LIBERIA INSTITUTE OF STATISTICS AND GEO-INFORMATION SERVICES

HOUSEHOLD INCOME AND EXPENDITURE SURVEY (HIES 2014/2015)

BASIC INFORMATION DOCUMENT

December 2015

ACRONYMS

AfDB	African Development Bank
CV	Coefficient of Variation
CWIQ	Core Welfare Indicator Questionnaire
EA	Enumeration Area
EU	European Union
GoL	Government of Liberia
GIS	Geographic Information System
GPS	Global Positioning System
HIES	Household Income and Expenditure Survey
LISGIS	Liberia Institute of Statistics and Geo-Information Services
NGO	Non-governmental Organization
PSU	Primary Statistical Unit
SIDA	Swedish International Development Agency
UNMIL	United Nations Mission in Liberia
USAID	United States Agency for International Development
WB	World Bank

Table of Contents

INTRODUCTION

The purpose of this document is to provide detailed information on the 2014/2015 Liberia Household Income and Expenditure Survey (HIES). This survey was done as part of a multi-year program that includes the design and implementation of the household survey focusing on income and expenditures that will be used to update the Consumer Price Index (CPI) consumption basket and weights, to analyze poverty and to update the household expenditure component of the National Accounts of Liberia. The project was implemented by the Liberia Institute of Statistics and Geo-Information Services (LISGIS), with support from the Government of Liberia (GoL), the World Bank (WB), the European Union (EU), the Swedish International Development Corporation Agency (Sida), the United States Agency for International Development (USAID) and the African Development Bank (AfDB).

Data collection activity began in January 2014 and was expected to continue for twelve months. However, due to the Ebola virus outbreak, the survey had to be halted after the first six months of planned data collection was complete.

CHARACTERISTICS OF THE SURVEY

The field work for the HIES was designed to be implemented throughout a twelve month period in order to reflect seasonality in expenditures and income throughout a full calendar year. The household questionnaire has twenty-one thematic sections, described in Table 1

Table 1: Household Questionnaire

Section	Name	Level of Observation	Description
A-1	Household Identification	Household	Cover page, identification information on location of the household
A-2	Survey Staff Details	Household	Details on survey staff including who implemented the questionnaire and supervised the work, and completed data entry, date and time of interview, and observation notes by enumerator regarding the interview
B	Household Member Roster	Individual	Socio-demographic characteristics of household members (gender, age, relationship with household head, etc.)
C	Education	Individual	Highest education level achieved for those no longer attending school, and the enrollment status and education level of those still attending school, and education expenditures
D	Health	Individual	Recent use of health services, use of mosquito nets, reproductive health for women 12 to 49 years of age, incidence of diarrhea for children under 5 years of age, and health expenditures

E	Labour	Individual	Employment status, economic activity, occupation, and earnings
F	Food Outside the Household	Individual	Expenditures on meals, snacks and drinks consumed outside of the household
G	Subjective Welfare	Individual	Respondents' opinions of their welfare situation, for those respondents 15 years and above
H	Non-Farm Enterprises	Household	Non-agricultural income generating enterprises which produce goods or services operated by the household
I	Food Security	Household	Assesses the household's ability to provide sufficient food for its members during the past seven days, and what was done to alleviate any problems
J	Housing, Water & Sanitation	Household	Information about the dwelling and its access to water, electricity, fuel and expenditures on services
K	Food Consumption	Household	Household's consumption of food within the household during the last seven days and the amount spent on the food that was consumed
L1	Non-Food Expenditures (past 7 days, past 30 days)	Household	Non-food items that are purchased on a regular basis and the expenditures on those items
L2	Non-Food Expenditures (past 12 months)	Household	Non-food items that are purchased infrequently and the expenditures on those items
M	Household Assets	Household	Assets owned by the household and their values
N	Assistance, Groups and Other Sources of Income	Household	Assistance in the form of cash or in-kind that has been received in the past 12 months
O	Credit	Household	Funds borrowed from someone outside of the household or from an institution in the form of cash goods or services
P	Cash and Gift Transfers	Household	Cash or goods received from other households and cash or goods sent to other households (nationally and internationally)
Q	Shocks	Household	Shocks that may have been felt by the household and how that shock affected income and/or assets
R	Crop Production and Sales	Household	Production and sales of agricultural crops during the last twelve months
S	Livestock and Aquatic Sales and Purchases	Household	Production and sales of livestock and aquatic animals over the past 12 months
T	Household Re-contact Information	Household	GPS location of the dwelling and how to re-contact the household in the future if needed

In addition to the household questionnaire, there is also a Community Price Questionnaire described in Table 2. The purpose of the Community Price Questionnaire is to collect prices of the food items that are included in Section K of the household questionnaire that households would find in the market. It was intended to be implemented in each cluster in which the household questionnaire was implemented. Price information is used during the analyses to adjust for differences in prices in different parts of the country and at different times of the year. In addition, the Community Price Questionnaire collects information on non-standard units, commonly used in Liberia. This information is used to convert non-standard units of consumption reported by households to standard units. The Community Price Questionnaire enabled for three different price points and related quantities and units to be captured, from each of up to three vendors.

Table 2

Section Name	Level of Observation	Description
Community Identification	Community (Market)	Cover page, identification information on location of the community and date of data collection
Market Prices (Vendor 1)	Community (Market)	Price and quantity data from first vendor
Market Prices (Vendor 2)	Community (Market)	Price and quantity data from second vendor
Market Prices (Vendor 3)	Community (Market)	Price and quantity data from third vendor

The questionnaires and survey tools were prepared by LISGIS through a process of extensive consultations with various stakeholders such as line ministries and agencies, donor organizations, and NGOs.

SAMPLING FRAME FOR THE 2014/2015 HIES

The sampling frame for the 2014/2015 HIES is based on the data and cartography from the 2008 Liberia Population and Housing Census. Liberia is divided administratively into 15 counties, with a total household population of 3.4 million (Table 3). This figure excludes the population living in institutions such as hospitals, schools and other public institutions. Each county is divided into districts, which are further subdivided into clans, and eventually into small operational areas, known as Enumeration Areas (EAs). The EAs have an average of 96 households each (103 for urban EAs and 88 for rural EAs). There are a total of 7,012 EAs in the 2008 Liberia Census frame (3,655 urban EAs and 3,357 rural EAs). Localities having a population of less than 2,000 are classified as rural, while those having 2,000 or more are classified as urban areas. However, regardless of population size, localities are classified as urban if they are county capitals or other important towns.

Table 3. Distribution of Total Household-Based Population by County and Urban/Rural Stratum Based on 2008 Liberia Census

County	Total		Urban		Rural
	Population	% Total Population	Population	% Urban Population in country	Population
Bomi	83,033	2.4	14,314	17.2	68,719
Bong	328,668	9.6	127,572	38.8	201,096
Gbarpolu	80,186	2.3	11,950	14.9	68,236
Grand Bassa	217,230	6.3	69,711	32.1	147,519
Grand Cape Mount	125,329	3.7	9,176	7.3	116,153
Grand Gedeh	122,913	3.6	51,120	41.6	71,793
Grand Kru	57,650	1.7	3,073	5.3	54,577
Lofa	273,990	8.0	98,384	35.9	175,606
Margibi	207,146	6.0	102,998	49.7	104,148
Maryland	134,279	3.9	61,323	45.7	72,956
Montserrado	1,105,966	32.3	1,042,682	94.3	63,284
Nimba	454,881	13.3	272,376	59.9	182,505
River Gee	64,330	1.9	19,457	30.2	44,873
Rivercess	69,844	2.0	2,212	3.2	67,632
Sinoe	101,068	2.69	13,229	13.1	87,839
Total	3,426,513	100	1,899,577	100	1,526,936

Stratification of the Sampling Frame for the 2014/2015 HIES

To increase the efficiency of the sample design for the 2014/15 HIES, the sampling frame of EAs is divided into strata that are as homogeneous as possible. The first level of stratification corresponds to the geographic domains of analysis defined for the 2014/15 HIES, which are the counties. The urban and rural areas are also considered domains at the national level. Therefore the sampling frame of EAs was stratified by county, and urban and rural areas. In this case, the urban and rural stratum within each county is treated as a sampling stratum but is not a domain of analysis. Within the urban and rural part of each county, the EAs were further sorted by district, clan and EA codes to ensure that the sample is geographically representative. This provides additional implicit geographic stratification.

Sample Size and Allocation for 2014/2015 HIES

For the HIES, the number of geographic domains of analysis is the main determinant of the sample size and allocation, since a minimum level of precision is needed in each county. First, the results of the Coefficients of Variation (CVs) for the estimates of average annual household consumption from the 2007 CWIQ Survey were examined. It was determined that a minimum sample of 500 households should be selected for each county to ensure that the estimate of the average annual household consumption would have a CV within 10 percent at the county level. For Greater Monrovia, the sample size was increased to 1,000 households given the higher CV and design effect for this domain. At the same time, the resource constraints and considerations for data quality limited the overall sample size to under 8,500 households.

An important aspect of the sample design is to determine the optimum number of sample households to select in each sample EA. This affects both the sampling efficiency as well as the cost of the fieldwork because a lower number of households per Primary Statistical Unit (EA) imply that more sample PSUs need to be enumerated. It is also important to consider the allocation of the sample over the four quarters of the year in order to have a nationally representative subsample of EAs assigned each quarter. This will ensure that the sample represents seasonality and will make it possible to produce quarterly estimates for key indicators.

Taking into consideration all of these factors, a sample of 52 EAs and 520 households were allocated to each county except for Montserrado in which a sample of 100 EAs and 1,000 households was allocated for Greater Monrovia and a proportional sample of 8 EAs and 80 households was assigned to the remainder of Montserrado. In this case Greater Monrovia and the entire county of Montserrado represent overlapping domains, where Greater Monrovia is one of the regional domains and Montserrado is one of the county domains. Therefore the total sample size for the 2014/15 HIES is 8,360 sample households in 836 sample EAs.

The next step is to allocate the sample to the urban and rural strata within each county. Based on the distribution of the frame, an effective determination was to allocate the sample EAs within each county approximately in proportion to the number of sample households. This would provide sampling efficiency for both the national and county level estimates. Although some counties have a small proportion of urban households, the urban and rural estimates will only be tabulated at the national level. It was also practical to ensure that the number of EAs allocated to each stratum is a multiple of 4 in order to define a nationally representative subsample of EAs each quarter across all strata in the sampling frame. This sample allocation will also make it possible to obtain reliable results from the 2014/15 HIES data for the six regions of Liberia, so that they will be directly comparable to the corresponding results from the 2007 CWIQ Survey. The region of Greater Monrovia is treated as a separate stratum within Montserrado County, and the remaining regions are combinations of the county strata.

