FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

Feed the Future BANGLADESH 2015

Zone of Influence Interim Assessment Report

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Photo Caption (Cover Page): A husband and wife check on their bean crop in Comilla District, Chittagong Division in 2015. Photo Credit: Farha Khan/IFPRI.

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List of Acronyms

5DE	Five Domains of Empowerment
BFS	Bureau for Food Security
BIHS	Bangladesh Integrated Household Survey
BMI	Body Mass Index
CI	Confidence Interval
CPI	Consumer Price Index
DATA	Data Analysis and Technical Assistance
DEFF	Design Effect
DHS	Demographic and Health Survey
FANTA	Food and Nutrition Technical Assistance Project
FTFMS	Feed the Future Monitoring System
GPI	Gender Parity Index
HHS	Household Hunger Scale
IFPRI	International Food Policy Research Institute
LCU	Local Currency Unit
LSMS	Living Standards Measurement Survey
MAD	Minimum Acceptable Diet
MDD-W	Women's Minimum Dietary Diversity
MDG	Millennium Development Goals
NRVCC	Nutrient-Rich Value Chain Commodity
PPP	Purchasing Power Parity
PRSSP	Policy Research and Strategy Support Program
SD	Standard Deviation
USAID	United States Agency for International Development
USD	United States Dollar
USG	United States Government
WDDS	Women's Dietary Diversity Score
WEAI	Women's Empowerment in Agriculture Index
ZOI	Zone of Influence

Executive Summary

Background

Feed the Future, led by the U.S. Agency for International Development (USAID), seeks to reduce poverty and undernutrition in 19 developing countries through its focus on accelerating growth of the agriculture sector, addressing root causes of undernutrition, and reducing gender inequality.

Feed the Future monitors its performance in part by periodic assessments of a number of standardized indicators. These indicators reflect data collected through population-based surveys in the geographic areas targeted by Feed the Future interventions, known as the Feed the Future Zones of Influence (ZOI). This document reports the results of the first interim assessment of Feed the Future's population-based indicators for the ZOI in Bangladesh.

The Feed the Future ZOI in Bangladesh includes rural areas of 20 districts in the Southern Delta region of Bangladesh, with a population of about 28 million. The ZOI includes areas with great growth potential for rice production and crop diversification. The ZOI also has high levels of poverty and malnutrition, and is disproportionately affected by natural disasters such as cyclones. It includes 11 coastal districts with increasing saline water intrusion from a rising sea level causing soil salinization in recent decades. This first interim assessment will provide the U.S. Government (USG) interagency partners, USAID Bureau for Food Security (BFS), USAID Missions, host country governments, and development partners with information about short-term progress of the ZOI indicators. The assessment is designed for use as a monitoring tool, and as such provides point estimates of the indicators with an acceptable level of statistical precision. However, Feed the Future ZOI sample calculations are not designed to support conclusions of causality or program attribution, nor is the interim assessment designed to measure change from the baseline.

Interim Assessment Indicators

Fourteen Feed the Future indicators are included in this assessment: (1) Daily per capita expenditures (as a proxy for income) in USG-assisted areas; (2) Prevalence of Poverty; (3) Depth of Poverty; (4) Prevalence of households with moderate or severe hunger; (5) Women's Empowerment in Agriculture Index (WEAI); (6) Women's Dietary Diversity; (7) Prevalence of children 6-23 months receiving a minimum acceptable diet (MAD); (8) Prevalence of exclusive breastfeeding among children under 6 months of age; (9) Prevalence of women of reproductive age who consume targeted nutrient-rich value chain commodities (NRVCC); (10) Prevalence of children 6-23 months who consume targeted NRVCC; (11) Prevalence of underweight women; (12) Prevalence of stunted children under 5 years of age; (13) Prevalence of wasted children under 5 years of age; and (14) Prevalence of underweight children under 5 years of age.

The interim assessment reports on all ten indicators that comprise the Women's Empowerment in Agriculture Index (WEAI), since data for the full WEAI were collected for both baseline (2011) and the interim (2015) surveys for the Feed the Future ZOI in Bangladesh. These are presented in the Women's Empowerment in Agriculture section of this report (Section 5).

The interim assessment does not report on the two Feed the Future anemia indicators because changes plausibly associated with Feed the Future's efforts are unlikely given the coverage and focus of nutrition programs at this time, and because they require more intrusive data collection, increase the cost of the survey, and increase the time and complexity of data collection and of obtaining in-country institutional review board approval.

Interim Assessment Data Sources

Data for the Feed the Future ZOI indicators presented in this assessment are drawn from two sources: Bangladesh Integrated Household Survey (BIHS) conducted in 2011 (baseline) and 2015 (interim), and the Bangladesh Demographic and Health Survey (BDHS) conducted in 2011 and 2014.

The Bangladesh ZOI baseline and interim surveys of the BIHS were conducted by the International Food Policy Research Institute (IFPRI) in conjunction with its data collection partner, Data Analysis and Technical Assistance (DATA). Fieldwork for the BIHS baseline survey took place between October and November 2011, and the BIHS interim survey, between January and March 2015. The BDHS surveys were conducted by the National Institute of Population Research and Training (NIPORT) of the Ministry of Health and Family Welfare, Government of the People's Republic of Bangladesh, and implemented by Mitra and Associates. Fieldwork for the 2011 BDHS took place between July and December 2011; the 2014 BDHS data collection took place between June and November 2014.

Summary of Key Findings

Household Economic Status

The Bangladesh Feed the Future ZOI interim estimates for the daily per capita expenditures (as a proxy for income) in USG-assisted areas shows an increase from $1.89 in 2011to $2.10 in 2015, an increase of 11.1 percent. The group of households with adult female but no adult male experienced a 14.3 percent increase in income—the largest increase among the disaggregated gendered household types.

Poverty declined in the Feed the Future ZOI by 6.5 percentage points (16 percent) from 2011 to 2015. Poverty declined more for adult female but no adult male households (10.0 percentage points), which is consistent with the change in income.

In addition to poverty headcount, the poverty gap or depth of poverty decreased by 2.3 percentage points (24.5 percent). Like headcount poverty measures, the group of households with adult female but no adult male had a 3.0 percentage point reduction in poverty gap—the biggest decrease among the disaggregations of gendered households type.

Women's Empowerment in Agriculture Index Indicators

The Bangladesh Feed the Future baseline (2011) and interim (2015) assessments show censored headcounts for 10 WEAI indicators, which is defined as the percent of women who are disempowered but achieved adequacy in each of the WEAI indicators. The WEAI indicators in the interim survey with the highest levels of achievement in the Bangladesh ZOI are control over the use of income (93.4 percent), input in productive decisions (90.4 percent), and ownership of assets (88.3 percent). By contrast, women in the ZOI achieved the lowest adequacy in group membership (51.3 percent) and access to and decisions on credit (60.0 percent).

Changes in achievement of adequacy from 2011 baseline to 2015 interim vary widely among the WEAI indicators in the Bangladesh ZOI. The greatest increase was observed in women's input in productive decisions (24.1 percentage points), followed by ability to speak in public (21.1 percentage points), and control over use of income (19.8 percentage points). By contrast, there was a decrease in the rate of achievement of adequacy by 5.4 percentage points in women's decision-making power over purchase, sale, or transfer of assets.

Hunger and Dietary Intake

Increased incomes and poverty reduction in the Bangladesh Feed the Future ZOI are also reflected in the decrease in the prevalence of households with moderate or severe hunger, indicating an improvement in household-level food security. The prevalence of hunger dropped by 1.9 percentage points (25.3 percent) from 7.5 percent at 2011 baseline to 5.6 percent at 2015 interim. Women's dietary diversity experienced a modest increase, from 4.26 to 4.49 food groups (5.39 percent). The prevalence of exclusive breastfeeding among children 0-5 months of age fell by 9.1 percentage points from 2011 to 2014. Approximately 64.3 percent of infants were exclusively breastfed in 2011 compared to a little over half of all infants in 2014 (55.2 percent). This drop in exclusive breastfeeding warrants further investigation to better understand why this reversal of progress is happening. Among children 6-23 months, over one-quarter (27.3 percent) received a minimum acceptable diet in the prior day in 2014 compared to 23.6 percent in 2011.

The targeted NRVCC in Bangladesh includes three commodities, which meet NRVCC criteria (see Chapter 6): lentil, mung, and groundnut.

Among women of reproductive age in Bangladesh, 21.3 percent consumed at least one of the three NRVCC foods in the prior day, with lentil most commonly consumed (19.3 percent of women).

The BDHS 2014 dataset used to calculate consumption of NRVCC for children ages 6-23 months does not have a list of individual items for 24-hour food intake for children; rather, it has a categorized list of food items. That is why for this age group only one food group met the NRVCC criteria and that is pulses and nuts. Only 8.1 percent of children consumed pulses and nuts within 24 hours of the survey.

Nutritional Status of Women and Children

The prevalence of women's underweight (defined as a body mass index [BMI] below 18.5) dropped, from 21.5 percent in 2011 to 16.3 percent in 2014.

Among children under age 5 in the Bangladesh ZOI, 32.3 percent are stunted in 2014, which is 4.6 percentage points less than 2011. The prevalence of wasting among children under age 5 (low weight-for-height) slightly increased, from 15.0 percent in 2011 to 15.8 percent in 2014, with boys showing a slightly larger increase in the prevalence of wasting than girls. Further research is necessary to assess the associated factors for children's acute undernutrition, and to identify effective strategies to buffer children from nutritional challenges that come hand-in-hand with short-term calamities that frequently occur in southwest Bangladesh. The prevalence of underweight decreased from 32.2 percent in 2011 to 30.2 percent in 2014.

Feed the Future Zone of Influence Indicator Estimates: Bangladesh

Feed the Future Indicator	Baseline (2011)			Interim (2015)		
	Estimate	95% CI[1]	n	Estimate	95% CI	n
Daily per capita expenditures (as a proxy for income) in USG-assisted areas (2010 USD)[2]						
All households	1.89	1.84-1.94	2,040	2.10	2.05-2.16	2,012
Male and female adults	1.86	1.81-1.90	1,748	2.05	2.00-2.11	1,723
Female adult(s) only***	2.10	1.93-2.26	286	2.40	2.22-2.57	280
Male adult(s) only	^	^	6	^	^	9
Children only no adults	^	^	^	^	^	^
Prevalence of Poverty: Percent of people living on less than $1.25 per day (2005 PPP)[2]						
All households**	40.50	37.00-43.90	2,040	34.01	31.94-36.08	2,015
Male and female adults**	40.50	36.80-44.10	1,748	34.35	32.11-36.59	1,726
Female adult(s) only	40.58	34.85-46.30	286	30.61	25.18-36.04	280
Male adult(s) only	^	^	6	^	^	9
Children only no adults	^	^	^	^	^	^
Depth of Poverty: Mean percent shortfall relative to the $1.25 per day poverty line (2005 PPP)[2]						
All households	9.27	8.64-9.91	2,040	7.00	6.46-7.54	2,015
Male and female adults	9.17	8.50-9.84	1,748	6.97	6.39-7.55	1,726
Female adult(s) only	10.31	8.36-12.26	286	7.29	5.64-8.94	280
Male adult(s) only	^	^	6	^	^	9
Children only no adults	^	^	^	^	^	^
Percent of women achieving adequacy on Women's Empowerment in Agriculture Index Indicators[2,3,4]						
Input in productive decisions	66.3	64.1-68.6	1,713	90.4	88.9-91.9	1,485
Ownership of assets	77.7	75.7-79.7	1,713	88.3	86.6-89.9	1,485
Purchase, sale or transfer of assets	68.4	66.2-70.6	1,713	63.0	60.5-65.5	1,485
Access to and decisions on credit	52.2	49.8-54.6	1,713	60.0	57.5-62.5	1,485
Control over use of income	73.6	71.6-75.7	1,713	93.4	92.1-94.6	1,485
Group member	44.0	41.6-46.3	1,713	51.3	48.7-53.8	1,485
Speaking in public	44.3	41.9-46.7	1,713	65.4	63.0-67.8	1,485
Workload	74.7	72.6-76.7	1,713	84.7	82.8-86.5	1,485
Leisure	75.1	73.1-77.2	1,713	81.4	79.4-83.4	1,485
Autonomy in production	82.8	81.1-84.6	1,713	82.9	80.9-84.8	1,485
Prevalence of households with moderate or severe hunger[2]						
All households	7.5	6.1-9.0	2,040	5.6	4.6-6.6	2,015
Male and female adults	7.1	5.6-8.5	1,748	4.6	3.6-5.6	1,726
Female adult(s) only	12.3	7.6-17.1	286	11.9	8.1-15.8	280
Male adult(s) only	^	^	^	^	^	^

Feed the Future Zone of Influence Indicator Estimates: Bangladesh (continued)

Feed the Future indicator	Baseline (2011)			Interim (2015)		
	Estimate	95% CI[1]	n	Estimate	95% CI	n
Women's Dietary Diversity: Mean number of food groups consumed by women of reproductive age[2]						
All women age 15-49	4.26	4.16-4.35	2,125	4.49	4.45-4.53	2,107
Prevalence of exclusive breastfeeding among children under 6 months of age[5]						
All children	64.3	55.8-72.9	123	55.2	45.5-64.9	105
Male children	60.8	48.3-73.3	62	55.0	41.1-68.8	53
Female children	67.7	55.6-79.8	61	55.4	41.4-69.3	52
Prevalence of children 6-23 months receiving a minimum acceptable diet[5]						
All children	23.6	20.0-27.2	542	27.3	23.6-31.0	552
Male children	18.8	14.1-23.4	274	25.4	23.7-34.6	279
Female children	28.3	22.9-33.8	268	29.1	20.3-30.6	273
Prevalence of women of reproductive (15-49 years non-pregnant) age who consume targeted nutrient-rich value chain commodities[2,6]						
Lentil	n/a	n/a	n/a	19.3	15.8-22.7	2,107
Mung	n/a	n/a	n/a	1.7	0.9-2.6	2,107
Groundnut	n/a	n/a	n/a	0.7	0.1-1.2	2,107
Prevalence of women of reproductive age who consume at least one targeted nutrient-rich value chain commodity[2,6]						
All women age 15-49	n/a	n/a	n/a	21.4	18.0-24.8	2,107
Prevalence of children 6-23 months who consume targeted nutrient-rich value chain commodities[5,6]						
Pulses and nuts	n/a	n/a	n/a	8.1	5.2-11.1	552
Prevalence of children 6-23 months who consume at least one targeted nutrient-rich value chain commodity[5]						
Male children	n/a	n/a	n/a	10.7	5.4-16.0	279
Female children	n/a	n/a	n/a	5.6	2.7-8.5	273
Prevalence of underweight women[5]						
All non-pregnant women age 15-49	21.5	20.3-22.7	4,307	16.3	15.2-17.4	4,442
Prevalence of stunted children under 5 years of age[5]						
All children**	36.9	34.6-39.2	1,734	32.3	30.0-34.6	1,594
Male children	37.4	34.2-40.6	877	33.7	30.5-36.9	818
Female children*	36.4	33.2-39.6	857	30.9	27.6-34.1	776

Feed the Future Zone of Influence Indicator Estimates: Bangladesh (continued)

Feed the Future indicator	Baseline (2011)			Interim (2015)		
	Estimate	95% CI[1]	n	Estimate	95% CI	n
Prevalence of wasted children under 5 years of age[5]						
All children	15.0	13.3-16.7	1,734	15.8	14.0-17.6	1,594
Male children	15.3	12.9-17.7	877	16.3	13.8-18.9	818
Female children	14.8	12.4-17.1	857	15.3	12.7-17.8	776
Prevalence of underweight children under 5 years of age[5]						
All children	32.2	30.0-34.4	1,734	30.2	27.9-32.4	1,594
Male children	31.5	28.4-34.6	877	28.7	25.6-31.8	818
Female children	33.0	29.8-36.1	857	31.7	28.4-35.0	776

n/a – Not available.

[1] Confidence intervals (CIs) demonstrate the reliability of estimated values. While interim surveys were not designed to capture change over time, non-overlapping CIs do indicate significant differences between the two estimates. However, if CIs do overlap, the reader cannot conclude whether there is or is not a significant difference between baseline and interim estimates. For the following indicators, it cannot be concluded that there are significant differences in estimates over time: *WEAI Indicator: Autonomy in production,* female adult(s) only household category of *Daily per capita expenditure. Prevalence of poverty* and *Depth of poverty*; all households, male and female adult and female adult only categories of *Household hunger, Women's Dietary Diversity, Prevalence of exclusive breastfeeding, Prevalence of minimum acceptable diet for all children and female children,* and *Prevalences of stunted, wasted and underweight children*. Based on non-overlapping CIs, the following indicators have significant differences between baseline and interim estimates: WEAI indicators: *Input in productive decision, Ownership of assets, Purchase, sale or transfer of assets, Access to and decisions on credit, Control over use of income, Group membership, Speaking in public, Leisure and Workload*; *Daily per capita expenditure* and *Depth of poverty* except for the female adult(s) only household category, Prevalence of minimum acceptable diet for male children and Prevalence of underweight women.

[2] BIHS 2011 and BIHS 2015.

[3] Significance tests were run to compare the baseline and interim estimates for WEAI Indicator: *Autonomy in production;* the female adult(s) only household category of *Daily per capita expenditure, Prevalence of poverty* and *Depth of poverty*; all households, male and female adult and female adult only categories of *Household hunger, Women's Dietary Diversity, Prevalence of exclusive breastfeeding, Prevalence of minimum acceptable diet for all children and female children,* and *Prevalences of stunted, wasted and underweight children*. The level of significance is noted to the right of each indicator: * p<.05, **p<.01, ***p<.001.

[4] Estimates show censored headcounts for 10 WEAI indicators for both baseline (2011) and interim (2015) surveys. Censored headcounts present the percent of women who are disempowered but achieve adequacy in each indicator, while uncensored headcounts depict the percent of women who achieve adequacy in each indicator regardless of their empowerment status. Censored headcounts, instead of uncensored, are presented for both rounds of survey since the Bangladesh ZOI collected the full WEAI–that is, information on all 10 indicators that comprise the ZOI WEAI score.

[5] BDHS 2011 and BDHS 2014.

[6] The indicators for women's and children's consumption of targeted NRVCC were not collected during the baseline round of data collection.

Source(s): ZOI stratum of IFPRI's Bangladesh Integrated Household Survey (BIHS), 2011 (baseline) and 2015 (interim); Bangladesh Demographic and Health Survey (BDHS), 2011 and 2014.

1. Background

This section provides background information on Feed the Future in Bangladesh, including a description of the program and the ZOI, demographic information on the ZOI population, and a summary of the agriculture situation in the ZOI.

1.1 Feed the Future Overview[1]

Bangladesh faces both opportunities and challenges for agriculture-led growth and food security. Since 2000, its gross domestic product has grown at an average rate of six percent. Rice production has tripled over the last 30 years. The extreme ($1.25 per day) poverty rate fell from about 59 percent in 2000 to about 43 percent in 2010. Forty-four percent of Bangladeshis are employed in the agriculture sector and a large majority of the rural population is involved in fisheries.

However, Bangladesh remains the most densely populated country in the world, with 163 million people living in a land area roughly the size of Iowa. Poverty, lack of access to agricultural land, and poor eating habits contribute to the country having some of the highest rates of undernutrition and child stunting in the world.

Population growth, urbanization, and soil and natural resource depletion have led to degradation of Bangladesh's land, water bodies, wetlands, and forests, and pose a significant threat to the country's agriculture sector.

Gender-related factors further complicate food insecurity and undernutrition. Women are heavily engaged in agriculture but do not have access to extension services or other inputs like seeds and fertilizer. They are also often the last to eat at meal times.

Nonetheless, Bangladesh is making progress. The under-5 mortality rate has declined by more than 50 percent since 1993, and 88 percent of children under-5 receive vitamin A supplementation twice a year through government-led campaigns. Poverty and child stunting have dropped within Feed the Future target regions.

Consistent with the Government of Bangladesh's priorities, Feed the Future focuses on increasing rice production while helping farmers diversify into higher-value, nutrient-dense commodities such as horticulture and fish.

Opportunities

Bangladesh has tremendous potential for agriculture-led growth, with fertile soil, abundant water, strong research and extension institutions, and expanding infrastructure. Over the past

[1] [1] Feed the Future, Bangladesh Fact Sheet, https://www.feedthefuture.gov/country/bangladesh

several decades, the Government of Bangladesh has adjusted its policies in the agriculture sector to increase private sector participation and reduce tariffs and price controls. As a demonstration of its strong leadership in food security, the Government of Bangladesh hosted a high-level Food Security Investment Forum in May 2010. At the meeting, representatives of the government, civil society, the private sector, academia, and donors discussed the Country Investment Plan, which was finalized in March 2011. The government also began implementing a $52 million Global Agriculture and Food Security Program, managed by the World Bank, to enhance agricultural productivity through technology generation and adoption, as well as improved water management.

Key Objectives

Feed the Future's collective efforts aim to improve the livelihood and nutritional status of households in Bangladesh through:

- Increased on-farm productivity
- Increased investment in market systems and value chains
- Enhanced food security policy and planning capacity
- Enhanced agriculture innovation capacity
- Improved nutritional status of rural poor

Feed the Future is focusing its efforts in targeted regions and value chains to maximize impact.

Value Chains

- Rice
- Horticulture
- Fisheries

Core Investments

The United States is focusing its efforts in targeted regions and value chains to maximize impact. Concentrating resources, fostering political engagement, linking agriculture to nutrition, and supporting gender equality are critical investments to successfully improve food security throughout Bangladesh.

Targeted Investments. Feed the Future will have the highest impact with focused interventions in areas that offer opportunities to reduce poverty and undernutrition. It targets intensification of rice production by promoting higher-yield, saline/drought-resistant, and more nutritious rice by supporting research institutions, government policy makers, non-governmental organizations (NGOs), farmers, and the private sector. The initiative also supports diversification into higher-value, nutritious products, such as fruits, vegetables, fish,

and livestock. This effort will increase farmers' incomes while also making more nutritious food available both in markets and at the household level. Women are specifically targeted through promotion of homestead food production and nutrition education to encourage consumption of the diversified foods they produce.

Private Sector Engagement. Feed the Future supports private sector growth by identifying market constraints and working with the Government of Bangladesh and private sector to eliminate constraints. It builds the capacity of farmers, small and medium enterprises, and civil society by promoting market linkages and improving access to market information.

Policy Reform. Feed the Future identifies and advocates for policy reforms, stimulates policy dialogue, and strengthens the analytical and monitoring capabilities of national institutions. It generates policy research to fill knowledge gaps in critical areas and communicate research outcomes to relevant stakeholders. It also works to improve the capacity of the government, civil society, farmers, and the private sector to engage in policy dialogue, with an emphasis on Bangladesh's most vulnerable populations.

Research and Innovation. Feed the Future strengthens agricultural research capacity with a focus on (1) crops that are resilient to climate change-related challenges, such as salinity, drought, and floods; (2) improved cost-effectiveness; (3) improved farming practices, including fertilizer use and better irrigation; and (4) high-value crops. Socioeconomic research is also prioritized, especially in the promotion of agribusiness marketing, value-added transformation, and analysis of the overall enabling environment. Natural resource management issues, such as soil fertility, erosion, and the impacts of pesticide use, are an important part of building research capacity in Bangladesh. Programs focus on strengthening extension services to farmers through government, NGOs, and the private sector to facilitate the dissemination of research results. In particular, efforts focus on gender roles in farming and household gardening activities and increasing the number and skills of female extension agents.

Nutrition. Through extension activities and community outreach, Feed the Future disseminates consistent information on nutrition and social and behavioral change. In collaboration with the U.S. Government Global Health Initiative, Feed the Future improves nutrition service delivery for pregnant women and young children. Research on innovative nutrition technologies and bio-fortified varieties of rice are targeted toward improving the quality of food and preventing and treating undernutrition.

Climate Change. Crop research and development focus on improving resiliency against climate change impacts associated with salinity, drought, and floods. Feed the Future efforts focus on use of energy and fertilizer, as well as on improved irrigation technologies to mitigate greenhouse gas production. Communities are being trained in conservation and sustainable agriculture practices. Feed the Future also promotes improved natural resource management,

watershed protection, and sustainable management of water bodies, since Bangladesh is heavily dependent on fishery systems.

