USAID
FROM THE AMERICAN PEOPLE

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
IFPRI

DESCRIPTION OF THE BANGLADESH INTEGRATED HOUSEHOLD SURVEY

Akhter U. Ahmed
Bangladesh Policy Research and Strategy Support Program
International Food Policy Research Institute

DESCRIPTION OF THE BANGLADESH INTEGRATED HOUSEHOLD SURVEY

Principal Investigator: **Akhter U. Ahmed**
International Food Policy Research Institute

Prepared for: **United States Agency for International Development**
Grant Number: **EEM-G-00-04-00013-00**

Submitted by: **International Food Policy Research Institute**
Policy Research and Strategy Support Program for Food Security and Agricultural Development in Bangladesh
House 10A, Road 35, Gulshan 2, Dhaka 1212, Bangladesh

Date: **November 2016**

Contents

Figures

Tables

1. Introduction

High quality data are fundamental for evidence-based policy research to address specific food security and agricultural development issues. Since October 2010, the Policy Research and Strategy Support Program (PRSSP) for Food Security and Agricultural Development, funded by the United States Agency for International Development (USAID) and implemented by the International Food Policy Research Institute (IFPRI), has been providing evidence-based policy research support in Bangladesh. Building on IFPRI's previous work in the country alongside the Government of Bangladesh (GOB), USAID and other development partners, the program fills the need for demand-driven food and agricultural policy research in response to Bangladesh's Country Investment Plan (CIP) for agriculture, food security, and nutrition. It generates information on critical issues, strengthens analytical capacity within the country, and stimulates policy dialogue. Its main objectives are to enhance the efficiency of food production and marketing, accelerate income growth of the poor, and improve nutrition for vulnerable groups.

One of the major responsibilities of the IFPRI-PRSSP is to evaluate the performance of the Feed the Future (FTF) program in Bangladesh. FTF is the US Government's global hunger and food security initiative that supports country-driven approaches to address the root causes of poverty, hunger, and undernutrition. In Bangladesh, FTF's collective efforts aim to improve the livelihood and nutritional status of households through: (1) increased on-farm productivity, (2) increased investment in market systems and value chains, (3) enhanced food security policy and planning capacity, (4) enhanced agriculture innovation capacity, and (5) improved nutritional status of the rural poor.

Towards that end, IFPRI researchers designed the Bangladesh Integrated Household Survey (BIHS)—the most comprehensive, nationally representative household survey conducted to date. The carefully collected data serve the basis for assessing performance of the FTF program in Bangladesh. Additionally, the BIHS provides useful data in an integrated format to answer the varied research questions posed in different PRSSP studies. Through the BIHS and several other surveys, the IFPRI-PRSSP has developed local capacity for high-quality survey work in Bangladesh.

2. The BIHS

The IFPRI-PRSSP research plan includes three rounds of the BIHS. The first round of the BIHS was conducted from November 2011 to March 2012, which is used as a reference point to measure progress through repeat surveys. The PRSSP carried out the second BIHS round from January to June 2015, which was administered on the same samples of households surveyed in the baseline creating a two-round panel (i.e., longitudinal surveys). The third BIHS round is planned to be conducted from November 2017 to March 2018.

BIHS is the only nationally representative survey in Bangladesh that collects detailed data on (1) plot-level agricultural production and practices, (2) dietary intake of individual household members, (3) anthropometric measurements (height and weight) of all household members, and (4) data to measure women's empowerment in agriculture index (WEAI). A community survey supplements the BIHS data to provide information on area-specific contextual factors.

This section provides a description of the BIHS in terms of sampling, questionnaire design, training of survey enumerators and supervisors, survey administration, and data entry and cleaning.

2.1 Sampling

The BIHS sample is statistically representative at the following levels: (1) nationally representative of rural Bangladesh; (2) representative of rural areas of each of the seven administrative divisions of the country: Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Rangpur, and Sylhet; and, (3) representative of the FTF Zone of Influence (ZOI) in south-western Bangladesh. USAID provided IFPRI the list of FTF locations (districts and upazilas or sub-districts).[1] Using this list, a consultant statistician sampled the FTF ZOI separately for its statistical representativeness.[2]

A sound and appropriate statistical method was used to calculate the total BIHS sample size of 6,500 households in 325 primary sampling units (PSUs) or villages. The sample design of the BIHS followed a stratified sampling in two stages—selection of PSUs and selection of households within each PSU—using the sampling frame developed from the community series of the 2001 population census of Bangladesh.

