FEED THE FUTURE

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

Feed the Future Kenya
Zone of Influence Interim Assessment Report

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USAID

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List of Acronyms

5DE	Five Domains of Empowerment
BFS	Bureau for Food Security
BMI	Body Mass Index
CI	Confidence Interval
CPI	Consumer Price Index
DEFF	Design Effect
DHS	Demographic and Health Survey
EA	Enumeration Area
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
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 Kenya.

The Feed the Future ZOI in Kenya includes high rainfall area 1 (HR1) and semi-arid area 2 (SA2), covering 22 Counties. The FTF ZOI is characterized by: high agricultural output; greatest number of rural poor; highest poverty density; low household incomes; highest number of malnourished children; and largest number of female heads of households, which, combined offer best opportunities for linking growth and poverty reduction.

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

Thirteen 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 Dietary Diversity; (6) Prevalence of children 6-23 months receiving a minimum acceptable diet (MAD); (7) Prevalence of exclusive breastfeeding among children under 6 months of age; (8) Prevalence of women of reproductive age who consume targeted nutrient-rich value chain commodities (NRVCC); (9) Prevalence of children 6-23 months who consume targeted NRVCC; (10) Prevalence of underweight women; (11) Prevalence of stunted children under 5 years of age; (12) Prevalence of wasted children under 5 years of age; and (13) Prevalence of underweight children under 5 years of age.

The first interim assessment does not report on the Feed the Future indicator of Women's Empowerment in Agriculture Index (WEAI) score, but does report on nine of the ten indicators that comprise the WEAI. These are presented in the Women's Empowerment in Agriculture Section of this report (Section 5). Because adjustments were being made to the WEAI tool at the time of the first ZOI interim survey collection, a streamlined version of the Women's Empowerment in Agriculture module was used that only collected nine of the ten indicators. The full WEAI will be collected during the next interim survey in 2017.

The interim assessment also 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. However, anthropometric data including testing of anemia was collected during the interim survey.

Interim Assessment Data Sources

Data for the Feed the Future ZOI indicators presented in this assessment are drawn from the interim. The Kenya ZOI interim survey was conducted by USAID/Kenya in conjunction with its data collection partner, Tegemeo Institute of Agricultural Policy and Development. Fieldwork for the ZOI interim survey took place between February and May 2015.

Summary of Key Findings

Household Economic Status

Consumption expenditure and poverty

The mean per capita expenditure per day was USD 2.2, and was highest among the male only households (USD 3.62) and lowest among the female adult only households at USD 1.93. There was wide disparity on per capita expenditure across expenditure quartiles and deciles. At USD 3.72, expenditure for the highest decile was more than five times that of the lowest decile (USD 0.78), and at least two times that of the fifth decile (USD 1.57).

Using a poverty line of $1.25 per person per day, 47% of individuals in the survey were poor, and this proportion was highest among the female adult only households (52%) and lowest in the male adult only households (28%). The depth of poverty, measured by the poverty gap index, was on average 0.15.

Women's Empowerment in Agriculture Index Indicators

Looking at the five empowerment domains, results show that a large proportion of women had attained adequacy in most of the indicators. This was highest for input in productive decisions, ownership of assets and control over use of income (above 90% for each) and lowest for access to and decisions on credit (50%). Participation in economic activities was highest for food crop farming (97%) followed by livestock raising at 86%, but lower for non-farm activities

(32%) and cash crop farming (32%). In terms of input into decision making on use of income, majority had input on wage or salaried employment (80%) followed by non-farm economic activities (75%). Only 40% of women had an input into decisions on use of income from cash crop farming. With regard to perceived abilities to contribute to decisions, women felt that they had a higher ability to make decisions on minor household expenditures (49%) and type of crops to grow (42%) but least ability on decisions about major household expenditures (26%). In terms of households' ownership of productive resources, a larger proportion of women reported to make decisions on purchase of poultry (55%) as well as on non-mechanized farm equipment (35%), but much less purchase on purchase of mechanized farm equipment (5%). On access to credit, more than a third of the surveyed women were from households that accessed a loan (38%) most of which was from group-based micro-finance.

In terms of leadership domains, more than three quarters of the women were comfortable speaking in public on the overall and on specific topics. In addition, most women were actively involved in mutual help and insurance groups (75%), religious groups (70%) and credit or micro finance groups (64%). The least involvement was in local government at 13%.

On time use, the key primary activities that most women spent time on were cooking (91%), domestic work (87%), and personal care (87%).

Hunger and Dietary Intake

Nutrition and household hunger

Prevalence of households with moderate or severe hunger

At the household level, most households (86%) experienced low hunger compared to 13% who experienced moderate hunger. Only about 1% of the households reported experiencing severe hunger. Household hunger (moderate and severe) was higher for female adult households and significantly differed by household education attainment.

Dietary Intake

- Dietary Diversity among Women Age 15-49 Years

The mean score for dietary diversity for all women aged 15-49 years was 4.14, implying that women in reproductive age consumed food from four food groups on average within the preceding 24 hours. Women dietary diversity differed significantly by education category and level of household hunger. In addition, 39% percent of women achieved minimum dietary diversity, which also differed significantly by education attainment and household hunger.

- Infant and Young Child Feeding

Approximately half of the children under six months of age were exclusively breastfed. The proportion was much higher for girls (61%) compared to boys (39%). This proportion also seems to increase with the level of caregiver's education attainment.

For children aged 6 to 23 months, about 18% of them received a minimum acceptable diet. This proportion was higher for children in male and female adults only households at 19% compared to those from female adult only households (7%). It was also much lower in households with moderate or severe hunger compared to those with little or no hunger.

- Consumption of Targeted Nutrient-Rich Value Chain Commodities

All women of reproductive age consumed at least one nutrient-rich value chain commodity. On the other hand, seventy nine percent of children aged 6-23 months consumed at least one nutrient-rich value chain commodity. For both women and children, livestock products were the commodity group consumed by the highest proportion.

