA.

questionnaire reviews, and authorizing review/call back based on these reports, (7) administering community questionnaires within each enumeration area.

3.42 ENUMERATORS

Field based mobile teams consisted of 4 enumerators to field household interviews over the course of the scheduled fieldwork. An enumerator's major areas of responsibility were to accurately and completely administer the Household, Agriculture, and Fishery questionnaires. The enumerators were responsible for: (1) locating assigned households, (2) relaying the source and purpose of the survey and obtaining respondent permission to implement the interview, (3) implementing all pertinent questionnaire modules, (4) systematically obtaining anthropometric measures for qualified household members, (5) using GPS technology to mark and record household locations and take agricultural field measurements, and (6) participating in the review and correction of questionnaires.

3.50 FIELDWORK MONITORING AND EVALUATION

The IHS4 field operations were regularly monitored through visits to the field based teams by the NSO IHS4 Managers, the World Bank IHS4 Resident Advisor, and the technical missions from the World Bank LSMS-ISA team. In addition, data transmitted from the field was regularly reviewed for completeness and quality by the NSO IHS4 Managers with the assistance of the World Bank IHS4 Resident Advisor. The incoming data was organized and regularly checked for completeness and quality at the national-, district-, team-, and enumerator-level. The issues that were found in instrument implementation, general quality, or other technical issues were reviewed, and the appropriate corrective action taken by the NSO IHS4 Managers and technical support staff either through revised field notes, additional field visits, remote communication directly with the field supervisors and/or general Whatsapp/SMS messages relayed to all teams.

After the first quarter of fieldwork, field supervisors and assistants were recalled to the NSO Headquarters in Zomba to discuss observations and concerns by field supervisors and to address observed concerns in the data. In general, field based teams demonstrated extremely high commitment to collecting high quality data and the successful completion of the IHS4 survey with the assistance of the NSO IHS4 Management team. In a few cases, however, failure to alleviate quality concerns through the above mentioned methods and individual coaching efforts lead to the restructuring of select field teams and or the replacement of field based staff.

4.00 DATA ENTRY AND DATA MANAGEMENT

4.10 DATA ENTRY PLATFORM

To ensure data quality and timely availability of data, the IHS4 was implemented using the World Bank's *Survey Solutions* CAPI software.[6] To carry out IHS4, 1 laptop computer and a wireless internet router were assigned to each team supervisor, and each enumerator had an 8–inch GPS-enabled Samsung Galaxy Tab S2 tablet computer. The use of *Survey Solutions* allowed for the real-time availability of data as the completed data was completed, approved by the Supervisor and synced to the Headquarters server as frequently as possible. While administering the first module of the questionnaire the enumerator(s) also used their tablets to record the GPS coordinates of the dwelling units. In *Survey Solutions*, Headquarters can then see the location of the dwellings plotted on a map of Malawi to better

[6] For background and documentation on *Survey Solutions*, please visit www.worldbank.org/capi. The software platform is available free of charge and is being developed by the World Bank Development Data Group - Survey and Methods Unit (DECSM). To access *Survey Solutions* Designer, please visit and sign up as a user at www.solutions.worldbank.org. All IHS4 CAPI questionnaires are available free of charge to any interested implementing agency.

enable supervision from afar – checking both the number of interviews performed and the fact that the sample households lie within EA boundaries. Geo-referenced household locations from that tablet complemented the GPS measurements taken by the Garmin eTrex 30 handheld devices and these were linked with publically available geospatial databases to enable the inclusion of a number of geospatial variables - extensive measures of distance (i.e. distance to the nearest market), climatology, soil and terrain, and other environmental factors - in the analysis.

4.20 DATA MANAGEMENT

The IHS4 *Survey Solutions* CAPI based data entry application was designed to stream-line the data collection process from the field. IHS4 Interviews were collected in "sample" mode (assignments generated from headquarters) as opposed to "census" mode (new interviews created by interviewers from a template) for the NSO to have more control over the sample.

The range and consistency checks built into the application was informed by the LSMS-ISA experience with the IHS3 2010/11 and the IHPS 2013. Prior programming of the data entry application allowed for a wide variety of range and consistency checks to be conducted and reported and potential issues investigated and corrected before closing the assigned enumeration area. Headquarters (the NSO management) assigned work to the supervisors based on their regions of coverage. The supervisors then made assignments to the enumerators linked to their supervisor account. The work assignments and syncing of completed interviews took place through a Wi-Fi connection to the IHS4 server. Because the data was available in real time it was monitored closely throughout the entire data collection period and upon receipt of the data at headquarters, data was exported to Stata for other consistency checks, data cleaning, and analysis.

4.30 DATA CLEANING

The data cleaning process was done in several stages over the course of fieldwork and through preliminary analysis. The first stage of data cleaning was conducted in the field by the field based field teams utilizing error messages generated by the Survey Solutions application when a response did not fit the rules for a particular question. For questions that flagged an error, the enumerators were expected to record a comment within the questionnaire to explain to their supervisor the reason for the error and confirming that they double checked the response with the respondent. The supervisors were expected to sync the enumerator tablets as frequently as possible to avoid having many questionnaires on the tablet, and to enable daily checks of questionnaires. Some supervisors preferred to review completed interviews on the tablets so they would review prior to syncing but still record the notes in the supervisor account and reject questionnaires accordingly. The second stage of data cleaning was also done in the field, and this resulted from the additional error reports generated in Stata, which were in turn sent to the field teams via email. The field supervisors collected reports for their assignments and in coordination with the enumerators reviewed, investigated, and collected errors. Due to the quick turn-around in error reporting, it was possible to conduct call-backs while the team was still operating in the EA when required. Corrections to the data were entered in the rejected questionnaires and sent back to headquarters.

The data cleaning process was done in several stages over the course of the fieldwork and through preliminary analyses. The first stage was during the interview itself. Because CAPI software was used, as enumerators asked the questions and recorded information, error messages were provided immediately when the information recorded did not match previously defined rules for that variable. For example, if the education level for a 12 year old respondent was given as post graduate. The second stage occurred during the review of the questionnaire by the Field Supervisor. The Survey Solutions software allows errors to remain in the data if the enumerator does not make a correction. The enumerator can write a comment to explain why the data appears to be incorrect. For example, if the previously mentioned 12 year old was, in fact, a genius who had completed graduate studies. The next stage occurred when the data were transferred to headquarters where the IT staff would again review

the data for errors and verify the comments from the enumerators and supervisors regarding anomalies that remain.

Additional cleaning was performed after interviews were "Approved" where appropriate to resolve systematic errors and organize data modules for consistency and efficient use. Case by case cleaning was also performed during the preliminary analysis specifically pertaining to out of range and outlier variables.

All cleaning activities were conducted led by the NSO, and the World Bank LSMS-ISA team provided technical assistance.

5.00 USING THE IHS4 DATA

It is strongly recommended that the end user of the IHS4 data familiarize themselves with the questionnaires and manuals while using the IHS4 data. The naming of IHS4 data files follows the instrument name and module lettering as listed in the questionnaires and variable names, whenever possible, reflect question numbers as presented in relative modules. In the Stata versions of the data, variable labels, whenever possible, perfectly match the question asked in the questionnaires. In some cases it was necessary to modify the variable labels and cross-referencing the questionnaires will be necessary for accurate use of the data.

To increase the efficiency with which the survey instruments were administered, the IHS4 instruments make extensive use of skip patterns. The end users of the IHS4 data must be aware of these skip patterns to properly interpret the data. When referencing the available paper questionnaires note that skip patterns are, in most cases, clearly identified by an arrow followed by a number in parentheses (>> 2).[7] The skip codes are explained in detail in the Enumerator Manual.

5.10 FILE STRUCTURE, KEY IDENTIFIERS

The file structure of the IHS4 data directly reflects the modules in the questionnaires. Where modules in the questionnaire contain data with multiple levels of observation, data files have been divided with additional numeric labels. It is recommended that end users of the IHS4 data refer to the questionnaires and manuals when using the data. The index of data files, along with key identifiers relevant for merging data from different modules, are presented in Tables 8-11.

IHS4 data files follow an intuitive naming scheme for easy use by the end user. Each file name gives reference to the instrument component, "HH" (Household), "AG" (Agriculture), "FS" (Fishery) and "COM" (Community) and the specific module as they appear in the questionnaires. For example, file "HH_MOD_B" refers to Household Module B; Household Roster. Similarly, file "AG_MOD_Q", for example, refers to Agriculture Module Q; "Tree / Permanent Crop Production (Over the Last 12 Months)". In modules that contain sub-sections with varying levels of observation, a number has been added to the tail of the file name, "HH_MOD_G1" and "HH_MOD_G2" for example. The numbers are sequential with how the module appears in the questionnaire.