[1] The administrative structure of Bangladesh consists of divisions, districts, upazilas, and unions, in decreasing order by size. There are 7 divisions, 64 districts, 484 upazilas, and 4,498 unions (all rural).

[2] The BIHS sampling was done by a consultant statistician, former chief statistician at the Bangladesh Bureau of Statistics, Ministry of Planning.

Later, sampling weights were adjusted on the basis of the latest population census of 2011. The domain of the national survey was the rural areas of the entire country, and the domain of the FTF ZOI was all the upazilas belonging to the ZOI.

In the first stage of sampling, the total BIHS sample of 325 PSUs were allocated among the eight strata (seven divisions and the FTF ZOI) with probability proportional to size (size being the number of households in each stratum), which resulted in the following distribution: 21 PSUs in Barisal, 48 in Chittagong, 87 in Dhaka, 27 in Khulna, 29 in Rajshahi, 27 in Rangpur, 36 in Sylhet, and 50 in the FTF ZOI. In the second stage, 20 households were randomly selected from each PSU. The sampling process and survey administration included the following steps:

- List all villages in each of the stratum (7 divisions and the FTF ZOI of influence).
- In each stratum, randomly select villages (PSUs) with probability proportional to size (PPS) sampling using the number of households in the 2001 population census data.
- Conduct complete census in each of the 325 selected villages.
- Randomly select 20 households from each village from the census list.
- Conduct interviews through male and female enumerators of male and female respondents of each selected household, respectively.

Initially, the FTF stratum had a sample of 1,000 households in 50 PSUs (labeled as FTF original in *hh/sample_type* variable in the dataset). However, IFPRI-PRSSP researchers noticed that the sample size becomes inadequate for certain disaggregated analyses of the data from the FTF sample of 1,000 households. To obtain more robust estimates of disaggregated analysis, the researchers expanded the FTF sample of households by adding 52 PSUs (with 1,040 sample households labeled as FTF additional in *hh/sample_type* variable in the dataset) that belong to FTF upazilas in Barisal, Dhaka, and Khulna, which are strata (divisions) of the overall BIHS sampling frame. Since the sampling frame of the BIHS has the FTF stratum and the seven strata representing the seven divisions, the use of the additional BIHS sample from the three divisional strata required estimation of appropriate sampling weights to obtain results that are statistically representative of the FTF ZOI. The consultant statistician calculated the sampling weights and trained IFPRI-PRSSP research analysts on the use of the weights in analyzing the expanded sample of the FTF data set. The final sample frame of the FTF ZOI includes 2,040 households (1,000 households in the original FTF sample and 1,040 additional sample households) in 102 PSUs belonging to 73 upazilas.

For the second round of the BIHS survey, sampling weights were updated using the growth rates of household and population following the Population and Housing Census of the Bangladesh Bureau of Statistics (BBS). Since BBS did not conduct a Population and Housing Census after the 2011 survey, PRSSP researchers estimated a growth rate of households for each of the divisions in Bangladesh using the total number of households from the BBS's Population and Housing Census of 2001 and 2011.[3] Using the growth rates, division level household weights were calculated for the survey. The population weight is calculated as household weights multiplied by household size.

The weights to maintain the representativeness of the FTF sample was also updated for the second round using the same methodology used for the nationally representative sample.

Figures 1 and 2 show the survey PSUs in the map of Bangladesh, for the national and the FTF sampling frames, respectively.

2.2 Survey Instruments

IFPRI has extensive experience in the design and implementation of similar surveys in Bangladesh and other countries. The IFPRI-PRSSP researchers also consulted the 2010 Household Income and Expenditure Survey (HIES) questionnaires of the Bangladesh Bureau of Statistics (BBS) in order to collect data on a comparable set of variables.

The BIHS questionnaires include modules that together provide useful data in an integrated format to answer the varied research questions posed in different PRSSP studies. The surveys collect gender-disaggregated information, as appropriate.