Nutritional Status of Women and Children

Body Mass Index of Women Age 15-49 Years

The mean BMI for women 15-49 years was 22.4. Amongst various age categories, it was lowest for ages 15-19 (21.42) and highest for ages 45-49 (23.9). In addition, mean BMI increased with education attainment. About 14% of women were underweight, with 23% being either overweight or obese.

Stunting, Wasting, and Underweight among Children under 5 Years

On average, the prevalence of stunting among children 0-5 years was 20.9%, with 8.3% being severely stunted. This prevalence was highest for the age category 12-23 months at 32%. In addition, prevalence was quite low in households where the caregiver had secondary school education or more (9.6%). On the other hand, the prevalence of wasting was 9.7%, with 5% of these being severely wasted. The prevalence of wasting was higher for boys (10.2%) compared to that of girls at 9.1%, and in female adult only households (12%) compared to male and female adult households (9.5%). The prevalence of underweight was 8.7%. This was highest in households where the caregiver had no formal education (17.8%) and in female adult only households (11.3%).

Baseline and interim estimates of indicator values in the ZOI are shown in the Feed the Future Zone of Influence Indicator Estimates table on the following page.

Feed the Future Zone of Influence Indicator Estimates: Kenya

Feed the Future Indicator	Baseline (2013) Estimate	95% CI[1]	n	Interim (2015) Estimate	95% CI	n
Daily per capita expenditures (as a proxy for income) in USG-assisted areas (2010 USD)						
All households	2.0	1.95, 2.05	2365	2.22	1.99, 2.45	2447
Male and female adults	2.0	1.95, 2.05	1878	2.21	1.96, 2.46	1908
Female adult(s) only	1.9	1.8, 2.0	361	1.93	1.68, 2.18	339
Male adult(s) only	4.6	4.1, 5.1	126	3.62	2.92, 4.32	200
Prevalence of Poverty: Percent of people living on less than $1.25 per day (2005 PPP)						
All households	44.7	42.65, 46.75	2365	46.92	43.02, 50.87	2447
Male and female adults	45.4	43.25, 47.55	1878	46.98	42.95, 51.05	1908
Female adult(s) only	45.3	42.4, 48.2	361	51.7	42.73, 60.56	339
Male adult(s) only	4.9	2.45, 7.35	126	27.99	16.40, 43.51	200
Depth of Poverty: Mean percent shortfall relative to the $1.25 per day poverty line (2005 PPP)						
All households	0.14	0.12, 0.16	2365	0.149	0.133, 0.164	2447
Male and female adults	0.14	0.12, 0.16	1878	0.147	0.131, 0.163	1908
Female adult(s) only	0.14	0.11, 0.17	361	0.177	0.139, 0.216	339
Male adult(s) only	0.02	0, 0.04	126	0.086	0.033, 0.139	200
Percent of women achieving adequacy on Women's Empowerment in Agriculture Index Indicators[2,3]						
Input in productive decisions	94.0	n/a	2057	95.38	n/a	2139
Ownership of assets	94.6	n/a	2057	98.38	n/a	2139
Purchase, sale or transfer of assets	84.2	n/a	2057	85.76	n/a	2139
Access to and decisions on credit	50.3	n/a	2057	50.18	n/a	2139
Control over use of income	94.3	n/a	2057	92.11	n/a	2139
Group member	90.0	n/a	2057	87.38	n/a	2139
Speaking in public	82.3	n/a	2057	78.67	n/a	2139
Workload	63.0	n/a	2057	61.41	n/a	2139
Leisure	73.8	n/a	2057	74.23	n/a	2139
Autonomy in production	n/a	n/a	n/a	n/a	n/a	n/a
Prevalence of households with moderate or severe hunger						
All households	13.51	12.36, 14.66	2365	13.96	12.11, 16.03	2452
Male and female adults	13.18	11.98, 14.37	1878	13.05	11.04, 15.35	1908
Female adult(s) only	17.42	15.06, 19.78	361	19.64	14.18, 26.55	340
Male adult(s) only	6.41	3.93, 8.88	126	13.27	8.08, 21.03	204

Women's Dietary Diversity: Mean number of food groups consumed by women of reproductive age						
All women age 15-49	4.08	4.02, 4. 13	2097	4.14	4.04, 4.23	2329
	Baseline (2013)			Interim (2015)		
Feed the Future indicator	Estimate	95% CI[1]	n	Estimate	95% CI	n
Prevalence of exclusive breastfeeding among children under 6 months of age						
All children	48.50	44.77, 52.22	167	49.52	37.24, 61.86	116
Male children	46.75	40.13, 53.36	94	38.76	24.27, 55.55	61
Female children	50.66	43.36, 57.95	73	60.90	45.31, 74.54	55
Prevalence of children 6-23 months receiving a minimum acceptable diet						
All children	26.05	23.35, 28.74	431	18.13	13.81, 23.35	423
Male children	23.55	19.73, 27.36	200	17.91	12.81, 24.47	218
Female children	28.29	25.3, 31.27	231	18.35	12.37, 26.36	205
Prevalence of women of reproductive age who consume targeted nutrient-rich value chain commodities[4]						
NRVCC 1: All women age 15-49	n/a	n/a	n/a	73.9	71.1, 76.54	2706
NRVCC 2: All women age 15-49	n/a	n/a	n/a	77.6	75.18, 79.77	2706
Prevalence of women of reproductive age who consume at least one targeted nutrient-rich value chain commodity[4]						
All women age 15-49	n/a	n/a	n/a	84.6	82.72, 86.36	2706
Prevalence of children 6-23 months who consume targeted nutrient-rich value chain commodities[4]						
NRVCC 1: All children	n/a	n/a	n/a	71.1	62.74, 78.21	423
NRVCC 2: All children	n/a	n/a	n/a	66.0	58.1, 73.12	423
Prevalence of children 6-23 months who consume at least one targeted nutrient-rich value chain commodity[4]						
All children	n/a	n/a	n/a	90.32	86.1, 94.54	423
Male children	n/a	n/a	n/a	89.96	82.63, 94.4	218
Female children	n/a	n/a	n/a	90.66	83.55, 94.89	205
Prevalence of underweight women[4,5]						
All non-pregnant women age 15-49	9.77	8.79, 10.75	3533	14.09	11.68. 16.90	1620
Prevalence of stunted children under 5 years of age[5,6]						
All children	35.1	33.31, 36.89	2732	20.93	16.93, 25.57	1140
Male children	38.26	35.69, 40.82	1380	21.93	17.00, 27.81	606
Female children	31.88	29.39, 34.36	1352	19.79	14.78, 25.96	534
Prevalence of wasted children under 5 years of age[5,6]						
All children	5.05	4.23, 5.89	2732	9.69	7.18, 12.95	1115