Gender Integration. Nutrition education focuses on women and children, though not to the exclusion of men. Extension activities reach out to women, and ensure that women are well represented in Bangladeshi agricultural support services. Feed the Future's efforts encourage teaching the "whole family at once" approach to ensure access to women and the next generation of farmers and better information retention.

Whole-of-Government Approach. Feed the Future elevates coordination across the U.S. Government so that its investments, resources, and programs are harmonized for greater collective impact. This interagency engagement, led by USAID, includes collaboration with U.S. Department of State, the U.S. Department of Agriculture, the U.S Department of the Treasury, the Millennium Challenge Corporation, the U.S. African Development Foundation, the U.S. Trade Representative, and the Overseas Private Investment Corporation. For example, the State Department will encourage regulatory reform and market liberalization to improve the business climate for farmers and the private sector.

1.2 Feed the Future ZOI Profile

The geographic area targeted by Feed the Future interventions in Bangladesh is known as the Feed the Future ZOI. The Bangladesh ZOI includes rural areas of 20 districts consisting of 120 upazilas (sub-districts) in three divisions in the south and southwest region of the country: Barisal Division (6 districts)—Barguna, Barisal, Bhola, Jhalakati, Patuakhali, and Pirojpur; Dhaka Division (5 districts)— Faridpur, Gopalganj, Madaripur, Rajbari, and Shariatpur; and Khulna Division (9 districts)— Bagerhat, Chuadanga, Jessore, Jhenaidah, Khulna, Magura, Meherpur, Narail, and Satkhira.

Feed the Future targets investments in the ZOI with the greatest growth potential for rice production and diversification, prioritizing high-value agricultural production, and with high levels of poverty and malnutrition. More than 28 million people live in Feed the Future's target regions in Bangladesh, where food security and nutrition face considerable challenges associated with scarce water resources, a rising sea level, vulnerability to extreme shocks, and changing weather patterns.

A map of the Feed the Future ZOI in Bangladesh is provided in **Figure 1.1**.

Figure 1.1. Map of Bangladesh: Feed the Future ZOI

1.2.1 Rationale for ZOI Selection

USAID Feed the Future focus countries were selected based on country ownership potential, level of need, and opportunities to achieve success. By equipping people with the tools to feed themselves over the long term, Feed the Future is addressing the root causes of hunger and poverty. This long-term investment builds communities that are more resilient to drought, famine and other natural disasters, and less dependent on emergency food assistance.

The Feed the Future ZOI in the south and southwest region of Bangladesh was selected for USAID development assistance based on the unique regional challenges to food security there, and its significant potential for improvements in agricultural productivity and market development. The topography of the south—flat, with multiple rivers and tributaries—leads to frequent flooding. With a coastline on the Bay of Bengal, the southern region is also prone to cyclones and saline water surge. Relative to rest of the country, the physical infrastructure is poorer and markets—while widespread—function less well. Altogether, these regional factors in the ZOI undermine agricultural productivity and contribute to high levels of poverty and food insecurity. Feed the Future's targeted investments in the ZOI aim to mitigate these regional food security risks.

1.2.2 Demography of the ZOI

Tables 1.1 and 1.2 present individual and household population estimates, respectively, for the ZOI for 2015. Estimates of the total population as well as sub-populations of the ZOI are presented. The sub-population categories correspond to the various sub-populations for the Feed the Future indicators and disaggregates (for example, children age 6-23 months, number of households). The ZOI estimates for the total population of individuals as well as households are also disaggregated by gendered household type.[2]

IFPRI researchers used population and housing data from the Bangladesh Bureau of Statistics' (BBS) Population and Housing Census 2011 for the 20 districts in the Feed the Future ZOI. The total population was 27,404,660 (27.4 million) and the total number of households was 6,277,486 (6.3 million) in the ZOI in 2011. We also obtained BBS data for the 20 ZOI districts for different age groups, disaggregated by gender. However, BBS did not have population data for specific age groups, disaggregated by gender, namely population for the following age groups: children aged 0-5 months, 6-23 months, and 6-59 months; and pregnant and non-pregnant women. Therefore, we estimated the population of these age groups by using the proportional distribution of the respective groups from the nationally representative BIHS conducted by IFPRI in 2011. For the 6-59 months age group, we subtracted the 0-5 months population estimated from the 0-59 month population obtained from BBS to arrive at the 6-59 months age group population. Similarly, we estimated the percentage of pregnant and non-

[2] See Section 2.2.1 Standard Disaggregates for the definition of gendered household type.

pregnant women in the total population of women of reproductive age (15-49 years) from BIHS 2011. We ascribed the acquired proportions to the population of women of reproductive age from BBS to estimate the total population of pregnant and non-pregnant women in 2011.

BBS did not conduct a Population and Housing Census after 2011. Therefore, we estimated the total population in 2015 in the ZOI to be 28,403,114 (28.4 million) by compounding the total population in 2011 at a growth rate of 1.03 percent per annum for 3.5 years. We calculated the stated growth rate using the total population in 2001 and 2011 from BBS's Population and Housing Census of 2001 and 2011.

Because there was no population census in 2015, we estimated the 2015 population data according to the age and gender classifications. We estimated the population growth rates for specific age groups, disaggregated by gender (as denoted by * in Table 1.1), such as 0-59 months, 15-29 years and 15-49 years (women of reproductive age) from the BBS population census reports of 2001 and 2011. We used these growth rates and the respective 2011 populations for each group and projected the 2015 population for these classifications.

However, growth rates pertaining to other groups could not be estimated from the BBS Population Census, since population data according to these classifications for 2001 were not available to estimate group specific growth rates. As a result, for groups for which growth rates were not available (denoted by ** in Table 1.1), we used the BIHS 2015 to estimate the distributions for groups, namely 0-5 months, 6-23 months, 6- 59 months, and pregnant and non-pregnant women to estimate the disaggregated populations in 2015.

In addition, the total number of households for 2015 was estimated to be 6,452,779 by compounding the total number of households in 2011 at a growth rate of 0.79 percent per annum for 3.5 years. We calculated the stated growth rate using the total number of households in 2001 (5,804,492) and 2011 (6,277,486) from BBS's Population and Housing Census of 2001 and 2011. Since total number of households disaggregated by categories were not available, we used the BIHS 2015 and estimated the distribution of households by these categories. These proportions were attributed to the estimated total number of households in 2015 (6,452,779) to project the disaggregated number of households by categories.

Table 1.1. Population of individuals, by category, in the ZOI, Bangladesh 2015

Category of individuals	Estimated population
Total population*	**28,403,114**
Total population, by sub-population	
Women of reproductive age (15-49 years)*	7,971,866
Children 0-59 months*	2,585,302
Children 0-5 months**	245,963
Children 6-23 months**	723,927
Children 6-59 months**	2,339,338
Youth 15-29 years*	7,832,717
Total population, by area type	
Urban	n/a
Rural*	28,403,114
Total population, by gendered household type	
Male and female adult(s) **	25,585,130
Female adult(s) only**	2,746,942
Male adult(s) only**	71,042
Child(ren) only (no adults)	^
Women of reproductive age, by pregnancy status	
Pregnant**	343,156
Non-pregnant**	7,628,710
Children 0-59 months, by child sex	
Male*	1,298,656
Female*	1,286,646
Children 0-5 months, by child sex	
Male**	125,667
Female**	120,297
Children 6-23 months, by child sex	
Male**	387,742
Female**	336,186
Children 6-59 months, by child sex	
Male**	1,232,589
Female**	1,106,749
Youth 15-29 years, by sex	
Male**	3,410,936
Female**	4,421,780

n/a – Not available.

*2015 population for these groups are projected using inter-census growth rates estimated from the BBS 2001 and 2011 Population and Housing Census data for the 20 districts in the ZOI.

**Inter-census growth rates for these population groups could not be estimated because the needed disaggregated data were not available from the BBS 2001 and 2011 population and housing census. Therefore, IFPRI researchers used BIHS data to estimate the respective distributions of these groups and used these estimates to project disaggregated population for 2015.

Source: Estimated by IFPRI researchers for the Feed the Future ZOI using data from the Bangladesh Bureau of Statistics (BBS) 2001 and 2011 Population and Housing Census; and ZOI stratum of IFPRI's Bangladesh Integrated Household Survey (BIHS), 2011 (baseline) and 2015 (interim).

Table 1.2. Number of households, by category, in the ZOI, Bangladesh 2015

Category of households	Estimated population
Total number of households in ZOI*	6,452,779
Number of households, by gendered household type	
Male and female adult(s) **	5,551,971
Female adult(s) only**	873,061
Male adult(s) only**	27,747
Child(ren) only, (no adults) **	^

*Total number of households in 2015 in the Feed the Future ZOI are projected using inter-census growth rates estimated from the Bangladesh Bureau of Statistics 2001 and 2011 population census data for the ZOI.

**Inter-census growth rates of households for these classifications could not be acquired because the needed disaggregated data were not available from the BBS 2001 and 2011 Population and Housing Census. Therefore, IFPRI researchers used BIHS data to estimate the respective distributions of these groups and used these estimates to project disaggregated household numbers for 2015.

Source: Bangladesh Bureau of Statistics 2011 and 2001 Population and Housing Census; and ZOI stratum of IFPRI's Bangladesh Integrated Household Survey (BIHS), 2011 (baseline) and 2015 (interim).

1.2.3 Agriculture in the ZOI

The description of agriculture in the ZOI is based on data from the ZOI sample of the BIHS conducted by IFPRI in 2011 as a baseline.[3]

Land is the most important factor of agricultural production. However, 51 percent of households in the Feed the Future ZOI are landless—they do not own any cultivable land. About 28 percent of all farm households are "pure tenants," meaning they do not own the land they work. Therefore, they have insecure, prohibitive, and unstable access to land through sharecropping or land-leasing arrangements, which may act as a deterrent for technology adoption. These farmers must pay rent for the land they cultivate, which makes farming a low-profit enterprise for them. Similar land tenure patterns exist in the entire rural Bangladesh. It is important to consider the implications of constraints arising from the prevailing agrarian structure in the country for agricultural development policies and programs in Bangladesh.

The dominant tenurial arrangement in Bangladesh is sharecropping, where the produce is shared between the cultivator and the landowner in different proportions that have been agreed upon prior to cultivation. About 40 percent of the farmers in ZOI are sharecroppers.

BIHS sample farmers are disaggregated into four operated farm size groups: (1) marginal farmers (operating less than 0.5 acres of land), (2) small farmers (operating 0.5–1.49 acres of land), (3) medium farmers (operating 1.5–2.49 acres of land), and (4) large farmers (operating

[3] Ahmed, A. et al. (2013). *The Status of Food Security in the Feed the Future Zone and Other Regions of Bangladesh: Results from the 2011–2012 Bangladesh Integrated Household Survey.* Project Report prepared for the US Agency for International Development (USAID). Dhaka: IFPRI. Retrieved from: http://thedata.harvard.edu/dvn/dv/IFPRI/faces/study/StudyPage.xhtml?globalId=hdl:1902.1/21266

2.5 acres or more). About one-third farmers in the ZOI are marginal farmers, who operate only about 8 percent of total operated land in the zone. At the other extreme, only about 8 percent of all farmers are large farmers, who operate about 27 percent of total operated land in the ZOI.

Rice is overwhelmingly dominant in the cropping patterns, accounting for about 77 percent of the total ZOI cropped area. About 60 percent of total cropped area is irrigated during the dry, winter season for *boro* rice cultivation.

Rice cultivation practices in Bangladesh are overwhelmingly male dominated, accounting for over 95 percent of total labor. The minimal participation of women is mainly geared toward weeding activities. In contrast, women perform a substantial proportion of rice post-harvest operations. The use of female labor is particularly high for paddy drying.

Women play a significant role in the production of high-value crops in the ZOI, such as vegetables. For example, women's participation accounts for 33 percent of total labor use for sweet gourd cultivation, 24 percent for tomatoes, and 19 percent for leafy vegetables.

In the FTF ZOI, the share of women's time spent raising chickens and ducks is around 90 percent. In other words, women's time accounts for 90 percent of the total time required to raise poultry. Women's time also accounts for 51 percent of total time for raising goats and 30 percent for taking care of milk cows in the ZOI.

The use of mechanical power for farmland preparation is quite high: 76 percent of farmers in the Feed the Future ZOI use two-wheeler power tillers.

Improvement in food security in the ZOI can be enhanced by rapidly increasing the incomes of small landholding farmers. These farmers dominate the agricultural sector in Bangladesh. Providing them with adequate access to institutional credit and effective agricultural extension services is critical for agricultural development. However, the outreach of agricultural extension services and access to formal agricultural credit to these farmers are very low in absolute terms and considerably less than the service provided to medium and large farmers.

1.3 Purpose of This Report

The purpose of this interim assessment is to provide the United States Government interagency partners, USAID BFS, USAID Missions, host country governments, and development partners with information about the current status of the ZOI indicators. The assessment is designed for use as a monitoring tool, and as such provides point estimates of the indicators with an acceptable level of statistical precision. However, Feed the Future ZOI sample calculations are not designed to support conclusions of causality or program attribution, nor is the interim assessment designed to measure change from the baseline with statistical precision.

2. Methodologies for Obtaining Interim Values for Feed the Future Indicators

This section describes the methodology used to obtain the population-based Feed the Future indicators. It provides information on the data sources and describes measures and reporting conventions used throughout the report.

2.1 Data Sources

Table 2.1 presents the data sources and dates of data collection for the baseline and interim Feed the Future indicators.

Table 2.1. Data sources and dates of the Baseline and Interim Feed the Future indicators

	Baseline		Interim	
Indicator	**Data source**	**Date collected**	**Data source**	**Date collected**
Daily per capita expenditures (as a proxy for income) in USG-assisted areas	BIHS ZOI Survey	October-November 2011	BIHS ZOI Survey	January-March 2015
Prevalence of Poverty: Percent of people living on less than $1.25 per day	BIHS ZOI Survey	October-November 2011	BIHS ZOI Survey	January-March 2015
Depth of Poverty: Mean percent shortfall relative to the $1.25 per day poverty line	BIHS ZOI Survey	October-November 2011	BIHS ZOI Survey	January-March 2015
Women's Empowerment in Agriculture Index indicators	BIHS ZOI Survey	October-November 2011	BIHS ZOI Survey	January-March 2015
Prevalence of households with moderate or severe hunger	BIHS ZOI Survey	October-November 2011	BIHS ZOI Survey	January-March 2015
Women's Dietary Diversity: Mean number of food groups consumed by women of reproductive age	BIHS ZOI Survey	October-November 2011	BIHS ZOI Survey	January-March 2015
Prevalence of exclusive breastfeeding among children under 6 months of age	BDHS	July-December 2011	BDHS	June-November 2014
Prevalence of children 6-23 months receiving a minimum acceptable diet	BDHS	July-December 2011	BDHS	June-November 2014
Prevalence of women of reproductive age who consume targeted nutrient-rich value chain commodities	BIHS ZOI Survey	October-November 2011	BIHS ZOI Survey	January-March 2015
Prevalence of children 6-23 months who consume targeted nutrient-rich value chain commodities	BIHS ZOI Survey	October-November 2011	BIHS ZOI Survey	January-March 2015
Prevalence of underweight women	BDHS	July-December 2011	BDHS	June-November 2014
Prevalence of stunted children under 5 years of age	BDHS	July-December 2011	BDHS	June-November 2014
Prevalence of wasted children under 5 years of age	BDHS	July-December 2011	BDHS	June-November 2014
Prevalence of underweight children under 5 years of age	BDHS	July-December 2011	BDHS	June-November 2014

2.1.1 Primary Data: The ZOI Interim Survey in Bangladesh

This section describes the ZOI interim survey, including discussion of the sample design (including targeted sample size), questionnaire customization, fieldwork, response rates, and limitations of the survey.

Survey Sample Design

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 Feed the Future ZOI. USAID provided the list of ZOI locations (districts and upazilas). Using this list, a consultant statistician sampled the ZOI separately for its statistical representativeness.[4]

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 [that is, villages]).[5] 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. Later, sampling weights were adjusted based on 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 Feed the Future ZOI was 120 upazilas in 20 districts.

In the first stage of sampling, the total BIHS sample of 325 PSUs were allocated among the eight strata (seven divisions and the ZOI) with probability proportional to size (size being the number of households in each stratum). In the second stage, 20 households were randomly selected from each PSU.

Initially, the ZOI stratum had a sample of 1,000 households in 50 PSUs. However, IFPRI-Policy Research and Strategy Support Program (PRSSP) researchers noticed that the sample size becomes inadequate for certain disaggregated analyses of the data from the ZOI sample of 1,000 households. To obtain more robust estimates of disaggregated analysis, the researchers expanded the ZOI sample of households by adding 52 PSUs (with 1,040 sample households) that belong to ZOI 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 ZOI stratum and the seven strata represent 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 ZOI. The consultant statistician calculated the sampling weights and trained IFPRI-PRSSP research analysts on the use of the weights in analyzing the

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

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

expanded sample of the ZOI data set. The final sample frame of the ZOI includes 2,040 households (1,000 households in the original ZOI sample and 1,040 additional sample households) in 102 PSUs belonging to 73 upazilas. A more detailed description of sampling and weighting is presented in Appendix 2.1.

Questionnaire Design

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 BBS Household Income and Expenditure Survey (HIES) questionnaires to collect data on a comparable set of variables.

The BIHS questionnaires include modules that together provide an integrated data platform to answer a variety of the research questions and to track progress of the Feed the Future population level indicators. USAID gave IFPRI a list of indicators and IFPRI-PRSSP researchers designed the BIHS questionnaire to ensure that the BIHS collects the necessary data to measure them.

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 other stakeholders in Bangladesh for comments. IFPRI received detailed comments from several organizations and incorporated them in the questionnaire.

The survey was designed to collect gender-disaggregated information, as appropriate. A two-part questionnaire was prepared—one part for female respondents and the other for male respondents. The modules of the questionnaires are listed below:

- Household composition and education (relation to household, age, marital status, occupation, literacy, level of education, additional schooling information for all children ages 6–18 or those who have attended primary/secondary school/*madrasa*)
- Employment for all household members age 6 years and older (employment status, type of work, number of days worked per week, wages)
- Migration, remittances, transfers, and other income
- Current household assets (date purchased/acquired, purchase price and current value, gender-disaggregated information on asset ownership)
- Savings (where saved, planned use of savings)
- Loans (source of loan for each borrower, use of loan, outstanding amount of loan, interest rate)
- 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)

- 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)
    - Crop marketing practices and revenues
    - Ownership of farming assets (date purchased/acquired, purchase price and current value, gender-disaggregated information on asset ownership)
    - Access to agricultural extension services and subsidies
- 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)
- Fisheries (production, consumption, marketing practices and sales)
- Food grain stock and storage capacity
- Nonfarm enterprises/activities
- 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
- Nonfood expenditures (fuel, housing, clothing and footwear, health, education, communication, transport, travel, entertainment, furniture/appliances, utilities/taxes/fees, family events, miscellaneous)
- Housing and amenities (dwelling characteristics, cooking fuel, lighting fuel, electricity, telephone)
- Water and sanitation (type of latrine, garbage disposal, source of water used for drinking and other purposes, water purification and testing for arsenic contamination)
- Access to facilities (distance, and time taken to commute by mode of transportation)
- Women's status
    - Earnings, mobility, reproductive decisions, commodity buying decisions, domestic violence, wife's assets brought to marriage
- 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.)
- Participation in safety net/social protection programs (government relief/transfers, nongovernmental organization [NGO] assistance, stipends)
- Quantities of food intake by individual household members (food weighing and 24-hour recall of individual dietary intakes)
- Anthropometry (weight and length or height) of all household members
- Health and illness
- 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
- Household food security indicators, including use of validated food security assessments
- Women's Empowerment in Agriculture Index
    - 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

Fieldwork

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.

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 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. 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.

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, 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.

Going into the field, the teams of enumerators were equipped with several documents (for example, the survey manual, serial numbered questionnaires, identification cards); weighing and height scales for anthropometric measurements; global positioning system (GPS) units for georeferencing, and so on.[6] The BIHS dataset includes the GPS coordinate for each of the 6,500 survey households. Letters of authorization to conduct the survey were issued by the Director General (DG), Food Planning and Monitoring Unit (FPMU) of the 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. The second round of the BIHS panel, which includes the ZOI stratum representing the ZOI interim survey, was authorized and facilitated by the Agricultural Policy Support Unit (APSU) of the Ministry of Agriculture.

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

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 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.

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 daily. 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.

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.

From the 2011 baseline survey to the 2015 interim survey, we have experienced an attrition of 3.9 percent of the sample of 2,040 households surveyed during the baseline in the ZOI. This means we have a 1.29 percent attrition rate per year, which is an acceptable level of attrition in survey data. Note that 2015 estimates use a dataset with 2,017 observations for the ZOI, as 48 households interviewed at baseline split up into 2 or more households by the time of the

interim survey. It is usual that households over time will split due to various reasons like children moving out, couples divorcing, and so on. In such cases, split households will introduce bias in estimation when (i) the sample is not re-weighted to be representative of the population; and (ii) if split households are not tracked in subsequent rounds (Rosenzweig 2003; Verwimp and Bundervoet 2008). In the BIHS, we have tracked all split households, keeping the "parent" households as the one containing the original household head. To produce representative estimates, weights were also re-estimated for the BIHS interim data.

The BIHS baseline and interim surveys received ethical approval from the Institutional Review Board of IFPRI.

Limitations of the Survey

This interim assessment uses both BIHS ZOI primary survey data and secondary data from BDHS. We recognize that there are various factors, which could introduce biases in the measurement of indicators between baseline and interim, including seasonality differences, changes in survey instruments, differences in methods of data collection between data sources for the same indicators, differences in survey sampling design, and substantial changes in contextual factors in the ZOI (such as natural calamities, political turmoil, major infrastructural development, and change in demographic composition).

Seasonality is the only factor that may have led to some biases in the indicator values between baseline and interim. This issue is discussed in detail in Section 2.1.3. Historically, the lean season occurs twice a year in Bangladesh: (1) September-October, and (2) March-April. The interim assessment data collection in the BIHS ZOI was conducted between January 30 and March 21, 2015. As such, the later part of the interim survey took place in the lean season, when rice price starts rising and continues until *boro* rice harvest starts in May. On the other hand, the BIHS ZOI baseline survey was conducted between October 26 and November 30, 2011, with the earlier part of data collection falling in the lean season, when employment opportunities are traditionally low and rice price is high before *aman* rice harvest starts in November. In recent decades, however, the magnitude of monthly rice price variation has declined, mainly due to the remarkable increase in the share of *boro* in total rice production and supply. Thus, while the two rounds of the BIHS ZOI were conducted during different months, the seasonality difference may not lead to any significant bias in household poverty, hunger and dietary diversity indicators measured using data from BIHS ZOI surveys.

Seasonality difference is not an issue for BDHS because the 2014 data collection time period (June to November 2014) closely matches that of the 2011 BDHS (July to December 2011).

ZOI Interim Survey Response Rates

Table 2.2 presents the response rates for the ZOI interim survey for Bangladesh. The components and the response rates for the sampled households, women of reproductive age (15-49), primary adult female decision-makers (for the Women's Empowerment in Agriculture module), as well as children under age 5 are presented.

Table 2.2. Results of the household and individual interviews for the ZOI interim survey in Bangladesh 2015

Response rates and components	Total
Households	
Households selected	2,017
Households occupied	2,017
Households interviewed	2,017
Household response rate[1]	100.0
Women of reproductive age (15-49 years)	
Number of eligible women	2,107
Number of eligible women interviewed	2,107
Eligible women response rate[2]	100.0
Primary adult female decision-makers (age 18+ years)	
Number of eligible women	8,690
Number of eligible women interviewed	1,957
Primary adult female response rate[2]	22.5
Children under 5 years of age	
Number of eligible children	n/a
Number of caregivers of eligible children interviewed	n/a
Eligible children response rate[2]	n/a

[1] Household response rates are calculated based on the result codes of Module C, the household roster, and are defined as the number of households interviewed divided by the number of households occupied. Unoccupied households were excluded from the response rate calculations. The unoccupied households were those that were found to be vacant, not a dwelling unit, dwelling unit destroyed, or with an extended absence, or other result code.

[2] Individual response rates are calculated based on the result codes in the relevant individual modules, that is, Modules G, H, and I. These rates are defined as the number of eligible individuals interviewed divided by the number of eligible individuals. Eligibility is determined in modules G, H, and I, respectively. (Note that for children under 5 years of age [Module I], the primary caregivers of the children served as the respondents, not the children directly.)