5.20 HOUSEHOLD LEVEL INSTRUMENTS

The cover sheet for the household questionnaire (HH_MOD_A_FILT) captures information on the location of the observation, district, traditional authority (TA) and the specific EA, as well as other observation level identification, for example, household identification for the household instrument. The variable "**ea_id**" has been created and serves as the lowest common level of aggregation for all IHS4 instruments. The variable "**reside**" identifies urban vs. rural EAs and is included in the data set named HH_MOD_A_FILT.

[7] Skip patterns were automatically taken into account in the CAPI application.

The ea_id is unique for each EA and is made up of the district, traditional authority, and EA codes. To provide unique district identification at the national level in the IHS4 data, district number is the concatenation of the single digit region code ("1" for Northern Region, "2" for Central Region, "3" for Southern Region) and the two digit district code composed with the respective region. For example, the unique district identification for the administrative district of Dedza is "208"; "2" (Central Region) + "08" (Region District Code). The variable "ea_id" is an 8-digit code that provides for the unique identification of sampled EAs. "ea_id" is specifically comprised of the three digit unique district code, the 2-digit TA code, and the 3-digit enumeration area. For example, the unique enumeration identification, "20807055" is the combination of district variable "hh_a01" ("208"), TA variable "hh_a02" ("07") + EA variable "hh_a03" ("055").[8]

Moreover, each household questionnaire was assigned a household identification number corresponding to the number of the dwelling recorded on the household listing forms. This four digit number was combined with the unique enumeration area identification to yield the "**case_id**" household unique identification across the IHS4 datasets. For example, "case_id" number "208070550160" is the combination of "ea_id" 20807055" and household number ,"hh_a06", "0160". The variable "case_id" is unique to the household and is repeated in every module of the household, agriculture and fishery data.

For household modules B through E, the level of observation is household member. The variable, "**PID**" refers to the roster row for the household member and when used in conjunction with "**case_id**" can uniquely identify individuals within the household across household modules of similar level of observation.

5.30 CONFIDENTIAL INFORMATION, GEOSPATIAL VARIABLES

To maintain the confidentiality of our respondents, certain parts of the IHS4 database have not been made publicly available. The confidential variables pertain to (i) names of the respondents to the household and community questionnaires, (ii) village and constituency names, (iii) descriptions of household dwelling and agricultural plot locations, (iv) phone numbers of household members and their reference contacts, (v) GPS-based household and agricultural plot locations, (vi) names of the children of the head/spouse living elsewhere, (vii) names of the deceased household members, (viii) names of individuals listed in the network roster, and (ix) names of field staff.

To increase the use of the IHS4 data, a set of geospatial variables has been provided by using the geo-referenced plot and household locations in conjunction with various geospatial databases that were available to the survey team. **IHS4.Geovariables.Description.pdf** provides the name, type, source, reference period, resolution, description, and source of each variable.

The geo-variables are stored in two data files, one at the household-plot-level, the other at the household-level. The plot-level file, named **PlotGeovariables**, contains several geospatial variables describing the physical landscape and plot distance to household. The observations are uniquely identified by the combination of **case_id gardenid plotid**. The observations included in this file are rainy season, dry season and permanent crop plots that are owned and/or cultivated by the household and that have been visited for GPS-based land area measurement. The rest of the geovariables are stored in **HouseholdGeovariables** and the observations are uniquely identified by **case_id.** To partially satisfy the demand for geo-referenced household and community locations while preserving the confidentiality of sample household and communities, we have computed the average of household GPS coordinates

[8] The users that have access to 2008 PHC data or the list of 2008 PHC EAs will not be able to match their databases with the IHS4 data on an EA-basis, since the last three digits of IHS4 ea_id have been replaced with a randomly generated three digit code in the construction of the IHS4 database for confidentiality purposes.

in each EA, applied a random offset within a specified range to the average EA value (following the MeasureDHS methodology) and provided the off-set EA latitudes and longitudes as part of **HouseholdGeovariables**. For households that have moved or split-off and are more than 5 km from their baseline location, the offset is with respect to the new household location.

More specifically, the coordinate modification strategy relies on random offset of cluster center-point coordinates (or average of household GPS locations by EA in IHS4) 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 district level, so that they still fall within the correct district for spatial joins, or point-in-polygon overlays. The result is a set of coordinates, representative at the EA level, that fall within known limits of accuracy. Users should take into account the offset range when considering different types of spatial analysis or queries with the data. 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.

All geospatial variables have been produced by using the unmodified GPS data. These include extensive measures of distance, climatology, soil and terrain and other environmental factors. Time-series on rainfall and vegetation have also been used to describe the survey agricultural season relative to normal conditions. These variables are intended to provide some understanding of how geophysical characteristics vary at the landscape level.

Table 8: Structure of the IHS4 Household Databases

File Name	Module Name	Level of Analysis	Identification Variable(s)
HH_MOD_A_FILT	Module A: Household Identification	Household	case_id
HH_MOD_B	Module B: Household Roster	Individual	case_id PID
HH_MOD_C	Module C: Education	Individual	case_id PID
HH_MOD_D	Module D: Health	Individual	case_id PID
HH_MOD_E	Module E: Time Use & Labour	Individual	case_id PID
HH_MOD_F	Module F: Housing	Household	case_id
HH_MOD_G1	Module G: Food Consumption Over Past One Week	Consumption Item	case_id hh_g02
HH_MOD_G2	Module G: Food Consumption Over Past One Week	Food Group	case_id hh_g08a
HH_MOD_G3	Module G: Food Consumption Over Past One Week	Age Group	case_id hh_g10a
HH_MOD_H	Module H: Food Security	Household	case_id
HH_MOD_I1	Module I: Non-Food Expenditures – Over Past One Week & One Month	Consumption Item	case_id hh_i02
HH_MOD_I2	Module I: Non-Food Expenditures – Over Past One Week & One Month	Consumption Item	case_id hh_i05
HH_MOD_J	Module J: Non-Food Expenditures – Over Past Three Months	Consumption Item	case_id hh_j02
HH_MOD_K	Module K: Non-Food Expenditures – Over Past 12 Months	Consumption Item	case_id hh_k02
HH_MOD_L	Module L: Durable Goods	Durable Good	case_id hh_l02
HH_MOD_M	Module M: Farm Implements, Machinery, and Structures	Farm Implement	case_id hh_m0a
HH_MOD_N1	Module N: Household Enterprises	Household	case_id

HH_MOD_N2	Module N: Household Enterprises	Household Enterprise	case_id hh_n09a
HH_MOD_O	Module O: Children Living Elsewhere	Child of Head/Spouse Living Elsewhere	case_id hh_o0a
HH_MOD_P	Module P: Other Income	Income Type	case_id hh_p0a
HH_MOD_Q	Module Q: Gifts Given Out	Gift Type	case_id D hh_q0a
HH_MOD_R	Module R: Social Safety Nets	Program	case_id hh_r0a
HH_MOD_S1	Module S: Credit	Loan	case_id hh_s02
HH_MOD_S2	Module S: Credit	Household	case_id
HH_MOD_T	Module T: Subjective Assessment Of Well-Being	Household	case_id
HH_MOD_U	Module U: Shocks & Coping Strategies	Shock	case_id hh_u0a
HH_MOD_V	Module V: Child Anthropometry	Individual	case_id PID
HH_MOD_W	Module W: Deaths In Household	Deceased Individual	case_id hh_w0a
HH_MOD_X	Module X: Filter Questions For Agriculture & Fishery Questionnaires	Household	case_id

Table 9: Structure of the IHS4 Agriculture Databases

File Name	Module Name	Level of Analysis	Identification Variable(s)
AG_META	Agriculture Questionnaire Metadata (Contains time stamps and respondent IDs for each module)	Household	case_id
AG_MOD_B1	Ag-Module B_1: Garden Roster – [Rainy Season]	Garden	case_id gardenid
AG_MOD_B2	Ag-Module B_2: Garden Details – [Rainy Season]	Garden	case_id gardenid
AG_MOD_C	Ag-Module C: Plot Roster - [Rainy Season]	Plot	case_id gardenid plotid
AG_MOD_D	Ag-Module D: Plot Details - [Rainy Season]	Plot	case_id gardenid plotid
AG_MOD_E1	Ag-Module E: Coupon Use - [Rainy Season]	Individual-Coupon Type	case_id ag_e0b ag_e0c
AG_MOD_E2	Ag-Module E: Coupon Use - [Rainy Season]	Individual-Coupon Type	case_id ag_e0e ag_e0g
AG_MOD_E3	Ag-Module E: Coupon Use - [Rainy Season]	Household	case_id
AG_MOD_E4	Ag-Module E: Coupon Use - [Rainy Season]	Coupon Type	case_id ag_e29_00
AG_MOD_F	Ag-Module F: Other Inputs - [Rainy Season]	Input Type	case_id ag_f0c
AG_MOD_G	Ag-Module G: Crops – [Rainy Season]	Plot-Crop	case_id gardenid plotid crop_code
AG_MOD_H	Ag-Module H: Seeds – [Rainy Season]	Seed Type	case_id crop_code
AG_MOD_I	Ag-Module I: Sales/Storage - [Rainy Season]	Crop	case_id crop_code