Male children	5.65	4.43, 6.86	1380	10.24	6.29, 16.24	593
Female children	4.43	3.33, 5.53	1352	9.06	5.30, 15.07	522
Prevalence of underweight children under 5 years of age[5,6]						
All children	13.87	12.57, 15.16	2732	8.67	6.55, 11.4	1129
Male children	15.14	13.24, 17.03	1380	8.41	6.01, 11.65	601
Female children	12.57	10.8, 14.34	1352	8.97	5.95, 13.31	528

Source(s): PBS Baseline (2013) and First Interim Surveys (2015), Demographic Health Survey 2008-09
n/a – Not available
There were no child headed households both in the baseline and first interim surveys.
The n reported for prevalence of poverty, per capita expenditure and depth of poverty are for the number of households.

[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: Daily per capita expenditures, Prevalence of Poverty, Depth of Poverty, Prevalence of households with moderate or severe hunger, Prevalence of exclusive breastfeeding among children under 6 months of age, and Prevalence of underweight women.

[2] The full WEAI score cannot be calculated because interim data were collected from women only and the autonomy indicator was dropped. The second interim survey (2017) will collect the full set of data from women and men and will report on the full WEAI.

[3] The baseline report presented censored headcounts of inadequate achievement for these empowerment indicators, while this interim report presents uncensored headcounts of adequate achievement for both baseline and interim reporting periods. Censored headcounts present the percent of women who are disempowered and achieve adequacy (or inadequacy) in each indicator, while uncensored headcounts present the percent of women who achieve adequacy (or inadequacy) in each indicator regardless of empowerment status.

[4] The indicators for women's and children's consumption of targeted NRVCC were not collected during the baseline round of data collection. Nutrient-rich Value Chains commodity are defined as nutrient-rich if it meets any of the following criteria: is bio-fortified, is a legume, nut, or some seeds such as sesame, sunflower, pumpkin seeds, wheat germ, or sprouted legume seeds, is an animal source food, including dairy products (milk, yogurt, cheese), fish, eggs, organ meats, meat, flesh foods, and other miscellaneous small animal protein (e.g., grubs, insects), is a dark yellow or orange-fleshed root or tuber, and. is a fruit or vegetable that meets the threshold for being a "high source" of one or more micronutrients on a per 100 calorie and per 100 gram basis

[5] Baseline figures were recalculated using data from the Demographic Health Survey for Kenya carried out in 2008/2009. We extracted data for households within the ZOI to recalculate the indicated figures.

[6] 11 children had edema and 14 children had extreme Z-scores for height and weight measurements. As such, the 11 were dropped from wasted estimates and 25 were dropped from underweight measurements.

1. Background

This section provides background information on Feed the Future in Kenya, 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

Feed the Future (FTF) program is a US government Global Hunger and Food Security Initiative (GHFSI), whose goal is to sustainably reduce hunger and poverty. It aims to do this by tackling their root causes and employing proven strategies for achieving large scale and lasting impact. In Kenya, the United States Agency for International Development (USAID) Kenya mission has developed a multi-year FTF strategy to implement the Initiative. The Kenya FTF 2011-2015 strategy (FTFS) recognizes that the country's progressive economic growth masks the high poverty levels (above 50 percent), and as such, the strategy builds upon the experience and results of previous USAID programs such as Initiative to End Hunger in Africa and the Global Food Security Response.

The FTFS seeks to invest in transforming Kenya's smallholder agriculture into commercially oriented agriculture and creating a direct linkage to improvement in nutrition. Growth in the agricultural sector is key towards achieving the economic growth targets of the Kenya Vision 2030. A key contribution of the FTFS is upscaling what works for poor households, found mainly in rural areas, to ensure that they are not left behind. Areas of emphasis by the Kenya FTFS consist of partnership with other stakeholders in the sector, including other development partners and the private sector players to harmonize procedures, encourage shared learning, resource leveraging and support to analytical work to inform policy and strengthen advocacy efforts. Success of the Kenya FTFS will be measured by its contribution in reducing the proportion of people living in extreme poverty and suffering from hunger.

Strategic Objectives of FTF

The overarching goal of the Kenya FTF program is to sustainably reduce poverty and hunger. The goal will be achieved by attaining two broad objectives: (i) inclusive agricultural sector growth; and (ii) improved nutritional status of women and children.

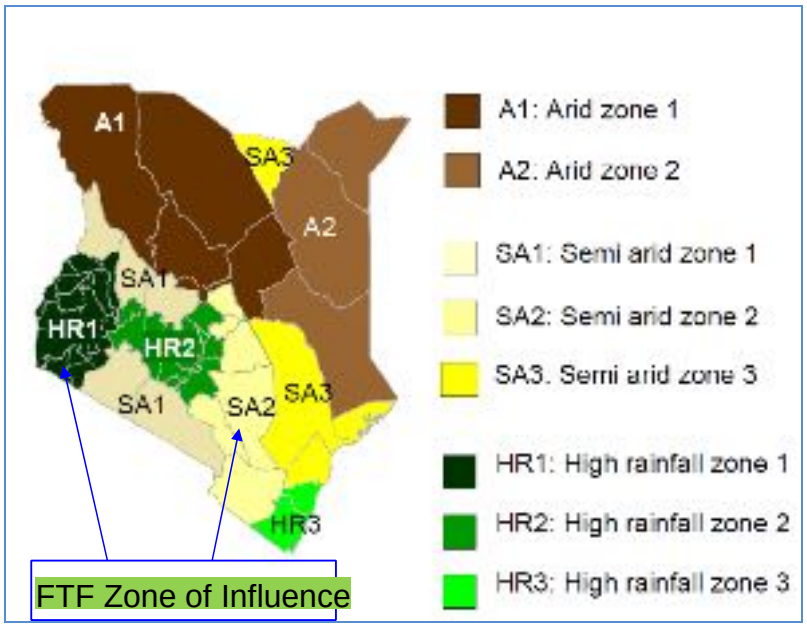
The FTFS theorizes that agricultural transformation that entails growth in competitive value chains as well as diversification within and outside agriculture is a necessary condition to reduce poverty and hunger but this does not meet the sufficiency condition. As such improving links to markets and input access, providing affordable business development and financial services, and promoting greater diversification, specifically tailored to the needs of smallholders, women and youth will help attain sufficient conditions necessary to achieve the goal (USG, 2011).