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

2.1.2 Secondary Data

The Bangladesh Feed the Future ZOI interim assessment, similar to the Bangladesh Feed the Future ZOI baseline assessment, utilizes secondary data. This section discusses the use of secondary data sources for the calculation of interim indicators.

Data from the BDHS were used for the calculation of 7 indicators in the ZOI: Prevalence of exclusive breastfeeding among children under 6 months; Percentage of children age 6-23 months who receive a minimum acceptable diet; Components of a minimum acceptable diet among children age 6-23 months; Prevalences of underweight, normal weight, overweight, and obese women; Prevalence of stunting (height-for-age) among children under 5 years old; Prevalence of wasting (weight-for-height) among children under 5 years old; and Prevalence of underweight (weight-for-age) among children under 5 years old.

As shown in **Table 2.3**, the BDHS was conducted between June and November 2014. The sample in the ZOI varied by indicator, ranging from 162 infants under 6 months to 4,684 women.

Table 2.3. Secondary data sources used for the ZOI interim assessment in Bangladesh 2015

Name of data source	Indicators	Fieldwork dates	Sample size in the ZOI
Bangladesh Demographic and Health Survey 2014	Prevalence of exclusive breastfeeding among children under 6 months	June-November 2014	162
Bangladesh Demographic and Health Survey 2014	Percentage of children age 6-23 months who receive a minimum acceptable diet	June-November 2014	552
Bangladesh Demographic and Health Survey 2014	Components of a minimum acceptable diet among children age 6-23 months	June-November 2014	552
Bangladesh Demographic and Health Survey 2014	Prevalence of underweight, normal weight, overweight, and obese women	June-November 2014	4,684
Bangladesh Demographic and Health Survey 2014	Stunting (height-for-age) among children under 5 years old	June-November 2014	1,594
Bangladesh Demographic and Health Survey 2014	Wasting (weight-for-height) among children under 5 years old	June-November 2014	1,594
Bangladesh Demographic and Health Survey 2014	Underweight (weight-for-age) among children under 5 years old	June-November 2014	1,594

2.1.3 Comparability of Data Sources Used for the ZOI Interim Assessment

This section discusses the comparability across data sources for the interim assessment.

Seasonality

The BIHS ZOI interim data collection occurred between January and March 2015, which is considered mostly normal season as reported in **Table 2.4** below.

Table 2.4. Seasonal issues affecting comparison of indicators across data sources

Indicator	Season of data collection for interim
Daily per capita expenditures	Mostly non-lean season and part of lean season. BIHS ZOI Survey, January-March 2015
Prevalence of Poverty	Mostly non-lean season and part of lean season. BIHS ZOI Survey, January-March 2015
Depth of Poverty	Mostly non-lean season and part of lean season. BIHS ZOI Survey, January-March 2015
Women's Empowerment in Agriculture Index	Mostly non-lean season and part of lean season. BIHS ZOI Survey, January-March 2015
Prevalence of households with moderate or severe hunger	Mostly non-lean season and part of lean season. BIHS ZOI Survey, January-March 2015
Women's Dietary Diversity	Mostly non-lean season and part of lean season. BIHS ZOI Survey, January-March 2015
Prevalence of exclusive breastfeeding among children under 6 months of age	Mostly non-lean season. DHS Survey, June-November 2014
Prevalence of children 6-23 months receiving a minimum acceptable diet	Mostly non-lean season. DHS Survey, June-November 2014
Prevalence of underweight children under 5 years of age	Mostly non-lean season. DHS Survey, June-November 2014
Prevalence of stunted children under 5 years of age	Mostly non-lean season. DHS Survey, June-November 2014
Prevalence of wasted children under 5 years of age	Mostly non-lean season. DHS Survey, June-November 2014
Prevalence of underweight women	Mostly non-lean season. DHS Survey, June-November 2014

First, it is essential to have an historical context of seasonality dynamics and how these dynamics have evolved in Bangladesh. We will use this context to help demonstrate how seasonal issues affecting comparability within (baseline versus interim) and between data sources (BIHS and DHS) were minimized.

Monthly rice prices displayed a greater degree of stability during the last two decades compared with the 1980s and 1990s, which significantly lessened the severity of both lean seasons. Two major factors likely account for the increased price stability. First, the phenomenal growth of irrigated *boro* rice in the dry season (which increased the share of *boro* rice in total production from about 20 percent in the early 1980s to about 55 percent in the mid-2010s) increased

stability of production and resulted in a more even distribution of market arrivals of rice. The increase in the share of *boro* in total rice production have eliminated the steep seasonal rise in prices. Second, improved infrastructure and enhanced capacity of the government and farmers to undertake effective resilience measures may have reduced the magnitude of rice production shortfalls caused by floods and other natural disasters, thus contributing to improved supply stability.[7]

Like many developing countries, agricultural seasons in Bangladesh can affect welfare indicators such as food consumption, incomes, and prices. Historically, September-October has been the worst season in terms of food insecurity caused by high rice prices and a lack of employment opportunities before the *aman* rice harvest in early November, which exacerbate this lean season's severity. In contrast, mid-November to February represents the peak season when rice price falls, and employment opportunities increase due to *aman* rice harvest and *boro* rice, wheat, and other winter season crop plantations. The second and relatively less severe lean season occurs in March-April, before *boro* rice harvest, when rice price tends to be high.

Seasonality has both spatial and temporal aspects. Spatial variations in seasonality among regions within a country may be a source of biased estimates. For example, the September-October lean season is most relevant for the northwestern region of Bangladesh where the poverty rate is the highest. By contrast, the months of September and October is normal to good season in the southern part of the ZOI, where aquaculture generates higher incomes than rice cultivation.

Setting longer recall periods in survey instruments can ameliorate the impact of seasonality. In the BIHS baseline and interim surveys, agricultural production data collection used a recall period of "12 months," which eliminated seasonal bias in the data. Moreover, the non-food expenditure module used recall periods ranging from 1 to 12 months, reducing seasonal bias in consumption expenditures used as proxy for income.

The BIHS ZOI surveys were designed and administered to mitigate seasonal bias in the data. From the above discussions, we conclude that seasonality did not pose any significant biases in our estimates of indicators using the survey data.

Other Issues Regarding Comparability

USAID/Bangladesh advised IFPRI-PRSSP to use the data from the BDHS conducted in 2011 and 2014 for selected nutrition indicators for the Feed the Future ZOI. The BDHS reports provide national-level estimates as well as estimates disaggregated by each of the seven divisions of Bangladesh. However, the BDHS did not include a statistically representative stratum for the Feed the Future ZOI. The ZOI is implemented in 20 districts in Barisal, Khulna, and Dhaka

divisions with the following division-wise distribution of districts: all 6 districts in Barisal division, 9 out of 10 districts in Khulna division (Kushtia district is excluded), and 5 out of 17 districts in Dhaka division. Since only a small part of Dhaka division belongs to the ZOI, USAID/Bangladesh and IFPRI-PRSSP decided to use the average estimates of nutrition indicators from the combined sample of Barisal and Khulna divisions from the BDHS data to measure nutrition indicators for the entire Feed the Future ZOI.

In order to examine the validity of the above approach, IFPRI-PRSSP researchers calculated the nutrition indicators using data from the ZOI sample of the BIHS conducted by IFPRI in 2011, which is statistically representative of the ZOI and national rural Bangladesh. We estimated one set of the nutrition indicators for the entire ZOI implemented in 20 districts in Barisal, Khulna, and Dhaka divisions; and the other set only for the 15 districts in Barisal and Khulna divisions. We then compared the two sets of estimates to find out whether they are statistically different from each other at 1, 5, and 10 percent levels of significance. From this exercise, we found that none of the estimates are statistically significantly different from each other. Therefore, we conclude that the use of average estimates of nutrition indicators from the BDHS data for the combined sample of Barisal and Khulna divisions to represent the entire ZOI is justifiable.

The division-level estimates of nutritional status of children (rates of stunting, wasting, underweight, and minimum acceptable diet) are not disaggregated by gender in the published BDHS reports. Therefore, we used the 2011 and 2014 BDHS datasets to estimate the gender-disaggregated nutritional status of children, and that of women from the aggregate dataset for Barisal and Khulna divisions.

2.2 Measures and Reporting Conventions Used Throughout This Report

2.2.1 Standard Disaggregates

A standard set of disaggregate variables are used in tables throughout this report. This section lists each of the standard disaggregate variables and defines how the variable is calculated.

These variables are coded consistently; however, because data have been drawn from the ZOI interim survey and the BDHS, there may be minor cross-source variations in the data used to derive the standard disaggregates. These are noted in the variable descriptions below. The data source used for each Feed the Future indicator is also the data source used to produce the disaggregate variables presented in the associated descriptive tables.

Age in Months

The age of children in months is collected in the child nutrition-focused module of the questionnaire, rather than in the household roster, so that the child's parent or primary

caregiver can be prompted to provide the most accurate age possible. Children's age in months is presented by monthly age groups as appropriate for the children's dietary intake and anthropometry tables. For example, for the MAD table (Table 6.6), which presents the MAD indicator for children age 6-23 months, children's age in months is disaggregated into six-month age groups as follows: 6-11 months, 12-17 months, and 18-23 months. For the children's anthropometry tables (Tables 7.2, 7.3, and 7.4), which present the prevalence of stunting, wasting, and underweight for all children under 5 years of age, children's age in months is disaggregated into 12-month age groups as follows: 0-11 months, 12-23 months, 24-35 months, 36-47 months, and 48-59 months.

Age in Years

Data on respondent's age in years is collected in the household roster. For women age 15-49 and children under age 6, more detailed age data are collected in subsequent questionnaire modules to confirm eligibility to respond to the module questions; these more detailed age data are used where available. Age is generally presented in the tables in 5- or 10-year age groups.

Child Sex

The sex of the child – male or female – is a standard disaggregate for the tables presenting children's indicators, for example, children's anthropometry (Tables 7.2, 7.3, and 7.4).

Educational Attainment (Household)

Household educational attainment reflects the highest level of education attained by any member of the household, as reported in the household roster of the corresponding questionnaire. This variable is used in tables that present household-level data, and is comprised of four categories: no education (households where no member has received any formal education); less than primary (households with at least one member who has entered the formal schooling system, but with no member who has completed primary); primary (households with at least one member whose highest educational attainment is completed primary, but with no member who has completed secondary); and secondary or more (households with at least one member whose highest educational attainment is completed secondary education or more). Households are categorized in only one of the four categories.

Educational Attainment (Individual)

Educational attainment at the individual level reflects the highest level of education attained by individual household members, as reported in the household roster of the corresponding questionnaire. This variable is comprised of four categories: no education (those who have not received any formal education), less than primary (those who have entered the formal schooling system but whose educational attainment is less than completed primary); primary (those who

have completed primary but have not completed secondary); and secondary or more (those who have completed secondary education or more).

Gendered Household Type

Feed the Future Monitoring and Evaluation Guidance Series Volume 6: *Measuring the Gender Impact of Feed the Future* notes that household-level indicators should be disaggregated by *gendered household types*–that is, (1) households where members include both male and female adults[8]; (2) households where members include male adult(s), but no female adults; (3) households where members include female adult(s), but no male adults; and (4) households with only members under age 18 (children)–that is, households with children only and no adult members. This approach to conceptualizing household type is distinct from the standard *head of household* approach, which is embedded with presumptions about household gender dynamics and may perpetuate existing social inequalities and prioritization of household responsibilities that may be detrimental to women (USAID 2014:1).[9]

This variable is calculated using data on age and sex collected in the household roster of the survey questionnaire.

Household Hunger

As described in greater detail in Section 6.1 of this report, the household hunger scale (HHS) characterizes households according to three categories of hunger severity: little to no household hunger, moderate household hunger, and severe household hunger. For the purposes of serving as a disaggregate in selected tables, the HHS is converted to a dichotomous measure reflecting households that report little to no household hunger, and households that report moderate or severe household hunger.

Household Size

For the ZOI surveys, household size is defined as the total number of people who: (1) are reported to be usual members of the household; and (2) who have spent the night in the household within the past six months. This ordinal household size variable is recoded into a categorical variable as follows: small households (1-5 members), medium households (6-10 members), and large households (11 or more members). Note that other household survey programs may use a slightly different definition of household member from that used in the ZOI surveys.

[8] Adult is defined as age 18 or older.

[9] United States Agency for International Development (USAID). (2014). Feed the Future M&E Guidance Series. Volume 6: Measuring the Gender Impact of FTF, March. Accessed 27 March 2015 at http://www.feedthefuture.gov/resource/volume-6-feed-future-measuring-gender-impact-guidance.

2.2.2 Reporting Conventions

The Feed the Future interim assessment reports are primarily descriptive in nature. This section provides an overview of the conventions used in reporting these descriptive results.

- In the tables throughout this report, weighted point estimates and unweighted sample sizes (denoted by *n*) are presented.
- Most estimates are shown to one decimal place, with the specific exceptions of per capita expenditures and the women's dietary diversity indicators, which are shown to two decimal places. Unweighted sample sizes in all tables and the population estimates in Tables 1.1 and 1.2 are shown as whole numbers.
- Values in the tables are suppressed when the unweighted sample size is insufficient to calculate a reliable point estimate (n<30); this is denoted by the use of the symbol ^ in the designated row and an explanatory footnote.

Bivariate relationships are described using cross tabulation, and the strength and direction of the relationships are assessed through the use of statistical tests. Analyses are performed in Stata using *svy* commands to handle features of data collected through the use of complex survey designs, including sampling weights, cluster sampling, and stratification.

Statistical significance ($p<0.05$) is denoted with matched superscripted letters attached to the row (usually the disaggregate variable) and column (usually the outcome variable) headings. Explanatory footnotes following each table clarify the meaning of the significance test annotation, and statistically significant relationships are highlighted in the narrative throughout the report.

3. ZOI Interim Survey Population

This section describes the background characteristics of the ZOI population using data from the ZOI interim survey.

3.1 Demographics

Table 3.1 presents demographic characteristics of the households in the ZOI. Values are shown for all households, as well as by categories of gendered household type. This table presents the average household size, as well as the average number of female adults and children within the household. Household education, defined as the highest level of education of any member of the household, is also presented in this table. The average household size in the Bangladesh ZOI is 4.1 members. Notably, household size is observed to vary significantly by gendered household type in the ZOI, as shown in the superscripts in Table 3.1. Male and female adult households have an average of 4.4 members, whereas female adult-only households have an average of 2.9 people. The estimates for male adult-only have not been exhibited in the table since the sample size is below 30 and, therefore, are not statistically reliable. Additionally, in the Feed the Future ZOI sample for Bangladesh there are no child-only households, and therefore no estimates for them are available.

The average number of adult females (age 18 and over) in ZOI households is 1.4. The average number of children under 2 years is 0.1, 0-4 years is 0.4, and school-age children between 5-17 years is 1.2. Over half of the adults in the ZOI households are female (57.1 percent). Except children age 5-17, all household demographic characteristics vary significantly with gendered household type.

Furthermore, Table 3.1 shows that about 5.9 percent of survey households in the ZOI have no education, and 13.0 percent have less than primary education. Over half of the households have primary education (54.0 percent), and nearly one-third of the households in the Bangladesh ZOI attained secondary or more education (27.2 percent).

There are significant differences in household educational attainment with gendered household type. Notably, among female adult-only households, 12.6 percent have no education at all, and only 17.9 percent have secondary or more schooling. In comparison, only 4.8 percent among the male and female adult households have no education at all, while nearly one-third (28.8 percent) have secondary or more schooling.

Table 3.1. Household demographic characteristics

Characteristic	Total (All households)	By gendered household type[a]			
		Male and female adult	Female adult(s) only	Male adult(s) only	Child only
Mean household size[a]	4.1	4.4	2.9	^	^
Mean number of adult female household members[1,2,a]	1.4	1.4	1.3	^	^
Mean number of children (<2 years)[1,a]	0.1	0.2	0.1	^	^
Mean number of children (0-4 years)[1,a]	0.4	0.4	0.3	^	^
Mean number of children (5-17 years)[1]	1.2	1.2	1.3	^	^
Mean percentage of adults who are female[1,2,a]	57.1	50.7	100.0	^	^
Highest education level attained[a]					
No education	5.9	4.8	12.6	^	^
Less than primary	13.0	11.9	19.3	^	^
Primary	54.0	54.6	50.2	^	^
Secondary or more	27.2	28.8	17.9	^	^
n[3]	**2017**	**1728**	**280**	**9**	**-**

^ Results not statistically reliable, n<30.

[1] The count is based on household members with known age.

[2] Feed the Future defines adult as an individual age 18 or older. Females age 15-17 are of reproductive age, but are not considered adults by this definition.

[3] Sample n is the unweighted count of all households that responded to the survey.

[a] Significance tests were performed for associations between household characteristics and gendered household type. For example, a test was done between mean household size and gendered household type. When an association is found to be significant ($p<0.05$), a superscript is noted next to the household characteristic.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

Table 3.2 shows characteristics of the primary male and female adult decision-makers in the sampled households in the ZOI. The primary male and primary female adult decision-makers are household members age 18 or over who self-identify as the primary adult male and/or primary adult female responsible for both social and economic decision-making within the household. When they exist within a single household, primary male and female adult decision-makers are typically, but not necessarily, husband and wife. Table 3.2 shows the age group, literacy status, and educational attainment for these household members. These characteristics are shown for all primary adult decision-makers and for primary adult decision-makers according to sex.

The table shows that the modal age group among all the primary adult decision-makers is 30-39, which is nearly 28.9 percent of the total sample. The age of the primary adult decision-makers is observed to vary significantly with sex, with a greater proportion of female (8.9 percent) in the youngest age group (18-24) compared to the male decision-makers (3.3

percent) in the same group. Additionally, over half (56.9 percent) of the adult decision-makers in the Bangladesh ZOI are literate. However, there are no significant differences in literacy between male and female adults.

Nearly 36.8 percent of the primary adult decision-makers have no schooling at all, and an additional 16.9 percent attain less than primary education. Unlike literacy, educational attainment among households' primary adult decision-makers significantly varies with sex.

Table 3.2. Characteristics of the primary male and female adult decision-makers

	Total (All primary adult decision-makers)		By primary adult decision-maker sex[a]			
			Male		Female	
Characteristic	Percent	n	Percent	n	Percent	n
Age[a]						
18-24	6.1	4017	3.3	2012	8.9	2005
25-29	11.9	4017	8.9	2012	14.8	2005
30-39	28.9	4017	25.0	2012	32.8	2005
40-49	25.1	4017	25.9	2012	24.3	2005
50-59	15.5	4017	18.1	2012	12.9	2005
60+	12.5	4017	18.8	2012	6.3	2005
Literacy						
Percent literate[l]	56.9	4017	54.9	2012	58.8	2005
Educational attainment[a]						
No education	36.8	4017	38.4	2012	35.1	2005
Less than primary	16.9	4017	16.2	2012	17.7	2005
Primary	37.6	4017	34.8	2012	40.4	2005
Secondary or more	8.7	4017	10.7	2012	6.7	2005

[l] The percent who are literate comprises those who report that they can both read and write.

[a] Significance tests were performed for associations between the sex and background characteristics of the decision-maker. For example, a test was done between sex and age of the decision-maker. When an association is found to be significant ($p<0.05$), a superscript is noted next to the characteristic.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

3.2 Living Conditions

Table 3.3 shows dwelling characteristics of the households in the ZOI. Many of these measures align with the 2015 Millennium Development Goals (MDG) definitions (UNDP 2003). The table presents the percentage of households who have access to an improved water source, improved sanitation, electricity, and solid cooking fuel. The average number of people per sleeping room, as well as roof, exterior wall, and floor materials are also presented. Values are shown for all households.

Table 3.3 reveals that most survey households in the Feed the Future ZOI have access to improved water (95.4 percent), yet less than half of survey households have improved sanitation (46.1 percent).

Households in the Bangladesh ZOI have an average of 2.5 persons per sleeping room. A little over half of the ZOI households have access to electricity (53.9 percent).

Virtually all households in the Bangladesh ZOI have finished roofs (97.9 percent), and approximately two-thirds of survey households in the ZOI have walls that consist of rudimentary materials such as tin, corrugated iron (CI) sheets, mud with bamboo, bamboo, cardboard, or plastics (63.5 percent).

Table 3.3. Household dwelling characteristics

Characteristic	Total (All households)	
	Estimate	N
Percent with improved water source[1]	95.4	2,017
Percent with improved sanitation[2]	46.1	2,017
Mean persons per sleeping room[3]	2.3	2,017
Percent using solid fuel for cooking[4]	95.7	2,017
Percent with access to electricity	53.9	2,017
Household roof materials (%)[5]		
Natural	1.9	1,913
Rudimentary	0.4	1,913
Finished	97.9	1,913
Household exterior wall materials (%)[6]		
Natural	4.7	1,913
Rudimentary	63.5	1,913
Finished	31.7	1,913
Household floor materials (%)[7]		
Natural	84.1	1,913
Rudimentary	0.7	1,913
Finished	15.3	1,913

^ Results not statistically reliable, n<30.

[1] Improved water sources include *piped water into the dwelling, piped water into the yard, a public tap/standpipe, a tube well/borehole, a protected dug well, a protected spring,* and *rainwater* (WHO and UNICEF 2006). The proportion of the population with sustainable access to an improved water source is the 2015 MDG indicator #30 (UNDP 2003); however, as in most major international survey programs, the measure reported here reflects only access to an improved water source, and not the sustainability of that access.

[2] Improved sanitation facilities are those that separate human excreta from human contact and include the categories *flush to piped sewer system, flush to septic tank, flush/pour flush to pit, composting toilet, ventilated improved pit latrine,* and a *pit latrine with a slab*. Because shared and public facilities are often less hygienic than private facilities, shared or public sanitation facilities are not counted as improved (WHO and UNICEF 2006). The proportion of the population with access to improved sanitation is the 2015 MDG indicator #31 (UNDP 2003).

[3] The average number of persons per sleeping room is a common indicator of crowding (UNDP 2003).

[4] Solid fuel is defined as *charcoal, wood, animal dung,* and *agriculture crop residue.* The proportion of the population using solid fuels is MDG indicator #29 (UNDP 2003). The *other* and *no food cooked in household* categories are removed from percentages.

[5] Natural roofs include *no roof, thatch/palm leaf,* and *sod.* Rudimentary roof includes *rustic mat, palm/bamboo, wood planks,* and *cardboard.* Finished roofs include *metal, wood, calamine/cement fiber, ceramic tiles, cement,* and *roofing shingles.* The *other* category is removed from percentages.

[6] Natural walls include *no walls, cane/palm/trunks,* and *dirt.* Rudimentary walls include *bamboo with mud, stone with mud, uncovered adobe, plywood, cardboard, reused wood,* and *metal sheeting.* Finished walls include *cement, stone with lime/cement, bricks, cement blocks, covered adobe,* and *wood planks/shingles.* The *other* category is removed from percentages.

[7] Natural floors include *earth/sand* and *dung.* Rudimentary floors include *wood planks* and *palm/bamboo.* Finished floors include *parquet/polished wood, vinyl or asphalt strips, ceramic tiles, cement* and *carpet.* The *other* category is removed from percentages.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

3.3 Education

Table 3.4 presents school attendance, educational attainment, and literacy in the Bangladesh ZOI. The table presents the percent of male, female, and all household members under age 25 who are currently attending school. It also presents the percent of household members over age 9 who have attained a primary level of education, as well as the percent of household members who are reported as literate. Sex ratios in school attendance, attainment of primary education, and literacy are also presented. These measures align with MDG education indicators.

In Bangladesh, primary education is defined as five years of schooling (grades 1-5) beginning at age six. A student needs to pass the first national exam–Primary School Certificate (PSC)—to complete primary education.

Current school attendance varies significantly by age and sex. Table 3.4 reveals that 73.8 percent of children ages 5-9 in the Bangladesh ZOI are currently attending school. A little over three-fourths of children ages 10-14 are currently attending school (82.1 percent).

Primary education attainment differs significantly across age groups and sex. Attainment of primary education is highest for the 25-29 year-old age group (72.9 percent), followed by the 15-19 year-old age group (70.9 percent). Interestingly, young women and girls are increasingly better educated and literate than their male counterparts, starting with the 25-29 year-old age group. These improvements in girls' primary school enrollment and reduced gender parity in primary education most likely correspond with the government's Food for Education (FFE) program, which was launched in 1993 and provided low-income rural households a monthly ration of rice or wheat if their children attend primary school. Ahmed et al. (1994) found that FFE increased enrollment more for girls than boys.[10] Unsurprisingly, the oldest age group (55+ years) achieved the lowest level of primary education (27.2 percent).