Table 4 Allocation of Sample EAs and Households for 2014/15 HIES by County and Urban/Rural Stratum

County	Total		Urban		Rural	
	Sample EAs	Sample Households	Sample EAs	Sample Households	Sample EAs	Sample Households
Bomi	52	520	8	80	44	440
Bong	52	520	20	200	32	320
Gbarpolu	52	520	8	80	44	440
Grand Bassa	52	520	16	160	36	360
Grand Cape Mount	52	520	4	40	48	480
Grand Gedeh	52	520	24	240	28	280
Grand Kru	52	520	4	40	48	480
Lofa	52	520	20	200	32	320
Margibi	52	520	24	240	28	280
Maryland	52	520	24	240	28	280
Greater Monrovia	100	1,000	100	1,000	-	-
Montserrado w/o Monrovia	8	80	4	40	4	40
Nimba	52	520	32	320	20	200
River Gee	52	520	16	160	36	360
Rivercess	52	520	4	40	48	480
Sinoe	52	520	8	80	44	440
Total	836	8,360	316	3,160	520	5,200

In order to determine the level of precision that can be expected for the estimate of average annual household consumption by domain based on the proposed sample size and allocation for the 2014/15 HIES, a simulation study was conducted using the data from the 2007 CWIQ Survey to estimate the intra-class correlation coefficients, in order to calculate the approximate design effects based on the 2014/15 HIES sample design. The formula used for a simulation study to estimate the approximate standard errors, CVs and 95 percent confidence intervals for the estimates of the average annual household consumption by county based on the proposed sample design for the 2014/15 HIES reveals that the approximate CVs are within 12 percent for all counties, and are less than 10 percent for most counties. The updated sampling frame for the 2014/15 HIES may result in slightly lower design effects, so the CVS for the survey estimates for some counties may actually be lower than 10-12 percent. Therefore this simulation study validates the proposed sample design for providing reliable county-level results for the 2014/15 HIES.

Similar estimates are expected for the level of precision for the estimates at the national, urban/rural and regional levels (Table 5). The approximate CVs for all regions except for Greater Monrovia are less than 6 percent, given that these regions are combinations of counties. In the case of Greater Monrovia, the expected CV is approximately 12.5 percent, which is a considerable improvement compared to the CV of 15 percent for this domain from the 2007 CWIQ Survey. Given the updated sampling frame based on the 2008 Liberia Census and a higher level of quality control to reduce non-sampling errors, the actual CV for Greater Monrovia from the 2014/15 HIES data may be lower than 12 percent.

Table 5: Regional definitions by County

Region	Counties
North Western	Bomi, Grand Cape Mount, Gbarpolu
South Central	Rural Montserrado (excluding Greater Monrovia), Margibi, Grand Bassa
South Eastern A	River Cess, Sinoe, Grand Gedeh
South Eastern B	Rivergee, Grand Kru, Maryland
North Central	Bong, Nimba, Lofa
Montserrado	Montserrado

Sample selection procedures

The sample selection methodology for the 2014/15 HIES is based on a stratified two-stage sample design. The procedures used for each sampling stage are as follows:

i. First stage

Selection of sample EAs. The sample EAs for the 2014/15 HIES were selected within each stratum systematically with Probability Proportional to Size from the ordered list of EAs in the sampling frame. They are selected separately for each county by urban/rural stratum. The measure of size for each EA was based on the number of households from the sampling frame of EAs based on the 2008 Liberia Census. Within each stratum the EAs were ordered geographically by district, clan and EA codes. This provided implicit geographic stratification of the sampling frame.

Listing of households in sample EAs. A household refers to people who live together and share income and basic needs, or share the same center of production and consumption. This can refer to people who live together in one dwelling, or in multiple dwellings within a compound, who share income and basic resources. A listing of dwellings, and households within each dwelling, was conducted in each sample EA prior to the 2014/15 HIES data collection in order to select the sample households. The supervisor verified the boundaries of the sample EA in order to ensure accurate coverage of the listed households. The number of households listed in each sample EA was compared to the corresponding number from the frame, and any large differences were investigated.

ii. Second stage

Selection of sample households within a sample EA. A random systematic sample of 10 households were selected from the listing for each sample EA. Using this type of table the supervisor only has to look up the total number of households listed, and a specific systematic sample of households is identified in the corresponding row of the table.

Selection of households for replacement. For the 2014/15 HIES there were plans to replace any sample household that could not be interviewed. A strong attempt was made to interview the

original sample households, and any replacement was controlled by the supervisors and the HIES project management team based in LISGIS headquarters. A reserve of random households that was used for possible replacement was selected for each sample EA prior to the survey, at the same time as the selection of the original sample of households.

Distribution of the sample EAs over the 12 months. The HIES was designed to be representative over space and time to account for seasonality in income and consumption. Therefore it is important to have a representative sample of EAs and households at the national level each quarter. The number of sample EAs allocated to each stratum is a multiple of 4 so that it will be possible to assign a nationally representative replicate of sample EAs to each quarter for the data collection. Each sample EA was systematically assigned replicate codes from 1 to 4 in each stratum in the same order in which they were selected. One replicate was randomly assigned to each quarter. Four nationally representative replicates of 209 sample EAs each were defined in an Excel file with the sampling frame information for all 836 sample EAs. Within each quarter, the schedule of EA visits was randomized over the three-month period.

PILOT TEST

The pilot questionnaire was finalized with the following modules:

- A household module with the following sections: Household Member Roster, Education, Health, Employment, Food consumption outside the household, Subjective Welfare, Food Security, Housing/Water/Sanitation, Food Consumption inside the household, Non-food expenditures (past week, past month and past twelve months), Household Assets, Credit, Finance, Other Assistance and Group memberships, and Welfare Shocks.

- A Community Price Questionnaire, which included a pricing sheet with market prices for a comprehensive list of traded products.

Pre-testing Activities for the Pilot

Before launching a major pilot for the HIES, a smaller pre-test activity was conducted. The pre-test was conducted in Monrovia in the 72nd Community one week before the piloting activities. Two households were selected for the pre-test. The household questionnaire was administered to ensure that the skip patterns were consistent, the questions were not too difficult to interpret and translate if the need arose, and that the timeline for conducting the interview was consistent with survey plans.

Listing Activities for the Pilot

The pilot data collection clusters were chosen in such a way that they did not overlap with the EAs selected for the main survey's sample. The selected three localities in the three counties, were: 72nd Community in Montserrado County, Cinta Clan in Margibi County and Klay Community in Bomi County. This activity involved sending two field GIS teams including one

Mapper, one Lister and one Supervisor to each of the selected localities. The teams used a listing form on which they recorded GPS coordinates for all households in the EA, information on name and gender of the head of each household, household codes, and codes for other structures. Using a dry erase marker, the household structure number was put on each dwelling to keep track of the households. These lists were entered in Excel and provided to the HIES team for verification and final household selection. Special instructions were given to the listing teams to not include any non-household structures such as hospitals, schools, commercial properties etc. within the listing activities.

Data Collection Activities for the Pilot

The data collection activities for the pilot took place over twelve days in three localities in the three counties where the listing had been undertaken. In total, sixty households were selected and enumerated in the pilot, this included twenty households from each EA using the listing forms produced by the listing teams. Two teams made up of LISGIS staff were recruited and trained for sixteen days. Each team included eight persons: one Supervisor, four Enumerators, one Data Entry Clerk, one GIS Staff and one Driver. The Project Coordinator, Deputy Project Coordinator, and Resident Advisor served as Field Monitors and were with the field teams throughout the pilot, which occurred in the following time periods:

- Montserrado County – September 23 – 25, 2013
- Margibi County – September 27 – 29, 2013
- Bomi County – October 1 – 3, 2013

The procedures used in the pilot test were the same as those planned for the actual fieldwork. Upon arrival field teams were instructed to make sure that the head of the village/EA was aware of and approved the team's presence. The Supervisor explained to the village leaders that LISGIS was responsible for the survey and explained the purpose of the survey. Once the necessary permissions within the village were obtained the teams went ahead with the household listing, selection and enumeration.

A random selection of twenty households in each EA was made by the HIES Resident Advisor, after which each enumerator was assigned two households to interview within one EA by the Supervisor. The goal was to complete interviews for the two households in each EA within the days assigned for each EA.

Before leaving the EAs, a market price data collection activity was undertaken where the teams went to the market that most residents in the EA visited to purchase daily household items. This market could be in the EA or close to it. The objective of the market price data collection activity was to collect price data for use by the Government of Liberia to determine the level of prices for various products in local markets around the country and for comparison with the responses received by household for non-standard consumption units. Price data would also enable analysis of the differences in local market prices in the regions of the country.

FIELD STAFF RECRUITMENT AND TRAINING ACTIVITIES.

Recruitment Process for the Field Teams

The recruitment process for the HIES involved the participation of LISGIS HIES Technical Committee, LISGIS Management, LISGIS County Offices and the United Nations Mission in Liberia (UNMIL). The recruitment for the HIES was a rigorous and transparent process, involving many stages and types of evaluation, which aimed to narrow down the pool of potential candidates, and select the most qualified for the vacancies of Supervisors, Enumerators, GIS Staff and Data Entry Clerks.

The following staff needed to be recruited in order to complete data collection for the HIES:

- 12 Supervisors
- 12 GIS Staff / Enumerators
- 48 Enumerators
- 12 Field Data Entry Clerks
- 12 Drivers

This would make up 12 teams, each consisting of 1 Supervisor, 5 Enumerators (including 1 GIS Staff), 1 Data Entry Clerk and 1 Driver.

Call for Applications

To begin recruitment, LISGIS published an advertisement calling for applications on three different days over a period two weeks, beginning October 29, 2013, advertisements were published in The Informer newspaper. The advertisement specified that applicants must, at minimum, be high school graduates. Since daily newspapers are not widespread outside of Monrovia, LISGIS County Offices assisted by posting a call for applications on their notice boards in order to attract candidates from outside Monrovia and attempted to obtain a nationally representative pool of applicants. Candidates were instructed to submit their CV and cover letters to LISGIS offices.

LISGIS Headquarters' Personnel processed the applications that were submitted in Monrovia, and LISGIS County Offices did so for applications submitted in other county offices. More than 2,000 applications were received in total, 1,181 came from Montserrado, and approximately 900 from the other 14 counties.

Aptitude Testing

Shortlisted applicants who met the minimum high school graduate requirement were invited to complete an aptitude test, which was designed to test their literacy and numeracy skills, and attention to detail. Approximately 1,900 applicants completed the aptitude test.

The aptitude test was conducted in each LISGIS County Office to ensure that applicants from all over Liberia had a fair chance of completing the test. In Monrovia the test was implemented on November 8, 2013 at LISGIS Headquarters. Due to the number of applicants the test was taken in four shifts throughout the day. LISGIS staff members administered the exam. In the other 14 counties, the tests were administered by UNMIL on November 9, 2013.

In order to minimize any chance of cheating, different versions of tests were drawn up for Monrovia and the other 14 counties.