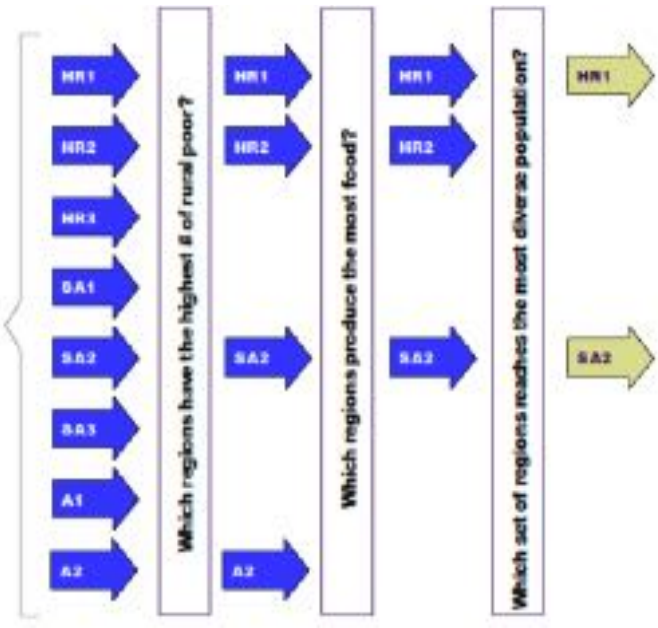
Therefore, two key mechanisms will be used in pursuit of the goal and objectives of the FTF program. First, activities aimed at improving the nutritional status of households, sustainable natural resource management and improving access to knowledge will help households transform their farming to be market oriented. Second, improving access to inputs, linking households to markets, providing affordable business development and financial services, and promoting greater diversification for households will improve the competitiveness of the selected value chains and provide a rich environment for growth.

1.2 Feed the Future ZOI Profile

The FTFS is implemented through a focus on geographical areas. These areas are known as zone of influence (ZOI). The ZOIs are selected through a series of filters such as levels of poverty, staple food production and ethnic diversity. In Kenya, there are two ZOIs for the FTF program: high rainfall area 1 (HR1) and semi-arid area 2 (SA2). These two ZOIs span 22 Counties of Kenya. HR1 is comprised of the following Counties: Bomet, Bungoma, Busia, Elgeyo Marakwet, Homabay, Kakamega, Kericho, Kisii, Kisumu, Migori, Nandi, Nyamira, Siaya, Trans Nzoia, Uasin Gishu and Vihiga. SA2 is made up of Kitui, Machakos, Makueni, Meru, Taita Taveta and Tharaka Nithi Counties. A map of the Feed the Future ZOI in Kenya is provided in Figure 1.1.

Figure 1.1. Map of Kenya: Feed the Future ZOI





Map of the Feed the Future Zone of Influence for Kenya

Source: USG, 2011

Although rural and urban cluster are found in both ZOIs, our sample is primarily made up of clusters classified as rural.

1.2.1 Rationale for ZOI Selection

The ZOIs for FTF interventions were selected through a series of filters such as levels of poverty, staple food production and ethnic diversity. The HR1 and SA2 are characterized by: high agricultural output (kg of food per household) in their respective ecological zones; high number of rural poor; low incomes per household; and, high number of malnourished children. These characteristics offer the best opportunities for linking growth and poverty reduction, while at the same time ensure that investments under the FTF program reach a more diverse population.

The Kenya FTFS will focus its farmer/household activities on production and post-harvest handling in the ZOI (HR1 and SA2) largely through the Kenya Agricultural Value Chain Enterprises (KAVES) Project. The Strategy's priority value chains in these regions include horticulture, dairy and maize (for HR1) and drought tolerant crops (e.g., sorghum/millet and root crop systems), horticulture and drought-tolerant maize (for SA2). In addition, pulses, an important source of plant protein, are widely grown in SA2 and will receive support alongside the priority value chains. However, given that some activities along value chain may be located outside the focus areas due to factors related to infrastructure and markets, some of the Kenya FTFS activities beyond the farm/household may not necessarily be confined to the ZOI.

1.2.2 Demography of the ZOI

Tables 1.1 presents individual and household population estimates, respectively, for the ZOI for 2009, when demographic and population census was last conducted. The sub-population categories correspond to the various sub-populations for the Feed the Future indicators and disaggregates (e.g., children age 6-23 months, number of households). The estimates for the total population of individuals as well as households are also disaggregated by ZOI.

The population in the ZOI represented about 48 percent of national population. Similarly, the population of women of reproductive age in the ZOI represents 48 percent of the total number of women in this age category nationally (Table 1.1). The number of children below five years in the ZOI was 51 percent of all children within this age category nationally.