AG_MOD_I1	Ag-Module I1: Garden Roster – [Dry Season]	Garden	case_id gardenid
AG_MOD_I2	Ag-Module I2: Garden Details – [Dry Season]	Garden	case_id gardenid
AG_MOD_J	Ag-Module J: Plot Roster – [Dry (Dimba) Season]	Plot	case_id gardenid plotid
AG_MOD_K	Ag-Module K: Plot Details - [Dry (Dimba) Season]	Plot	case_id gardenid plotid
AG_MOD_L	Ag-Module L: Other Inputs - [Dry (Dimba) Season]	Input Type	case_id ag_l0c
AG_MOD_M	Ag-Module M: Crops – [Dry (Dimba) Season]	Plot-Crop	case_id gardenid plotid crop_code
AG_MOD_N	Ag-Module N: Seeds – [Dry (Dimba) Season]	Seed Type	case_id crop_code
AG_MOD_O	Ag-Module O: Sales/Storage – [Dry (Dimba) Season]	Crop	case_id crop_code
AG_MOD_O1	Ag-Module O_1: Garden Roster Tree Crop Production	Garden	case_id gardenid
AG_MOD_O2	Ag-Module O_1: Plot Roster Tree Crop Production	Plot	case_id gardenid
AG_MOD_P	Ag-Module P: Tree / Permanent Crop Production Last 12 Months	Plot-Tree Crop	case_id gardenid plotid crop_code
AG_MOD_Q	Ag-Module Q: Tree/Permanent Crop Sales/Storage Last 12 Months	Tree Crop	case_id crop_code
AG_MOD_R1	Ag-Module R: Livestock	AnimalType	case_id ag_r0a
AG_MOD_R2	Ag-Module R: Livestock	Household	case_id
AG_MOD_S	Ag-Module S: Livestock Products	By-product	case_id ag_s0a
AG_MOD_T1	Ag-Module T: Access To Extension Services	Extension Source	case_id ag_t0a
AG_MOD_T2	Ag-Module T: Access To Extension Services	Extension Source	case_id ag_t0c
AG_NETWORK	Network Roster	Roster Member	case_id ag_nr00

Table 10: Structure of the IHS4 Fishery Databases

File Name	Module Name	Level of Analysis	Identification Variable(s)
FS_MOD_B_FILT	Module B: Fisheries Calendar	Household	case_id
FS_MOD_C	Module C: Fisheries Labour (Last High Season)	Individual	case_id fs_c00
FS_MOD_D1	Module D: Fisheries Input (Last High Season)	Fishing Gear	case_id fs_d0a
FS_MOD_D2	Module D: Fisheries Input (Last High Season)	Boat/Engine	case_id fs_d0c
FS_MOD_D3	Module D: Fisheries Input (Last High Season)	Household	case_id

FS_MOD_E1	Module E: Fisheries Output (Last High Season)	Fish Type	case_id fs_e02
FS_MOD_E2	Module E: Fisheries Output (Last High Season)	Fishing Gear	case_id fs_e0a
FS_MOD_F1	Module F: Fish Trading (Last High Season)	Fish Type	case_id fs_f01
FS_MOD_F2	Module F: Fish Trading (Last High Season)	Cost Item	case_id fs_f0a
FS_MOD_G	Module G: Fisheries Labour (Last Low Season)	Individual	case_id fs_g00
FS_MOD_H1	Module H: Fisheries Input (Last Low Season)	Fishing Gear	case_id fs_h0a
FS_MOD_H2	Module H: Fisheries Input (Last Low Season)	Boat/Engine	case_id fs_h0c
FS_MOD_H3	Module H: Fisheries Input (Last Low Season)	Household	case_id
FS_MOD_I1	Module I: Fisheries Output (Last Low Season)	Fish Type	case_id fs_i02
FS_MOD_I2	Module I: Fisheries Output (Last Low Season)	Fishing Gear	case_id fs_i0a
FS_MOD_J1	Module J: Fish Trading (Last Low Season)	Fish Type	case_id fs_j01
FS_MOD_J2	Module J: Fish Trading (Last Low Season)	Cost Item	case_id fs_j0a

Table 11: Structure of the IHS4 Community Database

File Name	**Module Name**	**Level of Analysis**	**Identification Variable(s)**
COM_CA	Module CA: Community Identification	Community	ea_id com_ca04
COM_CB	Module CB: Roster Of Informants	Informant	ea_id com_cb01
COM_CC	Module CC: Basic Information	Community	ea_id
COM_CD	Module CD: Access To Basic Services	Community	ea_id
COM_CE	Module CE: Economic Activities	Community	ea_id
COM_CF	Module CF: Agriculture	Community	ea_id
COM_CG	Module CG: Changes	Community	ea_id
COM_CG1	Module CG: Changes	Community	ea_id
COM_CG2	Module CG: Changes	Event	ea_id com_cg35a
COM_CH	Module CH: Community Needs, Actions & Achievements	Need	ea_id com_ch0b
COM_CI	Module CI: Communal Resource Management	Natural Resource	ea_id com_ci0b
COM_CJ	Module CJ: Communal Organization	Communal Group Type	ea_id com_cj0b
COM_CK	Section CK: Prices	Item	ea_id com_ck00a

6.00 WEIGHTING

In order to analyze the data and produce accurate representativeness of the population, the sample variables must be weighted using the household sampling weights provided in HH_MOD_A_FILT as **hh_wgt**. As noted above, the IHS4 data are representative at the national, urban/rural, regional and district-level.

The basic weight for each sample household is equal to the inverse of its probability of selection (calculated by multiplying the probabilities at each sampling stage). As indicated in the previous section, the IHS4 sample EAs were selected within each district with PPS from the 2008 PHC frame. At the second stage, 16 sample households were selected with equal probability from the listing for each sample EA. Therefore, the overall probability of selection for the IHS4 sample households can be expressed as follows:

$$p_{hi} = \frac{n_h \times M_{hi}}{M_h} \times \frac{m_{hi}}{M'_{hi}}, \text{ where:}$$

p_{hi} = overall sampling probability for households selected for the IHS4 in the i-th sample EA in district h,

n_h = number of sample EAs selected in district h for the IHS4,

M_{hi} = total number of households in the i-th sample EA in district h from the 2008 PHC frame,

M_h = total number of households in district h from 2008 PHC frame ,

m_{hi} = 16 = number of sample households selected for the IHS4 in the i-th sample EA in district h, and

M'_{hi} = total number of households in the new listing for the i-th sample EA in district h.

The basic weight for the IHS4 sample households is the inverse of this probability of selection, expressed as follows:

$$W_{hi} = \frac{1}{p_{hi}} = \frac{M_h \times M'_{hi}}{n_h \times M_{hi} \times m_{hi}}, \text{ where:}$$

W_{hi} = basic weight for the IHS4 sample households in the i-th sample EA in district h.

Following the calculation of the basic weight, the total weighted population by district was tabulated from the survey data and compared to corresponding census figures and the population projections. Conceptually, if the listing reflects the overall average growth in the number of households across all the sample EAs, the weighted estimates of the total population would also show a corresponding increase. The design weights depend on the updating of the sampling frame based on the listing, so if the listing for some sample EAs is not complete, this will lead to a lower bias in the weighted population estimates from the survey data. For most districts the weighted survey population estimates were lower than the corresponding projections, indicating potential problems with the listing data for the IHS4. Given the significant differences between the weighted estimates of the total population for some

districts and the corresponding population projections, it was decided to adjust the weights based on the population projections. The quality of the listing varied by district, which resulted in inconsistent weighted estimates of the total population. One way to adjust the weights for such deficiencies in the listing is to use population projections at the district level for calculating weight adjustment factors.

The weight adjustment factor based on the projected total population by district can be expressed as follows:

$$A_h = \frac{\hat{P}_{IHS3h}}{\sum_{i\in h}\sum_{j} W'_{hi} \times p_{hij}}$$, where:

A_h = adjustment factor for the weights of the IHS4 sample households in district h,

$\hat{P}_{IHS3h}$ = projected total population for district h for the mid-point of the data collection period for the IHS4, based on demographic analysis,

W'_{hi} = basic design weight for the sample households in the i-th sample EA in district h, adjusted for non-interviews, and

p_{hij} = number of persons in the j-th sample household of the i-th sample EA in district h.

The denominator of the adjustment factor A_h is the estimated total population in district h from the IHS4 data using the basic design weights. The design weights for all the sample households within a district were multiplied by the corresponding adjustment factor for the district to obtain the final adjusted weights, as follows:

$W_{Ahi} = W'_{hi} \times A_h$, where:

W_{Ahi} = final adjusted weight for the sample households in the i-th sample EA in district h.