The aptitude tests were graded by the LISGIS HIES Team over a period of 3 days. The cut off points for the aptitude tests were set taking into consideration that applicants from Monrovia had an advantage of receiving more information on HIES than those in other counties, and also considering that applicants from other counties likely have an advantage of being able to live in more challenging conditions for long periods of time. Bearing these points in mind, the pass mark in Monrovia was set at 72%, while for the other counties the pass mark was 60%.

Interviews

Upon completion of grading the test, a recommended shortlist of candidates was drawn up by the HIES Secretariat and passed on to LISGIS Management for further deliberation. A panel from the HIES Secretariat and LISGIS Management conducted interviews for the shortlisted candidates and selected 187 to continue to classroom training.

Class Room Training and Selection

Two weeks of theoretical training ran from December 9 – 23, 2013. Initially 187 trainees attended the workshop. Regular tests were used throughout the two-week workshop to further eliminate candidates who performed very poorly or misbehaved. In total nine candidates were dropped during the two-week workshop.

At the end of the training two exams were administered which tested candidates ability to understand and complete the questionnaire. An average of the final two exams was taken and used to rank the candidates and recommend a selection of the 113 best performing candidates.

Field-Based Training and Selection

The field-based training made up the final leg of the recruitment process. 113 trainees went into the field from January 5 – 10, 2014 where they had to complete a practical exercise simulating the work they would be conducting during the survey.

During the field based training, 11 facilitators observed and evaluated the trainees' abilities to act as Supervisors, Enumerators, and GIS staff for the survey. Based on these assessments, as well as the questionnaires completed in the field by the candidates, the HIES Team drew up a recommendation of a final pool of candidates to be recruited for the HIES Survey. The recommendation was reviewed by LISGIS Management, and a final listing was published for the selected candidates.

For selection of the field based data entry staff, the CSPro consultant contracted to design the CSPro template for the HIES and the LISGIS Data Processing Director designed a test for data entry on CSPro using one of the field questionnaires from the training. Candidates were evaluated on the number of errors made during data entry and the time taken to complete the data entry. The twelve best candidates recommended by the Data Processing Unit and the CSPro consultant were reviewed by LISGIS Management, and a final listing was published for the selected Data Entry Clerks.

DATA COLLECTION

The total sample size of 836 EAs for the HIES was evenly divided into four quarters, with the intention to enumerate 209 EAs each quarter. In every EA, the team first found a place to stay, and then contacted the village/EA head to explain the purpose of the survey and to seek permission to conduct the interviews. Once the necessary permissions were granted, a listing activity was undertaken. The team identified the boundaries of the EA and then listed every single structure, and every household within each structure, found in the EA. Each structure was marked using a dry erase marker in order to be identifiable for enumeration. Once all households in an EA were listed, a randomized table was used for selecting the ten households to be interviewed. Section A was filled in by the enumerator and contained identification on the household, then Sections B to G were administered to all household members, with the exceptions of those questions that are targeted at specific age groups or gender. From Section H onwards, the most informed member of the household was interviewed about household related matters.

Twelve teams were put in place for the collection of data from 209 EAs in each quarter. Each team included one Supervisor, one GIS Expert, one Data Entry Clerk, four Enumerators and one Driver. The total number of field personnel for the twelve teams was 96.

Each team covered approximately 17-18 EAs. The order of visiting the EAs was randomized for each team in order to minimize any self-selection biases due to locational preferences.

First Quarter

The First Quarter of data collection took place between January and April 2014. As shown in Table 6 and 7 below, the planned sample size was accomplished in all counties except Sinoe.

In cases where households that had been selected for interview were not available, replacement households were selected. Less than 0.8% of the sample for the first quarter is represented by replacements. In the HIES sampling methodology, replacement of up to four households in each EA is allowed in a randomized fashion and only the Project Technical Committee in the head office could determine if a replacement can be used and would provide the number for the new household to be interviewed.

Challenges were encountered in two EAs in Sinoe County (Rural) in the first quarter. In the first case, only 8 households were found in the EA by the field team during demarcation and listing process, while in the second, only ten households were found. While this does not allow for a randomized selection of the ten households in an EA, the sampling methodology dictates that all households found in such cases need to be interviewed.

Table 6. Allocation of Sample EAs and Households for First Quarter Data Collection

County	Total				Urban				Rural			
	Sample EAs		Interviewed Households		Sample EAs		Interviewed Households		Sample EAs		Interviewed Households	
	P	A	P	A	P	A	P	A	P	A	P	A
Bomi	13	13	130	130	2	2	20	20	11	11	110	110
Bong	13	13	130	130	5	5	50	50	8	8	80	80
Gbarpolu	13	13	130	130	2	2	20	20	11	11	110	110
Grand Bassa	13	13	130	130	4	4	40	40	9	9	90	90
Grand Cape Mount	13	13	130	130	1	1	10	10	12	12	120	120
Grand Gedeh	13	13	130	130	6	6	60	60	7	7	70	70
Grand Kru	13	13	130	130	1	1	10	10	12	12	120	120
Lofa	13	13	130	130	5	5	50	50	8	8	80	80
Margibi	13	13	130	130	6	6	60	60	7	7	70	70
Maryland	13	13	130	130	6	6	60	60	7	7	70	70
Greater Monrovia	25	25	250	250	25	25	250	250	-	-	-	-
Montserrado w/o Monrovia	2	2	20	20	1	1	10	10	1	1	10	10
Nimba	13	13	130	130	8	8	80	80	5	5	50	50
River Gee	13	13	130	130	4	4	40	40	9	9	90	90
Rivercess	13	13	130	130	1	1	10	10	12	12	120	120
Sinoe	13	13	130	128	2	2	20	20	11	11	110	108
Liberia	**209**	**209**	**2,090**	**2,088**	**79**	**79**	**790**	**790**	**130**	**130**	**1,300**	**1,298**

P – Planned; A - Actual

Second Quarter

The Second Quarter of data collection took place between June and August 2014. In mid-August the data collection had to be suspended because of the outbreak of Ebola in the country. Teams were not able to enumerate nine EAs in the second quarter, partly due to the Ebola virus outbreak and partly due to logistical challenges. One EA was found to have been abandoned at some point in the past and had no residents. In other cases, EAs were quarantined because of the Ebola outbreak. These EAs were replaced, but the rapid spread of the Ebola outbreak made it impossible to visit some of the EAs. Work was suspended in mid-August.

Table 7. Allocation of Sample EAs and Households for Second Quarter Data Collection

County	Total				Urban				Rural			
	Sample EAs		Sample Households		Sample EAs		Sample Households		Sample EAs		Sample Households	
	P	A	P	A	P	A	P	A	P	A	P	A
Bomi	13	12	130	120	2	2	20	20	11	10	110	100
Bong	13	13	130	130	5	5	50	50	8	8	80	80
Gbarpolu	13	13	130	130	2	2	20	20	11	11	110	110
Grand Bassa	13	13	130	130	4	4	40	40	9	9	90	90
Grand Cape Mount	13	12	130	120	1	1	10	10	12	11	120	110
Grand Gedeh	13	13	130	130	6	6	60	60	7	7	70	70
Grand Kru	13	13	130	130	1	1	10	10	12	12	120	120
Lofa	13	12	130	120	5	4	50	40	8	8	80	80
Margibi	13	7	130	70	6	3	60	30	7	4	70	40
Maryland	13	13	130	70	6	6	60	60	7	7	70	70
Greater Monrovia	25	25	250	250	25	25	250	250		-		-
Montserrado w/o Monrovia	2	2	20	20	1	1	10	10	1	1	10	10
Nimba	13	13	130	130	8	8	80	80	5	5	50	50
River Gee	13	13	130	130	4	4	40	40	9	9	90	90
Rivercess	13	13	130	130	1	1	10	10	12	12	120	120
Sinoe	13	13	130	130	2	2	20	20	11	11	110	110
Liberia	**209**	**200**	**2090**	**2,000**	**79**	**75**	**790**	**750**	**130**	**125**	**1300**	**1,250**

P – Planned; A - Actual

DATA PROCESSING

The Data Entry Clerk for each team, using data entry software called CSPro, entered data for each household in the field. For each household, an error report was generated on-site, which identified key problems with the data collected (outliers, incorrect entries, inconsistencies with skip patterns, basic filters for age and gender specific questions etc.). The Supervisor along with the Data Entry Clerk and the Enumerator that collected the data reviewed these errors. Callbacks were made to households if necessary to verify information and rectify the errors.

Once the data were collected in each EA, they were sent to LISGIS headquarters for further processing along with EA reports for each area visited. The HIES Technical committee converted the data into STATA and ran several consistency checks to manage overall data quality and prepared reports to identify key problems with the data set and called the field teams to update them about the same. Monthly reports were prepared by summarizing observations from data received from the field alongside statistics on data collection status to share with the field teams and LISGIS Management.

A second round of data entry was then conducted in LISGIS Headquarters. The completed questionnaires are received at LISGIS Headquarters on a rolling basis. These were sorted and

assigned to a team of 10 data entry clerks who reentered the questionnaires, independently of the first round, using the same CSPro data entry software.

Both first and second data entry of the community price questionnaire were completed in LISGIS Headquarters.

Once all data had been entered twice, first and second data entry were compared observation by observation. Where values that did not match, the original questionnaires were pulled out for a final verification of the correct value, this was then recoded in STATA.

BASIC COUNTS

Table 8. Basic Counts

	Total	Urban	Rural
Total Households	**4,088**	**1,540**	**2,548**
Total Individuals	**18,089**	**6,676**	**11,413**
Male	8,925	3,249	5,676
Female	9,164	3,427	5,737
Individuals by Age			
Less than 5	3,049	963	2,086
5 and older	15,003	5,697	9,306
10 and older	11,945	4,635	7,310
Females 12-49	4,779	1,976	2,803
No information	37	16	21
Completed household questionnaire modules (either household or individual level)			
Section B	18,089	6,676	11,413
Section C	18,089	6,676	11,413
Section D	18,089	6,676	11,413
Section E	18,065	6,664	11,401
Section F	18,085	6,675	11,410
Section G	18,024	6,642	11,382
Section H	4,088	1,540	2,548
Section I	4,088	1,540	2,548
Section J	4,088	1,540	2,548
Section K	4,083	1,537	2,546
Section L1	4,088	1,540	2,548
Section L2	4,088	1,540	2,548
Section M	4,088	1,540	2,548
Section N	4,088	1,540	2,548
Section O	4,088	1,540	2,548
Section P	4,088	1,540	2,548
Section Q	4,088	1,540	2,548

Section R	4,088	1,540	2,548
Section S	4,088	1,540	2,548
Section T	4,088	1,540	2,548
Completed price questionnaire modules			
Cover	334	111	219
Vendor1	334	111	219
Vendor 2	334	111	219
Vendor 3	334	111	219
Completed consumption aggregate calculation			
Consumption	4,085	1,539	2,546

HOW TO USE THE DATA

This section should provide an explanation of how to use the data.