Table 1.1. Population of individuals, by category, in the ZOI, Kenya 2009

	Population			
	National	ZOI		
		HR1	SA2	Total ZOI
Total population	38,610,097	13,437,860	5,002,108	18,439,968
Rural	26,122,722	9,783,240	3,923,226	13,706,466

	Population			
	National	ZOI		
		HR1	SA2	Total ZOI
Urban	12,487,375	3,654,620	1,078,882	4,733,502
Total Households	8,767,954	2,864,801	1,135,978	4,000,779
Women of Reproductive Age (15-49 years)	9,375,784	3,288,768	1,181,188	4,469,956
Women of Reproductive Age (Rural)	5,863,055	2,432,514	904,867	3,337,381
Women of Reproductive Age (Urban)	3,512,729	856,198	276,321	1,132,519
Children 0-59 months	5,939,306	2,321,664	694,847	3,016,511
Males 0-59 months	3,000,439	1,160,032	351,010	1,511,042
Females 0-59 months	2,938,867	1,161,632	343,837	1,505,469
Children 12-59 months	4,717,369	1,831,096	555,617	2,386,713
Males 12-59 months	2,383,596	912,769	296,768	1,209,537
Females 12-59 months	2,333,773	918,327	258,849	1,177,176
Children less than 1 year	1,221,937	490,568	139,230	629,798
Males less than 1 year	616,843	247,263	70,154	317,417
Females less than 1 year	605,094	243,305	69,076	312,381
Children 0-23 months	2,280,015	921,227	262,110	1,183,337
Males 0-23 months	1,152,512	465,291	132,310	597,601
Females 0-23 months	1,127,503	455,936	129,800	585,736

Note: 1. Population for ZOI is obtained by aggregating at the administration level (County level). This may be higher than actual number of people receiving FTF interventions
2. The last population census was undertaken in 2009.

Source: Republic of Kenya, 2009

1.2.3 Agriculture in the ZOI[1]

Crop agriculture is practised in both HR1 and SA2 ZOI although the ecological environment differs between the two zones. Both zones receive a bi-modal type of rainfall and have two cropping seasons in a year. The main cropping season for the HR1 zone starts in March, while it begins in October for the SA2 zone. However, HR1 on average receives much more precipitation (800-1600 mm annually) compared to SA2 (500-1000 mm annually).

In addition to the rainfall patterns, the higher potential of agricultural ecological zones in HR1 contributes to the differences in agricultural productivity between the two regions. The farmers' agronomic practices are also different although they are likely to capture risk aversion by farmers rather than ability. For example, although maize is grown in both zones, the varieties and subsequent yields differ. In addition, the proportion of maize farmers who used improved seed in 2014 was 74% in HR1 compared to 69% in SA2. Similarly, the proportion of maize farmers who used inorganic fertilizer was 77% in HR1 compared to 38% in SA2. Also, farmers in SA2 are more likely to adopt drought tolerant and early maturing varieties to take advantage of the ecological conditions.

[1] The Tegemeo Agricultural Policy Research and Analysis (TAPRA) II project survey carried in 2014 was used to characterize agriculture in the ZOI.

Average land sizes in HR1 are smaller than those found in SA2. Population increase contributes highly to land fragmentation in HR1. Although population has also increased in SA2, the greater likelihood of experiencing harsh conditions in SA2 implies that households tend to rely more on off farm income and livestock. As such, there are more agricultural intensification practices in HR1.

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.

This report presents results of the FTF population-based interim survey (PBS) conducted in the FTF ZOIs in Kenya in 2015. The rest of the report is organized as follows: Section 2 of the report outlines the methodology used in the interim PBS. Survey results on key demographic indicators of interest to FTF are described in section 3. Section 4 describes household economic status including consumption expenditure and poverty, while section 5 presents WEAI measures. Section 6 describes the results on hunger and dietary intake such as dietary diversity and minimum acceptable diet, while section 7 presents results of children and women nutritional status. Section 8 provides a summary and conclusion of the report.

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	ZOI Survey	Jan-Feb 2013	ZOI Survey	March-May 2015
Prevalence of Poverty: Percent of people living on less than $1.25 per day	ZOI Survey	Jan-Feb 2013	ZOI Survey	March-May 2015
Depth of Poverty: Mean percent shortfall relative to the $1.25 per day poverty line	ZOI Survey	Jan-Feb 2013	ZOI Survey	March-May 2015
Women's Empowerment in Agriculture Index indicators	ZOI Survey	Jan-Feb 2013	ZOI Survey	March-May 2015
Prevalence of households with moderate or severe hunger	ZOI Survey	Jan-Feb 2013	ZOI Survey	March-May 2015
Women's Dietary Diversity: Mean number of food groups consumed by women of reproductive age	ZOI Survey	Jan-Feb 2013	ZOI Survey	March-May 2015
Prevalence of exclusive breastfeeding among children under 6 months of age	ZOI Survey	Jan-Feb 2013	ZOI Survey	March-May 2015
Prevalence of children 6-23 months receiving a minimum acceptable diet	ZOI Survey	Jan-Feb 2013	ZOI Survey	March-May 2015
Prevalence of underweight women	DHS 2010	2008/09	ZOI Survey	March-May 2015
Prevalence of stunted children under 5 years of age	DHS 2010	2008/09	ZOI Survey	March-May 2015
Prevalence of wasted children under 5 years of age	DHS 2010	2008/09	ZOI Survey	March-May 2015
Prevalence of underweight children under 5 years of age	DHS 2010	2008/09	ZOI Survey	March-May 2015

2.1.1 Primary Data: The ZOI Interim Survey in Kenya

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

Survey Sample Design

The design of the survey followed the FTF guidance series vol. 11 and took into account several factors. The sample was clustered around the geographical area of focus i.e. FTF ZOIs (HR1 and SA2) which cover 22 counties.

Other factors considered were the indicators to be collected, particularly the need to collect both household level data and information on select groups of individuals in a household. As such, there were more than one respondent in each household: the primary and secondary respondents, who self-identified as the primary male and female members responsible for social and economic decision making within a household. In male and female adult households, these mainly would be the husband and wife, but could also be other household members as long as they were aged 18 years and above. In female adult only and male adult only households, however, there was to be only a primary respondent – the principal female/male decision-maker aged 18 or older. In addition to the primary and secondary respondents, women of reproductive age and caretakers of children in each household were to be individually interviewed to get information on the food items consumed within the last 24 hours. In this way, the data collected would provide information about level of empowerment of women in agriculture, women's dietary diversity and infant young child feeding in the rural farm households in the ZOI.