The IFPRI-PRSSP team prepared a draft questionnaire for the BIHS, which was peer reviewed within IFPRI. A revised questionnaire was distributed to USAID and its partners, officials of the Food Planning and Monitoring Unit (FPMU) of the Ministry of Food, researchers, and other stakeholders in Bangladesh for comments. IFPRI received detailed comments from a number of organizations and incorporated them in the questionnaire. IFPRI-PRSSP researchers revised the first round BIHS questionnaire and included additional questions for the BIHS second round.

[3] Household growth rate = $\left(\frac{number\ of\ households\ in\ 2011}{number\ of\ households\ in\ 2001}\right)^{1/10} - 1$

Figure 1 Map of Bangladesh showing the survey upazilas in the national sampling frame

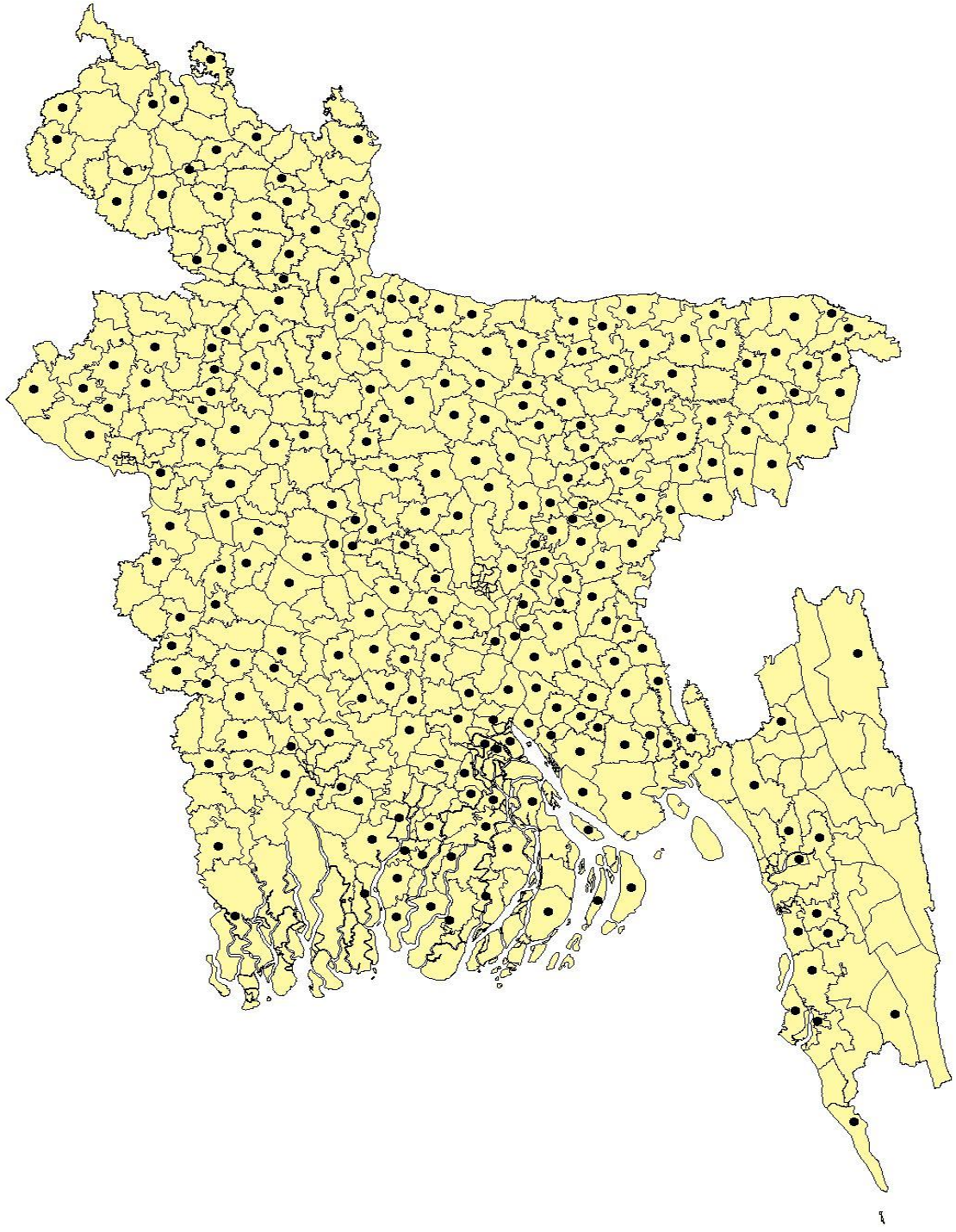
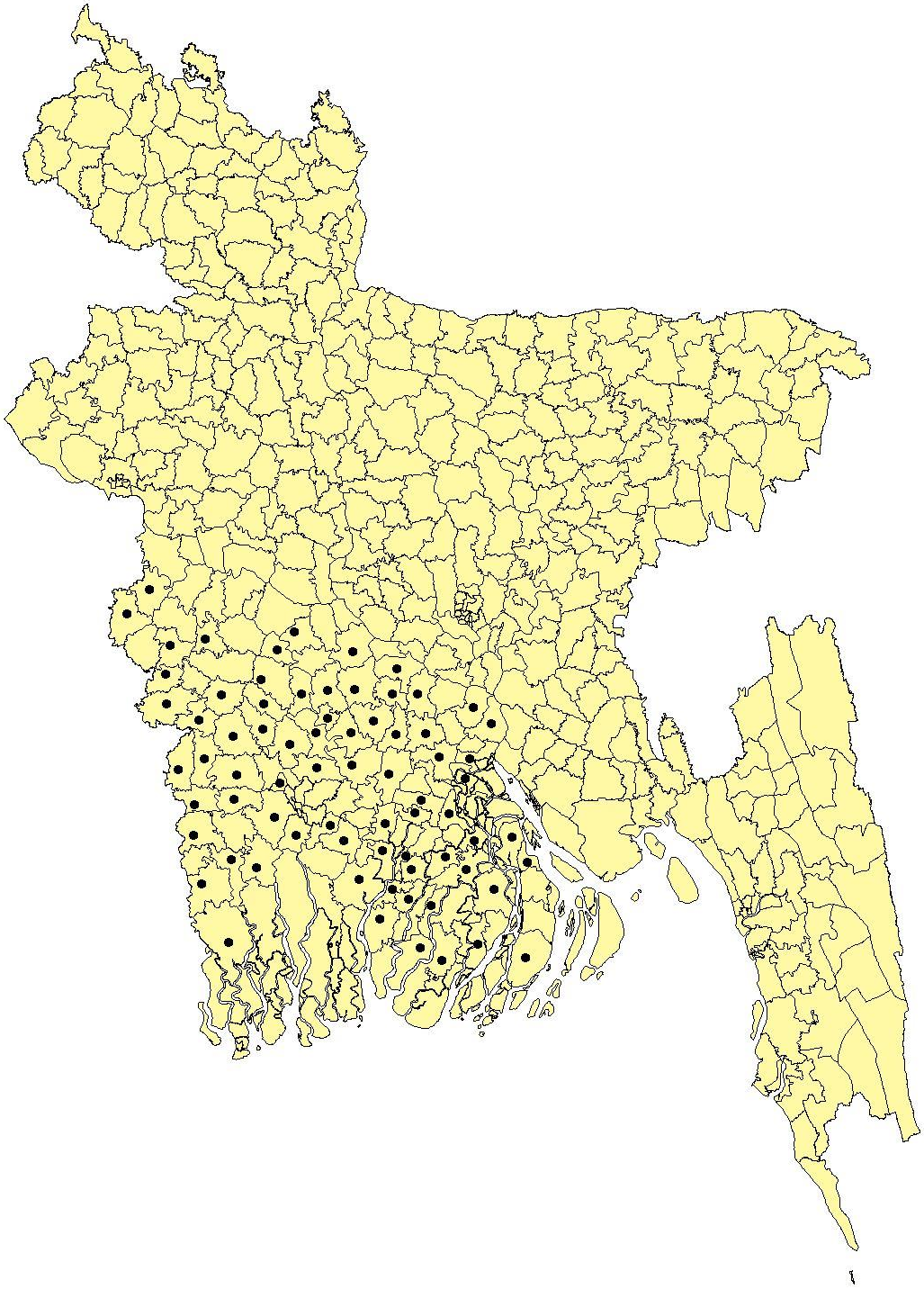


Figure 2 Map of Bangladesh showing the survey upazilas in the Feed the Future sampling frame



BIHS uses a two-part questionnaire—one part for female respondents and the other for male respondents. The modules of the questionnaires are listed below:

- **MODULE B (MALE AND FEMALE):** Household composition and education (relation to household head, age, marital status, age at marriage, occupation, literacy, level of education, additional schooling information for all children age 6–18 or those who have attended primary/secondary school/madrasa)
- **MODULE C (MALE):** Employment for all household members age 6 years and older (employment status, type of work, number of days worked per week, wages)
- **MODULE D (MALE):** Current household assets (date purchased/acquired, purchase price and current value, gender-disaggregated information on asset ownership)
- **MODULE E (MALE):** Savings (where saved, planned use of savings)
- **MODULE F (MALE):** Loans (source of loan for each borrower, use of loan, outstanding amount of loan, interest rate)
- **MODULE G (MALE):** Landownership and tenure (plot-level data on homestead land, cultivable land, other land, soil type, current value of land, gender-disaggregated information on landownership and decision making regarding use of land)
- **MODULE H (MALE):** Agricultural production and costs (plot-level data)
    - Crops grown and area planted on own land and on mortgaged/rented/leased land, source and cost of seeds
    - Crop yields, use of produced crops
    - Input use and expenditure on inputs (irrigation, fertilizers, pesticides, machineries, gender-disaggregated labor use)
    - Ownership of farming assets (date purchased/acquired, purchase price and current value, gender-disaggregated information on asset ownership)
- **MODULE I (MALE):** Summary of agriculture production and food grain stock
    - Food grain stock and storage capacity
    - Non-plot food production both inside and outside homestead
    - Seedling/seedbed production cost

- Access to technologies

- **MODULE J (MALE):** Agricultural extension services and subsidies
  - Access to agricultural extension services
  - Government agriculture input subsidy card and related information
- **MODULE K (MALE):** Livestock and poultry ownership and rearing
  - Current inventory, bought/sold/slaughtered in past 12 months, buying/selling price, rearing costs, gender-disaggregated information on ownership
  - Livestock and poultry products (production, consumption, marketing practices and sales, gender-disaggregated information on decision making concerning use of products)
- **MODULE L (MALE):** Fisheries (production, consumption, marketing practices and sales)
- **MODULE M (MALE):** Marketing of agriculture, livestock and fisheries products
- **MODULE N (MALE):** Nonfarm enterprises/activities
- **MODULE O (FEMALE):** Food consumption in the last seven days (quantity of food purchased, price of purchased food, quantity consumed from home production, food received from other sources)
  - Household food inventory on the day of survey
- **MODULE P (MALE):** Nonfood expenditures (fuel, housing, clothing and footwear, health, education, communication, transport, travel, entertainment, furniture/appliances, utilities/taxes/fees, family events, miscellaneous)
- **MODULE Q (MALE):** Housing and amenities (dwelling characteristics, cooking fuel, lighting fuel, electricity, telephone)
- **MODULE R (MALE):** Water and sanitation (type of latrine, garbage disposal, source of water used for drinking and other purposes, water purification and testing for arsenic contamination)
- **MODULE S (MALE):** Access to facilities (distance, and time taken to commute by mode of transportation)
- **MODULE T (MALE):** Economic events/shocks
  - Negative shocks and coping strategies (death of main earner, loss of a regular job, loss of assets, crop loss, loss/decrease of remittances, natural calamities)

    - Positive economic events (new job, new or increase in remittances, social assistance received, etc.)

- **MODULE U (MALE):** Participation in safety net/social protection programs (government relief/transfers, nongovernmental organization [NGO] assistance, stipends)
- **MODULE V (MALE):** Migration, remittances, transfers, and other income
- **MODULE W (FEMALE):** Anthropometry (weight and length or height) of all household members
    - Health and illness
- **MODULE X (FEMALE):** Quantities of food intake by individual household members (food weighing and 24-hour recall of individual dietary intakes)
    - Household food security indicators, including use of validated food security assessments
- **MODULE Y (FEMALE):** Nutrition practices and services
    - Infant and young child feeding practices and use of micronutrients
    - Nutrition knowledge of mothers
    - Awareness-trial-adoption of sentinel practices
    - Immunization and health status of young children (<2 years)
    - Nutrition-related prenatal care during pregnancy with youngest child
    - Access to community nutrition centers
    - Exposure to nutrition information from health workers and media
- **MODULE Z (FEMALE):** Women's status
    - Earnings, mobility, reproductive decisions, commodity buying decisions, domestic violence, wife's assets brought to marriage
- **MODULE WE (MALE AND FEMALE):** Women's Empowerment in Agriculture Index (WEAI): Full version
    - Individual identification
    - Role in household decision making around production and income generation
    - Access to productive capital
    - Income