[10] Ahmed, A. and del Ninno, C. (2002). *Food for Education Program in Bangladesh: An Evaluation of its Impact on Educational Attainment and Food Security* (IFPRI Discussion Paper 138). Retrieved from IFPRI: http://www.ifpri.org/publication/food-education-program-bangladesh.

Table 3.4. School attendance, educational attainment, and literacy

Characteristic	Percent			Female to male ratio			n
	Attending school[1,a]	Attained a primary level of education[2,b]	Literate[3,c]	Attending school[1]	Attained a primary level of education[2]	Literate[3]	
Age group[a,b,c]							
5-9	73.8	n/a[1]	55.0	1.0	n/a[1]	1.0	
10-14	82.1	46.0	84.3	1.1	1.2	1.1	
15-19	50.1	70.9	77.8	0.9	1.1	1.0	
20-24	16.6	62.2	70.7	0.5	1.4	1.1	
25-29	n/a[2]	72.9	82.8	n/a[2]	1.3	1.1	
30-34	n/a[2]	59.5	70.8	n/a[2]	1.2	1.1	
35-54	n/a[2]	39.1	49.3	n/a[2]	0.9	0.8	
55+	n/a[2]	27.2	34.0	n/a[2]	0.5	0.5	
Sex[a,b,c]							
Female							
Age group							
5-9	73.8	n/a[1]	55.2	n/a[3]	n/a[3]	n/a[3]	
10-14	86.0	49.7	87.2	n/a[3]	n/a[3]	n/a[3]	
15-19	47.8	76.0	79.4	n/a[3]	n/a[3]	n/a[3]	
20-24	11.7	65.6	72.9	n/a[3]	n/a[3]	n/a[3]	
25-29	n/a[2]	77.6	87.6	n/a[3]	n/a[3]	n/a[3]	
30-34	n/a[2]	60.2	72.4	n/a[3]	n/a[3]	n/a[3]	
35-54	n/a[2]	33.1	44.7	n/a[3]	n/a[3]	n/a[3]	
55+	n/a[2]	15.3	20.9	n/a[3]	n/a[3]	n/a[3]	
Male[a,b,c]							
Age group							
5-9	73.8	n/a[1]	54.7	n/a[3]	n/a[3]	n/a[3]	
10-14	77.9	42.1	81.3	n/a[3]	n/a[3]	n/a[3]	
15-19	52.4	65.9	76.3	n/a[3]	n/a[3]	n/a[3]	
20-24	22.5	58.1	68.1	n/a[3]	n/a[3]	n/a[3]	
25-29	n/a[2]	66.4	76.3	n/a[3]	n/a[3]	n/a[3]	
30-34	n/a[2]	58.6	68.9	n/a[3]	n/a[3]	n/a[3]	
35-54	n/a[2]	45.6	54.4	n/a[3]	n/a[3]	n/a[3]	
55+	n/a[2]	37.8	45.7	n/a[3]	n/a[3]	n/a[3]	

^ Results not statistically reliable, n<30.

n/a[1] Not applicable – Children in the age group 5-9 years are not yet old enough to have attained a primary level of education.

n/a[2] Not applicable – Current school attendance applies to school-age children and youth only, ages 5-24.

n/a[3] Not applicable – Female to male ratios cannot be calculated for male-only and female-only disaggregates.

[1] Note the survey was administered during the school year.

[2] The goals of achieving universal primary education and achieving gender equity with respect to education are assessed by multiple MDG indicators, typically using administrative school data. This table presents respondent-reported school attendance, primary educational attainment, and literacy, as well as the ratio of females to males on these measures (UNDP 2003).

[3] The MDG indicators for universal primary education and gender equity within education are assessed through the literacy rate (MDG indicator #8) and the ratio of literate women to men (MDG indicator #10) among young adults, age 15-24 years (UNDP 2003).

[a-c] Significance tests were performed for associations between the indicator in the column heading, and age and sex. For example, a test was done for school attendance by sex, and a test was done for school attendance by age. When an association is found to be significant ($p<0.05$), the superscript of the column heading will appear next to the sex row heading and/or next to the age group row heading.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

4. Household Economic Status

This section includes a background discussion of monetary poverty in Bangladesh, including the logic of the Bangladesh Integrated Household Survey (BIHS) and consumption expenditure methodology.

The Household Roster and Household Consumption Expenditure modules of the questionnaire are used to calculate the per capita expenditures and prevalence of poverty indicators. The household consumption expenditure module is similar to the Living Standards Measurement Survey (LSMS), where households' consumption of various food and non-food items is measured to infer household income and well-being. Food and non-food consumption are covered in separate modules in the questionnaire. The consumption expenditure variable is constructed in the following manner. For each food item, households are asked about household consumption from purchases, production, and other sources (for example, wages, gifts, government programs) in the last week. In general, these consumption levels are valued using prices obtained from households in the BIHS itself. Non-food items include consumables (for example, matches, batteries, soap, kerosene), and clothing, education, and transport. We also include local property taxes since public goods provision is often linked to local taxes (Deaton and Zaidi 2002),[11] and *zakat*,[12] which is linked to wealth. Following current best practice in computing consumption expenditures from household surveys (Deaton and Zaidi 2002), BIHS expenditure aggregate excludes the following costs because these tend to be lump sum, infrequent expenditures: (1) dowry, wedding, *Hajj* (pilgrimage), and funeral costs, which tend to be financed out of savings (or asset disposal); (2) durable goods (for example, appliances, means of transportation), housing, and housing repairs; (3) health and medical expenditures; and (4) legal costs.

Individuals' per capita expenditures are then derived by dividing total household expenditures by the number of household members. From these data, household expenditure totals are calculated and used as a proxy for household incomes, based on the assumption that a household's consumption is closely related to its income. Household consumption and expenditures are often preferred to income when measuring poverty due to the difficulty in accurately measuring income. According to Deaton, expenditure data are less prone to error, easier to recall, and more stable over time than income data.[13]

[11] Deaton, A. and Zaidi, S. (2002) Guidelines for constructing consumption aggregates for welfare analysis. LSMS Working Paper 135, World Bank, Washington D.C.

[12] A term used in Islamic finance to refer to the obligation that an individual has to donate a certain proportion of wealth each year to charitable causes. *Zakat* is a mandatory process for Muslims in order to physically and spiritually purify their yearly earnings that are over and above what is required to provide the essential needs of a person or family.

[13] Deaton, A. 2008. The Analysis of Household Surveys: A microeconomic approach to development policy. Baltimore: The Johns Hopkins University Press.

Bangladesh has seen a rapid decline in poverty since the 1990s. Using the national upper poverty line, which incorporates food and non-food poverty lines generated using the cost of basic needs (CBN) method by BBS from its Household Income and Expenditure Surveys (HIES), the incidence of national poverty declined from 56.7 percent to 48.9 percent between 1991-92 and 2000—a reduction rate of 0.78 percentage point per year. The rate of decline in poverty was faster during the 2000s, with a reduction rate of 1.7 percentage points per year, from 48.9 percent in 2000 to 31.5 percent in 2010. This is also evident in monthly per capita expenditure measures, which has increased by nearly 90 percent from 656.91 *taka* per person per month in 2005 to 1,245.76 *taka* per person per month in 2010. Although the poverty rate in rural Bangladesh has historically been higher than urban areas, rural poverty has seen a faster decline in the past decade compared to urban poverty rates. The rate of poverty in rural areas fell from 52.3 percent in 2000 to 35.2 percent in 2010, a decline of 1.7 percentage point per year, compared to a fall in poverty of 35.2 percent to 21.3 percent in the urban areas over the same period of time, a decline of about 1.4 percentage points per year.

Looking at the regional variation in poverty reduction and using the national upper poverty line, poverty reduction between 2005 and 2010 has been fastest in Rajshahi division (15.5 percentage points) followed by Khulna division (13.6 percentage points) and Barisal division (12.6 percentage points). The same trend is seen in terms of rural poverty during the same period. The fastest rate of reduction in rural poverty was in Rajshahi division (15.7 percentage points) followed by Khulna division (15.5 percentage points) and Barisal division (14.9 percentage points). The Feed the Future ZOI in Bangladesh incorporates rural areas of all districts of Barisal division and Khulna division (excluding Kushtia district in Khulna division) along with 5 districts from Dhaka division.

The poverty gap, which indicates the average gap between consumption levels of the population and the poverty line, decreased by 2.5 percentage points nationally between 2005 and 2010 with 5.7 and 4.4 percentage point reduction in Barisal and Khulna Divisions, respectively.

4.1 Daily Per Capita Expenditures

Table 4.1 presents daily per capita expenditures, the Feed the Future indicator that measures average daily expenditures within the ZOI per person in 2010 U.S. dollars (USD) after adjusting for 2005 purchasing power parity (PPP). Daily per capita expenditures serve as a proxy for income. This table includes the mean per capita expenditures, distributional information, and the poorest quintile's share of consumption. The table shows that 50 percent of individuals consume less than $1.77 (2010 USD). The percentiles are shown to provide information on the distribution of expenditures. As is typical of expenditure and income data, these estimates are positively skewed, with the majority of the population consuming/spending very little, and a small portion consuming much more. This is evident because the median per capita expenditure

of $1.77 (2010 USD) is much lower than the average per capita expenditure of $2.10 (2010 USD).

Estimates in Table 4.1 are shown for all households as well as disaggregated by household characteristics, including gendered household type, household size, and household educational attainment. The table shows statistically significant differences between the mean per capita expenditures of the different categories of gendered household type, household size as well as household educational attainment. In general, it appears that per capita expenditures increase among households with the highest levels of education, but decrease with the household size.

Table 4.1. Daily per capita expenditures by household characteristic (in 2010 USD[1])

	Estimate (weighted)						
		Percentile					
Characteristic	Mean[a]	10th	25th	50th	75th	90th	n[2]
Total (All households)	2.10	1.03	1.31	1.77	2.48	3.50	2,012
Gendered household type[a]							
Male and female adults	2.05	1.03	1.30	1.75	2.41	3.44	1,723
Female adult(s) only	2.40	1.00	1.37	2.08	2.84	3.88	280
Male adult(s) only	^	^	^	^	^	^	9
Child(ren) only (no adults)	^	^	^	^	^	^	0
Household size[a]							
Small (1-5 members)	2.21	1.07	1.38	1.90	2.62	3.66	1,637
Medium (6-10 members)	1.59	0.94	1.10	1.43	1.82	2.49	373
Large (11+ members)	^	^	^	^	^	^	2
Household educational attainment[a]							
No education	2.02	0.99	1.30	1.81	2.33	3.25	116
Less than primary	1.68	0.93	1.09	1.44	1.95	2.69	265
Primary	1.96	1.02	1.28	1.65	2.28	3.20	1,087
Secondary or more	2.58	1.26	1.63	2.20	3.06	4.33	544

^ Results not statistically reliable, n<30.

1 Per capita expenditures measured in Bangladeshi Taka local currency units (LCU) were converted to 2010 USD using the Basic Needs Price Index (BNPI) and the PPP Index estimated by the World Bank. We used the formula (2005 BNPI LCU/ 2015 BNPI LCU)*1/(PPP 2005)* (2010 USD CPI /2005 USD CPI) where LCU PPP 2005 = 25.49389, 2015 BNPI LCU = 230.91, 2005 BNPI LCU = 100, 2010 USD CPI =111.65, and 2005 USD CPI = 100. The conversion factor was 0.018966.

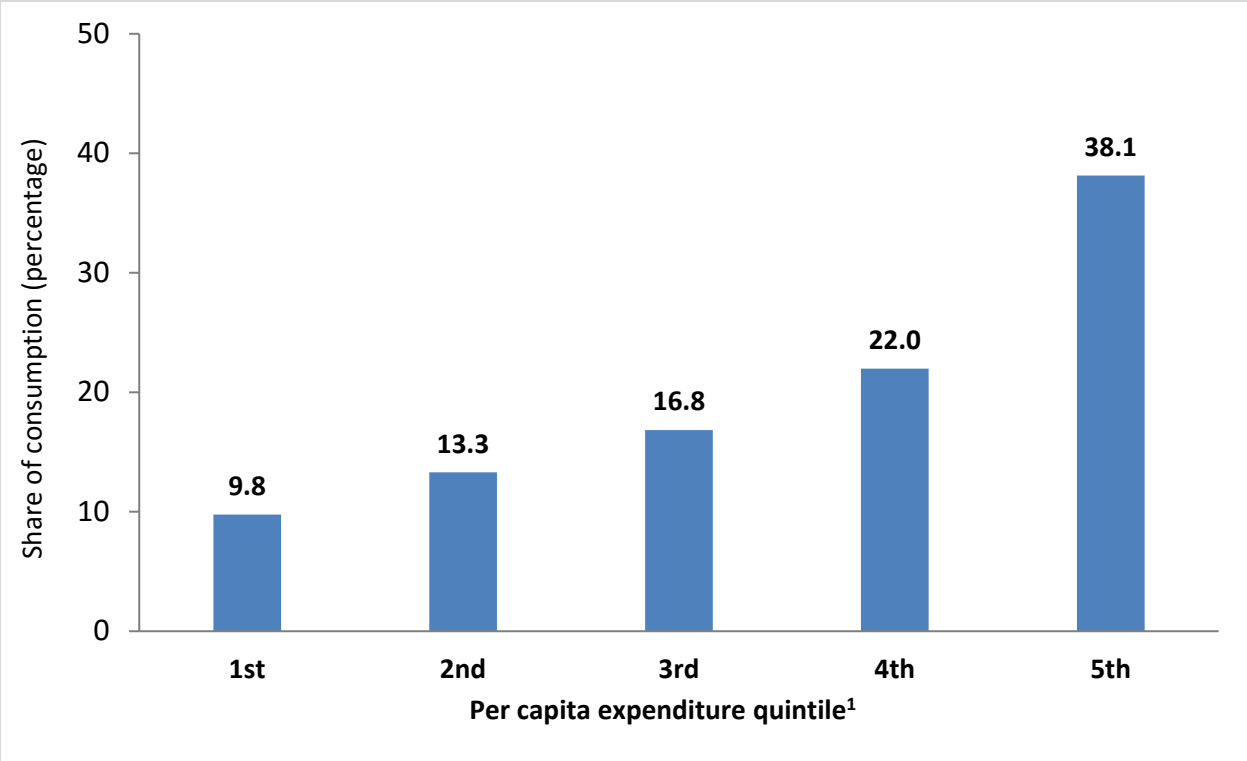
[2] Records missing information for the disaggregate variables have been excluded from the disaggregated estimates. The unweighted sample size reflects this loss in observations; therefore disaggregates' sample sizes may not total to the aggregated sample size.

[a] Significance tests were performed for associations between per capita expenditures and household characteristics. For example, a test was done between per capita expenditures and gendered household type. When an association is found to be significant ($p<0.05$), the superscript is noted next to the household characteristic.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

Figure 4.1 shows the share of total consumption per quintile in the ZOI. The share of consumption attributed to the lowest quintile (the bottom 20 percent) is a measure of inequality, an MDG. This figure shows that the poorest quintile within the ZOI consumes only 9.8 percent of the total consumption within the ZOI, whereas the wealthiest quintile consumes 38.1 percent of the total consumption within the ZOI. This indicates substantial inequality in consumption in rural Bangladesh.

Figure 4.1. Share of consumption per quintile: Feed the Future ZOI



[1] Share of the poorest quintile in national consumption is an MDG indicator that provides information on income inequality (UNDP 2003). The poorest quintile is determined as the poorest fifth of the population. The poorest quintile's share of total consumption is calculated by dividing the consumption of the poorest quintile by total consumption within the ZOI.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

4.2 Prevalence and Depth of Poverty in the ZOI

The prevalence of poverty, sometimes called the poverty headcount ratio, is measured by determining the percent of individuals living below a poverty threshold.[14] Estimates of poverty

[14] Note that expenditure data are not collected at the individual level but rather at the level of the household; individuals' per capita expenditures are then derived by dividing total household expenditures by the number of household members.

prevalence are sensitive to the poverty thresholds used to identify the poor. A standardized poverty threshold of $1.25 per person per day in adjusted[15] 2005 USD is used to track global changes in poverty across countries and over time, including for the purpose of monitoring progress toward international goals such as the MDG to eradicate extreme poverty and hunger.[16] The $1.25 threshold is in effect the extreme poverty threshold and represents the poverty line typical of the world's poorest countries.[17] Poverty estimates may also be presented for an individual country's own poverty and extreme poverty thresholds.

Where the poverty prevalence indicates how *many* individuals are impacted by poverty, it does not speak to how *much* people are impacted by poverty. The depth of poverty, often called the poverty gap, is a useful poverty estimate because it captures the extremity of poverty. This measure indicates the average gap between consumption levels and the poverty line, with the non-poor counted as having a gap of zero. The measure is expressed as a proportion of the poverty line. The depth of poverty or poverty gap represents the entire ZOI population. The average consumption shortfall of the poor, in contrast, is estimated for only those individuals living below the poverty line.

4.2.1 The $1.25 Poverty Threshold

Table 4.2 presents poverty estimates at the $1.25 per day (2005 PPP) threshold.[18] The prevalence of poverty and depth of poverty at the $1.25 per day poverty line are Feed the Future indicators. Similar to the per capita expenditures table, this table presents poverty estimates for all households in the ZOI, as well as disaggregated by household characteristics, including gendered household type, household size, and household educational attainment.

Poverty Prevalence

Thirty four percent of the ZOI population live below the $1.25 per day poverty threshold. Although no statistically significant association is found with poverty levels and gendered household types, the prevalence of poverty is higher among households with male and female adults present compared to households with female adult only. One possible explanation may be that households with female adult only may have a migrant spouse who sends remittances, which help prevent falling into poverty.

[15] Adjustments are made according to PPP conversions. These conversions are established by the World Bank to allow currencies to be compared across countries in terms of how much an individual can buy in a specific country. The $1.25 in 2005 PPP means that $1.25 could buy the same amount of goods in another country as $1.25 could in the United States in 2005.

[16] The World Bank recently issued 2011 PPPs (see http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD) and a revised standardized poverty threshold of $1.90 per person per day in 2011 PPP.

[17] World Bank. 2011. Poverty & Equality Data FAQs. http://go.worldbank.org/PYLADRLUN0. Accessed 15 April 2015.

[18] **Appendix Table 1.2** presents poverty estimates at the new $1.90 per day (2011 PPP) threshold.

A medium household size (6-10 members) is associated with significantly higher poverty compared to smaller households (1-5 members). The prevalence of poverty also declines with increasing levels of educational attainment in households except for the "no education" households, which have a lower prevalence of poverty than some of the better-educated households. Caution should be exercised in interpreting this finding due to the relatively small sample of the "no education" households.

Depth of Poverty

The depth of poverty in the ZOI is 7 percent, which indicates that the average gap between consumption levels of the population and the poverty line is $0.0875 (2005 PPP).

The depth of poverty provides an indication of the amount of resource transfers that, if *perfectly* targeted to poor households, would be needed to bring everyone below the poverty line up to the poverty line. With a ZOI population of 28.4 million, a poverty threshold of $1.25 per day, and a poverty gap of 7 percent, $2,485,018 (2005 PPP) per day would need to be transferred to the poor to bring their income or expenditures up to the poverty threshold.

Similar to the estimates of prevalence of poverty, depth of poverty is lower in households with fewer members and with higher levels of education except for the "no education" households. Furthermore, even though female adult only households have a lower prevalence of poverty, the depth of poverty is more severe for these households compared to the households with both male and female adults.

Average Consumption Shortfall of the Poor

The average *poor* person within the ZOI lives at 77.02 percent of the poverty line, or 22.98 percent below the poverty line. The average value of consumption of a *poor* person is $0.96 (2005 PPP) per day, which is $0.29 (2005 PPP) less than the $1.25 poverty threshold.

There are significant differences in average consumption shortfall of the poor by household educational attainment. Specifically, the average consumption shortfall declines with the increasing levels of educational attainment of the households. Conversely, household type and size have no significant association with average consumption shortfall of the poor.

Table 4.2. Poverty at the $1.25 (2005 PPP)[1] per person per day threshold

Characteristic	Prevalence of Poverty[2,5]		Depth of Poverty[3,5]		Average consumption shortfall of the poor[4,5]		
	Percent population[a]	n[6]	Percent of poverty line[b]	n[6]	In USD 2005 PPP[c]	Percent of poverty line[c]	n[6]
Total (All households)	**34.01**	**2,015**	**7.00**	**2,017**	**0.29**	**22.98**	**607**
Gendered household type							
Male and female adults	34.35	1,726	6.97	1,726	0.28	22.65	531
Female adult(s) only	30.61	280	7.29	280	0.33	26.6	73
Male adult(s) only	^	9	^	9	^	^	3
Household size[ab]							
Small (1-5 members)	28.54	1,640	5.58	1,640	0.27	21.85	427
Medium (6-10 members)	47.15	373	10.41	373	0.31	24.65	179
Large (11+ members)	^	2	^	2	^	^	1
Household educational attainment[abc]							
No education	39.06	117	8.30	117	0.30	23.73	36
Less than primary	51.65	266	12.63	266	0.34	27.30	123
Primary	38.94	1,087	7.80	1,087	0.28	22.36	370
Secondary or more	17.43	545	3.18	545	0.25	20.37	78

^ Results not statistically reliable, n<30.

[1] The Feed the Future poverty indicators are based on the poverty threshold of $1.25 (2005 PPP) per person per day.

[2] The prevalence of poverty is the percentage of individuals living below the $1.25 (2005 PPP) per person per day threshold. Poverty prevalence is sometimes referred to as the poverty incidence or poverty headcount ratio.

[3] The depth of poverty, or poverty gap, is the average consumption shortfall multiplied by the prevalence of poverty.

[4] The average consumption shortfall of the poor is the average amount below the poverty threshold of a person in poverty. This value is estimated only among individuals living in households that fall below the poverty threshold.

[5] A significance test was performed for associations between the indicator in the column heading and each of the variables in the rows. For example, a test was done between prevalence of poverty and gendered household type. When an association between the column indicator and row variable is found to be significant ($p<0.05$), the superscript for the indicator in the column heading is noted next to the row variable.

[6] Records missing information for the disaggregate variables have been excluded from the disaggregated estimates. The unweighted sample size reflects this loss in observations; therefore disaggregates' sample sizes may not total to the aggregated sample size.

[7] The number of child-headed households in the sample is too small to obtain a valid estimate.

[a-c] Superscripts in the column heading indicates significance tests were performed for associations between the indicator in the column heading and each of the variables in the rows. For example, a test was done between prevalence of poverty and gendered household type. When an association between the column indicator and row variable is found to be significant ($p<0.05$), the superscript for the indicator in the column heading is noted next to the row variable

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

5. Women's Empowerment in Agriculture

While women play a prominent role in agriculture, they face persistent economic and social constraints. Because of this, women's empowerment is a main focus of Feed the Future. Empowering women is particularly important to achieving the Feed the Future objectives of inclusive agriculture sector growth and improved nutritional status. The WEAI was developed to track the changes in women's empowerment that occurs as a direct or indirect result of interventions under Feed the Future, and as a programming tool to identify and address the constraints that limit women's full engagement in the agriculture sector.[19] For more information, the WEAI questionnaires and manual can be found online.[20]

5.1 Overview

The WEAI measures empowerment in five domains. The *Production* domain assesses the ability of individuals to provide input and autonomously make decisions about agricultural production. The *Resources* domain reflects individuals' control over and access to productive resources. The *Income* domain monitors individuals' ability to direct the financial resources derived from agricultural production or other sources. The *Leadership* domain reflects individuals' social capital and comfort speaking in public within their community. The *Time* domain reflects individuals' workload and satisfaction with leisure time. The WEAI aggregates information collected for each of the five domains into a single empowerment indicator.

The index is composed of two subindices: the Five Domains of Empowerment subindex (5DE), which measures the empowerment of women in the five empowerment domains, and the Gender Parity Index (GPI), which measures the relative empowerment of men and women within the household. The WEAI questionnaire is asked of the primary adult male and female decision-maker in each household and compares the 5DE profiles of women and men in the same household. The primary adult decision-makers are individuals age 18 or older who are self-identified as the primary male or female decision-maker during the collection of the household roster.[21] The WEAI score is computed as a weighted sum of the ZOI-level 5DE and the GPI.