Questionnaire Design

The PBS instrument for the FTF ZOI provided in Volume 11 of the FTF M&E Guidance Series was used for the survey. This instrument was adapted to the local context and the layout customized to Tegemeo data entry tools by a team of researchers at the Institute. Adapting the instrument to the local context was an iterative and interactive process and largely followed what had been agreed upon during the baseline.

The questionnaire was adapted to collect information on: household demographics, dwelling characteristics, consumption expenditure and hunger scale; primary male and female's role in household's decision making in production and income generation, access to productive assets, individual leadership and influence in the community, membership and influence in groups and time allocation; women's dietary diversity; and, infant and young child feeding.

The questionnaire was then designed and coded for Computer Aided Personal Interview (CAPI) use. Both the paper and CAPI versions of the questionnaire were used in training enumerators and eventually the CAPI version was used to collect data. The questionnaire was split in two for logistical reasons for data collection i.e. the main questionnaire and the anthropometric section.

Fieldwork

The interim PBS collected the following data: consumption and expenditure data on a sample of households; food consumption data on a select group of children (aged 0-23 months) and women of reproductive age (15-49 years) residing in the households; decision making and access to productive assets by primary male and female decision makers residing in the households; and, anthropometric measurements including prevalence of anemia from children aged 6-60 months and women of reproductive age.

The Institute partnered with the Kenya National Public Health Laboratory Services (NPHLS) to carry out anthropometric data collection including anemia testing. Subsequently, Tegemeo Institute obtained ethical clearance to undertake anthropometric data collection, which included weight and height measurements and hemoglobin tests (for anemia).

Household data collection began on 15th March 2015 and lasted forty six (46) days. Anthropometric data collection began on the 12th of April and continued until 31st May 2015.

Before data collection began, interview dates for each of the sampled cluster were communicated to the Kenya National Bureau of Statistics (KNBS) District Statistical Officers (DSOs), who were to direct the data collection teams to the sampled clusters and households within the clusters. The DSOs liaised with the village elders in the sampled clusters in advance to inform the households about the survey. This was to ensure that cases of missing respondents were minimized.

For household data collection, 55 enumerators were grouped into 11 data collection teams, each comprising of five enumerators, one supervisor and a driver. Each team was allocated the clusters in which to collect data. Supervision of data collection was done by Research Assistants at Tegemeo Institute, who have many years of experience in undertaking surveys. They were responsible for team management and day to day team activities in the field. They were also responsible for conducting spot checks on enumerators during interviews and checking and ensuring correction of mistakes by enumerators.

In addition to the data collection teams, three Tegemeo researchers, led by the survey coordinator, went round visiting the teams during the first two weeks of data collection to provide technical backstopping and assess quality of data collection. It is during the first week of field work that many technical and logistical challenges were experienced, and the three researchers were specifically out to attend to those issues.

The questionnaire was administered to the primary and secondary respondents, who self-identified as the primary male and female (or female only) members responsible for decision making within a household. In female adult only and male adult only households, however, there was only a primary respondent – the principal female/male decision-maker aged 18 or older. In addition to the primary and secondary respondents, women of reproductive age and

caretakers of children 0-23 months of age in each household were individually interviewed regarding food items consumed by the women and children within the last 24 hours.

Module G of the questionnaire required that the gender of the enumerator matched the gender of the respondent. Therefore, in assigning an enumerator to a household to conduct an interview, it was ensured as much as possible that if the household was male and female adult or female adult only, Module G was administered by an enumerator that is of the same sex as the respondent.

Anthropometric data collection was undertaken by five teams comprising of a health officer from the NPHLS, one enumerator from Tegemeo and a Community Health Worker identified from the health facility nearest to the sampled cluster. The teams followed the laid down procedures for taking height and weight measurements, collecting and testing of blood samples and disposal of medical waste.

Limitations of the Survey

First, primary data collected outside the baseline survey (i.e. Kenya DHS 2008/09 data) was used to compute baseline values for nutrition indicators. We urge readers to interpret the differences between the baseline and first interim survey with caution as different sampling strategies were used to identify the sample and establish the level of representation. Secondly, consumption data is heavily dependent on seasonality changes within the community. For instance, the interim survey was done at the onset of planting season for HR1 (March & April), which would present different consumption and expenditures levels compared to the lean season just before harvest.

The expenditure data is collected from small holder farmers in rural clusters in the ZOI. The high volatility of agricultural production is likely to affect consumption expenditures. Households are expected to make the necessary adjustments in consumption arising from either poor or peak production. In the last five years, there have been repeated incidences of disease outbreaks and rainfall failure, which are expected to affect consumption. However, since the survey covered only a 12-month recall period, some of these variations may not show up in the analysis. In addition, some indicators, especially the nutrition related ones, capture long term trends which may not be explained by short run variations.

The PBS results are for the FTF ZOI, the region at which the sample is deemed representative. Also, the sample was confined to rural areas within the ZOI. As such, the survey findings cannot be generalized to the whole country.

ZOI Interim Survey Response Rates

Table 2.2 presents the response rates for the ZOI interim survey for Kenya. The components and the response rates for the sampled households, women of reproductive age (15-49),

primary adult male and female decision makers (for the Women's Empowerment in Agriculture module) as well as children under 5 years are presented.

Overall, 2,452 households (93% of the number of households occupied) were interviewed, comprising 1,908 male & female adult households, 340 female adult only households, and 204 male adult only households. A total of 2,329 women between the ages of 15 and 49 years (86% of eligible women between the ages of 15 and 49 years) responded to the individual module. However, only 1,720 or 63% of those eligible responded to the anthropometric module. A total of 2,036 (91% of female decision makers) responded to the individual module G. Out of all eligible children, data was collected for 98% of them. However, 1,177 children in these categories participated in the anthropometric measurements. On the other hand, the number of caregivers for children aged below 5 years that responded to the individual module I was 1,450.