- Individual leadership and influence in the community
- Time allocation
- Decision making

2.3 Training

For implementing the BIHS, IFPRI contracted Data Analysis and Technical Assistance (DATA) Limited, a Bangladeshi consulting firm with expertise in conducting complex surveys and data analysis. DATA worked under the supervision and guidance of senior IFPRI researchers. DATA's capacity to conduct surveys to collect high-quality data was largely built by IFPRI over the past two decades.[4]

DATA provided experienced survey enumerators and supervisors to administer the BIHS; most of them hold a master's degree in social science, nutrition, or home economics. IFPRI researchers and DATA experts trained 120 experienced enumerators (60 females and 60 males) and 20 supervisors (3 females and 17 males) to conduct the survey, and 10 editors (4 females and 6 males) to edit the completed questionnaires in the field during the survey. The training of the survey team, conducted by IFPRI researchers and senior DATA staff, consisted of a formal classroom component, as well as closely monitored practice fieldwork. In the formal training, IFPRI researchers briefed the enumerators and supervisors on the objectives and methods of the survey, the sampling design, and the responsibilities of the enumerators. The enumerators and supervisors were trained in how to carry out the interviews, including line-by-line explanation and interpretation of the questionnaires, the flow and skip patterns, definitions, and explanations of how to handle unusual cases and when to contact the supervisors for assistance.

Field supervisors received additional training related to their supervisory role. In particular, they were trained on the quality control process; cross checking, editing, and coding the questions; security and confidentiality issues; and the delivery of the completed questionnaires to the DATA office in Dhaka for simultaneous data entry.

[4] DATA carried out all IFPRI surveys in Bangladesh, including more than 50 household surveys and several market, school, and other institutional surveys. In addition, DATA has conducted numerous surveys for various international organizations, such as the World Food Programme (WFP)-Bangladesh, the World Bank, the European Union, the U.S. Department of Agriculture, CARE-Bangladesh, World Vision-Bangladesh, the Population Council–New York, Save the Children (USA), Tufts University School of Nutrition Science and Policy, and the IRIS Center at the University of Maryland.

The questionnaires were field tested in five rural locations. The field testing determined the appropriate distribution of questionnaire modules for males and females, and identified problems with the questionnaires or additional rules that were needed to address difficult cases. The field testing resembled the actual implementation of the survey, in order to test the full range of survey activities, including questionnaire completion, questionnaire delivery, and data entry. An additional function of the field testing was to provide practical training to the enumerators in administering the questionnaire. The total duration of training (classroom and field testing) was 50 days.

2.4 Survey Administration

Going into the field, the teams of enumerators were equipped with a number of documents (such as the survey manual, serial numbered questionnaires, identification cards); weighing and height scales for anthropometric measurements; global positioning system (GPS) units for georeferencing, etc.[5] The BIHS dataset includes the GPS coordinate for each of the 6,500 survey households.

For BIHS Round 1, Letters of authorization to conduct the survey were issued by the Director General (DG), FPMU, Ministry of Food. The DG, FPMU sent letters to all Upazila *Nirbahi* (executive) Officers of upazilas where the survey was implemented, requesting their cooperation with the DATA team's administration of the household survey. For BIHS Round 2, the authorization to conduct the surveys was accorded to IFPRI by the Ministry of Agriculture. The Agricultural Policy Support Unit (APSU) of the Ministry of Agriculture issued letters to all Upazila *Nirbahi* Officers for cooperation.

The DATA survey team consisted of male and female interviewers who completed separate male and female questionnaires for each household. The male interviewer interviewed an adult male member of the household (usually the household head), and the female interviewer interviewed an adult female household member (typically the wife of the head of the household). IFPRI's knowledge from its previous surveys in Bangladesh and elsewhere and the pre-testing of the BIHS questionnaire in the field determined the appropriate distribution of questionnaire modules among the male and female questionnaires.