Table 5.1 presents the five empowerment domains, their definitions under the WEAI, the corresponding 10 indicators, and the percentage of women who achieve adequacy in the ten indicators assessed in the ZOI interim survey. The percentages presented in Table 5.1 reflect

[19] Alkire, S. Malapit, H., et al. (2013).
[20] IFPRI. (2013). http://feedthefuture.gov/lp/womens-empowerment-agriculture-index
[21] The respondents of the WEAI questionnaire are only the primary decision-makers in the household and, therefore, may not be representative of the entire female and male populations in the surveyed area.

the proportion of surveyed women who are disempowered and achieve adequacy in individual indicators (that is, the censored headcount).[22] The criteria for determining adequacy in each domain are provided in Appendix A2.3.

Among the surveyed women in the Bangladesh ZOI, the 5DE indicators with the greatest achievement of adequacy are (1) control over the use of income (93.4 percent), (2) input in productive decisions (90.4 percent), and (3) ownership of assets (88.3 percent). Conversely, women are observed to score the lowest levels of achievement in (1) group membership (51.3 percent), (2) access to and decisions on credit (60.0 percent), and (3) purchase, sale, or transfer of assets (63.0 percent).

Table 5.1. Achievement of adequacy on Women's Empowerment in Agriculture Index indicators[1]

Domain	Definition of domain	Indicators	Percent with adequate achievement	n
Production	Sole or joint decision-making over food and cash crop farming, livestock, and fisheries, and autonomy in agricultural production	Input in productive decisions	90.4	1,485
		Autonomy in production	82.9	1,485
Resources	Ownership, access to, and decision-making power over productive resources such as land, livestock, agricultural equipment, consumer durables, and credit	Ownership of assets	88.3	1,485
		Purchase, sale or transfer of assets	63.0	1,485
		Access to and decisions on credit	60.0	1,485
Income	Sole or joint control over income and expenditures	Control over use of income	93.4	1,485
Leadership	Membership in economic or social groups and comfort in speaking in public	Group member	51.3	1,485
		Speaking in public	65.4	1,485
Time	Allocation of time to productive and domestic tasks and satisfaction with the available time for leisure activities	Workload	84.7	1,485
		Leisure	81.4	1,485

[1] The ZOI interim survey reflects the full version of the empowerment instrument (WEAI), as a result of which, the ZOI interim assessments categorized the respondents into being empowered or disempowered, and was able to determine the censored headcounts for all ten indicators.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

[22] See Appendix 2.3 for the criteria for achieving adequacy in each WEAI indicator.

5.2 Agricultural Production

Table 5.2 presents economic activities (including agricultural activities) among surveyed women. This table presents the percentage of surveyed women who are involved in agricultural activities (food crop farming, cash crop farming, livestock raising, or fishing), non-farm economic activities, and wage or salaried employment. This table also presents the percentage of women who have input into the decisions made regarding a specific activity.

Nearly all surveyed women (97.6 percent) in the Bangladesh ZOI report participating in a productive activity. Of these women participating in a productive activity, nearly two-thirds of the women (65.6 percent) report having input into most or all the decisions made about the activities.

Notably, among the listed activities, women in the ZOI have the highest participations in two activities, namely livestock raising (83.4 percent) and food crop farming (70.5 percent), which by and large require them to operate within and near their households. Additionally, women have the lowest participation in activities like fishing or fishpond culture (18.7 percent) and wage or salaried employment (18.8 percent).

Less than 50 percent of women who participate in economic activities report having input on decisions in those activities, except for livestock raising (64.0 percent) and wage and salaried employment (55.5 percent)—activities in which women demonstrate greater decision-making potential.

Table 5.2. Economic activities and input in decision-making on production among surveyed women

	Participates in activity		Has input[1] into decisions about activity	
Activity	Percent	n[2]	Percent[3]	n[2,4]
Total (All surveyed women)	**97.6**	**1,485**	**65.6**	**1,446**
Type of activity				
Food crop farming	70.5	1,485	38.4	1,024
Cash crop farming	49.4	1,485	35.4	715
Livestock raising	83.4	1,485	64.0	1,216
Fishing or fishpond culture	18.7	1,485	41.4	275
Non-farm economic activities	27.0	1,485	43.6	373
Wage or salaried employment	18.8	1,485	55.5	272

[1] *Having input* means that a woman reported having input into most or all decisions regarding the activity.

[2] Estimates exclude households who have no primary adult female decision-maker (PAFD) or whose data are missing/incomplete.

[3] Women who do not participate in an activity or report that no decision was made are excluded from these percentages.

[4] Sample size represents all the surveyed women who report participating in the corresponding activities.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

Table 5.3 shows the percentage of surveyed women who have input into the decisions made regarding the use of income derived from an activity. Similar to findings on women's input on decision-making related to production, nearly two-thirds of surveyed women (66.4 percent) report having input into the use of income generated from any economic activity they participated in. Particularly, of all women who participate in the listed activities, nearly 64 percent report having input into the income decisions for livestock raising, which is similar to the percent of women having input in decisions about this activity in Table 5.2. However, less than 50 percent of women report having input into income generated for individual activities, such as food crop farming (40.2 percent), cash crop farming (37.7 percent), fishing and fishpond culture (44.0 percent), and non-farm economic activities (49.3 percent).

Table 5.3. Input in decision-making on use of income among surveyed women

Activity	Has input[1] into use of income from activity	
	Percent[3]	n[2,4]
Total (All surveyed women)	**66.4**	**1,446**
Type of activity		
Food crop farming	40.2	1,024
Cash crop farming	37.7	715
Livestock raising	64.3	1,216
Fishing or fishpond culture	44.0	275
Non-farm economic activities	49.3	373
Wage or salaried employment	60.4	272

[1] *Having input* means that a woman reported having input into most or all decisions regarding the use of income generated from the activity.

[2] Estimates exclude households who have no primary adult female decision-maker or whose data are missing/incomplete.

[3] Women who do not participate in an activity or report that no decision was made are excluded from these percentages.

[4] Sample size represents all surveyed women who report participating in the corresponding activities.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

In addition to the decision-making of women on broad agricultural and economic activities, the WEAI module collects information on the extent to which women can contribute to specific agricultural and economic activities. **Table 5.4** presents the percent distribution of surveyed women's perceived ability to contribute to decisions regarding various activities. The row percentages total to 100 percent.

Most women who report having participated in the listed activities in Table 5.4 feel they can make their decisions to a 'high extent' in all the activities, with the exception of "getting inputs for agricultural production." Across the various activities, women report having the greatest perceived ability to contribute to decisions related to livestock raising (74.0 percent), which is consistent with findings in Tables 5.2 and 5.3 showing women enjoying highest participation in production and income-related decision-making related to livestock raising.

Conversely, less than 5.0 percent of surveyed women who participate in an economic activity report having *no* decision-making abilities in any activity. Decision-making about whether to take crops to market is the highest among activities where women felt they had no say (5.0 percent). No estimates are available for the response "Not applicable" because for Bangladesh ZOI interim survey, when respondents report having participated in decision-making, they were followed up to state their feelings about their decision-making abilities with four options only (not at all, small, medium, and high). "Not applicable" was not used as a response category for the follow-up question.

Tables 5.2, 5.3, and 5.4 present information contributing to two indicators of the WEAI. *Input into productive decisions*, one indicator of the *Production* domain, is measured by the extent to which individuals make decisions or feel they can make decisions on the agricultural activities listed in the three tables. The *Income* domain is comprised entirely of a single indicator measuring the control over use of income. This indicator captures individuals' ability to make decisions involving the income generated from their productive activity or the extent to which they feel they can make decisions regarding household expenditure and wage income.

Table 5.4. Decision-making on production among surveyed women

Activity	Extent to which respondents feel they can make their own decisions (percent)[1,2]				Not applicable[3]	n
	Not at all	Small extent	Medium extent	High extent		
Getting inputs for agricultural production	4.8	43.8	10.4	41.0	n/a	1,485
The types of crops to grow	4.8	36.9	17.0	41.3	n/a	1,485
Whether to take crops to the market	5.0	35.7	16.8	42.5	n/a	1,485
Livestock raising	1.2	14.7	10.1	74.0	n/a	1,485
Her own wage or salary employment	3.5	16.0	11.0	69.6	n/a	1,485
Major household expenditures	4.7	30.5	18.5	46.4	n/a	1,485
Minor household expenditures	1.6	17.1	12.2	69.1	n/a	1,485

[1] Estimates exclude households who have no primary adult female decision-maker or whose data are missing or incomplete. Women who do not participate in an activity, or who report that no decision was made, are excluded from these percentages.

[2] When a primary adult female decision-maker reports that she alone makes decisions about the specified activities, she is not asked any further questions, and is categorized during analysis as making her own decisions "to a high extent." When she reports making decisions about the specified activities in conjunction with other individuals, she is asked an additional question about the extent to which she feels she could make her own personal decisions on the specified matters, with possible response options being "not at all," "to a small extent," "to a medium extent," or "to a high extent." Responses are recoded accordingly.

[3] This category includes respondents who report participating in the activity, but say that making the specified decision is not applicable to their situation.

[n/a] "Not Applicable" was not included in the response category for the stated question in the Bangladesh ZOI interim survey, thus no estimates are available for this

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

5.3 Productive Resources

One of the 10 indicators of the WEAI is the ownership of productive resources. The ability of women to make decisions on the use of productive resources is a second indicator of the *Resource* domain. **Table 5.5** presents households' ownership of productive resources, as reported by surveyed women. Table 5.5 also presents the percentage of women who can make a decision to purchase or to sell, give away, or rent owned items. Women are counted as having the ability to make a decision if they can solely make a decision or if they can make these decisions with others with any degree of input.

Over 90 percent of respondents for each productive resource reported residing in a household with someone who owns that particular productive resource, except agricultural land, which is slightly less (78.7 percent). Notably, all households with access to mechanized farm equipment report 100 percent ownership with household member(s), although only 185 cases report having access to the asset. Assets such as non-mechanized farm equipment (99.7 percent), nonfarm business equipment (99.4 percent), small consumer durables (99.8 percent) and cell phones (99.6 percent) were reported to be owned by nearly all households. Agricultural land, however, is the least commonly owned resource, where 78.7 percent of all the households report ownership of the asset by someone in the household.

The table further exhibits the extent of women's decision-making ability with regards to transfer of assets (purchasing, selling, renting or giving them away), which the households have access to. Nearly 90 percent of the women with access are reported to have rights to decide on purchase of poultry/fowl, followed by 85.4 percent with similar rights for small consumer durables. However, for vital productive assets of the households, a much lower percentage of women are seen to have rights to decide on purchase. For example, only 29 percent women reported having the stated right for agricultural land purchase.

Similarly, with regards to women's decision-making over selling, giving away, or renting the resources that household has access to, the items with the highest percentages on this measure were also poultry/fowl (91.2 percent) and small consumer durables (85.6 percent). Finally, lowest percentage of women are reported to have rights to decide on both purchase (14.3 percent) and to sell, give away, or rent (14.6 percent) of non-agricultural land.

Table 5.5. Household ownership and surveyed women's control over productive resources

Type of resource	Someone in the household owns item		Woman can decide to purchase items		Woman can decide to sell/give/rent items	
	Percent	n[1,2]	Percent	n[1,2]	Percent	n[1,2]
Agricultural land	78.7	1,086	29.0	1,086	21.8	1,086
Large livestock	95.3	676	52.0	676	50.2	676
Small livestock	94.8	402	66.0	402	68.1	402
Chickens, ducks, turkeys, and pigeons	99.9	1,267	90.1	1,267	91.2	1,267
Fish pond or fishing equipment	98.9	430	21.4	430	20.7	430
Non-mechanized farm equipment	99.7	1,029	31.1	1,029	31.6	1,029
Mechanized farm equipment	100.0	185	19.1	185	16.4	185
Nonfarm business equipment	99.4	263	27.0	263	24.5	263
House or other structures	95.8	1,485	33.5	1,485	30.5	1,485
Large consumer durables	98.8	868	47.5	868	47.1	868
Small consumer durables	99.8	1,401	85.4	1,401	85.6	1,401
Cell phone	99.6	1,336	42.5	1,336	41.9	1,336
Non-agricultural land	95.5	224	14.3	224	14.6	224
Means of transportation	99.2	636	23.4	636	20.8	636

[1] Estimates exclude households that have no primary adult female decision-maker or in which data are missing/incomplete. Those who indicate "Not applicable" are excluded from estimates.

[2] Sample size represents all surveyed women who report residing in a household that has access to the corresponding assets.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

Table 5.6 shows the third indicator of the *Resources* domain, access to, and decision-making on credit. The table presents the percent of surveyed women who report that a household member in the past 12 months has received any loan in the form of in-kind (for example, food items or raw materials) or in cash. These categories are not mutually exclusive. Further, for women living in households where a household member has received a loan, the table presents the percentage who report having contributed to the decision to take the loan and the subsequent decisions on how to use the loan. These figures are disaggregated by source of loan.

In the Bangladesh ZOI, more than two-thirds of households in the WEAI module (76.2 percent) report a household member receiving any type of loan in the prior year. The most popular type of loan is a cash loan (75.4 percent), with only 2.1 percent of in-kind loans availed by households of the surveyed respondents. The most common credit source of the five possible sources is non-governmental organization (52.7 percent), followed by loans from friends and

relatives (33.2 percent). However, for in-kind loans, respondents report taking more loans from informal sources, such as friends and relatives (1.1 percent), compared to other sources.

Among the subsample of women living in households that received a loan in the prior year (n=1106), the bottom half of Table 5.6 presents the percentages who reported having contributed to two different decisions surrounding the loan: (1) the decision on whether to borrow, and (2) the decision on how to use the loan. Overall, nearly two in every three women (66.4 percent) report contributing to at least one of the credit decisions. When further disaggregated, nearly 65 percent of the women reported contributing to the decisions on whether to borrow the loan, and nearly 60 percent contributed to decisions on the use of loans.

Table 5.6. Credit access among surveyed women

		Credit source (percent)[1]				
Estimate	Any source (percent)	Non-governmental organization	Informal lender	Formal lender	Friends or relatives	Group-based micro-finance
Total receiving a loan (All surveyed women)	**76.2**	**52.7**	**9.8**	**13.4**	**33.2**	**1.0**
Type of loan						
Any loan	76.2	52.7	9.8	13.4	33.2	1.0
In-kind loan	2.1	0.3	0.9	0.2	1.1	0.1
Cash loan	75.4	52.4	9.0	13.2	32.3	0.9
n[2]	**1,485**	**1,485**	**1,485**	**1,485**	**1,485**	**1,485**
Total contributing to a credit decision (All surveyed women)	**66.4**	**67.0**	**53.5**	**51.4**	**63.2**	**^**
Type of decisions						
On whether to borrow	64.8	65.4	50.4	49.6	61.8	^
On how to use loan	59.7	58.6	51.8	46.1	55.6	^
n[2,3]	**1,106**	**748**	**141**	**196**	**495**	**14**

^ Results not statistically reliable, n<30.

[1] Percentages sum to more than 100 because loans may have been received from more than one source.

[2] Estimates exclude households who have no primary adult female decision-maker or whose data are missing/incomplete.

[3] Sample size represents all surveyed women who report residing in a household that received any type of loan in the prior year.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

5.4 Leadership in the Community

The *Leadership* domain measures an individual's influence and involvement with community organizations and issues impacting her community. The first indicator of the domain is an individual's ease speaking in public, which is measured by three questions related to the level of difficulty an individual faces when voicing her opinion regarding community decisions. 65.4 percent of the surveyed women in the ZOI are disempowered, but achieve adequacy in voicing their opinions on community matters (**Table 5.7**), which evidently is also the censored headcount for this indicator presented in Table 5.1.

Nearly half of surveyed women are comfortable speaking in public about three topics of community importance, listed in Table 5.7.

Table 5.7. Comfort with speaking in public among surveyed women

Topics for public discussion	Percent Comfortable speaking in public about selected topics	n[1]
Total (All surveyed women)	65.4	1,485
Topics		
To help decide on infrastructure to be built in the community	49.9	1,485
To ensure proper payment of wages for public works or other similar programs	47.3	1,485
To protest the misbehavior of authorities or elected officials	50.4	1,485

[1] Estimates exclude households who have no primary adult female decision-maker or whose data are missing/incomplete.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

The second indicator of the *Leadership* domain is an individual's participation in a community organization. **Table 5.8** shows the percentage of surveyed women who report the existence of an organization in their community and the percentage of women who are active members of the organization.

In the Bangladesh ZOI, about half of the surveyed women (51.3 percent) are evaluated to be disempowered, but they report membership in at least one group, which is also the censored headcount for this indicator presented earlier in Table 5.1. The highest participation of the primary adult female decision-makers is reported to be in religious groups (44.8 percent). Other group types in the ZOI with active participation among surveyed women include credit or microfinance groups (31.9 percent) and local government groups (24.9 percent).

Table 5.8. Group membership among surveyed women

Group type	Percent[1] Is an active group member	n[2]
Total (All surveyed women)	51.3	1,485
Group type		
Agricultural producers' group	7.9	1,485
Water users' group	10.0	1,485
Forest users' group	1.5	1,485
Credit or microfinance group	31.9	1,485
Mutual help or insurance group	3.7	1,485
Trade and business association	10.2	1,485
Civic or charitable group	0.8	1,485
Local government	24.9	1,485
Religious group	44.8	1,485
Other	4.2	1,485

[1] The denominator for this percentage includes all surveyed women, even those who reported that no group exists or that she is unaware of the existence of a group in her community. Women who report that no group exists or who are unaware of a group are counted as having inadequate achievement of this indicator.

[2] Estimates exclude households who have no primary adult female decision-maker or whose data are missing/incomplete.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

5.5 Time Use

The last domain of the WEAI is time use. This domain assesses women's work load as directly measured through a time allocation log, as well as the satisfaction felt by the surveyed woman with her leisure time. **Table 5.9** shows the percentage distribution and average hours spent participating in various activities and chores that women often perform. The percentage of women performing an activity indicates the percentage of women who reported doing an activity within the past 24 hours, irrespective of the length of time spent performing the activity. The average hours spent performing an activity is the average across all women, assigning zero hours to women who did not perform an activity. Both primary and secondary activities are presented in Table 5.9. Additionally, 81.4 percent of women in the ZOI report being satisfied with their leisure time, which is also the censored headcount shared for leisure (Table 5.1).

The most commonly reported primary activities among surveyed women in the ZOI include sleeping and resting (100.0 percent of women, mean 9.3 hours), eating and drinking (98.5 percent, mean 1.7 hours), and personal care (99.0 percent, mean 1.3 hours). Furthermore, above 90 percent of women report engaging in daily domestic work such as fetching food or water (97.3 percent), cooking (91.0 percent), and farming, caring for livestock, or fishing (68.8 percent). Conversely, the least common activities include exercising (only reported by 4.0

percent of surveyed women), work as employed (4.7 percent), and "other" (2.7 percent), where on average women reported spending less than 15 minutes a day. Finally, in the Bangladesh ZOI, very few women reported secondary activities, causing the average time spent in secondary activities across all surveyed women to be negligible.

Table 5.9. Time allocation among surveyed women

Activity	Primary activity		Secondary activity[1]	
	Percent of women	Mean hours devoted	Percent of women	Mean hours devoted
Sleeping and resting	100.0	9.3	0.1	0.0
Eating and drinking	98.5	1.7	5.0	0.0
Personal care	99.0	1.3	4.5	0.0
School and homework	9.9	0.1	0.2	0.0
Work as employed	4.7	0.2	-	-
Own business work	5.2	0.2	0.1	0.0
Farming/livestock/fishing	68.8	1.1	4.1	0.0
Shopping/getting services	5.0	0.1	0.3	0.0
Weaving, sewing, textile care	16.8	0.3	0.7	0.0
Cooking	91.0	2.2	0.6	0.0
Domestic work (fetching food and water)	97.3	3.2	3.5	0.0
Care for children/adults/elderly	63.6	1.0	7.7	0.1
Travel and commuting	25.0	0.3	1.3	0.0
Watching TV/listening to radio/reading	25.8	0.5	0.8	0.0
Exercising	4.0	0.0	0.1	0.0
Social activities and hobbies	68.7	1.6	6.1	0.1
Religious activities	61.5	1.0	2.2	0.0
Other	2.7	0.0	0.2	0.0
N	**1,485**	**1,485**	**1,485**	**1,485**

[1] Respondents were allowed to report up to two activities per time use increment (15 minutes) in the prior 24 hours. If two activities were reported, one was designated as a primary and the second as a secondary activity. Some women may not have reported secondary activities for each fifteen-minute period.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

6. Hunger and Dietary Intake

This section presents findings related to hunger in the ZOI as well as women's and young children's dietary intake.

6.1 Household Hunger

The Household Hunger Scale (HHS) is used to calculate the prevalence of households in the Bangladesh ZOI experiencing moderate or severe hunger. The HHS was developed by the USAID-funded Food and Nutrition Technical Assistance II Project (FANTA-2/FHI 360) in collaboration with the United Nations Food and Agriculture Organization. It has been cross-culturally validated to allow comparison across different food-insecure contexts. The HHS is used to assess, geographically target, monitor, and evaluate settings affected by substantial food insecurity. The HHS is used to estimate the percentage of households affected by three different severities of household hunger: little to no household hunger (HHS score 0-1); moderate household hunger (HHS score 2-3); and severe household hunger (HHS score 4-6). The HHS should be measured at the same time each year, and ideally at the most vulnerable time of year (right before the harvest, during the dry season, etc.).[23,24]

The hungry (or lean) season in Bangladesh occurs twice a year: (1) September-October, and (2) March-April. Data for the HHS were collected in the ZOI in January 2015. Thus, the period of data collection meets the requirement of being in the dry season but not right before harvest.

Table 6.1 presents estimates of household hunger for all households, as well as by household characteristics, including gendered household type, household size, and household educational attainment.

The majority of households in the Bangladesh ZOI report experiencing little or no hunger (94.4 percent), about 5 percent experience moderate hunger, and very few experience severe hunger (0.8 percent). Significance tests were performed for relationships between little to no hunger and household characteristics. This is equivalent to a significance test for moderate and severe hunger combined.

There is a significant association between hunger and gendered household type. Most households with both male and female adults have little or no hunger situation (95.4 percent) and less moderate or severe hunger prevalence than households with only female adults (0.6 percent vs. 1.9 percent, respectively).

[23] Deitschler, Ballard, Swindale, & Coates (2011).
[24] For further description of the household hunger indicator and its calculation, refer to the Feed the Future Indicator Handbook, available at http://feedthefuture.gov/resource/feed-future-handbook-indicator-definitions.

Similarly, as education attainment increases, households experiencing little to no hunger increases. For example, 86.3 percent of households with no schooling experience little to no hunger compared to 96.4 percent of households with at least one household member completing at least secondary education. This demonstrates the positive relationship between educational attainment and reductions in hunger.

Table 6.1. Household hunger

Characteristic	Percent			n[1]
	Little to no hunger[a]	Moderate hunger	Severe hunger	
Total (All households)	**94.4**	**4.8**	**0.8**	**2,015**
Gendered household type[a]				
Male and female adults	95.4	4.0	0.6	1,728
Female adult(s) only	87.8	10.3	1.9	280
Male adult(s) only	^	^	^	9
Child(ren) only (no adults)	-	-	-	-
Household size				
Small (1-5 members)	94.1	5.1	0.8	1,642
Medium (6-10 members)	95.5	3.9	0.6	373
Large (11+ members)	^	^	^	2
Household educational attainment[a]				
No education	86.3	11.9	1.7	117
Less than primary	87.2	11.2	1.6	266
Primary	94.9	4.3	0.7	1,089
Secondary or more	98.4	1.4	0.2	545

^ Results not statistically reliable, n<30.

[1] Records missing information for the disaggregate variables have been excluded from the disaggregated estimates. The unweighted sample size reflects this loss in observations; therefore disaggregates' sample size may not total to the aggregated sample size.

[a] Significance tests were performed for associations between little to no hunger and household characteristics, which is equivalent to testing the association between moderate to severe hunger and household characteristics. For example, a test was done between little to no hunger and gendered household type. When differences were found to be significant ($p<0.05$), the superscript is noted next to the household characteristic.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

6.2 Dietary Intake

This section presents information on the dietary diversity of women of reproductive age and on infant and young child feeding in the ZOI.