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

Response rates and components	Total
Households	
Households selected	2825
Households occupied	2622
Households interviewed	2452
Household response rate[1]	93.3
Women of reproductive age (15-49 years)	
Number of eligible women	2706
Number of eligible women interviewed	2329
Eligible women response rate[2,3]	86.1
Primary adult female decision makers (age 18+ years)	
Number of eligible women	2227
Number of eligible women interviewed	2036
Primary adult female response rate[2]	91.4
Children under 5 years of age	
Number of eligible children	1485
Number of caregivers of eligible children interviewed	1450
Eligible children response rate[2,4]	97.6

All the households were residing in clusters classified as rural

[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, i.e., 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.)

[3] 1720 women responded to the anthropometric module (measured height, weight and anemia). This represents a 63.6 % response rate

[4] 1177 children participated in the anthropometric module (measured height, weight and anemia). This represents a 79.3 % response rate

Source: ZOI interim survey, Kenya, 2015

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.

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 minimum acceptable diet (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, e.g., 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 FTF* notes that household-level indicators should be disaggregated by *gendered household types* – that is: (1) households where members include both male and female adults[2]; (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), i.e., 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).[3]

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

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

[3] 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.

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.

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 for all households in the ZOI was 5 persons. The male and female household type had the largest household size, with the male adult only households having the least number of members. The average adult members were 2.6 for all households, making up 48% of the total household membership for all households. Female adult only households had the greatest share of female adults in household size.

The mean number of children aged below two years was 0.24, with the number rising to 0.5 for children aged below 4 years. The number of children below 18 and over five years was 2.3. As expected the number of children in all categories was highest in male and female adult households.

For all household types, relatively smaller proportions of members did not have any education. For instance, in male and female households, 74% of the members had attained at least primary school level and above. On the other hand, female adult households registered 47% of members who had attained primary level schooling or higher. Fifty percent of members in male adult households had attained primary schooling or higher. We found significant correlation between household type and education attainment as further explored in Table 3.1.

Table 3.1. Household demographic characteristics

Characteristic[a]	Total (All households)	By gendered household type[a]		
		Male and female adult	Female adult(s) only	Male adult(s) only
Mean household size[a]	5.2	5.9	3.7	1.7
Mean number of adult female household members[1,2]	2.6	2.9	2.4	0.2
Mean number of children (<2 years)[1]	0.2	0.3	0.2	0.0
Mean number of children (0-4 years)[1]	0.5	0.6	0.4	0.0
Mean number of children (5-17 years)[1]	2.3	2.5	1.8	0.5

Characteristic[a]	Total (All households)	By gendered household type[a]		
		Male and female adult	Female adult(s) only	Male adult(s) only
Mean percentage of adults who are female[1,2]	0.5	0.5	0.7	0.1
Highest education level attained[a]				
No education	2.8	0.8	12.1	5.9
Less than primary	23.3	18.2	40.0	43.7
Primary	37.3	39.1	30.6	31.4
Secondary or more	36.6	41.9	17.4	19.1
n[3]	**2452**	**1908**	**340**	**204**

[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 interim survey, Kenya 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 aged 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 largest age category of primary decision makers is 30-39 years, with the smallest being those that are aged 18-24 years. More than half (56%) of the primary decision makers are forty years or older. In a rural setting in Kenya, this is not surprising because majority of those aged between 18 and 24 years are likely to be in school or migrate to urban cities in search of employment especially if they are educated.

Seventy nine percent of the primary decision makers are literate. Only 13% were found to have no education, with the largest proportion (41%) having attained less than primary level of education. In total, 45% had attained primary level education or higher.

Among male primary decision makers, 14% were aged below 30 years. This was smaller than the proportion of women (20%) within the same age category. However, the proportion of male primary decision makers aged 60 years and older was larger (23%) than that of female primary decision makers (18%) in this age category. More male primary decision makers were literate (88%) compared to female decision makers (77%). Similarly, more male primary

decision makers had attained primary level of school or higher (54%) compared to female primary decision makers (43%).

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						
18-24^	5.7	115		15^	5.7	100
25-29	12.9	293	9.8	33	13.6	260
30-39	25.1	608	25.8	101	24.9	507
40-49	20.9	522	20.6	89	20.9	433
50-59	16.5	422	16.2	70	16.6	352
60+	19.0	492	23.4	107	18.0	385
Literacy						
Percent literate[1]	79	2452	88.16	415	76.89	2037
Educational attainment						
No education^	13.2	356		29^	15.0	327
Less than primary	41.6	1019	40.4	179	41.9	840
Primary	29.4	702	30.6	117	29.1	585
Secondary or more	15.8	375	23.4	90	14.0	285

^ Results for primary adult decision maker for age group 18-24 years and those with no education are not statistically reliable, n<30.

[1] 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 interim survey, Kenya 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 fifty eight percent of the households had access to improved water sources. This is comparable to the national average for rural households of fifty nine percent established in the Kenya DHS survey 2014. Sixty three percent of the households had access to improved sanitation facilities. Ninety six percent of the households in the ZOI used solid fuel, which includes charcoal, wood, animal dung and agriculture crop residue. This was comparable to the national average (96%) for rural households in the Kenya DHS survey 2014. Nineteen percent of the households had access to electricity in the ZOI, higher than 13% national average for rural areas in the Kenya DHS survey 2014.

Ninety one percent of the households in the ZOI used finished material for roofing. For the walls, sixty one percent of the households used natural material, while thirty nine percent used finished material. For the floor material, seventy percent of the households in rural areas in Kenya used natural material, with thirty percent using finished material (Kenya DHS 2014).

Table 3.3. Household dwelling characteristics

Characteristic	Total (All households)	
	Estimate	n
Percent with improved water source[1]	58.2	1354
Percent with improved sanitation[2]	63.3	1568
Mean persons per sleeping room[3]	2.5	2452
Percent using solid fuel for cooking[4]	96.2	2368
Percent with access to electricity	19.5	520
Household roof materials (%)[5]		
Natural	8.8	156
Finished	91.1	2293
Household exterior wall materials (%)[6]		
Natural	61.26	1139
Finished	38.71	1312
Household floor materials (%)[7]		
Natural	66.99	1557
Finished	32.74	883

^ Results for those who used rudimentary materials for roof, wall and floor are 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 interim survey, Kenya, 2015

3.3 Education

Table 3.4 presents school attendance, educational attainment and literacy in the 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 Kenya, primary education is defined as the levels between class one and eight (this was class seven in the old system, which was discontinued in 1984). Successful attainment of primary education is having completed class eight and sat for the Kenya Certificate of Primary Education examination.