Data from the 20 sections of the household questionnaire is stored in 29 files, in STATA .dta format. The data set names begin with "HH" and then reference the questionnaire section they relate to. For example, data from section C has file name "HH_C". Data from some sections have been stored in more than one data set, in these cases, the datasets are named accordingly, e.g. Section P data is stored in two datasets, these are named "HH_P1" and "HH_P2". Each dataset contains data for the full data collection period (i.e. all six months of data). The datafile HH_T.dta containing the re-contact information is not published.

Data from the community price questionnaire is stored in 4 files, in STATA .dta format. The datasets begin with "COMM" and then take letters A to D to differentiate the four section of the price questionnaire. The first dataset, "COMM_A & FILT", has basic identification data for the 334 enumeration areas for which the data relates to. Each of the remaining three datasets contains data from one of the three vendors, e.g. "COMM_B" contains data from the first vendor, and "COMM_C" contains data from the second vendor, and "COMM_D" from the third vendor.

It should be noted that in four instances the EAs from the price questionnaire did not match those from the household questionnaire. The exact details of how this issue was handled can be found in Appendix 7.

The consumption aggregate data is named HH_CONSUMPTION.dta. The consumption aggregate file contains information on general identification of the households (HH Id, region, etc.) as well as the relevant weights (per household, per capita, per adult equivalent). In addition, the total overall, food, and non-food expenditure of the households and the resulting consumption quintiles are included. The dataset contains 4085 observations since there were 3 households without any expenditure in the survey. For details of the calculations please see the methodological appendix of the HIES 2014 Statistical Abstract.

A complete list of data files is in Appendix 2.

Unique Identifiers & Merging Data

Each of the 409 clusters enumerated during the survey (better known in this dataset as the enumeration area), have a unique three digit identifier that ranges from 001-409, in the variable "ea_id".

Sections administered at the household level are Section A, and those inclusive of Section H to Section T. Data from each of these files is saved in (one or more) separate datasets as described in Appendix 2. In order to merge each household level dataset, the unique household identifier that should be used is the variable named "hh_id". The unique household identifier is made up of both the unique ea_id (the first three digits) and the household number (the last two digits, ranging from 01-10). Therefore, the first household in the 321st EA would have the unique household identifier 32101.

Sections administered at the individual household member are those inclusive of Section B to Section G. Each one of these is saved as separate data files as described above. In order to merge data at the individual level, the following variables should be used to merge using a unique individual level ID: hh_id and ind_id.

WEIGHTING FACTORS[1]

In order to examine the representativeness of the final sample of EAs and households that were successfully enumerated before the data collection was halted, the distribution of the enumerated EAs was compared to the original sample.

Table 9 shows the distribution of the sample EAs in the original sample by region, urban/rural stratum, the number of EAs enumerated in each stratum, and the corresponding percentages. It can be seen in this table that for most strata exactly 50% of the original sample EAs were covered, as this corresponds to the two replicates assigned to the first two quarters. The county with the lowest coverage was Margibi, where 37.5% of the original urban sample EAs were enumerated and 39.3% of the rural EAs were covered. In the case of the small Montserrado other urban stratum (excluding Greater Monrovia), where only 4 sample EAs had been allocated, none of the sample EAs were covered. At the same time 2 sample EAs were enumerated for Greater Monrovia in addition to the 50 EAs in the two replicates assigned to the first two quarters. As a result, it was decided to combine the Greater Monrovia and other urban stratum into one urban stratum for Montserrado County.

The conclusion from this review of the distribution of the enumerated sample of EAs for the 2014 HIES was that the final sample is representative at the national level, urban and rural levels.

[1] Megill, David. 2015. "Final Weighting Procedures for the 2014 Liberia Household Income and Expenditure Survey."

However, it should be noted that seasonality is only represented for the 6 months covered by the data collection.

Table 9. Comparison of Sample EAs in Original Sample Design for 2014 Liberia HIES and Number of Sample EAs Enumerated, by County and Urban/Rural Strata

	Urban			Rural		
County	**Original Sample EAs**	**Enumerated EAs**	**% Covered**	**Original Sample EAs**	**Enumerated EAs**	**% Covered**
Bomi	8	4	50.0%	44	21	47.7%
Bong	20	10	50.0%	32	16	50.0%
Gbarpolu	8	4	50.0%	44	22	50.0%
Grand Bassa	16	8	50.0%	36	18	50.0%
Grand Cape Mount	4	2	50.0%	48	23	47.9%
Grand Gedeh	24	12	50.0%	28	14	50.0%
Grand Kru	4	2	50.0%	48	24	50.0%
Lofa	20	9	45.0%	32	16	50.0%
Margibi	24	9	37.5%	28	11	39.3%
Maryland	24	12	50.0%	28	14	50.0%
Greater Monrovia	100	52	52.0%	-	-	-
Montserrado w/o Monrovia	4	0	0.0%	4	2	50.0%
Nimba	32	16	50.0%	20	10	50.0%
River Gee	16	8	50.0%	36	18	50.0%
Rivercess	4	2	50.0%	48	24	50.0%
Sinoe	8	4	50.0%	44	22	50.0%
Total	316	154	48.7%	520	255	49.0%
Sinoe	8	4	50.0%	44	22	50.0%
Total	316	154	48.7%	520	255	49.0%

Weighting Procedures for the 2014 HIES

As described in the report on "Recommendations on Sample Design and Estimation Procedures for 2013/14 Liberia Household Income and Expenditure Survey (HIES)"[2], the basic weight for each sample household would be equal to the inverse of its probability of selection (calculated by multiplying the probabilities at each sampling stage). The sampling probabilities at each stage of selection were maintained in an Excel spreadsheet with information from the sampling frame for each sample EA so that the overall probability and corresponding weight could be calculated.

The original sample weight adjusted for nonresponse specified in the sample design report can be simplified as follows:

[2] Megill, David. 2012. "Recommendations on Sample Design and Estimation Procedures for the 2013/14 Liberia Household Income and Expenditure Survey."

$$W'_{hi} = \frac{M_h \times M'_{hi}}{n_h \times M_{hi} \times m_{hi}} \times \frac{m_{hi}}{m'_{hi}} = \frac{M_h \times M'_{hi}}{n_h \times M_{hi} \times m'_{hi}},$$

where:

W'_{hi} = original adjusted weight for the sample households in the i-th sample EA in stratum (county, urban/rural) h

M_h = total number of households in the 2008 Census sampling frame of EAs (cumulated measure of size) for stratum h

M'_{hi} = total number of households listed in the i-th sample EA in stratum h

n_h = number of sample EAs originally selected in stratum h for the 2014 HIES

M_{hi} = total number of households in the frame for the i-th sample EA in stratum h

m_{hi} = number of sample households selected in the i-th sample EA in stratum h (that is, 10)

m'_{hi} = number of sample households with completed interviews in the i-th sample EA in stratum h, including replacement households

These original weights need to be adjusted to reflect the final number of sample EAs enumerated in each stratum. Given the way that the original replicate of EAs assigned to each quarter within a stratum was selected, the final sample of enumerated EAs can be considered a systematic subsample of the original sample EAs, selected with equal probability within the stratum (thus maintaining the first stage probabilities proportional to size). In this case the original weight should be multiplied by the inverse of the subsampling rate for the EAs in each stratum. Therefore the weight for the sample households in the final data for the 2014 HIES can be expressed as follows:

$$W''_{hi} = \frac{M_h \times M'_{hi}}{n_h \times M_{hi} \times m'_{hi}} \times \frac{n_h}{n'_h} = \frac{M_h \times M'_{hi}}{n'_h \times M_{hi} \times m'_{hi}},$$

where:

W''_{hi} = adjusted weight for the sample households enumerated in the i-th sample EA in stratum h in the final 2014 HIES data set

n'_h = number of sample EAs successfully enumerated in stratum h for the 2014 HIES

The weights were calculated using the formula specified above. As mentioned previously, in the case of Montserrado County, the strata for Greater Monrovia and other urban were combined into one urban stratum for the purposes of calculating these weights. Table 10 shows the

distribution of the weighted total number of households by county, urban and rural strata, using these weights.

Table 10. Distribution of Weighted Total Number of Households by County, Urban and Rural Strata, from Final 2014 HIES Data Using the Design Weights

County Name	Urban	Rural	Total
Bomi	3,350	18,373	21,723
Bong	35,670	66,741	102,411
Gbarpolu	2,061	11,911	13,972
Grand Bassa	29,133	33,988	63,121
Grand Cape Mount	2,067	24,262	26,329
Grand Gedeh	10,510	7,830	18,340
Grand Kru	885	10,782	11,667
Lofa	26,635	25,050	51,685
Margibi	56,693	27,707	84,400
Maryland	13,225	7,543	20,768
Montserrado	258,455	258,455	258,455
Nimba	56,693	35,681	92,374
River Gee	4,342	6,927	11,269
Rivercess	473	8,837	9,310
Sinoe	2,633	14,081	16,714
Liberia	502,825	318,348	821,173

Alternative Adjustment of 2014 HIES Weights Based on Population Projections

If the quality of the listing data for the sample EAs was good, the weighted distribution of the sample households and population based on the design weights specified above should reflect the differential population growth rate by county, urban and rural stratum. In comparing the total number of households listed in each sample EA with the corresponding number in the 2008 Liberia Census frame, considerable differences were found for some EAs. Sometimes the number of households in the Census frame was higher, and sometimes the listing number was higher. It is difficult to determine whether these differences were related to actual changes in the households, or to listing quality issues. There has been a significant internal migration in the Liberia population since 2008.

In some countries that have found problems with the quality of the listing data for a particular survey it was decided to adjust the design weights based on population projections at the national level or by region (province or state). The population projections are obtained based on demographic analysis. In order to obtain accurate population projections at a regional level, it is necessary to have good estimates of the total fertility rates, mortality rates, in-migration and out-migration for each region. In countries without this type of information, the population projections by region may not be accurate. Of course, the population projections at the national level are generally more accurate.

In the case of Liberia, we examined the population projections by county to determine the effect of making this type of adjustment to the weights. However, before deciding to use this approach it is important to assess the quality of the population projections. Given the considerable migration of the Liberian population after the 2008 Liberia Census and the lack of good information on inter-county and international migration, the initial conclusion was that the quality of the population projections by county may not be sufficient to ensure that adjusting the weights based on this information will improve the accuracy of the survey results.