6.2.1 Dietary Diversity among Women Age 15-49 Years

Women of reproductive age (15-49 years) are at risk of multiple micronutrient deficiencies, which can jeopardize their health and their ability to care for their children and participate in income-generating activities (Darnton-Hill et al. 2005). The Feed the Future women's dietary diversity indicator is a proxy for the micronutrient adequacy of women's diets. The dietary

diversity indicator reports the mean number of food groups consumed in the previous day by non-pregnant women of reproductive age.

For the ZOI interim survey, two dietary diversity indicators for women are calculated: the Women's Dietary Diversity Score (WDDS) and Women's Minimum Dietary Diversity (MDD-W).

Women's Dietary Diversity Score

The Feed the Future women's dietary diversity indicator, presented in Table 6.2, is based on nine food groups: (1) grains, roots, and tubers; (2) legumes and nuts; (3) dairy products; (4) organ meat; (5) eggs; (6) flesh food and small animal protein; (7) vitamin A-rich dark green leafy vegetables; (8) other vitamin A-rich vegetables and fruits; and (9) other fruits and vegetables. The number of food groups consumed is averaged across all women of reproductive age in the sample for whom dietary diversity data were collected to produce a WDDS.

Table 6.2 shows the mean and median WDDS for all women of reproductive age in the ZOI, and by individual-level and household-level characteristics. Mean WDDS is the Feed the Future high-level indicator. Individual-level characteristics include women's age groups and educational attainment. Household-level characteristics include categories of gendered household type, household size, and household hunger.

In the Bangladesh ZOI, the WDDS indicator value is 4.5; in other words, women consume an average of 4.5 food groups of the nine possible groups. The median value is four food groups. Mean WDDS varies significantly by levels of women's educational attainment, gendered household type and household category. As shown in Table 6.2, mean WDDS increases with increasing levels of women's education, presence of both male and female adults, and household size category. Women with no education consume an average of 4.3 food groups, while women with secondary or more schooling consume an average of 4.8 food groups.

Table 6.2. Women's dietary diversity score

Characteristic	Mean [a]	Median	n [1]
Total (All women 15-49)	**4.49**	**4.00**	**2,107**
Age			
15-19	4.60	5	309
20-24	4.56	5	280
25-29	4.50	5	369
30-34	4.44	4	313
35-39	4.42	4	324
40-44	4.42	4	276
45-49	4.45	4	236
Educational attainment [a]			
No education	4.32	4	495
Less than primary	4.34	4	307
Primary	4.52	5	1,025
Secondary or more	4.78	5	280
Gendered household type [a]			
Male and female adults	4.50	4	1,835
Female adult(s) only	4.37	4	270
Male adult(s) only	^	^	^
Household size [a]			
Small (1-5 members)	4.38	4	1,589
Medium (6-10 members)	4.56	5	511
Large (11+ members)	^	^	7
Household hunger [a]			
Little to no hunger	4.53	5	1,999
Moderate or severe hunger	3.80	4	108

^ Results not statistically reliable, n<30.

[1] Records missing information for the disaggregate variables have been excluded from the disaggregated estimates. The unweighted sample size reflects this loss in observations; therefore disaggregates' sample sizes may not total to the aggregated sample size.

[a] Significance tests were performed for associations between mean women's dietary diversity score and individual/household characteristics. For example, a test was done between mean women's dietary diversity score and age. When an association is found to be significant ($p<0.05$), the superscript is noted next to the characteristic.

[3] The number of children only households are too small to obtain a valid estimate.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

Women's Minimum Dietary Diversity

The Feed the Future MDD-W indicator is a new measure introduced in the interim assessments and uses the following 10 food groups: (1) grains, roots, and tubers; (2) legumes and beans; (3) nuts and seeds; (4) dairy products; (5) eggs; (6) flesh foods, including organ meat and miscellaneous small animal protein; (7) vitamin A-rich dark green leafy vegetables; (8) other

vitamin A-rich vegetables and fruits; (9) other fruits; and (10) other vegetables.[25] Achievement of MDD-W is defined as having consumed foods from five of the 10 food groups in the past 24 hours. Thus, this indicator is a dichotomous variable, and the measure is reported as the percentage of women who achieve a minimum dietary diversity.[26]

Table 6.3 shows the percentage of all women of reproductive age in the ZOI who have achieved the minimum dietary diversity threshold by individual-level and household-level characteristics. Individual-level characteristics include women's age groups and educational attainment. Household-level characteristics include categories of gendered household type, household size, and household hunger.

In the Bangladesh ZOI, about 53.5 percent of women meet the MDD-W threshold (five food groups). Similar to the WDDS table presented previously (Table 6.2), women's educational attainment is significantly associated with the MDD-W indicator. Prevalence of MDD-W increases substantially with women's increasing education, from 47.5 percent among women with no education to 61.4 percent among women with secondary or more schooling.

[25] The differences between the nine food groups used for the WDDS (Table 6.2), which is the current standard Feed the Future indicator, and the 10 food groups used for the new MDD-W measure (Table 6.3) include: (1) legumes and beans are separated from nuts and seeds; (2) meat (flesh foods) and organ meat are combined into one group; and (3) other fruits and other vegetables are separated into two groups.

[26] For more information, refer to Volume 11: Guidance on the First Interim Assessment of the Feed the Future Zone of Influence Population-Level Indicators (October 2014), Section 4.2, available for download at http://www.feedthefuture.gov/sites/default/files/resource/files/ftf_guidanceseries_vol11_interimassessment_oct2014.pdf.

Table 6.3. Women's minimum dietary diversity

Characteristic	Percent[a]	n[1]
Total (All Women 15-49)	**53.5**	**2,107**
Age[a]		
15-19	52.1	309
20-24	61.2	280
25-29	58.3	369
30-34	48.9	313
35-39	48.5	324
40-44	54.1	276
45-49	50.3	236
Educational attainment[a]		
No education	47.5	495
Less than primary	45.9	307
Primary	56.1	1,025
Secondary or more	61.4	280
Gendered household type[a]		
Male and female adults	54.5	1,835
Female adult(s) only	42.8	270
Male adult(s) only	^	^
Household size[a]		
Small (1-5 members)	49.9	1,589
Medium (6-10 members)	58.4	511
Large (11+ members)	^	7
Household hunger[a]		
Little to no hunger	55.2	1,999
Moderate or severe hunger	22.5	108

^ Results not statistically reliable, n<30.

[1] Records missing information for the disaggregate variables have been excluded from the disaggregated estimates. The unweighted sample size reflects this loss in observations; therefore disaggregates' sample sizes may not total to the aggregated sample size.

[a] Significance tests were performed for associations between women's minimum dietary diversity and individual/household characteristics. For example, a test was done between women's minimum dietary diversity and age. When an association is found to be significant ($p<0.05$), the superscript is noted next to the characteristic.

[3] The number of child-headed households in the sample is too small to obtain a valid estimate.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

Table 6.4 shows the percentages of women age 15-49 years who consume each of the 10 food groups by dietary diversity achievement status. The percentages of all women who consume each of the 10 food groups is shown (the *Overall* column), as well as the percentages among women who achieve a minimum dietary diversity and among women who do not achieve a minimum dietary diversity.

Among the subgroup of women who do not achieve a minimum dietary diversity (n=979), four of the 10 food groups are consumed by at least half of the women: grains, roots, and tubers (consumed by 98.4 percent of women in this "not achieving MDD-W" group), meat and organ meats (62.4 percent), vitamin A-rich vegetables and fruits (73.1 percent) and other vegetables (consumed by 77.5 percent of women in this group). For the other six food groups, the percentage of women consuming each group falls below 50 percent.

Moreover, as shown in the superscripts in Table 6.4, achievement of a minimum dietary diversity is significantly associated with consumption of all the 10 specific food groups.

Table 6.4. Consumption of foods by women's minimum dietary diversity status

Category	Percent of women according to achievement of a minimum dietary diversity [a]	
	Achieving	Not achieving
Women consuming a specific food group		
Grains, roots and tubers [a]	100.0	98.4
Legumes and beans [a]	46.7	12.3
Nuts and seeds [a]	1.2	0.1
Dairy products [a]	18.8	1.9
Meat and organ meats [a]	85.6	62.4
Eggs [a]	25.5	6.7
Vitamin A-rich dark green leafy vegetables [a]	38.6	8.2
Other Vitamin A-rich vegetables and fruits [a]	97.4	73.1
Other fruits [a]	28.6	4.1
Other vegetables [a]	99.6	90.8
N	**1,127**	**980**

^ Results not statistically reliable, n<30.

[a] Significance tests were performed for associations between women's achievement of minimum dietary diversity and consumption of a specific food group. For example, a test was done between women's achievement of minimum dietary diversity and consumption of grains, roots and tubers. When an association is found to be significant ($p<0.05$), a superscript is noted next to the food group.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

6.2.2 Infant and Young Child Feeding

This section presents young children's dietary intake measures, including the Feed the Future indicators of exclusive breastfeeding among babies 0-5 months and the MAD indicator among children 6-23 months.

Exclusive Breastfeeding

Exclusive breastfeeding provides children with significant health and nutrition benefits, including protection from gastrointestinal infections and reduced risk of mortality due to infectious disease. Exclusive breastfeeding means the infant received breast milk (including expressed breast milk or breast milk from a wet nurse) and may have received oral rehydration salts,

vitamins, minerals, and/or medicines, but did not receive any other food or liquid. This indicator measures the percentage of children 0-5 months of age who were exclusively breastfed during the day preceding the survey.

Table 6.5 shows the prevalence of exclusive breastfeeding among children 0-5 months in the ZOI. Estimates are shown for all children, as well as by children's sex and by educational attainment of the child's mother. The mother's educational categories include no education, less than primary, completed primary, and completed secondary or more.

Among all infants under 6 months of age in the Bangladesh ZOI, more than half (55.2 percent) are exclusively breastfed. Neither of the disaggregate variables presented in Table 6.5 (child sex or mother's educational attainment) are significantly associated with prevalence of exclusive breastfeeding.

Table 6.5. Prevalence of exclusive breastfeeding among children under 6 months

Characteristic	Percent [a]	n [1]
Total (All children under 6 months)	**55.2**	**105**
Child sex		
Male	55.0	53
Female	55.4	52
Mother's educational attainment [2]		
No education	^	8
Less than primary	^	15
Primary	55.7	55
Secondary or more	^	27

^ Results not statistically reliable, n<30.

[1] Records missing information for the disaggregate variables have been excluded from the disaggregated estimates. The unweighted sample size reflects this loss in observations; therefore disaggregates' sample sizes may not total to the aggregated sample size.

[a] Significance tests were performed for associations between exclusive breastfeeding and child/caregiver characteristics. For example, a test was done between exclusive breastfeeding and the child's sex. When an association is found to be significant ($p<0.05$), the superscript is noted next to the characteristic.

Source: Demographic and Health Survey (DHS), Bangladesh 2014.

Minimum Acceptable Diet

The prevalence of children 6-23 months receiving a MAD measures the proportion of young children who receive a MAD apart from breastfeeding. This composite indicator measures both the minimum feeding frequency and minimum dietary diversity based on mother reports of the frequency with which the child was fed in the past 24 hours, and what foods were consumed during the past 24 hours. Tabulation of the indicator requires data on children's age in months, breastfeeding status, dietary diversity, number of semi-solid or solid feeds, and number of milk feeds.

Table 6.6 presents the Feed the Future MAD indicator for children in the ZOI. Estimates are shown for all children, as well as by characteristics of the children, mother, and household. Children's characteristics include children's sex and age group. Mothers' characteristics include age and sex categories, as well as mothers' educational attainment. Household characteristics include gendered household type and household size.

In the Bangladesh ZOI, over one-quarter (27.3 percent) of children ages 6-23 months receive a MAD. Significance tests were run for differences in the prevalence of MAD by the child's sex, child's age group, mother's educational attainment, gendered household type, and household size.

Table 6.6. Percentage of children age 6-23 months who receive a minimum acceptable diet

Characteristic	Percent[a]	n[1s]
Total (All children 6-23 months)	**27.3**	**552**
Child sex		
Male	25.4	279
Female	29.1	273
Child age[a]		
6-11 months	16.4	193
12-17 months	29.3	184
18-23 months	36.0	175
Mother's educational attainment[2a]		
No education	20.2	41
Less than primary	17.1	86
Primary	26.0	315
Secondary or more	43.4	110
Gendered household type		
Male and female adults	28.3	508
Female adult(s) only	16.8	30
Male adult(s) only	^	14
Child(ren) only (no adults)		
Household size		
Small (1-5 members)	28.3	284
Medium (6-10 members)	25.9	241
Large (11+ members)	^	27
Household hunger		
Little to no hunger	n/a	n/a
Moderate or severe hunger	n/a	n/a

^ Results not statistically reliable, n<30.

n/a –Not available as DHS does not have data on food security.

[1] Records missing information for the disaggregate variables have been excluded from the disaggregated estimates. The unweighted sample size reflects this loss in observations; therefore disaggregates' sample sizes may not total to the aggregated sample size.

[a] Significance tests were performed for associations between children receiving a minimum acceptable diet and child/caregiver/household characteristics. For example, a test was done between children receiving a minimum acceptable diet and child's sex. When an association is found to be significant ($p<0.05$), the superscript is noted next to the characteristic.

Source: Demographic and Health Survey (DHS), Bangladesh 2014.

Table 6.7 presents the percentage of children achieving the MAD components (for example, minimum meal frequency, minimum dietary diversity) and consuming each of the food groups of the minimum dietary diversity indicator. Estimates are shown for all children, as well as by specific age groups, and presented separately for breastfed children and non-breastfed children.

Table 6.7 reveals that among the subsample of breastfed children ages 6-23 months in the Bangladesh ZOI, 71.7 percent receive a minimum meal frequency and 32.4 percent receive a minimum dietary diversity. Grains, roots, and tubers were the most consumed food group by children ages 6-23 months in the ZOI (86.3 percent of children), whereas the least consumed food group was legumes and nuts (8.2 percent). Only two of the seven food groups (that is, grains, roots, and tubers; and flesh foods) are consumed by more than half of children ages 6-23 months (50.5 percent).

Table 6.7. Components of a minimum acceptable diet among children age 6-23 months

MAD components and food groups	Percent			
	All children	By child age (in months)		
		6 to 11	12 to 17	18 to 23
Breastfed children				
Achieving minimum meal frequency	71.7	64.3	75.9	75.2
Achieving minimum dietary diversity	32.4	21.5	32.0	43.8
Consuming:				
Grains, roots, and tubers	86.3	75.3	91.9	91.7
Legumes and nuts	8.2	6.0	6.1	12.6
Dairy products	34.6	33.6	33.7	36.5
Flesh foods	50.5	30.5	53.4	67.7
Eggs	32.0	23.6	32.3	40.0
Vitamin A-rich fruits and vegetables	47.2	34.7	53.4	53.6
Other fruits and vegetables	24.7	17.8	26.5	29.9
n	**529**	**186**	**178**	**165**
Non-breastfed children				
Achieving minimum meal frequency	^	^	^	^
Achieving minimum milk feeding frequency	^	^	^	^
Achieving minimum dietary diversity	^	^	^	^
Consuming:				
Grains, roots, and tubers	^	^	^	^
Legumes and nuts	^	^	^	^
Dairy products	^	^	^	^
Flesh foods	^	^	^	^
Eggs	^	^	^	^
Vitamin A-rich fruits and vegetables	^	^	^	^
Other fruits and vegetables	^	^	^	^
n	**23**			

^ Results not statistically reliable, n<30.

[a] Significance tests were performed for associations between MAD components/food groups for breastfed and non-breastfed children. For example, a test was done for achieving minimum meal frequency and breastfeeding status. When an association is found to be significant ($p<0.05$), a superscript is noted next to the breastfed and non-breastfed row headings corresponding to the MAD component/food group.

Source: Demographic and Health Survey (DHS), Bangladesh 2014.

6.2.3 Consumption of Targeted Nutrient-Rich Value Chain Commodities

U.S. Government-funded programming supports nutrition-sensitive agricultural value chain[27] interventions to achieve the dual purpose of enhancing both economic and nutritional outcomes. The Feed the Future ZOI interim assessment measures the degree to which respondents in the ZOI are consuming nutrient-rich commodities or products made from nutrient-rich commodities being promoted by these value chain activities.

There are three criteria for a food commodity to be considered a targeted NRVCC:

1) Increased production of the commodity must be promoted through a U.S. Government-funded value chain activity.

2) The value chain commodity must have been selected for nutrition objectives, in addition to any poverty-reduction or economic-growth related objectives.

3) The commodity must be considered nutrient rich, defined as meeting any one of the following criteria: It is bio-fortified; a legume, nut or seed; an animal-sourced food, including dairy products (milk, yogurt, cheese), eggs, organ meat, flesh foods, and other miscellaneous small animal protein (grubs, insects); a dark yellow or orange-fleshed root or tuber; or a fruit or vegetable that meets the threshold for being a "high source" of one or more micronutrients on a per 100-gram basis.

This section presents the ZOI interim assessment's findings on the consumption of targeted NRVCC among women age 15-49 and children age 6-23 months. The targeted commodities in Bangladesh include: lentil, mung, and groundnut.

The targeted commodities in Bangladesh are categorized by the above criteria. The 2015 Bangladesh ZOI interim survey is used to calculate the consumption of targeted NRVCC among women age 15-49 years. The ZOI interim survey has a comprehensive list of foods used to collect data on the 24-hour dietary intake for all household members. Although the first criteria (that is, bio-fortified food) could not be identified from that food list, the food items women ate within the last 24 hours from administering the survey were categorized into the other four criteria.

[27] From Martin Webber and Patrick Labaste, "Building competitiveness in Africa's agriculture: a guide to value chain concepts and applications," published by The World Bank. "The term 'value chain' describes the full range of value-adding activities required to bring a product or service through the different phases of production, including procurement of raw materials and other inputs, assembly, physical transformation, acquisition of required services such as transport or cooling, and ultimately response to consumer demand (Kaplinsky and Morris (2002), "A Handbook for Value Chain Research," p. 46–47)."

For children ages 6-23 months, consumption of targeted NRVCC was calculated using the BDHS 2014 data. DHS does not have a comprehensive list of foods given to children within 24 hours preceding the survey; rather, the food items are disaggregated into certain categories. To calculate consumption of NRVCC, the already given categories are further categorized according to the five criteria mentioned above.

Women's Consumption of Targeted Nutrient-Rich Value Chain Commodities

Table 6.8 presents women's consumption of targeted NRVCC ages 15-49, disaggregated by women's individual and household characteristics.

Around 21.4 percent of women of reproductive age consumed at least one NRVCC food the prior day. Percentages of all women of reproductive age consuming lentil, mung, and groundnut are 19.3, 1.7, and 0.7, respectively. Lentil consumption varies significantly with household size and household hunger. However, consumption of mung by women ages 15-49 varies significantly with women's educational attainment.

Table 6.8. Women's consumption of targeted nutrient-rich value chain commodities

Characteristic	Percent				n[1]
	Any targeted commodity	Lentil[a]	Mung[b]	Groundnut[c]	
Total (All women 15-49)	**21.4**	**19.3**	**1.7**	**0.7**	**2,107**
Age					
15-19	23.7	21.8	2.0	0.4	309
20-24	23.8	20.4	1.6	2.4	280
25-29	23.6	20.9	2.2	0.4	369
30-34	18.1	16.0	2.4	0.0	313
35-39	15.4	14.4	0.7	0.6	324
40-44	20.0	19.0	1.3	0.0	276
45-49	25.5	23.1	1.7	1.4	236
Educational attainment[b]					
No education	19.6	18.9	0.5	0.3	495
Less than primary	21.3	19.7	0.8	0.7	307
Primary	21.1	18.8	1.9	0.9	1,025
Secondary or more	25.1	21.2	0.4	0.7	280
Gendered household type					
Male and female adults	21.7	19.6	1.7	0.7	1,835
Female adult(s) only	18.7	15.8	2.3	0.5	270
Male adult(s) only	^	^	^	^	^
Household size[a]					
Small (1-5 members)	19.8	17.4	2.1	0.5	1,589
Medium (6-10 members)	23.1	21.6	1.1	1.0	511
Large (11+ members)	^	^	^	^	7
Household hunger[a]					
Little to no hunger	22.1	20.0	1.8	0.7	1,999
Moderate or severe hunger	8.1	7.0	1.4	^	108

^ Results not statistically reliable, n<30.

[1] Records missing information for the disaggregate variables have been excluded from the disaggregated estimates. The unweighted sample size reflects this loss in observations; therefore disaggregates' sample sizes may not total to the aggregated sample size.

[2] The number of child-headed households in the sample is too small to obtain a valid estimate.

[a-e] A superscript in the column heading indicates significance tests were performed for associations between the indicator in the column heading and each of the variables in the rows. For example, a test was done between any targeted commodity and the woman's age. When an association between the column indicator and row variable is found to be significant ($p<0.05$), the superscript for the indicator in the column heading is noted next to the row variable.

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

Children's Consumption of Targeted Nutrient-Rich Value Chain Commodities

Table 6.9 presents children's consumption of targeted NRVCC. Estimates are shown for all children 6-23 months, as well as by characteristics of the child, caregiver, and household. Children's characteristics include sex and age, and caregivers' characteristics include educational attainment. Household characteristics include gendered household type, household size, and household hunger.

BDHS 2014 data were used to calculate an estimate of consumption of targeted NVCC for children ages 6-23 months. DHS does not have a list of individual items for 24-hour food intake for children; rather, it has a categorized list of food items. Thus, this age group includes only one food group that meets the NRVCC criteria—that is, pulses and nuts. Only 8.1 percent of children consumed pulses and nuts within the last 24 hours of the survey. As denoted by the superscripts in Table 6.9, these criteria vary significantly with mother's educational attainment.

Table 6.9. Children's consumption of targeted nutrient-rich value chain commodities

Characteristic	Percent	
	Pulses and nuts[a]	n[1]
Total (All children 6-23 months)	**8.1**	**552**
Child sex		
Male	10.7	279
Female	5.6	273
Child age		
6-11 months	6.5	193
12-17 months	6.0	184
18-23 months	11.9	175
Mother's education[a]		
No education	3.5	41
Less than primary	4.0	86
Primary	9.5	315
Secondary or more	9.4	110
Gendered household type		
Male and female adults	8.2	508
Female adult(s) only	9.6	30
Male adult(s) only	^	14
Child(ren) only (no adults)	^	0
Household size		
Small (1-5 members)	10.3	284
Medium (6-10 members)	5.7	241
Large (11+ members)	^	27
Household hunger		
Little to no hunger	n/a	n/a
Moderate or severe hunger	n/a	n/a

^ Results not statistically reliable, n<30.

[1] Records missing information for the disaggregate variables have been excluded from the disaggregated estimates. The unweighted sample size reflects this loss in observations; therefore disaggregates' sample sizes may not total to the aggregated sample size.

[2] The Demographic and Health Survey (DHS) identifies the primary caregiver of each age-eligible child. This person is likely, but not necessarily, the child's biological mother.

[a-e] A superscript in the column heading indicates significance tests were performed for associations between the indicator in the column heading and each of the variables in the rows. For example, a test was done between any targeted commodity and the woman's age. When an association between the column indicator and row variable is found to be significant ($p<0.05$), the superscript for the indicator in the column heading is noted next to the row variable.

Source: Demographic and Health Survey (DHS), Bangladesh 2014.

7 Nutritional Status of Women and Children

This section presents findings related to the Feed the Future indicators of women's underweight and children's anthropometry (stunting, wasting, and underweight).

7.1 Body Mass Index of Women Age 15-49 Years

Table 7.1 presents women's mean Body Mass Index (BMI) as well as the BMI categories of underweight (BMI < 18.5), normal weight (18.5 ≤ BMI < 25.0), overweight (25.0 ≤ BMI < 30.0), and obese (BMI ≥ 30.0). Estimates are shown for all non-pregnant women age 15-49, as well as disaggregated by individual-level and household-level characteristics. Individual characteristics include age and educational attainment. Household characteristics include gendered household type and household size.

Among non-pregnant women ages 15-49 in the Bangladesh ZOI, mean BMI is 22.5, or normal weight. As shown in Table 7.1, less than one-fifth (16.3 percent) of women in the Bangladesh ZOI are underweight (BMI <18.5).