After the adjustment factors were applied to the weights of each district, the final weighted survey estimates of total population by district were consistent with the corresponding population projections. The NSO produce district-level population projections for each year, based on demographic analysis using the 2008 PHC data and estimates of the different demographic parameters. The approximate reference date for the population projections each year is 1 July. The data collection for the IHS4 was conducted between 15 April 2016 and 30 April 2017, so the mid-point of the data collection period was 22 October 2016. Using the population projections by district for 1 July 2016 and 2017, an interpolation based on exponential growth was used to estimate the population for 22 October 2016, using the following formula:

$$\hat{P}_{IHS3h} = P_{10h} \times e^{\ln\left[\left(\frac{P_{11h}}{P_{10h}}\right)\times\left(\frac{t_{IHS3}-t_{10}}{t_{11}-t_{10}}\right)\right]}$$, where:

$\hat{P}_{IHS3h}$ = estimated total population for district h on 22 October 2016,

P_{10h} = population projection for district h on 1 July 2016,

P_{11h} = population projection for district h on 1 July 2017,

$t_{IHS4} - t_{10}$ = number of days between 1 July 2016 and 22 October 2016 (that is, 113 days), and

$t_{08} - t_{07}$ = number of days between 1 July 2016 and 1 July 2017 (that is, 365 days).

Table 12 presents the population projections by district for 1 July 2016 and 2017, and the corresponding interpolated population estimates for 22 October 2016. Table 13 shows the population projections for the mid-point of the IHS4 data collection period and the IHS4 weighted estimates of total population by district based on the design weights, and the corresponding weight adjustment factor for the sample household weights in each district.

It can be seen in Table 13 that the weight adjustment factors vary from 0.3206 for Mzimba District to 1.9801 for Chiradzulu. An adjustment factor less than 1 indicates that the IHS4 data with the original design weights over-estimated the population, and a factor greater than 1 indicates that the original weighted survey estimates under-estimated the population. The weight adjustment factors for 24 of the 31 districts are greater than 1, indicating a potential undercount in the listing of sample EAs for most districts.

Since the population projections were not made separately for the urban and rural areas, the urban/rural distribution of the weighted IHS4 data reflects the distribution of the sampling frame and the listing results for urban and rural EAs. The final weighted urban population using the adjusted weights is 15.3% of the total at the national level, compared to 14.8% based on the design weights.

Table 12: Malawi Population Projections by District, for 2016 and 2017, and Interpolated Population for the Mid-Point of the IHS4 Data Collection Period

District	2016 01-Jul-16	2017 01-Jul-17	IHS4 22-Oct-16
Chitipa	222,769	228,732	224,598
Karonga	348,110	359,080	351,470
Nkhata Bay	277,861	286,956	280,645
Rumphi	222,769	228,732	224,598
Mzimba	222,769	228,732	224,598
Likoma	10,464	10,478	10,468
Mzuzu City	239,008	254,891	243,816
Kasungu	858,782	892,523	869,089
Nkhotakota	391,575	404,102	395,411
Ntchisi	295,592	305,589	298,652
Dowa	797,426	831,365	807,782
Salima	432,069	445,031	436,041
Lilongwe, non-city	1,490,641	1,526,971	1,501,795
Mchinji	610,781	632,728	617,493
Dedza	752,520	770,108	757,922
Ntcheu	588,038	603,871	592,895
Lilongwe City	1,098,167	1,161,408	1,117,369
Mangochi	1,053,585	1,091,666	1,065,230
Machinga	627,399	647,401	633,524
Zomba, non-city	408,019	417,453	410,917
Chiradzulu	673,178	685,755	677,047
Blantyre, non-city	322,646	327,038	323,999
Mwanza	105,743	107,341	106,235
Thyolo	655,118	666,895	658,742
Mulanje	579,818	587,553	582,202
Phalombe	383,273	393,385	386,375
Chikwawa	549,706	566,283	554,786
Nsanje	288,581	295,900	290,827
Balaka	409,420	422,925	413,554
Neno	158,123	165,662	160,420
Zomba City	147,131	156,020	149,827
Blantyre City	920,226	956,898	931,426
Malawi	16,141,307	16,659,472	16,299,756

Table 13: Malawi Population Projections and the IHS4 Weighted Estimates of Total Population by District, and Corresponding Weight Adjustment Factors

District	Projected Population 22-Oct-10	Weighted Population IHS-4	Weight Adjustment Factor
Chitipa	224,598	176,407	1.2732
Karonga	351,470	335,508	1.0476
Nkhata Bay	280,645	240,186	1.1685
Rumphi	224,598	186,257	1.2058
Mzimba	224,598	700,467	0.3206
Likoma	10,468	11,603	0.9022
Mzuzu City	243,816	191,643	1.2722
Kasungu	869,089	790,729	1.0991
Nkhotakota	395,411	345,877	1.1432
Ntchisi	298,652	277,412	1.0766
Dowa	807,782	670,752	1.2043
Salima	436,041	359,155	1.2141
Lilongwe, non-city	1,501,795	1,366,683	1.0989
Mchinji	617,493	548,654	1.1255
Dedza	757,922	711,856	1.0647
Ntcheu	592,895	505,335	1.1733
Lilongwe City	1,117,369	799,119	1.3983
Mangochi	1,065,230	914,879	1.1643
Machinga	633,524	574,654	1.1024
Zomba, non-city	410,917	613,680	0.6696
Chiradzulu	677,047	341,928	1.9801
Blantyre, non-city	323,999	342,420	0.9462
Mwanza	106,235	114,772	0.9256
Thyolo	658,742	595,338	1.1065
Mulanje	582,202	801,009	0.7268
Phalombe	386,375	313,015	1.2344
Chikwawa	554,786	535,890	1.0353
Nsanje	290,827	281,961	1.0314
Balaka	413,554	329,188	1.2563
Neno	160,420	107,681	1.4898
Zomba City	149,827	81,084	1.8478
Blantyre City	931,426	586,471	1.5882

ANNEX 1: CODES NOT INCLUDED IN THE QUESTIONNAIRE

DISTRICT CODES AND COUNTRY CODES

DISTRICT CODES:

Chitipa.....101
Karonga.....102
Nkhatabay.....103
Rumphi.....104
Mzimba.....105
Likoma.....106
Mzuzu City.....107
Kasungu.....201
Nkhotakota.....202
Ntchisi.....203
Dowa.....204
Salima.....205
Lilongwe Non-City..206
Mchinji.....207
Dedza.....208
Ntcheu.....209
Lilongwe City.....210
Mangochi.....301
Machinga.....302
Zomba Non-City.....303
Chiradzulu.....304
Blanytyre Non-City...305
Mwanza.....306
Thyolo.....307
Mulanje.....308
Phalombe.....309
Chikwawa.....310
Nsanje.....311
Balaka.....312
Neno.....313
Zomba City.....314
Blantyre City.....315

COUNTRY CODES:

Angola.....501
Australia.....502
Botswana.....503
Canada.....504
China.....505
Lesotho.....506
Mozambique.....507
Namibia.....508
New Zealand.....509
South Africa.....510
Swaziland.....511
Tanzania.....512
United Kingdom (UK)..513
United States of America (USA).....514
Zambia.....515
Zimbabwe.....516
Other Country (Specify).....517