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

$$A_c = \frac{P_c}{\sum_{h \in c} \sum_{i} \sum_{j} W''_{hi} \times p_{hij}},$$

where:

A_c = adjustment factor for the weights of the HIES sample households in county c

P_c = projected total population for county c for the mid-point of the HIES data collection period, based on demographic analysis

W''_{hi} = final design weight for the sample households in the i-th sample EA in stratum h (adjusted for nonresponse)

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

The denominator of the adjustment factor Ac is the estimated weighted total population in county c from the HIES data using the final design weights. The design weights for all the sample households within a stratum are multiplied by the corresponding adjustment factor for the county to obtain the final adjusted weights, as follows:

$$W_{chi} = W''_{hi} \times A_c,$$

where:

W_{chi} = final adjusted weight for the sample households in the i-th sample EA in stratum h

After the adjustment factors are applied to the design weights for the sample households of each county, the final weighted survey estimates of total population by county would be consistent with the corresponding population projections. Of course the accuracy of the estimates of total population based on the adjusted weights depends on the quality of the population projections by county. Since population projections are not available by urban and rural stratum, the

distribution of the weighted estimates by urban and rural stratum would be based on the HIES sample data.

The population projections which LISGIS generated for each year reflect the mid-point of the year, or 1 July. For the adjustment of the weights, it is ideal to use the population projections for the mid-point of the data collection period for the survey. The data collection for the HIES was conducted from 26 January to 12 August 2014, so the mid-point was estimated as 5 May 2014. Using the LISGIS population projections by county for 1 July 2013 and 1 July 2014 based on the medium fertility scenario, an interpolation based on exponential growth was used to estimate the population by county for 5 May 2014, using the following formula:

$$P_c = P_{13c} \times e^{\ln\left[\left(\frac{P_{14c}}{P_{13c}}\right)\times\left(\frac{t_{HIES}-t_{13}}{t_{14}-t_{13}}\right)\right]}$$

where:

P_c = projected total population for county c on 5 May 2014

P_{13c} = projected total population for county c on 1 July 2013

P_{14c} = projected total population for county c on 1 July 2014

$t_{HIES} - t_{13}$ = number of days between 1 July 2013 and 5 May 2014 (that is, 308 days)

$t_{14} - t_{13}$ = number of days between 1 July 2013 and 1 July 2014 (that is, 365 days)

Table 11 presents the LISGIS population projections by county for 1 July 2013 and 1 July 2014, and the corresponding interpolated population estimates for 5 May 2014. This table also shows the distribution of the weighted total population by county from the HIES data using the design weights, and the corresponding weight adjustment factors.

It can be seen in Table 11 that the weight adjustment factors vary from 0.6113 for Margibi to 1.7553 for Grand Gedeh. Following the adjustment of the design weights for each county by these adjustment factors, the final distribution of the weighted total population from the HIES data by county will be consistent with the corresponding distribution of the population projections.

Table 12 shows the weighted total number of households by county using the alternative weights adjusted based on the population projections. As mentioned previously, the distribution of the households in each county by urban and rural classification is based on the corresponding distribution of the HIES sample data. Table 12 can be compared to the corresponding weighted population by county using the design weights in Table 10, in order to determine the effect of the alternative weight adjustment.

Table 11. Liberia Population Projections for 2013 and 2014 by County, Interpolated Population for Mid-Point of HIES Data Collection Period, HIES Weighted Population and Weight Adjustment Factor by County

County	Projections 01-07-13	Projections 01-07-14	Projections 05-05-14	HIES Weighted Population	Weight Adjustment Factor
Bomi	95,009	97,168	96,828	92,287	1.0492
Bong	376,654	385,212	383,863	422,880	0.9077
Grand Bassa	250,394	256,083	255,186	284,137	0.8981
Cape Mount	143,527	146,789	146,275	125,367	1.1668
Grand Gedeh	141,474	144,689	144,182	82,140	1.7553
Grand Kru	65,410	66,897	66,663	51,135	1.3037
Lofa	312,706	319,812	318,692	213,878	1.4901
Margibi	237,100	242,487	241,638	395,311	0.6113
Maryland	153,537	157,025	156,475	96,698	1.6182
Monteserrado	1,263,009	1,291,709	1,287,184	1,110,222	1.1594
Nimba	521,840	533,698	531,829	415,883	1.2788
River Cess	80,767	82,602	82,313	42,850	1.9210
Sinoe	115,647	118,274	117,860	68,475	1.7212
River Gee	75,436	77,150	76,880	53,863	1.4273
Gbarpolu	94,183	96,324	95,986	57,044	1.6827
Liberia	3,926,693	4,015,919	4,001,853	3,512,170	

Given that accurate information on internal and international migration for Liberia is not available to improve the population projections, and that there has been a considerable internal migration in Liberia, it may be risky to depend on the population projections for adjusting the weights. However, the alternative weights adjusted based on the population projections were calculated so that estimates of key survey indicators based on these weights can be compared to the corresponding results based on the final design weights.

Table 12. Distribution of Weighted Total Number of Households by County, Urban and Rural Strata, from 2014 HIES Data, Based on Alternative Weights Adjusted with Population Projections

County Name	Urban	Rural	Total
Bomi	3,515	19,277	22,792
Bong	32,379	60,583	92,962
Gbarpolu	3,467	20,043	23,510
Grand Bassa	26,164	30,525	56,689
Grand Cape Mount	2,412	28,308	30,720
Grand Gedeh	18,449	13,745	32,194
Grand Kru	1,153	14,057	15,210
Lofa	39,688	37,327	77,015
Margibi	34,654	16,936	51,590
Maryland	21,401	12,207	33,608
Montserrado	299,651	21,605	321,256
Nimba	72,498	45,629	118,127
River Gee	6,197	9,886	16,083
Rivercess	908	16,976	17,884
Sinoe	4,532	24,236	28,768
Liberia	567,068	371,340	938,408

APPENDIX 1. HOW TO OBTAIN COPIES OF THE DOCUMENTATION AND DATA

Copies of the documentation (Basic Information Document, questionnaires, manuals, etc.) for the 2014/15 HIES can be obtained from LISGIS (lisgis.net) or the World Bank (http://microdata.worldbank.org/index.php/catalog/2563). Users who are interested in obtaining copies of the data or have any questions on the content of either document should direct queries to:

Deputy Director-General for Coordination and Information, Mr. Johnson Q. Kei; contact information: Mobile number: +231-886518885 and Email Address: **jquiah2002@yahoo.com** *or the Project Coordinator – Mr. Boima HM. Sonii; contact information: Mobile numbers: +231-886524773/+231-777524773 and Email Address:* ***bhmsonii1975@gmail.com*** */* ***b.sonii@yahoo.com***

Users should provide a brief description of the research that will be done with the data.

Individuals who receive copies of the data agree to: (a) cite the Liberia Institute of Statistics and Geo-Information Services as the collector and source of the data in all reports, publications and presentations; (b) provide copies of all reports, publications and presentations to the Liberia Institute of Statistics and Geo-Information Services; and (c) not to pass the data to third parties for any reason.

APPENDIX 2. LIST OF FILE NAMES

Household Questionnaire		
Data File	**Description**	**Unique Identifier**
HH_A&FILT_weighted.dta	Household Identification & Survey Staff Details (Section A), Survey weights, Region, Filter questions from other sections (Section H q1a-1b; Section K q8; Section N q11; Section O q1; Section P1 q1-2; Section P2 q1-2)	hh_id
HH_B.dta	Household Member Roster (Section B)	hh_id & ind_id
HH_C.dta	Education (Section C)	hh_id & ind_id
HH_D.dta	Health (Section D)	hh_id & ind_id
HH_E.dta	Labour (Section E)	hh_id & ind_id
HH_F.dta	Food Consumption Outside the Household (Section F)	hh_id & ind_id
HH_G.dta	Subjective Welfare	hh_id & ind_id
HH_H.dta	Household Non-Farm Enterprises (Section H q2-21)	hh_id
HH_I1.dta	Food Security (Section I q1-8, q10)	hh_id
HH_I2.dta	Food Security (Section I q9)	hh_id
HH_J1.dta	Housing, Water & Sanitation (Section J q1-26)	hh_id
HH_J2.dta	Housing, Water & Sanitation (Section J q27-28)	hh_id
HH_K1.dta	Food Consumed in the Household (Section K q1-7)	hh_id
HH_K2.dta	Food Consumed in the Household (Section K q9-10)	hh_id
HH_K3.dta	Food Consumed in the Household (Section K q8)	hh_id
HH_L1.dta	Non-Food Expenditures (past 7 and 30 days) (Section L1)	hh_id
HH_L2.dta	Non-Food Expenditures (12 months) (Section L1)	hh_id
HH_M.dta	Household Assets (Section M)	hh_id
HH_N1.dta	Assistance, Groups & Other Sources of Income (Section N q1-6)	hh_id
HH_N2.dta	Assistance, Groups & Other Sources of Income (Section N q7-10)	hh_id
HH_N3.dta	Assistance, Groups & Other Sources of Income (Section N q12-19)	hh_id
HH_O.dta	Credit (Section O)	hh_id
HH_P1.dta	Cash & Gift Transfers Received (Section P, Part A q3-9)	hh_id
HH_P2.dta	Cash & Gift Transfers Sent (Section P, Part B q3-9)	hh_id
HH_Q.dta	Shocks (Section Q)	hh_id
HH_R.dta	Production & Sales of Agricultural Crops (past 12	hh_id

	months) (Section R)	
HH_S.dta	Livestock and Aquatic Sales and Purchases (past 12 months) (Section S)	hh_id
HH_T.dta	Household Re-contact Information (including GPS Coordinates) (Section T)	hh_id

Community Price Questionnaire		
Data File	**Description**	**Unique Identifier**
COMM_A & FILT.dta	Community Identification, Date of Enumeration, GPS coordinates (Cover Page)	ea_id
COMM_B.dta	Market Prices from First Vendor (Pgs 2-6)	ea_id
COMM_C.dta	Market Prices from Second Vendor (Pgs 7-11)	ea_id
COMM_D.dta	Market Prices from Third Vendor (Pgs 12-16)	ea_id

Consumption Aggregate		
Data File	**Description**	**Unique Identifier**
HH_ CONSUMPTION.dta	Consumption aggregates of overall, food, and non-food expenditure by household	hh_id

APPENDIX 3. COUNTY CODES

County Name	County Code
Bomi	03
Bong	06
Grand Bassa	09
Grand Cape Mount	12
Grand Gedeh	15
Grand Kru	18
Lofa	21
Margibi	24
Maryland	27
Montserrado	30
Nimba	33
Rivercess	36
Sinoe	39
River Gee	42
Gbarpolu	45