More than half (58.7 percent) of women in the Bangladesh ZOI are normal weight, and 20.7 percent and 4.6 percent are overweight and obese, respectively.

As shown in Table 7.1, mean BMI and underweight prevalence vary significantly by women's age group, educational attainment, gendered household type, and household size. All the BMI categories are significantly associated with women's age group, educational attainment, gendered household type, and household size.

Table 7.1. Prevalence of underweight, normal weight, overweight, and obese women

Characteristic	Mean BMI[a]	Body Mass Index (BMI) category (percent)[b] Under-weight[c]	Normal weight	Over-weight	Obese	n[1]
Total (All women age 15-49)	**22.5**	**16.3**	**58.7**	**20.7**	**4.6**	**4,442**
Age[abc]						
15-19	20.2	33.8	57.4	6.5	2.3	468
20-24	21.5	20.2	61.0	16.8	2.0	669
25-29	22.6	14.1	60.5	21.8	3.6	786
30-34	23.3	11.3	58.1	23.4	7.2	723
35-39	23.6	11.4	55.6	25.3	7.7	644
40-44	22.9	13.1	58.4	24.1	4.4	640
45-49	22.7	15.1	55.7	24.4	4.7	512
Educational attainment[abc]						
No education	21.8	20.3	59.7	17.3	2.7	838
Less than primary	21.9	18.0	62.5	16.2	3.3	862
Primary	22.6	15.7	57.7	21.8	4.8	2,021
Secondary or more	24.0	9.4	52.5	29.3	8.8	721
Gendered household type[abc]						
Male and female adults	22.6	15.7	58.3	21.2	4.9	4,050
Female adult(s) only	22.1	18.7	58.2	19.7	3.4	359
Male adult(s) only	19.4	41.1	56.9	2.0	0.0	32
Household size[abc]						
Small (1-5 members)	22.6	14.6	59.0	22.3	4.1	2,925
Medium (6-10 members)	22.2	19.0	57.5	18.1	5.4	1,389
Large (11+ members)	23.3	19.9	48.9	18.9	12.4	128
Household hunger						
Little to no hunger	n/a	n/a	n/a	n/a	n/a	n/a
Moderate or severe hunger	n/a	n/a	n/a	n/a	n/a	n/a

^ Results not statistically reliable, n<30.

n/a Not available as Demographic and Health Survey (DHS) does not have food security data.

[1] Records missing information for the disaggregate variables have been excluded from the disaggregated estimates. The unweighted sample size reflects this loss in observations; therefore disaggregates' sample sizes may not total to the aggregated sample size.

[2] The number of child-headed households in the sample is too small to obtain a valid estimate.

[a-c] A superscript in the column heading indicates significance tests were performed for associations between the indicator in the column heading and each of the variables in the rows. For example, a test was done between BMI and the woman's age. When an association between the column indicator and row variable is found to be significant ($p<0.05$), the superscript for the indicator in the column heading is noted next to the row variable.

Source: Demographic and Health Survey (DHS), Bangladesh 2014.

7.2 Stunting, Wasting, and Underweight among Children Under 5 Years

This section reports on three anthropometric measurements of undernutrition among children under 5 years in the ZOI: stunting (height-for-age), wasting (weight-for-height), and underweight (weight-for-age).

7.2.1 Stunting (Height-for-Age)

Stunting is an indicator of linear growth retardation, most often due to a prolonged inadequate diet and poor health. Reducing the prevalence of stunting among children, particularly age 0-23 months, is important because linear growth deficits accrued early in life are associated with cognitive impairments, poor educational performance, and decreased work productivity as adults (Black et al. 2008; Victora et al. 2008). Stunting is a height-for-age measurement that reflects chronic undernutrition. This indicator measures the percentage of children 0-59 months who are stunted, as defined by a height-for-age Z-score more than two standard deviations (SD) below the median of the 2006 WHO Child Growth Standard (<-2SD).[28] The stunting measures presented below include the Feed the Future stunting indicator of moderate or severe stunting combined (<-2SD) as well as the indicator for severe stunting (<-3SD). Mean Z-scores are also presented.

Table 7.2 shows the prevalence of stunting, severe stunting, and mean Z-scores for children under 5 years in the ZOI. Estimates are presented for all children and by child, caregiver, and household characteristics. Children's characteristics include sex and age. Caregivers' characteristics include educational attainment. Household characteristics include gendered household type and household size.

In the Bangladesh ZOI, 32.3 percent of children under age 5 are stunted. As shown in Table 7.2, 8.2 percent of ZOI children are severely stunted. The mean height-for-age Z-score in the ZOI is -1.4, which indicates that the average height-for-age among children in the Bangladesh ZOI is lower than that of the WHO global reference population.

As denoted by the superscripts in the column headings of Table 7.2, significance tests were run for both the Feed the Future children's stunting indicator (<-2SD) as well as the mean height-for-age Z-scores. Both the prevalence of children's stunting and mean Z-scores are not found to be significantly associated with children's sex, age, mothers' education, gendered household type, or household size.

[28] WHO. (2006).

Table 7.2. Stunting (height-for-age) among children under 5 years old

Characteristic	% Stunted (<-2 SD)[a]	% Severely stunted (<-3 SD)	Mean Z-score [b]	n[1]
Total (All children under 5 years)	**32.3**	**8.2**	**-1.4**	**1,594**
Child sex				
Male	33.7	8.4	-1.5	818
Female	30.9	8.0	-1.3	776
Child age				
0-11 months	13.6	2.6	-0.6	326
12-23 months	37.6	8.7	-1.6	345
24-35 months	37.8	8.7	-1.6	329
36-47 months	37.4	10.5	-1.6	294
48-59 months	34.6	10.7	-1.6	300
Mother's educational attainment[2]				
No education	54.0	17.9	-1.9	144
Less than primary	35.7	10.1	-1.6	259
Primary	31.1	7.2	-1.4	874
Secondary or more	21.9	4.6	-0.9	317
Gendered household type				
Male and female adults	32.5	8.1	-1.4	1,477
Female adult(s) only	22.9	8.7	-1.1	95
Male adult(s) only	^	^	^	22
Child(ren) only (no adults)	^	^	^	0
Household size				
Small (1-5 members)	34.0	9.3	-1.4	866
Medium (6-10 members)	30.2	6.7	-1.7	658
Large (11+ members)	30.5	8.9	-1.3	70
Household hunger				
Little to no hunger	n/a	n/a	n/a	n/a
Moderate or severe hunger	n/a	n/a	n/a	n/a

^ Results not statistically reliable, n<30.

n/a not available as the Demographic and Health Survey (DHS) does not have food security data.

[1] Records missing information for the disaggregate variables have been excluded from the disaggregated estimates. The unweighted sample size reflects this loss in observations; therefore disaggregates' sample sizes may not total to the aggregated sample size.

[2] The DHS identifies the primary caregiver of each age-eligible child. This person is likely, but not necessarily, the child's biological mother.

[3] The number of child-headed households in the sample is too small to obtain a valid estimate.

[a-b] A superscript in the column heading indicates significance tests were performed for associations between the indicator in the column heading and each of the variables in the rows. For example, a test was done between percent stunted and the child's sex. When an association between the column indicator and row variable is found to be significant ($p<0.05$), the superscript for the indicator in the column heading is noted next to the row variable.

Source: Demographic and Health Survey (DHS), Bangladesh 2014.

7.2.2 Wasting (Weight-for-Height)

Wasting is an indicator of acute malnutrition. Children who are wasted are too thin for their height and have a much greater risk of dying than children who are not wasted. This indicator measures the percentage of children 0-59 months who are acutely malnourished, as defined by a weight-for-height Z-score more than two SD below the median of the 2006 WHO Child Growth Standard. The wasting measures presented below include the Feed the Future wasting indicator of moderate or severe wasting combined (<-2SD) as well as the indicator for severe wasting (<-3SD), and the percentage of children who are overweight (>+2SD) and obese (>+3SD). Mean Z-scores are also presented.

Table 7.3 shows the prevalence of wasting, severe wasting, overweight, obesity, and mean Z-scores for children under age 5 in the ZOI. Estimates are presented for all children and by child, mother, and household characteristics. Children's characteristics include sex and age. Mothers' characteristics include educational attainment. Household characteristics include gendered household type and household size.

In the Bangladesh ZOI, 15.8 percent of children under age 5 are wasted, and 4.0 percent are severely wasted, according to the national estimates from the BDHS survey 2014.

With respect to overweight (>+2SD) and obese (>+3SD), 0.4 percent of children under age 5 are overweight and 0.1 percent are obese in the Bangladesh ZOI. The mean weight-for-height Z-score for children under age 5 in the Bangladesh ZOI is -0.9, which indicates that, on average, the weight-for-height of children in the ZOI is slightly lower than that for the WHO global reference population.

Table 7.3 also includes the results of significance tests for the children's wasting measures (<-2SD), the Feed the Future standard indicator), the overweight measure (> +2SD), and mean weight-for-height Z-scores. But none of these are significantly associated with children's sex, age caregivers' education, gendered household type, or household size.

Table 7.3. Wasting (weight-for-height) among children under 5 years old

Characteristic	% Wasted (<-2 SD) [a]	% Severely wasted (<-3 SD)	% Overweight (> +2SD) [b]	% Obese (> +3SD)	Mean Z-score [c]	n[1]
Total (All children under 5 years)	**15.8**	**4.0**	**0.4**	**0.1**	**-0.9**	**1,594**
Child sex						
Male	16.3	4.8	0.8	0.1	-0.9	818
Female	15.3	3.1	0.0	0.0	-0.9	776
Child age						
0-11 months	14.6	3.2	0.0	0.0	-0.7	326
12-23 months	18.4	5.3	0.0	0.0	-0.8	345
24-35 months	14.7	4.3	0.0	0.0	-1.0	329
36-47 months	12.7	2.2	0.1	0.1	-1.0	294
48-59 months	18.4	4.6	2.2	0.3	-1.1	300
Mother's educational attainment[2]						
No education	19.5	4.2	0.0	0.0	-1.1	144
Less than primary	16.2	4.3	0.0	0.0	-1.0	259
Primary	14.9	3.7	0.0	0.0	-0.9	874
Secondary or more	16.4	4.2	2.4	0.4	-0.7	317
Gendered household type[3]						
Male and female adults	16.2	3.8	0.4	0.1	-0.9	1,477
Female adult(s) only	12.3	12.3	0.0	0.0	-0.9	95
Male adult(s) only	^	^	^	^	^	22
Child(ren) only (no adults)	^	^	^	^	^	0
Household size						
Small (1-5 members)	15.4	4.0	0.1	0.1	-0.9	866
Medium (6-10 members)	16.3	4.0	1.0	0.1	-0.9	658
Large (11+ members)	16.7	2.8	0.0	0.0	-0.7	70
Household hunger						
Little to no hunger	n/a	n/a	n/a	n/a	n/a	n/a
Moderate or severe hunger	n/a	n/a	n/a	n/a	n/a	n/a

^ Results not statistically reliable, n<30.

n/a - not available as the Demographic and Health Survey (DHS) does not have food security data.

[1] Records missing information for the disaggregate variables have been excluded from the disaggregated estimates. The unweighted sample size reflects this loss in observations; therefore disaggregates' sample sizes may not total to the aggregated sample size.

2 The DHS identifies the primary caregiver of each age-eligible child. This person is likely, but not necessarily, the child's biological mother.

3 The number of child-headed households in the sample is too small to obtain a valid estimate.

[a-c] A superscript in the column heading indicates significance tests were performed for associations between the indicator in the column heading and each of the variables in the rows. For example, a test was done between the percent wasted and the child's sex. When an association between the column indicator and row variable is found to be significant ($p<0.05$), the superscript for the indicator in the column heading is noted next to the row variable.

Source: Demographic and Health Survey (DHS), Bangladesh 2014.

7.2.3 Underweight (Weight-for-Age)

Underweight is a weight-for-age measurement and is a reflection of acute and/or chronic undernutrition. This indicator measures the percentage of children 0-59 months who are underweight, as defined by a weight-for-age Z-score of more than two SD below the median of the 2006 WHO Child Growth Standard. The underweight measures presented below include the Feed the Future underweight indicator of moderate or severe underweight combined (<-2SD) as well as the indicator for severe underweight (<-3SD). Mean Z-scores are also presented.

Table 7.4 shows the prevalence of underweight, severe underweight, and mean Z-scores for children under 5 years in the ZOI. Estimates are presented for all children and by child, mother, and household characteristics. Children's characteristics include sex and age, and the mothers' characteristics include educational attainment. Household characteristics include gendered household type and household size.

In the Bangladesh ZOI, 30.2 percent of children under age 5 are underweight, and 6.4 percent are severely underweight.

The mean weight-for-age Z-score in the ZOI is -1.4, which indicates that on average the weight-for-age for children in the ZOI is below that for the global reference population.

As shown in the column headings in Table 7.4, significance tests were run for both children's underweight (<-2SD), as well as the mean weight-for-age Z-scores. The mean weight-for-age is significantly associated with children's age and mother's educational attainment. For example, prevalence of children underweight declines with increasing levels of mothers' education, from 46.1 percent among children whose mothers have no education, to 21.5 percent among children whose mothers have secondary or more schooling.

Table 7.4. Underweight (weight-for-age) among children under 5 years old

Characteristic	% Underweight (<-2 SD)[a]	% Severely underweight (<-3 SD)	Mean Z-score [b]	n[1]
Total (All children under 5 years)	**30.2**	**6.4**	**-1.4**	**1,594**
Child sex				
Male	28.7	6.7	-1.4	818
Female	31.7	6.1	-1.4	776
Child age[b]				
0-11 months	16.1	1.6	-0.9	326
12-23 months	29.7	8.4	-1.4	345
24-35 months	35.3	6.7	-1.6	329
36-47 months	29.1	7.1	-1.6	294
48-59 months	40.3	7.9	-1.7	300
Mother's educational attainment[2b]				
No education	46.1	11.1	-1.9	144
Less than primary	33.5	5.4	-1.6	259
Primary	29.4	6.6	-1.4	874
Secondary or more	21.5	4.4	-1.0	317
Gendered household type				
Male and female adults	30.5	6.3	-1.4	1,477
Female adult(s) only	22.2	6.6	-1.2	95
Male adult(s) only	^	^	^	22
Child(ren) only (no adults)				0
Household size				
Small (1-5 members)	30.6	6.6	-1.5	866
Medium (6-10 members)	29.3	6.4	-1.4	658
Large (11+ members)	32.4	3.0	-1.2	70
Household hunger				
Little to no hunger	n/a	n/a	n/a	n/a
Moderate or severe hunger	n/a	n/a	n/a	n/a

^ Results not statistically reliable, n<30.

n/a - not available as Demographic and Health Survey (DHS) does not have food security data.

[1] Records missing information for the disaggregate variables have been excluded from the disaggregated estimates. The unweighted sample size reflects this loss in observations; therefore disaggregates' sample sizes may not total to the aggregated sample size.

[2] The DHS identifies the primary caregiver of each age-eligible child. This person is likely, but not necessarily, the child's biological mother.

[a-b] A superscript in the column heading indicates significance tests were performed for associations between the indicator in the column heading and each of the variables in the rows. For example, a test was done between the percent underweight and the child's sex. When an association between the column indicator and row variable is found to be significant ($p<0.05$), the superscript for the indicator in the column heading is noted next to the row variable.

Source: Demographic and Health Survey (DHS), Bangladesh 2014.

8 Summary and Conclusions

The Feed the Future ZOI interim assessment was not designed to draw conclusions about attribution or causality. Nevertheless, this interim assessment provides a comprehensive understanding of changes in ZOI in south and southwest Bangladesh in a variety of areas using data from the 2011 baseline to 2015 interim surveys. This summary section reports only statistically significant results.

The Bangladesh Feed the Future Zone of Influence (ZOI) interim estimates for the daily per capita expenditures (as a proxy for income) in USG-assisted areas shows an increase from $1.89 in 2011to $2.10 in 2015, an increase of 11.1 percent. The group of households with adult female but no adult male experienced a 14.3 percent increase in income—the largest increase among the disaggregated household groups, most likely due to remittances sent from an adult male who lives and works outside of Bangladesh or in urban areas within the country.

Poverty is a major determinant of chronic household food insecurity. In approximately four years, there were remarkable reductions in poverty in the Bangladesh ZOI (16 percent) from 40.5 percent to 34.0 percent. Poverty declined more for adult female but no adult male households (10 percentage points), which is consistent with the change in income. In addition to poverty headcount, the poverty gap or depth of poverty decreased by 2.3 percentage points (24.5 percent) from 9.3 percent to 7.0 percent. Like headcount poverty measures, the group of households with adult female but no adult male had a 3.0 percentage point reduction in poverty gap—the biggest decrease among the disaggregated groups of households. Notably, reductions in poverty headcount and depth of poverty, together, indicate that these improvements are not just enjoyed by the subjacent poor (that is, those living immediately below the poverty line); rather, the poor are collectively moving up out of extreme poverty.

Women's empowerment improves a wide range of household, women, and child nutritional outcomes. The Women's Empowerment in Agriculture Index (WEAI) censored headcounts with the highest levels of achievement in the Bangladesh ZOI are control over the use of income (93.4 percent), input in productive decisions (90.4 percent), and ownership of assets (88.3 percent). Further research is required, but these gains may be due in part to USAID interventions specifically designed for women's participation and control, including the promotion of homestead gardens, involvement in market sales of produce and emphasis on improving nutrition among women and children. By contrast, women in the ZOI achieved the lowest adequacy in group membership (51.3 percent) and access to and decisions on credit (60.0 percent). Group-based efforts have often been unable to reach the ultra-poor, because many group-based activities, such as those in microfinance, require a minimum level of resources for participation, such as funds for the compulsory savings requirements (Sraboni et al. 2014).

Changes in the adequacy achievement from 2011 baseline to 2015 interim vary widely among the WEAI indicators in the Bangladesh ZOI. The greatest increase in adequacy achievement was observed in women's input in productive decisions (24.1 percentage points), followed by ability to speak in public (21.1 percentage points), and control over use of income (19.8 percentage points). By contrast, there was a decrease in rate of adequacy achievement by 5.4 percentage points in women's decision-making power over purchase, sale, or transfer of assets.

Increased incomes and poverty reduction in the Bangladesh ZOI contributed to the decrease in the prevalence of households with moderate or severe hunger, indicating an improvement in household-level food security. The prevalence of hunger dropped by 1.9 percentage points (28 percent) from 7.5 percent at 2011 baseline to 5.6 percent at 2015 interim.

Women's dietary diversity experienced a modest increase of 4.5 percent from 4.26 to 4.49. This slow growth requires further attention. Among children 6-23 months, over one-quarter (27.3 percent) received a minimum acceptable diet in the prior day in 2014 compared to 23.6 percent in 2011, which demonstrates encouraging improvements in children's nutrition.

In approximately three years, there has been a reversal on improvements in exclusive breastfeeding for children under six months of age. Around 64.3 percent of infants were exclusively breastfed the prior day in 2011 compared to 55.2 percent in 2014. It is not clear whether the decrease was the result of reporting bias or actual change (NIPORT 2016). To this end, USAID's Global Food Security Strategy's emphasis on promoting direct nutrition interventions and services such as exclusive breastfeeding through six months, and continued breastfeeding for up to twenty-four months through social behavior change communication and other nutrition trainings, may be key for correcting the course on breastfeeding.

The targeted Nutrient-Rich Value Chain Commodities (NRVCC) in the Bangladesh Feed the Future ZOI includes three commodities: lentil, mung, and groundnut. Among women of reproductive age, 21.3 percent consumed at least one of the three NRVCC foods in the prior day, with lentil most commonly consumed (19.3 percent of women).

The Bangladesh Demographic and Health Survey (BDHS) dataset used to calculate consumption of NRVCC for children ages 6-23 months does not have a list of individual items for 24-hour food intake for children; rather, it has a categorized list of food items. That is why for this age group only one food group met the NRVCC criteria and that is pulses and nuts. Only 8.1 percent children consumed pulses and nuts within last 24 hours of the survey.

The prevalence of women's underweight (defined as a body mass index [BMI] below 18.5) is 16.3 percent in 2014 compared to 21.5 percent in 2011.

Among children under age 5 in the ZOI, 32.3 percent are stunted in 2014, which is 4.6 percentage points lower than 2011. Although Bangladesh has been successful at reducing stunting–an indicator of chronic malnutrition; wasting, on the other hand, has slightly increased

from 2011 to 2014 (15.0 percent vs. 15.8 percent, respectively). This may signify that children under-five remain vulnerable to sudden economic and climatic shocks or crises in the Bangladesh Feed the Future ZOI.

Underweight is an indicator of either acute or chronic undernutrition in children. In the Bangladesh ZOI, 30.2 percent of children are underweight, or have low weight-for-age.

In sum, in the south and southwest region of Bangladesh, where Feed the Future activities are concentrated, there have been remarkable improvements between the baseline and interim assessment periods. Nevertheless, emergent challenges in food and nutrition security require the Government of Bangladesh and development partners to work together to accelerate progress to achieve the goal of zero hunger and malnutrition.

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Appendix 1. Supplementary Data and Figures

A1.1. Interim Feed the Future Indicator Estimates

Unweighted sample sizes, point estimates, standard deviations, confidence intervals, design effects (DEFF), and nonresponse rates for the interim Feed the Future indicators for the Zone of Influence.

Feed the Future indicator	Estimate					
	Indicator[a]	SD	95% CI	DEFF	Non-response rate[1]	n
Daily per capita expenditures (as a proxy for income) in USG-assisted areas (2010 USD) [a]						
All households	2.10	1.24	2.05-2.16	2.47	0.25	2,012
Male and female adults	2.05	1.19	2.00-2.11	2.11	0.29	1,723
Female adult(s) only	2.40	1.52	2.22-2.57	1.19	0	280
Male adult(s) only	^	^	^	^	^	9
Child(ren) only (no adults)	^	^	^	^	^	0
Prevalence of Poverty: Percent of people living on less than $1.25 per day (2005 PPP)						
All households	34.01	0.47	31.94-36.08	2.21	0.10	2,015
Male and female adults	34.35	0.46	32.11-36.59	2.21	0.12	1,726
Female adult(s) only	30.61	0.56	25.18-36.04	1.18	0	280
Male adult(s) only	^	^	^	^	^	9
Child(ren) only (no adults)	^	^	^	^	^	0
Depth of Poverty: Mean percent shortfall relative to the $1.25 per day (2005 PPP) poverty line						
All households	7.00	0.12	6.46-7.54	2.26	0.10	2,015
Male and female adults	6.97	0.12	6.39-7.55	2.28	0.12	1,726
Female adult(s) only	7.29	0.17	5.64-8.94	0.97	0	280
Male adult(s) only	^	^	^	^	^	9
Child(ren) only (no adults)	^	^	^	^	^	0
Percent of women achieving adequacy on Women's Empowerment in Agriculture Index Indicators[2]						
Input in productive decisions	90.4	0.3	88.9-91.9	2.0	20.0	1,485
Autonomy in production	82.9	0.4	80.9-84.8	4.4	20.0	1,485
Ownership of assets	88.3	0.3	86.6-89.9	2.3	20.0	1,485
Purchase, sale or transfer of assets	63.0	0.5	60.5-65.5	2.3	20.0	1,485
Access to and decisions on credit	60.0	0.5	57.5-62.5	2.3	20.0	1,485
Control over use of income	93.4	0.2	92.1-94.6	1.9	20.0	1,485
Group member	51.3	0.5	48.7-53.8	2.5	20.0	1,485
Speaking in public	65.4	0.5	63.0-67.8	2.9	20.0	1,485
Workload	84.7	0.4	82.8-86.5	1.8	20.0	1,485
Leisure	81.4	0.4	79.4-83.4	2.9	20.0	1,485

Feed the Future indicator	Estimate					
	Indicator[a]	SD	95% CI	DEFF	Non-response rate[l]	N
Prevalence of households with moderate or severe hunger						
All households	5.6	0.2	4.6-6.6	1.4	0.0	2,015
Male and female adults	4.6	0.2	3.6-5.6	1.5	0.0	1,726
Female adult(s) only	11.9	0.3	8.1-15.8	1.4	0.0	280
Male adult(s) only	^	^	^	^	^	9
Child(ren) only (no adults)						
Women's Dietary Diversity: Mean number of food groups consumed by women of reproductive age						
All women age 15-49	4.49	1.0	4.45-4.53	3.7	0.0	2,107
Prevalence of exclusive breastfeeding among children under 6 months of age						
All children	55.2	0.5	45.5-64.9	1.3	0.0	105
Male children	55.0	0.5	41.1-68.8	1.4	0.0	53
Female children	55.4	0.5	41.4-69.3	1.0	0.0	52
Prevalence of children 6-23 months receiving a minimum acceptable diet						
All children	27.3	0.4	23.6-31.0	1.3	0.0	552
Male children	25.4	0.4	23.7-34.6	1.2	0.0	279
Female children	29.1	0.4	20.3-30.6	1.6	0.0	273
Prevalence of women of reproductive age (15-49 years non-pregnant) who consume targeted nutrient-rich value chain commodities						
Lentil	19.3	0.4	15.8-22.7	4.8	0.0	2,107
Mung	1.7	1.3	0.9-2.6	2.2	0.0	2,107
Groundnut	0.7	0.1	0.1-1.2	2.1	0.0	2,107
Prevalence of women of reproductive age who consume at least one targeted nutrient-rich value chain commodity						
All women age 15-49	21.4	0.4	18.0-24.8	3.6	0.0	2,107
Prevalence of children 6-23 months who consume specific targeted nutrient-rich value chain commodities						
Pulses and nuts	8.1	0.3	5.2-11.1	1.6	0.0	552
Prevalence of children 6-23 months who consume at least one targeted nutrient-rich value chain commodity						
All children	8.1	0.3	5.2-11.1	1.6	0.0	552
Male children	10.7	0.3	5.4-16.0	2.0	0.0	279
Female children	5.6	0.2	2.7-8.5	1.1	0.0	273
Prevalence of underweight women						
All non-pregnant women age 15-49	16.3	0.4	15.2-17.4	2.8	0.0	4,442

Feed the Future indicator	Estimate					
	Indicator[a]	SD	95% CI	DEFF	Non-response rate[1]	N
Prevalence of stunted children under 5 years of age						
All children	32.3	0.5	30.0-34.6	1.6	6.0	1,594
Male children	33.7	0.5	30.5-36.9	1.6	6.0	818
Female children	30.9	0.5	27.6-34.1	1.7	6.0	776
Prevalence of wasted children under 5 years of age						
All children	15.8	0.4	14.0-17.6	1.3	6.0	1,594
Male children	16.3	0.4	13.8-18.9	1.3	6.0	818
Female children	15.3	0.3	12.7-17.8	1.4	6.0	776
Prevalence of underweight children under 5 years of age						
All children	30.2	0.4	27.9-32.4	1.6	6.0	1,594
Male children	28.7	0.4	25.6-31.8	1.3	6.0	818
Female children	31.7	0.5	28.4-35.0	1.6	6.0	776

n/a – Not available.