OCCUPATION CODES

MAJOR GROUP 0/1: PROFESSIONAL, TECHNICAL, & RELATED WORKERS	
01	**Physical Scientists and related technicians.** Chemists, Physicists
02	**Architects, Surveyors and related workers.** Architects, Planners, Surveyors, Draughtsmen and related workers
03	**Engineers and related workers.** Civil, Mechanical, Electrical, Mining and Other Engineers; Mining Technicians
04	**Aircraft's and ships' officers.** Pilots, Navigators, deck officers, flight and ships' officers
05	**Life scientists and related technicians**. Agronomists, biologists, zoologists.
06	**Medical, dental and related workers.** Doctors, Dentists, Medical and Dental Assistants, Nurses, X-ray and other medical technicians. (**Excluding traditional healers (which are group 59)**)
07	**Veterinary and related workers.** Veterinarians and related workers not elsewhere classified
08	**Statisticians, mathematicians, systems analysts.** Statisticians, actuaries, systems analysts and related technicians
09	**Economists**
11	**Accountants**, (private or government); (for book-keepers see 33)
12	**Jurists.** Lawyers, Judges
13	**Teachers**. University Lectures and teachers.
14	**Workers in Religion.** Priests, nuns lay brothers etc, and related workers in religion not elsewhere classified
15	**Writers.** Authors, journalists, critics and related writers.
16	**Artists.** Sculptors, painters of pictures, photographers and cameramen.
17	**Composers and Performing artists.** Composers, musicians, singers, dancers, actors, producers, performing artists.
18	**Athletics, sportsmen and related workers.** Athletes, etc.
19	**Professional and technical workers not elsewhere classified**. Librarians, archivists, curators, sociologists, social workers and occupational specialists, translators, interpreters and other professional and technical workers not elsewhere classified.
MAJOR GROUP 2: ADMINISTRATION AND MANAGERIAL WORKERS	
20	**Legislative Officials and government senior administrators.** Legislative officials.
21	**Managers.** General Managers, production managers (except farm managers) and managers not elsewhere classified.
22	**Traditional Leaders.** Village Headmen, Group Village Headmen, Sub-Traditional Authorities, Traditional Authorities, Senior Traditional Authorities/Chiefs, Paramount Chiefs.
MAJOR GROUP 3: CLERICAL AND RELATED WORKER	
30	**Clerical supervisors**
31	**Government administrative/secretarial officials**
32	**Stenographers and related workers.** Stenographers, typists, card and tape punching machine operators.
33	**Book-keepers, cashiers and related workers.** Book-keepers and cashiers.
34	**Computing and machine operators of book-keeping machines, calculators and automatic data processing machines (computers).**
35	**Transport and communication supervisors**. Railway Stations Masters, postmasters, communication supervisors not elsewhere classified stated.
36	**Transport conductors.** Bus conductors
37	**Mail distribution clerks.** Registry clerks
38	**Telephone and telegram operators Including switchboard (PBX) operators.**
39	**Clerical and related workers not elsewhere classified.** Stock Clerk Correspondence clerks, receptionists, and travel agency clerks, Library and filling clerks and other clerks and not elsewhere classified.
MAJOR GROUP 4: SALES WORKERS	
40	**Managers (wholesale & retail trade)**
41	**Working proprietors (wholesale and retail trade)**
42	**Sales supervisors and buyers**
43	**Technical salesmen, commercial travellers, manufactures agency**
44	**Auctioneers and salesmen of insurance, real estate, securities, and business services.**
45	**Salesmen and shop assistants, and related workers** (demonstrators, street vendors, canvassers, news vendors).
49	**Sales workers not elsewhere classified.**
MAJOR GROUP 5: SERVICE WORKERS	

50	**Managers (catering &lodging services)**
51	**Working proprietors (catering & lodging services)**
52	**Housekeeping and related service supervisors (Excluding housewives)**
53	**Cooks, waiters, bartenders and related workers**
54	**Maids and related housekeeping service workers not elsewhere classified, house girls, houseboys, garden boys**
55	**Buildings caretakers, watch guards, charworkers, cleaners and related workers.**
56	**Launderers, dry-cleaners and pressers.**
57	**Hairdressers, barbers, beauticians and related workers.**
58	**Protective service workers.** Fire fighters, policemen and detectives, protective workers not elsewhere classified.
59	**Service workers not elsewhere classified.** Traditional healers, guides, undertakers and embalmers, other service workers.
MAJOR GROUP 6: AGRICULTURAL, ANIMAL HUSBANDRY AND FORESTRY WORKERS, FISHERMEN AND HUNTERS	
60	**Farm managers and supervisors**
61	**Farmers (general farm owner/operators and specialised farmers)**
62	**Agricultural and animal husbandry workers.** General farm workers and labourers, dairy farm workers and gardeners, farm machine operators, agricultural and animal husbandry workers not elsewhere classified. (Not ganyu farm labourers-ganyu work covered in separate questions)
63	**Forestry workers.** Loggers and other forestry workers not elsewhere classified.
64	**Fishermen, hunters and related workers.**
MAJOR GROUP 7/8/9: PRODUCTION AND RELATED WORKERS, TRANSPORT EQUIPMENT OPERATORS AND LABOURERES NOT ELSEWHERE CLASSIFIED	
70	**General foreman and production supervisors.**
71	**Miners, Quarrymen, well drillers** including mineral and stone treaters, well borers and related workers.
72	**Metal processors**, Including melters and reheaters, casters, moulders and coremakers. Annealers, platers and coaters.
73	**Wood preparation and workers and paper makers.** Wood treaters, sawyers, makers and related wood processing and related workers, paper pulp prepares and paper makers related workers.
74	**Chemical processors and related workers.** Crushers, grinders, mixers, heat treaters, filter and separator operators, still operators, chemical processors and related workers not elsewhere classified.
75	**Spinners, weavers, dyers, fibre preparers.** Spinners, Weaving and Knitting, Machine setters and operators bleachers dyers and textile product finishers; related workers not elsewhere classified.
76	**Tanners, skin preparers and pelt dressers.**
77	**Food and beverage processors.** Grain millers, sugar processors and refiners, butchers and daily product processors, bakers tea and coffee prepares, brewers, beverages makers and other food and beverage processors.
78	**Tobacco preparers and product makers.** Tobacco preparers, cigarette makers and tobacco preparers and tobacco product workers not elsewhere classified.
79	**Tailors, dressmakers, sewers, upholsters.** Tailors dressmakers for tailors, hat makers, cutters, sewers, upholsters and related workers not elsewhere classified.
80	**Shoemakers and leather goods makers.** Shoemaker repairers, shoe cutters, lasters, sewers and related workers; leather goods makers.
81	**Cabinet makers and related wood workers.** Cabinet makers, wood-working machine operators not elsewhere classified.
82	**Stone cutters and carvers.**
83	**Blacksmith, toolmakers & machine tool operators.** Blacksmith, operators, forge-press operators, toolmakers, machine tool setters & operators, metal grinders, polishers, sharpeners.
84	**Machinery fitters, machine assemblers.** Machinery fitters and assemblers, clock makers, motor and precision instrument makers, vehicle machine and aircraft engine mechanics (except electrical)
85	**Electrical fitters and related electrical workers.** Electrical fitters wiremen and linesmen, electrical and electronics workers, electronic equipment assemblers, radio repairmen telephone and telegram installers and related workers not elsewhere classified.
86	**Broadcasting station operators and cinema projectionists.**
87	**Plumbers, welders, sheet metal workers.** Plumbers and pipe fitters, and frame cutters, sheet structural metal prepares, metal workers, structural metal prepares and erectors.

88	**Jewellery and precious metal workers.**
89	**Potters, glass formers and related workers.** Potters, glass formers and cutters ceramic kinsmen, grass engravers ceramic and glass painters and decorators and related workers not elsewhere classified
90	**Rubber and plastic product makers.** Rubber and plastic product makers not elsewhere classified (not footwear), tyre makers, vulcanisers and retreaders.
91	**Paper and paper-board product makers.**
92	**Printers and related workers.** Compositors, typesetters, printing pressmen, printing and photo engravers book binders, photographic darkroom operators and related workers not elsewhere classified.
93	**Painters.** House painters and the like (not artists).
94	**Production and related workers.** Musical instrument makers and tuners, basketry weavers not elsewhere classified and brush makers, other production related workers.
95	**Bricklayers, carpenters and other bricklayers**. stonemasons, tile setters, reinforced construction workers concetors, roof**e**rs, carpenters and joiners, plaster, glaziers and construction workers not elsewhere classified. (Not ganyu labourers - ganyu work covered in separate questions.)
96	**Operators of stationery engines and power generating machines.** Operators and operators of related equipment other stationery engines (i.e. not vehicles tractors etc) and related equipment not elsewhere classified.
97	**Material handling and related equipment operators.** Dockers and handlers, riggers, crane and hoist operators, Dockers and freight handlers/operators, earth moving and related machinery operators and material-handling equipment operators not elsewhere classified.
98	**Transport equipment operators.** Vehicles drivers, railway engine drivers and firemen, ships rating crew, railway breakmen shunters, signalmen and transport equipment operators not elsewhere classified.
99	**Labourers not elsewhere classified.** Workers not reporting occupation, or occupation not adequately describe or not classified. (Not ganyu labourers-ganyu work covered in separate questions.)

INDUSTRY CODES

AGRICULTURE, HUNTING, FORESTRY & FISHING	
01	Growing of non-perennial crops (cereals, rice, vegetables, sugar cane, tobacco) Growing of perennial crops (grapes, citrus fruits, other fruits, beverage crops, spices) Plant propagation Animal Production (cattle, horses, camels, sheep, goats, swine/pigs, poultry) Mixed farming Support activities to agriculture & post-harvest crop activities (activities for crop production & animal production, seed processing for propagation).
02	Forestry and logging (silviculture, gathering of non-wood forest products)
03	Fishing and aquaculture (marine and freshwater fishing and aquaculture)
MINING AND QUARRYING	
05	Mining of coal and lignite
06	Extraction of crude petroleum and natural gas
07	Mining of metal ores (iron, non-ferrous metal ores, uranium, thorium)
08	Other mining and quarrying (stone, sand, clay, chemical and fertilizer minerals, extraction of peat, salt)
09	Mining support service activities (for petroleum, natural gas extraction, other mining and quarrying support activities)

MANUFACTURING	
10	Processing and preserving of meat Processing and preserving of fish, crustaceans and molluscs Processing and preserving of fruit and vegetables Manufacture of vegetable and animal oils and fats Manufacture of dairy products Manufacture of grain mill products, starches and starch products Manufacture of grain mill products Manufacture of bakery products Manufacture of sugar Manufacture of cocoa, chocolate and sugar confectionery Manufacture of macaroni, noodles, couscous and similar farinaceous products Manufacture of prepared meals and dishes Manufacture of other food products n.e.c. Manufacture of prepared animal feeds
11	Distilling, rectifying and blending of spirits Manufacture of wines Manufacture of malt liquors and malt Manufacture of soft drinks; production of mineral waters and other bottled waters
12	Manufacture of tobacco products
13	Preparation and spinning of textile fibres Weaving of textiles Finishing of textiles Manufacture of knitted and crocheted fabrics Manufacture of made-up textile articles, except apparel Manufacture of carpets and rugs Manufacture of cordage, rope, twine and netting Manufacture of other textiles n.e.c.