The enumerators conducted the interviews one-by-one and face-to-face with the respondents assigned to them. On average, it took about eight hours for a team of two enumerators (about four hours each) to interview one household, usually in two visits to the household on two consecutive days. A gift (valued at

[5] "Health O' Meter" weighing scales and GPS units were imported from the United States for the BIHS.

about Bangladeshi Taka[6] 200 was given to each household in appreciation of the time given for the survey interviews by its members.

The field supervisors accompanied the enumerators to the village and supervised them. Each field supervisor was responsible for his/her defined region. All field staff reported their activities to their superiors using a standard progress report form. Completed questionnaires were delivered to the DATA central office in Dhaka on a regular basis for further quality control and validation during data entry.

2.4.1 Quality Control

IFPRI and DATA took extensive care to ensure the quality of the household survey data. In the field, survey supervisors routinely oversaw interviews conducted by enumerators, and verified that enumerators completed all questionnaires on a daily basis. If the supervisors detected inconsistencies in responses in completed questionnaires, they visited the related respondents to find out the reasons and correct the responses as needed. In addition, the supervisors made random checks of about 10 percent of the completed questionnaires by revisiting the sample households. IFPRI researchers made frequent field visits to supervise the fieldwork.

2.5 Data Entry and Cleaning

The DATA office in Dhaka carried out the data entry simultaneously during data collection, with about a week time lag. It is important to enter the data as soon as possible after data collection, in case there are errors that can only be addressed by returning to the village where the errors occurred.

DATA carried out data entry of the BIHS using a specialized software (Microsoft Access) that was programmed to identify values that are out of range or inconsistent with other responses in the questionnaire.

For the BIHS second round, DATA carried out a double entry method of data input, where the same data were entered by two individuals to minimize data entry errors in the final dataset.

[6] The official exchange rate for the Taka (Tk), the currency of Bangladesh, was Tk 80.41 per US$1.00 on January 1, 2012.

2.6 Attrition and Split Households

From the 2011/12 baseline survey to the 2015 midline survey, we have experienced an attrition of 4.41 percent of the sample of 5,503 households surveyed during the baseline for the rural nationally representative sample. This means we have a 1.26 percent attrition rate per year, which is an acceptable level of attrition in survey data. Table 1 shows the status of the interviews at the 2015 midline. Please note that 2015 dataset has 5,447 households for the rural nationally representative sample, as 162 households interviewed at baseline split up into 2 or more households by the time of the midline survey.

Table 1 Status of households surveyed in 2011/12 and 2015 BIHS

Interview status	Frequency (number of households)	Percentage of baseline	Cumulative percentage
Completed at 2015 midline	5,260	95.58	95.58
Refused	11	0.20	95.78
Not at home	26	0.47	96.26
Migrated	206	3.74	100.00
Completed at 2011/12 baseline	5,503	100.00	

Source: IFPRI Bangladesh Integrated Household Survey (BIHS): 2011/12 baseline and 2015 midline surveys.

2.6.1 Identification of the split households in the 2015 BIHS dataset

For each of the households in the 2015 BIHS dataset, an identification number is assigned that is unique and consistent in each of the module for every household. The variable "*a01*" in Module A (household roster) contains the unique identification number and may be used to merge together different modules in the dataset.

For households that have split during the period between the two rounds of survey (e.g., a son of the household head from the first round got married and moved to another house), the split households' original identification numbers have decimal places, so that one can identify which households from the first round these split households belong to in the second round dataset.

In the "*a01*" variable ***.1 always means the original household (parent household) and the ***.2, ***.3 and so on, is used to identify the household that have split off. To merge modules of the dataset from the two rounds, one can keep only the household with the household head of the first round (e.g., for household number 10 split into 10.1 and 10.2, household 10.1 has the household head from the first round) and drop the rest of the split households.

3. Ethical Approval and Survey Authorization

The BIHS Round 1 and Round 2 received ethical approval from the Institutional Review Board of the International Food Policy Research Institute, Washington, DC, USA. The BIHS Round 1 questionnaires were reviewed in Bangladesh by the Ministry of Food and Disaster Management, Government of the People's Republic of Bangladesh, who issued Letters of Authorization to conduct the surveys. For the BIHS Round 2, the Ministry of Agriculture reviewed the questionnaires and authorized the survey. Oral consent to participate in the surveys was received from the respondents.