^ Results not statistically reliable, n<30.

[1] Non-response rates for each indicator are derived by the difference between the number of eligible cases and the number of observations available for analysis divided by the number of eligible cases.

[2] Estimates show censored headcounts for 10 WEAI indicators, which are defined as the percent of women who are disempowered but achieve adequacy in individual indicators on each of the WEAI indicators.

[a] Significance tests were run for associations between each indicator (bold text title in the rows) and the disaggregate variable below the indicator title. For example, a test was done between per capita expenditures and gendered household type. When an association between the indicator and disaggregated variable is found to be significant ($p<0.05$), the superscript is noted next to the indicator.

Source: ZOI stratum of IFPRI's Bangladesh Integrated Household Survey (BIHS), 2011 (baseline) and 2015 (interim); Bangladesh Demographic and Health Survey (BDHS), 2011 and 2014.

A1.2. *Poverty at the $1.90 (2011 PPP) per person per day threshold*

Characteristic	Prevalence of Poverty[1,4]		Depth of Poverty[2,4]		Average consumption shortfall of the poor[3,4]		
	Percent population[a]	n[5]	Percent of poverty line[b]	n[5]	In USD 2011 PPP[c]	Percent of poverty line[c]	n[5]
Total (All households)	**10.73**	**2,015**	**1.36**	**2,015**	**0.27**	**14.12**	**192**
Gendered household type							
Male and female adults	10.38	1,726	1.28	1,726	0.26	13.76	159
Female adult(s) only	13.98	280	2.11	280	0.32	16.84	32
Male adult(s) only	^	9	^	9	^	^	1
Child(ren) only (no adults)	^	0	^	0	^	^	0
Household size[ab]							
Small (1-5 members)	8.53	1,640	1.06	1,640	0.26	13.86	131
Medium (6-10 members)	16.15	373	2.09	373	0.27	14.45	61
Large (11+ members)	^	2	^	2	^	^	0
Household educational attainment[ab]							
No education	15.05	117	1.90	117	^	^	14
Less than primary	20.76	266	3.02	266	0.31	16.26	49
Primary	11.48	1,087	1.48	1,087	0.27	14.43	109
Secondary or more	4.94	545	0.41	545	^	^	21

^ Results not statistically reliable, n<30.

[1] The prevalence of poverty is the percentage of individuals living below the $1.90 (2011 PPP) per person per day threshold. Poverty prevalence is sometimes referred to as the poverty incidence or poverty headcount ratio.

[2] The depth of poverty, or poverty gap, is the average consumption shortfall multiplied by the prevalence of poverty.

[3] The average consumption shortfall of the poor is the average amount below the poverty threshold of a person in poverty. This value is estimated only among individuals living in households that fall below the poverty threshold.

[4] A significance test was performed for associations between the indicator in the column heading and each of the variables in the rows. For example, a test was done between prevalence of poverty and gendered household type. When an association between the column indicator and row variable is found to be significant ($p<0.05$), the superscript for the indicator in the column heading is noted next to the row variable.

[5] Records missing information for the disaggregate variables have been excluded from the disaggregated estimates. The unweighted sample size reflects this loss in observations; therefore disaggregates' sample sizes may not total to the aggregated sample size.

[a-c] Superscripts in the column heading indicates significance tests were performed for associations between the indicator in the column heading and each of the variables in the rows. For example, a test was done between prevalence of poverty and gendered household type. When an association between the column indicator and row variable is found to be significant ($p<0.05$), the superscript for the indicator in the column heading is noted next to the row variable

Source: ZOI stratum of IFPRI's Interim Bangladesh Integrated Household Survey (BIHS), 2015.

Appendix 2. Methodology

A2.1 Sampling and Weighting

The BIHS sample is statistically representative at the following levels: (1) nationally of rural Bangladesh; (2) rural areas of each of the seven administrative divisions of the country: Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Rangpur, and Sylhet;[29] and (3) the FTF zone of influence. USAID provided IFPRI the list of FTF locations (districts and upazilas [i.e., sub-districts]). Using this list, a consultant statistician sampled the FTF zone separately for its statistical representativeness.[30]

Sampling Design

The sample design of households for the interim survey followed a two-stage stratified cluster sampling design where each of the aforementioned seven administrative divisions form a stratum. To give reliable estimates at the division and ZOI level, sample sizes were determined using the following statistical formula, which takes into account the estimate population proportion, design effect, and the confidence interval required to yield an estimate with a specified margin of error

$$n = (p(1-p) * deff * z * z)/(e * e)$$

where, n = sample size
p = estimated proportion of the population that presents the characteristic
deff = design effect
z = level of confidence according to the standard normal distribution
e = tolerated margin of error or level of permissible error (1 percent, 5 percent, or 10 percent)

Since we are not aware of the value of *p* (the prevalence of the core indicator), it is common practice in the literature to assume *p* to be 0.5 (50 percent), which gives the maximum variance of the estimator of proportion and in turn the maximum value of sample size (*n*). Following the methodology used in the Household Income and Expenditure Survey (HIES) 2005, on average we can take the design effect (deff) as 2. This means that in order for the sample to produce the same sampling error as a simple random sample of size *n*, the sample size needs to be increased by the factor 2. The sample size was calculated for a 95 percent level of confidence—that is, *z* = 1.96 and the level of precision or relative error was set at 10 percent, with the margin of error, *e*=0.10**p*, thus equaling 5 percent. Using these values in the aforementioned equation, the sample size for each division is

[29] 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).
[30] The BIHS sampling was done by a consultant statistician, former chief statistician at the Bangladesh Bureau of Statistics (BBS), Ministry of Planning.

$$n = (0.5(1 - 0.5) * 2 * 1.96 * 1.96) / (0.05 * 0.05) = 768$$

Using a sample size of 768 for each division, the national sample is estimated to be (768 * 7) = 5376, which was rounded up to 5,500 households to account for potential non-response from sampled households. Furthermore, for the ZOI, sample size was set at 1,000 households initially. The number of primary sampling units (PSU) required for the survey was determined using the methodology used in the HIES 2010, which was designed to provide estimates at the national and divisional levels. In HIES 2010, 20 households were selected per PSU for enumeration. Consistent with BBS' sampling methodology, we determined that 5500/20 = 275 PSUs (villages) are required for the nationally representative sample and 1000/20 = 50 PSUs are required for the ZOI sample.

Sample Selection

As mentioned earlier, the sample design of households for the interim survey followed a two-stage stratified cluster sampling design, where each village will be treated as a cluster and will form the PSU or first stage sampling unit. Households within these villages will be the secondary sampling unit (SSU) or the second stage sampling unit.

For the ZOI, in the first stage, 50 PSUs—that is, villages were selected from the 2001 population census of Bangladesh in 20 Feed the Future districts by probability proportional to size (PPS) sampling, size being the number of households in the village. Proportional allocation was made while allocating the 50 sample villages to the 3 different strata (divisions). IFPRI-PRSSP researchers noticed that the sample size becomes inadequate for certain disaggregated analyses of the data from the Feed the Future sample of 1,000 households. To obtain more robust estimates of disaggregated analysis, the researchers expanded the Feed the Future sample of households by adding 52 PSUs (with 1,040 sample households labeled as Feed the Future additional in hh/sample type variable in the dataset) that belong to Feed the Future upazilas in Barisal, Dhaka, and Khulna, which are also strata of the overall BIHS sampling frame.

After selecting the 102 PSUs, a complete household listing operation was done in the selected villages where the number of households residing in the village were less than or equal to 300. If the number of households in the village is greater than 300, the village was hypothetically segmented and clusters of around 300 households were formed. One cluster was randomly selected and complete listing of households was done in this selected cluster. The resulting list of the households served as the sampling frame for the second stage selection of sample households within the selected villages.

In the second stage, 20 households were selected with an equal probability using linear systematic sampling scheme. The final sample frame of the Feed the Future ZOI includes 2,040 households (1,000 households in the original Feed the Future sample and 1,040 additional

sample households) in 102 PSUs belonging to 73 upazilas. The comprehensive list of households generated during a listing operation was fielded from October 25–November 30, 2011.

Since the sampling frame of the BIHS has the Feed the Future 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 Feed the Future 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 Feed the Future dataset.

Weighting

Data required for weighting of survey data were collected throughout the sampling process, and included: (1) PSU measure of size (where size is in terms of number of population or number of households) used for selection of PSUs; (2) measure of size of strata from which PSUs are drawn; (3) measure of size of PSUs at time of listing; and (4) response rates among households, women, and men. Sampling probability was computed separately for each sampling stage and for each village (PSU). Weights were calculated for households, women, men, and children in the sample.

Design weights were calculated based on the separate sampling probabilities for each sampling stage and for each cluster. We have:

$P_{1hi} =$ first-stage sampling probability of the *i*-th cluster (village) in stratum *h*.
$P_{2hi} =$ second-stage sampling probability within the *i*-th cluster (household selection).

The probability of selecting cluster *i* in the sample is:

$$P_{1hi} = \frac{m_h \times N_{hi}}{N_h}$$

The second-stage probability of selecting a household in cluster *i* is:

$$P_{2hi} = \frac{n_{hi}}{L_{hi}}$$

Where:
$m_h =$ number of sample clusters selected in stratum *h*.
$N_{hi}=$ total population in the frame for the *i*-th sample cluster in stratum *h*.
$N_h =$ total population in the frame in stratum *h*.
$n_{hi} =$ number of sample households selected for the *i*-th sample cluster in stratum *h*.
$L_{hi} =$ number of households listed in the household listing for the *i*-th sample cluster in stratum *h*.

The overall selection probability of each household in cluster *i* of stratum *h* is the product of the selection probabilities of the two stages:

$$P_{hi} = P_{1hi} \times P_{2hi} = \frac{m_h \times N_{hi}}{N_h} \times \frac{n_{hi}}{L_{hi}}$$

The design weight for each household in cluster *i* of stratum *h* is the inverse of its overall selection probability:

$$W_{hi} = \frac{1}{p_{hi}} = \frac{N_h \times L_{hi}}{m_h \times N_{hi} \times n_{hi}}$$

The sampling weight was calculated with the design weight corrected for non-response for each of the selected clusters. Response rates were calculated at the cluster level as ratios of the number of interviewed units over the number of eligible units, where units could be household or individual (woman, child).

Post adjustment of weights

Since the measure of size that was used for selecting the PSUs (villages) was based on extrapolation from the total household size of the 2001 Population Census conducted by the BBS which is very old by now, the current value of this size measure may be very different. Therefore, it is required to update/project the number of households at the selected PSU level. However, for controlling design effect, it is desirable that the survey weights do not vary widely within each division/stratum. A wide variation of weights within division/stratum may unnecessarily increase the variances of the estimates. Hence, efforts should be made to maintain the similar or almost similar base weights within a division. Base weight is the inverse of the selection probability of an ultimate sampling unit (household). To ensure similar or uniform weight within a division/stratum, the base weight was modified using an adjustment factor. The adjustment factor was determined on the basis of 2011 Population Census, which is the latest population census available.

A2.2 Poverty Prevalence and Expenditure Methods

Data Source

The Household Roster and Household Consumption Expenditure modules of the BIHS questionnaire are used to calculate the per capita expenditures and prevalence of poverty Interim Assessment indicators. The household consumption expenditure module is similar to the LSMS, where households' consumption of various food and non-food items is measured to infer household income and well-being. Food and non-food consumption are covered in separate modules in the BIHS questionnaire.

Data Preparation

- All lumpy expenditures and life cycle events are excluded from consumption expenditure. Such expenses include: expense for pilgrimage, dowry/dower, C-section operation for giving birth, land purchase, etc. The transfers of money to entities outside of the households (for example, donations, insurance, taxes, or levies) or expenses on large purchases that occur infrequently, as Deaton and Zaidi have suggested, are excluded because they either do not contribute to the household's well-being or are considered "lumpy expenditures" that should not be included within the aggregate[31].

- Durable goods costs are excluded but use value of durable goods are included. For durable goods data were collected in a manner that allowed us to calculate use value per annum/month.

- The BIHS collected information for a list of durable items in the asset module of the questionnaire. Information included - the number of such items owned, the year of purchase, the price of purchase, and the estimate of the current value of the item. Since durable goods are typically expensive and used year after year, the purchase price or the current value is not added directly to the consumption aggregate. Instead, the consumption value of durable goods is estimated as a flow of services accrued to the household—that is, the use value of the durable good.

- The rental value of housing for households who rented the housing units was used as the housing expenditure. For owner-occupied households, the expected rental values were used as housing expenditure. In most cases, the respondent reported the expected value of the rent by estimating their housing cost based on the cost of housing for similar dwelling units in the neighborhood.

Imputations:

- For items with missing prices we have imputed prices from the next available level of disaggregation. If household level price was not available, then we imputed price from the village level or from union level or from upazila level or from district level or from division/strata level, depending on the market from which we were able to find the price of the items that have missing value. This imputation was done for only a few food items which had missing price at the household level.

- The data was inspected for outliers so that expenditure measures were not distorted. Generally, 3 standard deviation (Z value) were calculated for continuous variables to

[31] Deaton, A. and Zaidi, S. (2002) Guidelines for constructing consumption aggregates for welfare analysis. LSMS Working Paper 135, World Bank, Washington D.C.

test whether the distribution is normal or skewed and took other standard measures for data validity and reliability process.

Prices:

- Market surveys were performed to collect village level prices along with the collection of household prices based on the BIHS questionnaire.

- There is little temporal and spatial price variation in the Feed the Future data. Since the BIHS data was collected in a timespan of three months within a single season, there is little variation of price over time. Furthermore, markets are integrated in the 20 districts of the Feed the Future ZOI, with prices remaining more or less constant. Thus, there is little spatial variation in prices as well.

Currency Conversions using CPI and PPP

In order to analyze the data, the consumption values and poverty thresholds had to be adjusted for inflation and converted between NPR and US dollars (USD). The inflation adjustments were done using the Basic Needs Price Index (BNPI) and the conversion between NPR and USD was done using the 2005 PPP. An important feature of this analysis is that the BNPI is used rather than the Consumer Price Index (CPI) to adjust the poverty line over time to 2011/12. The main reason for using the BNPI rather than CPI stems from the decision of the BBS and followed by the World Bank not to rely on CPI for updating the poverty line, as the assumption is that CPI is downward biased in the estimation of inflation as experienced by the poor of Bangladesh. The Basic Needs Price Index (BNPI), which the BBS calculated for every round of the Household Expenditure Income Survey (HIES) from 1990/91 to 2010, is not available for 2015 because the 2015 HIES has not been conducted yet. In order to be consistent with our original poverty head count estimate of 40.5 percent for the Feed the Future ZOI at the baseline (we used the BNPI for adjusting the poverty line for inflation), an approximation of the BNPI for 2015 was made using the general rural CPI and BNPI data for four rounds of HIES poverty estimates. Regression analysis was used to estimate coefficients that could be used to predict the BNPI for 2015.

The following equation was estimated:

$$BNPI_t = \beta_0 + \beta_1 Year_t + \beta_2 CPI_t + \mu_t$$

The regression results are:

$$BNPI_t = 4{,}809.28 - 2.42 Year_t + 1.41 CPI_t$$

All coefficients in the regression are significant at the 1 percent level of significance and the regression has an R squared = 0.99, F= 64.99, and Probability > F= 0.0874. From these coefficients the predicted BNPI for 2015 is **230.91**.

The local currency equivalent (LCE) of the PPP $1.25 per day poverty line was calculated as follows:

$$\text{LCE} = 1.25 \text{ x } \text{PPP}_{2005} \text{ x } \left[\frac{\text{2015 Price index}}{\text{2010 Price Index}}\right]$$

The $1.25 2005 PPP threshold is equivalent to 73.59 taka, per person, per day in 2015 prices.

To report per capita expenditure measures in 2010 USD, per capita expenditures measured in Bangladeshi Taka local currency units (LCU) were converted to 2010 USD using the Basic Needs Price Index (BNPI) and the PPP Index estimated by the World Bank. We used the formula (2005 BNPI LCU/ 2015 BNPI LCU)*1/(PPP 2005)* (2010 USD CPI /2005 USD CPI) where LCU PPP 2005 = 25.49389, 2015 BNPI LCU = 230.91, 2005 BNPI LCU = 100, 2010 USD CPI =111.65, and 2005 USD CPI = 100. The conversion factor was 0.018966.

Weights

Based on the sampling procedure described previously, weights were calculated for household level based on the proportion of households in the survey to the number of actual households in each stratum of the sample. Population weights are generated by multiplying the household sampling weight by the number of household members present in the each of the sampled household in the BIHS survey.

A2.3 Criteria for Achieving Adequacy for Women's Empowerment in Agriculture Indicators

The below table presents the Women's Empowerment in Agriculture five dimensions of empowerment, their corresponding empowerment indicators, the survey questions that are used to elicit the data required to establish adequacy or inadequacy for each empowerment indicator, and how adequacy criteria are defined for each empowerment indicator.

Dimension	Indicator name	Survey questions	Aggregation of adequacy criteria	Inadequacy criteria
Production	Input in productive decisions	WE202, 1-3, 6 How much input did you have in making decisions about: food crop farming, cash crop farming, livestock raising, fish culture; WE5a_02 A-D To what extent do you feel you can make your own personal decisions regarding these aspects of household life if you want(ed) to: agriculture production, what inputs to buy, what types of crops to grow for agricultural production, when or who would take crops to market, livestock raising	Must have at least some input into or can make own personal decisions in at least two decision-making areas	Inadequate if individual participates BUT does not have at least some input in decisions; or she does not make the decisions nor feels she could.
	Autonomy in production	WE5ba_01_1-WE5bc_04_1 Are you like this person; WE5ba_01_2-WE5bc_04_2 Are you completely the same or somewhat the same? WE5ba_01_3-WE5bc_04_3 Are you completely different or somewhat different?	Respondent's motivation for decision-making must reflect his/her values in at least one of the three activities: types of crop to grow, taking crops to the market and Livestock raising.	Inadequate if motivation for decision-making reflects desire to please others or avoid harm

Dimension	Indicator name	Survey questions	Aggregation of adequacy criteria	Inadequacy criteria
Resources	Ownership of assets	WE3a_02a- WE3a_02c A-N Who would you say owns most of the [ITEM]? Agricultural land, Large livestock, Small livestock, chicks etc.; Fish pond/equip; Farm equipment (non-mechanized); F arm equip (mechanized); Nonfarm business equipment; House; Large durables; Small durables; Cell phone; Non-agricultural land (any); Transport	Must own at least one asset, but not only one small asset (chickens, non-mechanized equipment, or small consumer durables)	Inadequate if household does not own any asset or only owns one small asset, or if household owns the type of asset BUT she does not own most of it alone
	Purchase, sale, or transfer of assets	WE3a_03a-WE3a_05c A-N Who would you say can decide whether to sell, give away, rent/mortgage [ITEM] most of the time? WE3a_06a-WE3a_06c A-N Who contributes most to decisions regarding a new purchase of [ITEM]? Agricultural land, Large livestock, Small livestock, chicks etc.; Fish pond/equip; Farm equipment (non-mechanized); F arm equip (mechanized); Nonfarm business equipment; House; Large durables; Small durables; Cell phone; Non-agricultural land (any); Transport	Must be able to decide to sell, give away, or rent at least one asset, but not only chickens and non-mechanized farming equipment	Inadequate if household does not own any asset or only owns one small asset, or household owns the type of asset BUT she does not participate in the decisions (exchange or buy) about it

Dimension	Indicator name	Survey questions	Aggregation of adequacy criteria	Inadequacy criteria
	Access to and decisions on credit	WE3d_18a-WE3d_19c A-E Who made the decision to borrow/what to do with money/item borrowed from [SOURCE]? Non-governmental organization (NGO); Informal lender; Formal lender (bank); Friends or relatives; ROSCA (savings/credit group)	Must have made the decision to borrow or what to do with credit from at least one source	Inadequate if household has no credit OR used a source of credit BUT she did not participate in ANY decisions about it
Income	Control over use of income	WE2031-6 How much input did you have in decisions on the use of income generated from: Food crop, Cash crop, Livestock, Non-farm activities, Wage & salary, Fish culture; WE5a_02 E-G To what extent do you feel you can make your own personal decisions regarding these aspects of household life if you want(ed) to: Your own wage or salary employment? Minor household expenditures?	Must have some input into decisions on income, but not only minor household expenditures	Inadequate if participates in activity BUT she has no input or little input on decisions about income generated
Leadership	Group member	WE4.08 A-K Are you a member of any: Agricultural / livestock/ fisheries producer/ market group; Water, forest users', credit or microfinance group; Mutual help or insurance group (including burial societies); Trade and business association; Civic/charitable group; Local government; Religious group; Other women's group; Other group.	Must be an active member of at least one group	Inadequate if not an active member of a group or if unaware of any group in the community or if no group in community

Dimension	Indicator name	Survey questions	Aggregation of adequacy criteria	Inadequacy criteria
	Speaking in public	WE4.01 – WE4.03 Do you feel comfortable speaking up in public: To help decide on infrastructure (like small wells, roads) to be built? To ensure proper payment of wages for public work or other similar programs? To protest the misbehavior of authorities or elected officials?	Must feel comfortable speaking in at least one public setting	Inadequate if not at all comfortable speaking in public
Time	Workload	WE6a Worked more than 10.5 hours in previous 24 hours.	Total summed hours spent toward labor must be less than 10.5	Inadequate if works more than 10.5 hours a day
	Leisure	WE6_04b How would you rate your satisfaction with your available time for leisure activities like visiting neighbors, watching TV, listening to radio, seeing movies or doing sports?	Must rate satisfaction level as at least five out of 10	Inadequate if not satisfied (<5)