MANUFACTURING (CONT'D)	
14	Manufacture of wearing apparel, except fur apparel Manufacture of articles of fur Manufacture of knitted and crocheted apparel
15	Tanning and dressing of leather; dressing and dyeing of fur Manufacture of luggage, handbags and the like, saddlery and harness Manufacture of footwear
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
17	Manufacture of paper and paper products
18	Printing Service activities related to printing Reproduction of recorded media
19	Manufacture of coke and refined petroleum products
20	Manufacture of basic chemicals, fertilizers and nitrogen compounds, plastics and synthetic rubber in primary forms, Manufacture of other chemical products (pesticides, paints, varnishes, printing ink, soap and detergents, man-made fibres
21	Manufacture of pharmaceuticals, medicinal chemical and botanical products
22	Manufacture of rubber and plastics products
23	Manufacture of glass and glass products, Manufacture of refractory products Manufacture of clay building materials Manufacture of other porcelain and ceramic products Manufacture of cement, lime and plaster Manufacture of articles of concrete, cement and plaster Cutting, shaping and finishing of stone
24	Manufacture of basic iron and steel Manufacture of basic precious and other non-ferrous metals Casting of iron and steel Casting of non-ferrous metals
25	Manufacture of fabricated metal products, metalworking service activities
26	Manufacture of electronic components and boards

	Manufacture of computers and peripheral equipment Manufacture of communication equipment Manufacture of consumer electronics Manufacture of measuring, testing, navigating and control equipment Manufacture of watches and clocks Manufacture of optical instruments and photographic equipment Manufacture of magnetic and optical media
27	Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus Manufacture of batteries and accumulators Manufacture of fibre optic cables Manufacture of other electronic and electric wires and cables Manufacture of wiring devices Manufacture of electric lighting equipment Manufacture of domestic appliances Manufacture of other electrical equipment
28	Manufacture of engines and turbines, except aircraft, vehicle and cycle engines Manufacture of fluid power equipment Manufacture of other pumps, compressors, taps and valves Manufacture of bearings, gears, gearing and driving elements Manufacture of ovens, furnaces and furnace burners Manufacture of lifting and handling equipment Manufacture of office machinery and equipment (except computers and peripheral equipment) Manufacture of power-driven hand tools Manufacture of other general-purpose machinery Manufacture of agricultural and forestry machinery Manufacture of metal-forming machinery and machine tools Manufacture of machinery for metallurgy Manufacture of machinery for mining, quarrying and construction Manufacture of machinery for food, beverage and tobacco processing Manufacture of machinery for textile, apparel and leather production Manufacture of other special-purpose machinery
29	Manufacture of motor vehicles Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers Manufacture of parts and accessories for motor vehicles
30	Building of ships and floating structures Building of pleasure and sporting boats Manufacture of air and spacecraft and related machinery Manufacture of military fighting vehicles Manufacture of motorcycles Manufacture of bicycles and invalid carriages Manufacture of other transport equipment n.e.c.
31	Manufacture of furniture
32	Manufacture of jewellery and related articles Manufacture of imitation jewellery and related articles Manufacture of musical instruments Manufacture of sports goods Manufacture of games and toys Manufacture of medical and dental instruments and supplies
33	Repair of fabricated metal products Repair of machinery Repair of electronic and optical equipment Repair of electrical equipment Repair of transport equipment, except motor vehicles Repair of other equipment Installation of industrial machinery and equipment
ELECTRICITY, GAS AND WATER	
35	Electricity, gas, steam and air conditioning supply
36	Water collection, treatment and supply
37	Sewerage
38	Waste collection, treatment and disposal activities; materials recovery

39	Remediation activities and other waste management services
CONSTRUCTION	
41	Construction of buildings
42	Civil engineering
43	Specialized construction activities (Demolition, Site preparation, Electrical, plumbing and other construction installation activities)

WHOLESALE AND RETAIL TRADE AND REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	
45	Wholesale and retail trade and repair of motor vehicles and motorcycles
46	Wholesale on a fee or contract basis Wholesale of agricultural raw materials and live animals Wholesale of food, beverages and tobacco Wholesale of household goods Wholesale of machinery, equipment and supplies Wholesale of solid, liquid and gaseous fuels and related products Wholesale of metals and metal ores Wholesale of construction materials, hardware, plumbing and heating equipment and supplies Wholesale of waste and scrap and other products n.e.c.
47	Retail trade, except of motor vehicles and motorcycles
TRANSPORTATION AND STORAGE	
49	Land transport and transport via pipelines
50	Water transport
51	Air transport
52	Warehousing, storage and support activities for transportation
53	Postal and courier activities
ACCOMMODATION AND FOOD SERVICE ACTIVITIES	
55	Accommodation
56	Food and beverage service activities
INFORMATION AND COMMUNICATION	
58	Publishing activities
59	Motion picture, video and television programme production, sound recording and music publishing activities
60	Programming and broadcasting activities
61	Telecommunications
62	Computer programming, consultancy and related activities
63	Information service activities
FINANCIAL AND INSURANCE ACTIVITIES	
64	Financial service activities, except insurance and pension funding
65	Insurance, reinsurance and pension funding, except compulsory social security
66	Activities auxiliary to financial service and insurance activities
REAL ESTATE ACTIVITIES	
68	Real estate activities with own or leased property Real estate activities on a fee or contract basis
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	
69	Legal and accounting activities
70	Activities of head offices; management consultancy activities
71	Architectural and engineering activities; technical testing and analysis
72	Scientific research and development

73	Advertising and market research
74	Other professional, scientific and technical activities
75	Veterinary activities
ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	
77	Rental and leasing activities
78	Employment activities
79	Travel agency, tour operator, reservation service and related activities
80	Security and investigation activities
81	Services to buildings and landscape activities
82	Office administrative, office support and other business support activities
PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECURITY	
84	Administration of the State and the economic and social policy of the community Provision of services to the community as a whole
EDUCATION	
85	Pre-primary and primary education Secondary education Higher education Other education (Sports and recreation education, Cultural education) Educational support activities
HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	
86	Human health activities
87	Residential care activities
88	Social work activities without accommodation
ARTS, ENTERTAINMENT AND RECREATION	
90	Creative, arts and entertainment activities
91	Libraries, archives, museums and other cultural activities
92	Gambling and betting activities
93	Sports activities and amusement and recreation activities
OTHER SERVICE ACTIVITIES	
94	Activities of membership organizations
95	Repair of computers and personal and household goods
96	Other personal service activities (Washing and (dry-) cleaning of textile and fur products, Hairdressing and other beauty treatment, Funeral and related activities)
ACTIVITIES OF HOUSEHOLDS AS EMPLOYERS; UNDIFFERENTIATED GOODS- AND SERVICES-PRODUCING ACTIVITIES OF HOUSEHOLDS FOR OWN USE	
97	Activities of households as employers of domestic personnel
98	Undifferentiated goods- and services-producing activities of private households for own use
ACTIVITIES OF EXTRATERRITORIAL ORGANIZATIONS AND BODIES	
99	Activities of extraterritorial organizations and bodies
00	ACTIVITIES NOT ADEQUATELY DEFINED

COMMUNITY, SOCIAL & PERSONNEL SERVICES	
91	Public administration and defence
92	Sanitary and similar services
93	Educational, commercial and driving schools Private schools Government schools Research and scientific institutes Medical, dental and other services Animal care centres Non-governmental organisations Agricultural cooperatives Welfare institutions Business professional and labour associates

	Religious organisations Political organisations
94	Motion picture distribution and projection Radio broadcasting Concert artists Libraries and museums Amusement and recreational services including clubs
95	Electrical repair shops Repairs of motor vehicles, and motor cycles Watch, clock repairs Bicycles, type writer, camera etc. repairs Laundries Barber and beauty Photographic studios Security services Funeral services
96	Private households with employed persons
00	ACTIVITIES NOT ADEQUATELY DEFINED