APPENDIX 4. DISTRICT CODE BY COUNTY

County Code	County Name	District Code	District Name
03	Bomi	02	Klay
03	Bomi	04	Suehn Mecca
03	Bomi	06	Senjeh
03	Bomi	08	Dowein
06	Bong	02	Fuamah
06	Bong	04	Jorquelleh
06	Bong	06	Yeallequelleh
06	Bong	08	Panta
06	Bong	10	Salala
06	Bong	12	Sanoyeah
06	Bong	14	Suakoko
06	Bong	16	Zota
06	Bong	20	Tukpahblee
06	Bong	24	Kpaai
09	Grand Bassa	02	Owensgrove
09	Grand Bassa	04	District # 1
09	Grand Bassa	06	District # 2
09	Grand Bassa	08	St. John River City
09	Grand Bassa	10	Neekreen
09	Grand Bassa	12	Commonwealth
09	Grand Bassa	14	District # 3
09	Grand Bassa	16	District # 4
12	Grand Cape Mount	02	Garwula
12	Grand Cape Mount	04	Golakonneh
12	Grand Cape Mount	06	Porkpa
12	Grand Cape Mount	08	Commonwealth
12	Grand Cape Mount	10	Tewor
15	Grand Gedeh	02	Gbao
15	Grand Gedeh	04	Gboe-Ploe
15	Grand Gedeh	06	Konobo
15	Grand Gedeh	08	Tchien
15	Grand Gedeh	10	Glio-Twarbo
15	Grand Gedeh	12	Putu
15	Grand Gedeh	14	B'hai
15	Grand Gedeh	16	Cavala
18	Grand Kru	02	Lower Jloh
18	Grand Kru	04	Upper Jloh
18	Grand Kru	08	Bolloh
18	Grand Kru	10	Dorbor
18	Grand Kru	12	Forpoh

18	Grand Kru	16	Dweh
18	Grand Kru	18	Kpi
18	Grand Kru	20	Gee
18	Grand Kru	24	Nrokwia-Wesldow
18	Grand Kru	26	Felo-Jekwi
18	Grand Kru	28	Barclayville
18	Grand Kru	30	Grand Cess Wedabo
18	Grand Kru	32	Bleebo
18	Grand Kru	34	Trenbo
18	Grand Kru	36	Garraway
21	Lofa	02	Foya
21	Lofa	04	Kolahun
21	Lofa	06	Salayea
21	Lofa	08	Vahun
21	Lofa	10	Voinjama
21	Lofa	12	Zorzor
21	Lofa	14	Quardu Boundi
24	Margibi	02	Firestone
24	Margibi	04	Gibi
24	Margibi	06	Kakata
24	Margibi	08	Mambah Kaba
27	Maryland	02	Whojah
27	Maryland	04	Gwelekpoken
27	Maryland	06	Nyorken
27	Maryland	08	Karluway#1
27	Maryland	10	Karluway#2
27	Maryland	12	Pleebo/Sodoken
27	Maryland	14	Harper
30	Montserrado	04	Greater Monrovia
30	Montserrado	06	St. Paul River
30	Montserrado	10	Commonwealth
33	Nimba	02	Sanniquellie Mahn
33	Nimba	04	Yarpea Mahn
33	Nimba	06	Yarmein
33	Nimba	08	Gbehlay-Geh
33	Nimba	10	Twan River
33	Nimba	12	Garr-Bain
33	Nimba	14	Doe
33	Nimba	16	Gbi & Doru
33	Nimba	20	Boe & Quilla
33	Nimba	24	Zoe-Gbao
33	Nimba	26	Yarwein Mehnsonnoh
33	Nimba	28	Meinpea-Mahn

33	Nimba	30	Leewehpea-Mahn
33	Nimba	32	Wee-Gbehyi-Mahn
33	Nimba	34	Buu-Yao
36	Rivercess	02	Doedain
36	Rivercess	04	Fen River
36	Rivercess	06	Norwein
36	Rivercess	08	Central Rivercess
36	Rivercess	10	Beawor
36	Rivercess	12	Sam Gbalor
36	Rivercess	14	Jo River
36	Rivercess	16	Zarflahn
39	Sinoe	02	Greenville
39	Sinoe	04	Butaw
39	Sinoe	06	Sanquin Dist#2
39	Sinoe	08	Sanquin Dist# 3
39	Sinoe	10	Sanquin Dist# 1
39	Sinoe	12	Kulu Shaw Boe
39	Sinoe	14	Plahn Nyarn
39	Sinoe	16	Juarzon
39	Sinoe	18	Wedjah
39	Sinoe	20	Seekon
39	Sinoe	22	Pynes Town
39	Sinoe	24	Jeadepo
39	Sinoe	26	Jaedae
39	Sinoe	30	Bokon
39	Sinoe	32	Dugbe River
39	Sinoe	34	Kpayan
42	River Gee	02	Chedepo
42	River Gee	04	Karforh
42	River Gee	06	Nanee
42	River Gee	08	Gbeapo
42	River Gee	10	Nyenawliken
42	River Gee	12	Potupo
42	River Gee	14	Glaro
42	River Gee	16	Sarbo
42	River Gee	18	Tuobo
42	River Gee	20	Nyenebo
45	Gbarpolu	02	Koninga
45	Gbarpolu	04	Belleh
45	Gbarpolu	06	Bokomu
45	Gbarpolu	08	Bopolu
45	Gbarpolu	10	Gbarma
45	Gbarpolu	12	Gounwolaila

APPENDIX 5. ISCO OCCUPATION CODES

For Section E, questions 16, 31, and 45:

ISCO 08 Code	Title EN
1	**Managers**
11	Chief executives, senior officials and legislators
111	Legislators and senior officials
1111	Legislators
1112	Senior government officials
1113	Traditional chiefs and heads of village
1114	Senior officials of special-interest organizations
112	Managing directors and chief executives
1120	Managing directors and chief executives
12	Administrative and commercial managers
121	Business services and administration managers
1211	Finance managers
1212	Human resource managers
1213	Policy and planning managers
1219	Business services and administration managers not elsewhere classified
122	Sales, marketing and development managers
1221	Sales and marketing managers
1222	Advertising and public relations managers
1223	Research and development managers
13	Production and specialised services managers
131	Production managers in agriculture, forestry and fisheries
1311	Agricultural and forestry production managers
1312	Aquaculture and fisheries production managers
132	Manufacturing, mining, construction, and distribution managers
1321	Manufacturing managers
1322	Mining managers
1323	Construction managers
1324	Supply, distribution and related managers
133	Information and communications technology service managers
1330	Information and communications technology service managers
134	Professional services managers
1341	Child care services managers
1342	Health services managers
1343	Aged care services managers
1344	Social welfare managers
1345	Education managers
1346	Financial and insurance services branch managers
1349	Professional services managers not elsewhere classified
14	Hospitality, retail and other services managers
141	Hotel and restaurant managers
1411	Hotel managers
1412	Restaurant managers
142	Retail and wholesale trade managers
1420	Retail and wholesale trade managers
143	Other services managers

1431	Sports, recreation and cultural centre managers
1439	Services managers not elsewhere classified
2 **Professionals**	
21	Science and engineering professionals
211	Physical and earth science professionals
2111	Physicists and astronomers
2112	Meteorologists
2113	Chemists
2114	Geologists and geophysicists
212	Mathematicians, actuaries and statisticians
2120	Mathematicians, actuaries and statisticians
213	Life science professionals
2131	Biologists, botanists, zoologists and related professionals
2132	Farming, forestry and fisheries advisers
2133	Environmental protection professionals
214	Engineering professionals (excluding electrotechnology)
2141	Industrial and production engineers
2142	Civil engineers
2143	Environmental engineers
2144	Mechanical engineers
2145	Chemical engineers
2146	Mining engineers, metallurgists and related professionals
2149	Engineering professionals not elsewhere classified
215	Electrotechnology engineers
2151	Electrical engineers
2152	Electronics engineers
2153	Telecommunications engineers
216	Architects, planners, surveyors and designers
2161	Building architects
2162	Landscape architects
2163	Product and garment designers
2164	Town and traffic planners
2165	Cartographers and surveyors
2166	Graphic and multimedia designers
22	Health professionals
221	Medical doctors
2211	Generalist medical practitioners
2212	Specialist medical practitioners
222	Nursing and midwifery professionals
2221	Nursing professionals
2222	Midwifery professionals
223	Traditional and complementary medicine professionals
2230	Traditional and complementary medicine professionals
224	Paramedical practitioners
2240	Paramedical practitioners
225	Veterinarians
2250	Veterinarians
226	Other health professionals
2261	Dentists
2262	Pharmacists

2263	Environmental and occupational health and hygiene professionals
2264	Physiotherapists
2265	Dieticians and nutritionists
2266	Audiologists and speech therapists
2267	Optometrists and ophthalmic opticians
2269	Health professionals not elsewhere classified
23	Teaching professionals
231	University and higher education teachers
2310	University and higher education teachers
232	Vocational education teachers
2320	Vocational education teachers
233	Secondary education teachers
2330	Secondary education teachers
234	Primary school and early childhood teachers
2341	Primary school teachers
2342	Early childhood educators
235	Other teaching professionals
2351	Education methods specialists
2352	Special needs teachers
2353	Other language teachers
2354	Other music teachers
2355	Other arts teachers
2356	Information technology trainers
2359	Teaching professionals not elsewhere classified
24	Business and administration professionals
241	Finance professionals
2411	Accountants
2412	Financial and investment advisers
2413	Financial analysts
242	Administration professionals
2421	Management and organization analysts
2422	Policy administration professionals
2423	Personnel and careers professionals
2424	Training and staff development professionals
243	Sales, marketing and public relations professionals
2431	Advertising and marketing professionals
2432	Public relations professionals
2433	Technical and medical sales professionals (excluding ICT)
2434	Information and communications technology sales professionals
25	Information and communications technology professionals
251	Software and applications developers and analysts
2511	Systems analysts
2512	Software developers
2513	Web and multimedia developers
2514	Applications programmers
2519	Software and applications developers and analysts not elsewhere classified
252	Database and network professionals
2521	Database designers and administrators
2522	Systems administrators
2523	Computer network professionals

2529	Database and network professionals not elsewhere classified
26	Legal, social and cultural professionals
261	Legal professionals
2611	Lawyers
2612	Judges
2619	Legal professionals not elsewhere classified
262	Librarians, archivists and curators
2621	Archivists and curators
2622	Librarians and related information professionals
263	Social and religious professionals
2631	Economists
2632	Sociologists, anthropologists and related professionals
2633	Philosophers, historians and political scientists
2634	Psychologists
2635	Social work and counselling professionals
2636	Religious professionals
264	Authors, journalists and linguists
2641	Authors and related writers
2642	Journalists
2643	Translators, interpreters and other linguists
265	Creative and performing artists
2651	Visual artists
2652	Musicians, singers and composers
2653	Dancers and choreographers
2654	Film, stage and related directors and producers
2655	Actors
2656	Announcers on radio, television and other media
2659	Creative and performing artists not elsewhere classified
3	**Technicians and associate professionals**
31	Science and engineering associate professionals
311	Physical and engineering science technicians
3111	Chemical and physical science technicians
3112	Civil engineering technicians
3113	Electrical engineering technicians
3114	Electronics engineering technicians
3115	Mechanical engineering technicians
3116	Chemical engineering technicians
3117	Mining and metallurgical technicians
3118	Draughtspersons
3119	Physical and engineering science technicians not elsewhere classified
312	Mining, manufacturing and construction supervisors
3121	Mining supervisors
3122	Manufacturing supervisors
3123	Construction supervisors
313	Process control technicians
3131	Power production plant operators
3132	Incinerator and water treatment plant operators
3133	Chemical processing plant controllers
3134	Petroleum and natural gas refining plant operators
3135	Metal production process controllers