Food-Unit Combinations Covered for IHS4 Non-Standard Units

em Name [Module G]	*Item Code [Module G]*	*Unit in Photo Aid*	*Size*	*Unit Code in Module G*
Cereals, Grains & Cereal Products:				
Maize ufa mgaiwa (normal flour)	101	PAIL	SMALL	4A
	101	PAIL	MEDIUM	4B
	101	PAIL	LARGE	4C
	101	No. 10 PLATE		6
	101	No. 12 PLATE		7
	101	TINA LARGE		23F
Maize ufa refined (fine flour)	102	PAIL	SMALL	4A
	102	PAIL	MEDIUM	4B
	102	PAIL	LARGE	4C
	102	No. 10 PLATE		6
	102	No. 12 PLATE		7
	102	TINA LARGE		23F
Maize ufa madeya (bran flour)	103	PAIL	SMALL	4A
	103	PAIL	MEDIUM	4B
	103	PAIL	LARGE	4C
	103	No. 10 PLATE		6
	103	No.12 PLATE		7
	103	TINA LARGE		23F
Maize grain (not as ufa)	104	PAIL	SMALL	4A
	104	PAIL	MEDIUM	4B
	104	PAIL	LARGE	4C
	104	No. 10 PLATE		6
	104	No. 12 PLATE		7
	105	5 LITRE BUCKET (Chigoba)		4D
	105	BASIN	SMALL	4E
Green maize	105	PIECE	SMALL	9A
	105	PIECE	MEDIUM	9B
	105	PIECE	LARGE	9C

Item Name [Module G]	*Item Code [Module G]*	*Unit in Photo Aid*	*Size*	*Unit Code in Module G*
Vegetables:				
Onion	401	PIECE	SMALL	9A
	401	PIECE	MEDIUM	9B
	401	PIECE	LARGE	9C
	401	HEAP	SMALL	10A
	401	HEAP	MEDIUM	10B
	401	HEAP	LARGE	10C
Cabbage	402	PIECE	SMALL	9A
	402	PIECE	MEDIUM	9B
	402	PIECE	LARGE	9C
Tanaposi/Rape	403	HEAP	SMALL	10A
	403	HEAP	MEDIUM	10B
	403	HEAP	LARGE	10C
Vegetables (Continued):				
Nkhwani	404	HEAP	SMALL	10A
	404	HEAP	MEDIUM	10B
	404	HEAP	LARGE	10C
Chinese cabbage	405	HEAP	SMALL	10A
	405	HEAP	MEDIUM	10B
	405	HEAP	LARGE	10C
Other cultivated green leafy vegetables	406	HEAP	SMALL	10A
	406	HEAP	MEDIUM	10B
	406	HEAP	LARGE	10C
Gathered wild green leaves	407	HEAP	SMALL	10A
	407	HEAP	MEDIUM	10B
	407	HEAP	LARGE	10C
Tomato	408	PIECE	SMALL	9A
	408	PIECE	MEDIUM	9B
	408	PIECE	LARGE	9C
	408	HEAP	SMALL	10A
	408	HEAP	MEDIUM	10B
	408	HEAP	LARGE	10C

Standard units like KGs, GRAMs and/or Litres are acceptable appropriate items e.g. 101 to 105

Item Name [Module G]	*Item Code [Module G]*	*Unit in Photo Aid*	*Size*	*Unit Code in Module G*
Rice	106	PAIL	SMALL	4A
	106	PAIL	LARGE	4C

Item Name [Module G]	*Item Code [Module G]*	*Unit in Photo Aid*	*Size*	*Unit Code in Module G*
Cucumber	409	PIECE		9

	106	No. 10 PLATE		6
	106	No. 12 PLATE		7
	106	5 LITRE BUCKET (Chigoba)		4D
	106	TINA LARGE		23F
Finger millet (mawere)	107	No. 10 PLATE		6
	107	No. 12 PLATE		7
	107	BASIN	SMALL	4E
	107	TINA LARGE		23F
Sorghum (mapira)	108	PAIL	SMALL	4A
	108	PAIL	LARGE	4C
	108	No. 10 PLATE		6
	108	No. 12 PLATE		7
	108	TINA LARGE		23F
	108	BASIN	SMALL	4E
	108	5 LITRE BUCKET (Chigoba)		4D
Pearl millet (mchewere)	109	PAIL	SMALL	4A
	109	PAIL	LARGE	4C
	109	BASIN	SMALL	4E
	109	TINA LARGE		23F
Bread	111	LOAF (300G)		
	111	LOAF (600G)		25A
	111	LOAF (700G)		25B
	111	PIECE		9
Buns, scones	112	PIECE		9
Biscuits	113	PACKET (150 GRAMS)		26B
Spaghetti, macaroni, pasta	114	PACKET 250G		26C
	114	PACKET 400G		26D
	114	PACKET 500G		26E
	114	PACKET 1KG		26F

KGs, GRAMs and/or Litres are acceptable for appropriate items e.g 106 to 114, 504 to 509, 803

Item Name [Module G]	*Item Code [Module G]*	*Unit in Photo Aid*	*Size*	*Unit Code in Module G*
Roots,Tuber & Plantains:				
Cassava tubers	201	PAIL	SMALL	4A
	201	PAIL	LARGE	4C
	201	PIECE	SMALL	9A
	201	PIECE	MEDIUM	9B
	201	PIECE	LARGE	9C
Cassava flour	202	PAIL	SMALL	4A
	409	HEAP	SMALL	10A
	409	HEAP	MEDIUM	10B
	409	HEAP	LARGE	10C
Pumpkin	410	PIECE	SMALL	9A
	410	PIECE	MEDIUM	9B
	410	PIECE	LARGE	9C
Okra / Therere	411	HEAP	SMALL	10A
	411	HEAP	MEDIUM	10B
	411	HEAP	LARGE	10C
Mushroom	413	HEAP		10
Meat, Fish, and Animal Products				
Eggs	501	PIECE		9
Sun-Dried fish (Large Variety)	502	PIECE	SMALL	9A
	502	PIECE	MEDIUM	9B
	502	PIECE	LARGE	9C
Sun-Dried fish (Medium Variety)	502	PIECE	SMALL	9G
	502	PIECE	MEDIUM	9H
	502	PIECE	LARGE	9I
	502	HEAP	SMALL	10G
	502	HEAP	MEDIUM	10H
	502	HEAP	LARGE	10I
Sun-Dried fish (Small Variety)	502	HEAP	SMALL	10D
	502	HEAP	MEDIUM	10E
	502	HEAP	LARGE	10F

Item Name [Module G]	*Item Code [Module G]*	*Unit in Photo Aid*	*Size*	*Unit Code in Module G*
Fresh fish (Large Variety)	503	PIECE	SMALL	9A
	503	PIECE	MEDIUM	9B
	503	PIECE	LARGE	9C
Fresh fish (Medium Variety)	503	HEAP	SMALL	10G
	503	HEAP	MEDIUM	10H
	503	HEAP	LARGE	10I
	503	PIECE	SMALL	9G

	202	PAIL	MEDIUM	4B
	202	PAIL	LARGE	4C
	202	No. 10 PLATE		6
	202	No. 12 PLATE		7
	202	TINA LARGE		23F
White sweet potato	203	PIECE	SMALL	9A
	203	PIECE	MEDIUM	9B
	203	PIECE	LARGE	9C
	203	HEAP	SMALL	10A
	203	HEAP	MEDIUM	10B
	203	HEAP	LARGE	10C
Orange sweet potato	204	PIECE	SMALL	9A
	204	PIECE	MEDIUM	9B
	204	PIECE	LARGE	9C
	204	HEAP	SMALL	10A
	204	HEAP	MEDIUM	10B
	204	HEAP	LARGE	10C
Irish potato	205	PAIL	SMALL	4A
	205	PAIL	MEDIUM	4B
	205	PAIL	LARGE	4C
	205	HEAP	SMALL	10A
	205	HEAP	MEDIUM	10B
	205	HEAP	LARGE	10C
	205	5 LITRE BUCKET (Chigoba)		4D

Item Name [Module G]	*Item Code [Module G]*	*Unit in Photo Aid*	*Size*	*Unit Code in Module G*
Potato crisps	206	PACKET	25G	26A
	206	SATCHET/TUBE	25g	27A
	206	SATCHET/TUBE	50g	27B
	206	SATCHET/TUBE	100g	27C
Plantain, cooking banana	207	BUNCH	SMALL	8A
	207	BUNCH	MEDIUM	8B
	207	BUNCH	LARGE	8C
	207	PIECE		9
	207	CLUSTER	SMALL	8D
	207	CLUSTER	MEDIUM	8E
	207	CLUSTER	LARGE	8F
Cocoyam (masimbi)	208	PIECE		9
	208	HEAP		10
Nuts & Pulses:				

	503	PIECE	MEDIUM	9H
	503	PIECE	LARGE	9I
Fresh fish (Small Variety)	503	HEAP	SMALL	10A
	503	HEAP	MEDIUM	10B
	503	HEAP	LARGE	10C
Beef	504	PIECE		9
Goat	505	PIECE		9
Pork	506	PIECE		9
Mutton	507	PIECE		9
Chicken - Whole	508A	PIECE		9
Chicken - Pieces	508B	PIECE		9
Other poultry - guinea fowl, doves, etc. **	509	PIECE		9
Small animal – rabbit, mice, etc. **	510	PIECE		9
Termites, other insects (eg Ngumbi, caterpillar) **	511	No. 10 PLATE		6
	511	No. 12 PLATE		7
	511	TINA LARGE		23F
	511	HEAP		10
Smoked fish (Large Variety)	502	PIECE	SMALL	9A
	502	PIECE	MEDIUM	9B
	502	PIECE	LARGE	9C
Smoked fish (Medium Variety)	502	PIECE	SMALL	9G
	502	PIECE	MEDIUM	9H
	502	PIECE	LARGE	9I
	502	HEAP	SMALL	10G

Item Name [Module G]	*Item Code [Module G]*	*Unit in Photo Aid*	*Size*	*Unit Code in Module G*
	502	HEAP	MEDIUM	10H
Smoked fish (Medium Variety)	502	HEAP	LARGE	10I
Smoked fish (Small Variety)	502	HEAP	SMALL	10D
	502	HEAP	MEDIUM	10E
	502	HEAP	LARGE	10F
Fruits:				
Mango	601	PAIL SMALL		4
	601	PAIL LARGE		5
	601	PIECE	SMALL	9A

Bean, white	301	PAIL	SMALL	4A
	301	No. 10 PLATE	FLAT	6A
	301	No. 10 PLATE	HEAPED	6B
	301	No. 12 PLATE	FLAT	7A
	301	No. 12 PLATE	HEAPED	7B
	301	TINA LARGE	FLAT	23C
	301	TINA LARGE	HEAPED	23D
	301	BASIN	SMALL	4E
	301	HEAP		10
Bean, brown	302	PAIL SMALL		4A
	302	No. 10 PLATE	FLAT	6A
	302	No. 10 PLATE	HEAPED	6B
	302	No. 12 PLATE	FLAT	7A
	302	No. 12 PLATE	HEAPED	7B
	302	TINA LARGE	FLAT	23C
	302	TINA LARGE	HEAPED	23D
	302	BASIN	SMALL	4E
	302	HEAP		10

	601	PIECE	MEDIUM	9B
	601	PIECE	LARGE	9C
	601	HEAP		10
Banana	602	CLUSTER	SMALL	28A
	602	CLUSTER	MEDIUM	28B
	602	CLUSTER	LARGE	28C
	602	PIECE	SMALL	9A
	602	PIECE	MEDIUM	9B
	602	PIECE	LARGE	9C
Citrus – naartje, orange, etc. **	603	PIECE		9
Pineapple	604	PIECE		9
Papaya	605	PIECE		9
Guava	606	PIECE	SMALL	9A
	606	PIECE	MEDIUM	9B
	606	PIECE	LARGE	9C
Avocado	607	PIECE		9

Item Name [Module G]	*Item Code [Module G]*	*Unit in Photo Aid*	*Size*	*Unit Code in Module G*
Pigeonpea (nandolo)	303	PAIL SMALL		4A
	303	No. 10 PLATE	FLAT	6A
	303	No. 10 PLATE	HEAPED	6B
	303	No. 12 PLATE	FLAT	7A
	303	No. 12 PLATE	HEAPED	7B
	303	TINA LARGE	FLAT	23C
	303	TINA LARGE	HEAPED	23D
	303	BASIN	SMALL	4E
	303	HEAP		10
Groundnut (Shelled)	304A	PAIL SMALL		4A
	304A	No. 10 PLATE	FLAT	6A
	304A	No. 10 PLATE	HEAPED	6B
	304A	No. 12 PLATE	FLAT	7A
	304A	No. 12 PLATE	HEAPED	7B
	304A	TINA LARGE	FLAT	23C
	304A	HEAP		10
	304B	PAIL SMALL		4A

Item Name [Module G]	*Item Code [Module G]*	*Unit in Photo Aid*	*Size*	*Unit Code in Module G*
Wild fruit (masau, malambe, etc.)**	608	No. 10 PLATE		6
	608	No. 12 PLATE		7
	608	TINA LARGE		23F
	608	PIECE		9
	608	HEAP		10
Apple	609	PIECE		9
Milk and Milk Products				
Powdered milk	702	SATCHET/TUBE		22
	702	TABLE SPOON		20B
Margarine - Blue band	703	PIECE		9
	703	SATCHET/TUBE		22
Chambiko - soured milk	705	SATCHET/TUBE		22
Yoghurt	706	PACKET		26
Cheese	707	PIECE		9
Sugar, Fats & Oil:				
Sugar	801	No. 10 PLATE		6

Groundnut - Dried (UnShelled)	304B	No. 10 PLATE	HEAPED	6B
	304B	No. 12 PLATE	HEAPED	7B
	304B	TINA LARGE	HEAPED	23D
	304B	BASIN -SMALL		4E
	304B	BASIN - MEDIUM		4F
	304B	HEAP		10
Groundnut - Fresh (UnShelled)	304C	PAIL SMALL		4A
	304C	PAIL LARGE		4C
	304C	No. 10 PLATE	HEAPED	6B
	304C	No. 12 PLATE	HEAPED	7B
	304C	TINA LARGE	HEAPED	23D
	304C	HEAP		10
	304C	BASIN -SMALL		4E
	304C	BASIN - MEDIUM		4F

Item Name [Module G]	*Item Code [Module G]*	*Unit in Photo Aid*	*Size*	*Unit Code in Module G*
Groundnut flour	305	No. 10 PLATE	FLAT	6A
	305	No. 10 PLATE	HEAPED	6B
	305	No. 12 PLATE	FLAT	7A
	305	No. 12 PLATE	HEAPED	7B
	305	TINA SMALL	FLAT	23A
	305	TINA SMALL	HEAPED	23B
	305	TINA LARGE	FLAT	23C
	305	TINA LARGE	HEAPED	23D
Soybean flour	306	PAIL SMALL		4A
	306	No. 10 PLATE		6
	306	No. 12 PLATE		7
	306	TINA LARGE	FLAT	23C
	306	TINA LARGE	HEAPED	23D
	306	BASIN	LARGE	4G
Ground bean (nzama)	307	No. 10 PLATE	FLAT	6A
	307	No. 10 PLATE	HEAPED	6B
	307	No. 12 PLATE	FLAT	7A
	307	No. 12 PLATE	HEAPED	7B
	307	TINA LARGE	HEAPED	23D

	801	PACKET		26
	801	TEASPOON		20
	801	SATCHET/TUBE		22
Sugar Cane	802	PIECE		9
Cooking Oil	803	SATCHET/TUBE	SMALL	22A
	803	SATCHET/TUBE	MEDIUM	22B
	803	SATCHET/TUBE	LARGE	22C
Spices & Miscellaneous:				
Salt	810	No. 10 PLATE	FLAT	6A
	810	No. 10 PLATE	HEAPED	6B
	810	No. 12 PLATE		7
	810	TINA LARGE		23F
	810	HEAP		10
	810	TABLESPOON		20B
Spices	811	TEASPOON		20A
Yeast, baking powder, bicarbonate of soda	812	TEASPOON		20A

Item Name [Module G]	*Item Code [Module G]*	*Unit in Photo Aid*	*Size*	*Unit Code in Module G*
Cooked Foods from Vendors:				
Maize - boiled or roasted (vendor)	820	PIECE		9
Chips (vendor)	821	No. 10 PLATE		6
	821	No. 12 PLATE		7
Cassava - boiled (vendor)	822	PIECE		9
Cassava - Roasted (vendor)		PIECE		9
Eggs - boiled (vendor)	823	PIECE		9
Chicken (vendor)	824	PIECE		9
Meat (vendor)	825	PIECE		9
Fish (vendor)	826	PIECE		9
Mandazi, doughnut (vendor)	827	PIECE		9
Samosa (vendor)	828	PIECE		9
Boiled sweet potatoes	829	PIECE		9
Roasted sweet potatoes	830	PIECE		9
Boiled groundnuts	831	No. 10 PLATE		6
	831	No. 12 PLATE		7
	831	TINA SMALL		23E
	831	TINA LARGE		23F

Cowpea (khobwe)	308	No. 12 PLATE	FLAT	7A
	308	No. 12 PLATE	HEAPED	7B
	308	TINA LARGE	FLAT	23C
	308	TINA LARGE	HEAPED	23D
	308	BASIN	SMALL	4E
	308	HEAP		10
Macademia nuts	309	PACKET SMALL		26G
	309	PACKET LARGE		26I

Roasted groundnuts	832	TABLESPOON	20B
	832	TEASPOON	20A
Popcorn	833	PACKET	26
Zikondamoyo / Nkate	834	PIECE	9
KALONGONDA (Mucuna)	835	No. 10 PLATE	6
	835	No. 12 PLATE	7