3139	Process control technicians not elsewhere classified
314	Life science technicians and related associate professionals
3141	Life science technicians (excluding medical)
3142	Agricultural technicians
3143	Forestry technicians
315	Ship and aircraft controllers and technicians
3151	Ships' engineers
3152	Ships' deck officers and pilots
3153	Aircraft pilots and related associate professionals
3154	Air traffic controllers
3155	Air traffic safety electronics technicians
32	Health associate professionals
321	Medical and pharmaceutical technicians
3211	Medical imaging and therapeutic equipment technicians
3212	Medical and pathology laboratory technicians
3213	Pharmaceutical technicians and assistants
3214	Medical and dental prosthetic technicians
322	Nursing and midwifery associate professionals
3221	Nursing associate professionals
3222	Midwifery associate professionals
323	Traditional and complementary medicine associate professionals
3230	Traditional and complementary medicine associate professionals
324	Veterinary technicians and assistants
3240	Veterinary technicians and assistants
325	Other health associate professionals
3251	Dental assistants and therapists
3252	Medical records and health information technicians
3253	Community health workers
3254	Dispensing opticians
3255	Physiotherapy technicians and assistants
3256	Medical assistants
3257	Environmental and occupational health inspectors and associates
3258	Ambulance workers
3259	Health associate professionals not elsewhere classified
33	Business and administration associate professionals
331	Financial and mathematical associate professionals
3311	Securities and finance dealers and brokers
3312	Credit and loans officers
3313	Accounting associate professionals
3314	Statistical, mathematical and related associate professionals
3315	Valuers and loss assessors
332	Sales and purchasing agents and brokers
3321	Insurance representatives
3322	Commercial sales representatives
3323	Buyers
3324	Trade brokers
333	Business services agents
3331	Clearing and forwarding agents
3332	Conference and event planners
3333	Employment agents and contractors

3334	Real estate agents and property managers
3339	Business services agents not elsewhere classified
334	Administrative and specialised secretaries
3341	Office supervisors
3342	Legal secretaries
3343	Administrative and executive secretaries
3344	Medical secretaries
335	Regulatory government associate professionals
3351	Customs and border inspectors
3352	Government tax and excise officials
3353	Government social benefits officials
3354	Government licensing officials
3355	Police inspectors and detectives
3359	Regulatory government associate professionals not elsewhere classified
34	Legal, social, cultural and related associate professionals
341	Legal, social and religious associate professionals
3411	Police inspectors and detectives
3412	Social work associate professionals
3413	Religious associate professionals
342	Sports and fitness workers
3421	Athletes and sports players
3422	Sports coaches, instructors and officials
3423	Fitness and recreation instructors and program leaders
343	Artistic, cultural and culinary associate professionals
3431	Photographers
3432	Interior designers and decorators
3433	Gallery, museum and library technicians
3434	Chefs
3435	Other artistic and cultural associate professionals
35	Information and communications technicians
351	Information and communications technology operations and user support technicians
3511	Information and communications technology operations technicians
3512	Information and communications technology user support technicians
3513	Computer network and systems technicians
3514	Web technicians
352	Telecommunications and broadcasting technicians
3521	Broadcasting and audio-visual technicians
3522	Telecommunications engineering technicians
4	**Clerical support workers**
41	General and keyboard clerks
411	General office clerks
4110	General office clerks
412	Secretaries (general)
4120	Secretaries (general)
413	Keyboard operators
4131	Typists and word processing operators
4132	Data entry clerks
42	Customer services clerks
421	Tellers, money collectors and related clerks
4211	Bank tellers and related clerks

4212	Bookmakers, croupiers and related gaming workers
4213	Pawnbrokers and money-lenders
4214	Debt-collectors and related workers
422	Client information workers
4221	Travel consultants and clerks
4222	Contact centre information clerks
4223	Telephone switchboard operators
4224	Hotel receptionists
4225	Enquiry clerks
4226	Receptionists (general)
4227	Survey and market research interviewers
4229	Client information workers not elsewhere classified
43	Numerical and material recording clerks
431	Numerical clerks
4311	Accounting and bookkeeping clerks
4312	Statistical, finance and insurance clerks
4313	Payroll clerks
432	Material-recording and transport clerks
4321	Stock clerks
4322	Production clerks
4323	Transport clerks
44	Other clerical support workers
441	Other clerical support workers
4411	Library clerks
4412	Mail carriers and sorting clerks
4413	Coding, proof-reading and related clerks
4414	Scribes and related workers
4415	Filing and copying clerks
4416	Personnel clerks
4419	Clerical support workers not elsewhere classified
5	**Service and sales workers**
51	Personal service workers
511	Travel attendants, conductors and guides
5111	Travel attendants and travel stewards
5112	Transport conductors
5113	Travel guides
512	Cooks
5120	Cooks
513	Waiters and bartenders
5131	Waiters
5132	Bartenders
514	Hairdressers, beauticians and related workers
5141	Hairdressers
5142	Beauticians and related workers
515	Building and housekeeping supervisors
5151	Cleaning and housekeeping supervisors in offices, hotels and other establishments
5152	Domestic housekeepers
5153	Building caretakers
516	Other personal services workers
5161	Astrologers, fortune-tellers and related workers

5162	Companions and valets
5163	Undertakers and embalmers
5164	Pet groomers and animal care workers
5165	Driving instructors
5169	Personal services workers not elsewhere classified
52	Sales workers
521	Street and market salespersons
5211	Stall and market salespersons
5212	Street food salespersons
522	Shop salespersons
5221	Shop keepers
5222	Shop supervisors
5223	Shop sales assistants
523	Cashiers and ticket clerks
5230	Cashiers and ticket clerks
524	Other sales workers
5241	Fashion and other models
5242	Sales demonstrators
5243	Door to door salespersons
5244	Contact centre salespersons
5245	Service station attendants
5246	Food service counter attendants
5249	Sales workers not elsewhere classified
53	Personal care workers
531	Child care workers and teachers' aides
5311	Child care workers
5312	Teachers' aides
532	Personal care workers in health services
5321	Health care assistants
5322	Home-based personal care workers
5329	Personal care workers in health services not elsewhere classified
54	Protective services workers
541	Protective services workers
5411	Fire-fighters
5412	Police officers
5413	Prison guards
5414	Security guards
5419	Protective services workers not elsewhere classified
6	**Skilled agricultural, forestry and fishery workers**
61	Market-oriented skilled agricultural workers
611	Market gardeners and crop growers
6111	Field crop and vegetable growers
6112	Tree and shrub crop growers
6113	Gardeners, horticultural and nursery growers
6114	Mixed crop growers
612	Animal producers
6121	Livestock and dairy producers
6122	Poultry producers
6123	Apiarists and sericulturists
6129	Animal producers not elsewhere classified

613	Mixed crop and animal producers
6130	Mixed crop and animal producers
62	Market-oriented skilled forestry, fishery and hunting workers
621	Forestry and related workers
6210	Forestry and related workers
622	Fishery workers, hunters and trappers
6221	Aquaculture workers
6222	Inland and coastal waters fishery workers
6223	Deep-sea fishery workers
6224	Hunters and trappers
63	Subsistence farmers, fishers, hunters and gatherers
631	Subsistence crop farmers
6310	Subsistence crop farmers
632	Subsistence livestock farmers
6320	Subsistence livestock farmers
633	Subsistence mixed crop and livestock farmers
6330	Subsistence mixed crop and livestock farmers
634	Subsistence fishers, hunters, trappers and gatherers
6340	Subsistence fishers, hunters, trappers and gatherers
7	**Craft and related trades workers**
71	Building and related trades workers, excluding electricians
711	Building frame and related trades workers
7111	House builders
7112	Bricklayers and related workers
7113	Stonemasons, stone cutters, splitters and carvers
7114	Concrete placers, concrete finishers and related workers
7115	Carpenters and joiners
7119	Building frame and related trades workers not elsewhere classified
712	Building finishers and related trades workers
7121	Roofers
7122	Floor layers and tile setters
7123	Plasterers
7124	Insulation workers
7125	Glaziers
7126	Plumbers and pipe fitters
7127	Air conditioning and refrigeration mechanics
713	Painters, building structure cleaners and related trades workers
7131	Painters and related workers
7132	Spray painters and varnishers
7133	Building structure cleaners
72	Metal, machinery and related trades workers
721	Sheet and structural metal workers, moulders and welders, and related workers
7211	Metal moulders and coremakers
7212	Welders and flamecutters
7213	Sheet-metal workers
7214	Structural-metal preparers and erectors
7215	Riggers and cable splicers
722	Blacksmiths, toolmakers and related trades workers
7221	Blacksmiths, hammersmiths and forging press workers
7222	Toolmakers and related workers

7223	Metal working machine tool setters and operators
7224	Metal polishers, wheel grinders and tool sharpeners
723	Machinery mechanics and repairers
7231	Motor vehicle mechanics and repairers
7232	Aircraft engine mechanics and repairers
7233	Agricultural and industrial machinery mechanics and repairers
7234	Bicycle and related repairers
73	Handicraft and printing workers
731	Handicraft workers
7311	Precision-instrument makers and repairers
7312	Musical instrument makers and tuners
7313	Jewellery and precious-metal workers
7314	Potters and related workers
7315	Glass makers, cutters, grinders and finishers
7316	Sign writers, decorative painters, engravers and etchers
7317	Handicraft workers in wood, basketry and related materials
7318	Handicraft workers in textile, leather and related materials
7319	Handicraft workers not elsewhere classified
732	Printing trades workers
7321	Pre-press technicians
7322	Printers
7323	Print finishing and binding workers
74	Electrical and electronic trades workers
741	Electrical equipment installers and repairers
7411	Building and related electricians
7412	Electrical mechanics and fitters
7413	Electrical line installers and repairers
742	Electronics and telecommunications installers and repairers
7421	Electronics mechanics and servicers
7422	Information and communications technology installers and servicers
75	Food processing, wood working, garment and other craft and related trades workers
751	Food processing and related trades workers
7511	Butchers, fishmongers and related food preparers
7512	Bakers, pastry-cooks and confectionery makers
7513	Dairy-products makers
7514	Fruit, vegetable and related preservers
7515	Food and beverage tasters and graders
7516	Tobacco preparers and tobacco products makers
752	Wood treaters, cabinet-makers and related trades workers
7521	Wood treaters
7522	Cabinet-makers and related workers
7523	Woodworking-machine tool setters and operators
753	Garment and related trades workers
7531	Tailors, dressmakers, furriers and hatters
7532	Garment and related pattern-makers and cutters
7533	Sewing, embroidery and related workers
7534	Upholsterers and related workers
7535	Pelt dressers, tanners and fellmongers
7536	Shoemakers and related workers
754	Other craft and related workers

7541	Underwater divers
7542	Shotfirers and blasters
7543	Product graders and testers (excluding foods and beverages)
7544	Fumigators and other pest and weed controllers
7549	Craft and related workers not elsewhere classified
8	**Plant and machine operators, and assemblers**
81	Stationary plant and machine operators
811	Mining and mineral processing plant operators
8111	Miners and quarriers
8112	Mineral and stone processing plant operators
8113	Well drillers and borers and related workers
8114	Cement, stone and other mineral products machine operators
812	Metal processing and finishing plant operators
8121	Metal processing plant operators
8122	Metal finishing, plating and coating machine operators
813	Chemical and photographic products plant and machine operators
8131	Chemical products plant and machine operators
8132	Photographic products machine operators
814	Rubber, plastic and paper products machine operators
8141	Rubber products machine operators
8142	Plastic products machine operators
8143	Paper products machine operators
815	Textile, fur and leather products machine operators
8151	Fibre preparing, spinning and winding machine operators
8152	Weaving and knitting machine operators
8153	Sewing machine operators
8154	Bleaching, dyeing and fabric cleaning machine operators
8155	Fur and leather preparing machine operators
8156	Shoemaking and related machine operators
8157	Laundry machine operators
8159	Textile, fur and leather products machine operators not elsewhere classified
816	Food and related products machine operators
8160	Food and related products machine operators
817	Wood processing and papermaking plant operators
8171	Pulp and papermaking plant operators
8172	Wood processing plant operators
818	Other stationary plant and machine operators
8181	Glass and ceramics plant operators
8182	Steam engine and boiler operators
8183	Packing, bottling and labelling machine operators
8189	Stationary plant and machine operators not elsewhere classified
82	Assemblers
821	Assemblers
8211	Mechanical machinery assemblers
8212	Electrical and electronic equipment assemblers
8219	Assemblers not elsewhere classified
83	Drivers and mobile plant operators
831	Locomotive engine drivers and related workers
8311	Locomotive engine drivers
8312	Railway brake, signal and switch operators

832	Car, van and motorcycle drivers
8321	Motorcycle drivers
8322	Car, taxi and van drivers
833	Heavy truck and bus drivers
8331	Bus and tram drivers
8332	Heavy truck and lorry drivers
834	Mobile plant operators
8341	Mobile farm and forestry plant operators
8342	Earthmoving and related plant operators
8343	Crane, hoist and related plant operators
8344	Lifting truck operators
835	Ships' deck crews and related workers
8350	Ships' deck crews and related workers
9	**Elementary occupations**
91	Cleaners and helpers
911	Domestic, hotel and office cleaners and helpers
9111	Domestic cleaners and helpers
9112	Cleaners and helpers in offices, hotels and other establishments
912	Vehicle, window, laundry and other hand cleaning workers
9121	Hand launderers and pressers
9122	Vehicle cleaners
9123	Window cleaners
9129	Other cleaning workers
92	Agricultural, forestry and fishery labourers
921	Agricultural, forestry and fishery labourers
9211	Crop farm labourers
9212	Livestock farm labourers
9213	Mixed crop and livestock farm labourers
9214	Garden and horticultural labourers
9215	Forestry labourers
9216	Fishery and aquaculture labourers
93	Labourers in mining, construction, manufacturing and transport
931	Mining and construction labourers
9311	Mining and quarrying labourers
9312	Civil engineering labourers
9313	Building construction labourers
932	Manufacturing labourers
9321	Hand packers
9329	Manufacturing labourers not elsewhere classified
933	Transport and storage labourers
9331	Hand and pedal vehicle drivers
9332	Drivers of animal-drawn vehicles and machinery
9333	Freight handlers
9334	Shelf fillers
94	Food preparation assistants
941	Food preparation assistants
9411	Fast food preparers
9412	Kitchen helpers
95	Street and related sales and service workers
951	Street and related service workers

9510	Street and related service workers
952	Street vendors (excluding food)
9520	Street vendors (excluding food)
96	Refuse workers and other elementary workers
961	Refuse workers
9611	Garbage and recycling collectors
9612	Refuse sorters
9613	Sweepers and related labourers
962	Other elementary workers
9621	Messengers, package deliverers and luggage porters
9622	Odd job persons
9623	Meter readers and vending-machine collectors
9624	Water and firewood collectors
9629	Elementary workers not elsewhere classified
0	Armed forces occupations
01	Commissioned armed forces officers
011	Commissioned armed forces officers
0110	Commissioned armed forces officers
02	Non-commissioned armed forces officers
021	Non-commissioned armed forces officers
0210	Non-commissioned armed forces officers
03	Armed forces occupations, other ranks
031	Armed forces occupations, other ranks
0310	Armed forces occupations, other ranks

APPENDIX 6. ISIC OCCUPATION CODES

ISIC Codes (Rev. 4) for Section E, Questions 17, 32, 46 and 53

A - *Agriculture, forestry and fishing*
01 - Crop and animal production, hunting and related service activities
02 - Forestry and logging
03 - Fishing and aquaculture
B - *Mining and quarrying*
05 - Mining of coal and lignite
06 - Extraction of crude petroleum and natural gas
07 - Mining of metal ores
08 - Other mining and quarrying
09 - Mining support service activities
C - *Manufacturing*
10 - Manufacture of food products
101 - Processing and preserving of meat
102 - Processing and preserving of fish, crustaceans and mollusks
103 - Processing and preserving of fruit and vegetables
104 - Manufacture of vegetable and animal oils and fats
105 - Manufacture of dairy products
106 - Manufacture of grain mill products, starches and starch products
107 - Manufacture of other food products
108 - Manufacture of prepared animal feeds
11 - Manufacture of beverages

12 - Manufacture of tobacco products
13 - Manufacture of textiles
14 - Manufacture of wearing apparel
15 - Manufacture of leather and related products
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 and reproduction of recorded media
19 - Manufacture of coke and refined petroleum products
20 - Manufacture of chemicals and chemical products
21 - Manufacture of basic pharmaceutical products and pharmaceutical preparations
22 - Manufacture of rubber and plastics products
23 - Manufacture of other non-metallic mineral products
24 - Manufacture of basic metals
25 - Manufacture of fabricated metal products, except machinery and equipment
26 - Manufacture of computer, electronic and optical products
27 - Manufacture of electrical equipment
28 - Manufacture of machinery and equipment n.e.c.
29 - Manufacture of motor vehicles, trailers and semi-trailers
30 - Manufacture of other transport equipment
31 - Manufacture of furniture
32 - Other manufacturing
33 - Repair and installation of machinery and equipment
D - ***Electricity, gas, steam and air conditioning supply***
35 - Electricity, gas, steam and air conditioning supply
E - ***Water supply; sewerage, waste management and remediation activities***
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
F - ***Construction***
41 - Construction of buildings
42 - Civil engineering
43 - Specialized construction activities
G - ***Wholesale and retail trade; repair of motor vehicles and motorcycles***
45 - Wholesale and retail trade and repair of motor vehicles and motorcycles
46 - Wholesale trade, except of motor vehicles and motorcycles
47 - Retail trade, except of motor vehicles and motorcycles
471 - Retail sale in non-specialized stores
472 - Retail sale of food, beverages and tobacco in specialized stores
473 - Retail sale of automotive fuel in specialized stores
474 - Retail sale of information and communications equipment in specialized stores
475 - Retail sale of other household equipment in specialized stores
476 - Retail sale of cultural and recreation goods in specialized stores
477 - Retail sale of other goods in specialized stores
478 - Retail sale via stalls and markets
479 - Retail trade not in stores, stalls or markets
H - ***Transportation and storage***
49 - Land transport and transport via pipelines
491 - Transport via railways

492 - Other land transport
4921 - Urban and suburban passenger land transport
4922 - Other passenger land transport
4923 - Freight transport by road
493 - Transport via pipeline
50 - Water transport
51 - Air transport
52 - Warehousing and support activities for transportation
53 - Postal and courier activities
I - ***Accommodation and food service activities***
55 - Accommodation
56 - Food and beverage service activities
561 - Restaurants and mobile food service activities
562 - Event catering and other food service activities
563 - Beverage serving activities
J - ***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
K - ***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
L - ***Real estate activities***
68 - Real estate activities
M - ***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
N - ***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
O - ***Public administration and defense; compulsory social security***
84 - Public administration and defense; compulsory social security
P - ***Education***
85 - Education
Q - ***Human health and social work activities***
86 - Human health activities
87 - Residential care activities

88 - Social work activities without accommodation
R - ***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
S - ***Other service activities***
94 - Activities of membership organizations
95 - Repair of computers and personal and household goods
96 - Other personal service activities
T - ***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
U - ***Activities of extraterritorial organizations and bodies***
99 - Activities of extraterritorial organizations and bodies

APPENDIX 7. PRICE QUESTIONNAIRE EA MISMATCH

The community price questionnaire was not administered in every EA where the household questionnaire was performed. Hence there are fewer EAs with price data than there are overall EAs. To be precise, the 2014 HIES contains information from 409 EAs but only in 334 EAs were price questionnaires administered.

To assign the anonymised EA ID to the price questionnaires the information from the price data was merged with a list of EAs. The expectation when merging these files is to obtain 334 observations that are present in both files and that the remaining 75 EAs enumerated were without price questionnaires.

However, there are 330 EAs listed with a price questionnaire, 79 in the list of EAs without a price questionnaire, and 4 EAs that only appear in the price data. Thus, in 4 cases the price questionnaire cannot be clearly matched with a sample EA. This may be because it was administered in a market in a different area and coded incorrectly. While it was not possible to identify which EA these match with perfectly, it is known that these four cases are located in Grand Gedeh.

In order to match the price data with an appropriate sample EA, we look for sensible pairings; the list of sample EAs is restricted to observations from Grand Gedeh only, which are not already matched with a price questionnaire. This procedure reveals five remaining unmatched EAs from the sample list of EAs enumerated.

Four of the latter five coincide in district with the price questionnaire observations. The fifth EA – where districts do not match – is thus assumed to be an EA where no price questionnaire was administered.

Out of the four EAs with price questionnaires, and in the sample list, one pair of observations coincides in district and clan uniquely – this is assumed to be the intended price data for the associated sample EA, and thus these are matched (applying the EA ID from the EA list to the price questionnaire EA).

Out of the remaining three, one pairing is different in time, occurring in early February, late January, as opposed to the two other cases (occurring in late February). This pair, too, is assumed to correspond.

Of the remaining two EAs from the household questionnaire and the two from the price questionnaire it is not discernible which one should be substituted. However, in one case, the (non-anonymised, original) EA code is equal for two observations except for one number, making it reasonable to assume a clerical error. This is taken as the third substitution and thus the fourth falls into place.

QUESTIONNAIRE