Table 3.4 reveals that a large majority of those aged between 5 and19 years were attending school. The average age for primary school going children was 6 to 14 years, with 15 to 18 years being the average age for those attending high school. A large majority of individuals aged 10 to 54 years were literate. Literacy levels were lower for individuals aged 55 years or older. These individuals may have not attended school, with primary education only being made free universally in Kenya from 2003.

Although the proportion of males and females attending school was similar for age categories between 5 and 19 years, there were more males between the age of 20 and 24 in school (44.1%) compared to females (33.1%). However, the proportion the females aged between 20 and 24 years that had attained primary level of education was higher than that of males in the same age category. There were more male individuals aged 55 years or older who had attained primary level schooling and those that were literate compared to females in the same age category. The proportion of those attending school and those having attained primary level education differed significantly by age group. In addition, proportion of those attending school, those having attained primary level education and those literate differed by sex.

Table 3.4. School attendance, educational attainment, and literacy

	Percent			Female to male ratio			
Characteristic	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]	n
Age group [a,b]							
5-9	97.1	n/a[1]	57.5	0.9	n/a[1]	0.8	1909
10-14	99.5	3.0	98.4	1.0	1.7	1.0	1855
15-19	82.0	49.2	98.9	0.8	0.9	0.8	1639
20-24	38.6	41.3	97.9	0.8	0.9	0.9	948
25-29	n/a[2]	37.5	95.9	n/a[2]	1.6	1.1	817
30-34	n/a[2]	44.4	96.8	n/a[2]	1.1	0.9	682
35-54	n/a[2]	33.0	90.7	n/a[2]	0.8	0.9	2136
55+	n/a[2]	11.5	56.3	n/a[2]	0.6	0.6	1397
Sex							
Female							
Age group[abc]							
5-9	96.9	n/a[1]	53.8	n/a[3]	n/a[3]	n/a[3]	919
10-14	99.4	3.6	98.6	n/a[3]	n/a[3]	n/a[3]	928

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]	
15-19	81.1	51.7	98.7	n/a[3]	n/a[3]	n/a[3]	742
20-24	33.1	43.5	97.9	n/a[3]	n/a[3]	n/a[3]	455
25-29	n/a[2]	42.9	94.9	n/a[3]	n/a[3]	n/a[3]	438
30-34	n/a[2]	43.8	95.6	n/a[3]	n/a[3]	n/a[3]	335
35-54	n/a[2]	28.0	85.4	n/a[3]	n/a[3]	n/a[3]	1074
55+	n/a[2]	7.7	37.0	n/a[3]	n/a[3]	n/a[3]	752
Male							
Age group[abc]							
5-9	97.4	n/a[1]	61.0	n/a[3]	n/a[3]	n/a[3]	990
10-14	99.5	2.3	98.0	n/a[3]	n/a[3]	n/a[3]	927
15-19	82.9	47.1	99.0	n/a[3]	n/a[3]	n/a[3]	897
20-24	44.1	39.2	97.8	n/a[3]	n/a[3]	n/a[3]	493
25-29	n/a[2]	31.3	97.0	n/a[3]	n/a[3]	n/a[3]	379
30-34	n/a[2]	44.9	98.0	n/a[3]	n/a[3]	n/a[3]	347
35-54	n/a[2]	38.0	96.0	n/a[3]	n/a[3]	n/a[3]	1062
55+	n/a[2]	15.7	77.7	n/a[3]	n/a[3]	n/a[3]	645

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] The survey in Kenya 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 interim survey, Kenya, 2015

4. Household Economic Status

This section includes a background discussion of monetary poverty in Kenya, including the logic of the Living Standard Measurement Survey (LSMS)[4] 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 LSMS, where households' consumption of various food and non-food items is measured to infer household income and well-being. 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.[5]

In Kenya, poverty numbers were last updated in 2005/06, when the last household and budget survey (Kenya integrated household budget survey (KIHBS)) was carried out (a new survey is being carried out and data is expected to be ready by 2017). Poverty at that time was estimated at 46%. Some studies have used projections to estimate the level of poverty. However, these studies differ significantly due to the approach and type of data used. For instance, studies by Kenya Public Policy Research and Analysis (KIPPRA) and the World Bank show that poverty increased after 2007/08 due to the political violence that followed the election in 2007 and again in 2011 following the world price shock and drought experienced in the horn of Africa countries. However, whereas the World Bank shows declining poverty trends since then (poverty estimated at 43% in 2013), KIPPRA shows that poverty had increased to 49% in 2014. The PBS baseline study showed that poverty rate in the ZOI was at 45% in 2013, against a national estimate of 48%.

Another major shock that affected household's living standard was an outbreak of Maize Lethal Necrosis Disease (MLND), a disease that first broke out in 2011 but had devastating effects during the 2013/14 cropping year. Low productivity for maize, which is a major cereal, not only affected incomes for these farmers but contributed to increase in food prices causing an inflationary pressure.

[4] Grosh, Margaret and Paul Glewwe. 1995. "A Guide to Living Standards Measurement Study Surveys and Their Data Sets." Living Standards Measurement Study Group. Working paper No. 120. The World Bank, Washington, DC.

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

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 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. The share of consumption attributed to the lowest quintile (the bottom 20 percent) is a measure of inequality and an MDG indicator.

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 mean daily per capita expenditure in 2010 USD was 2.2. As expected in areas with high inequality, the mean is between the 50th and 75th percentiles. The top decile had a per capita expenditure of 3.72 which was almost five fold the per capita expenditure of the lowest decile. The pattern of expenditure was similar when households were disaggregated by type of household with the exception of male only households, whose expenditure was in the top decile. The male adult households had the largest mean expenditure (3.6) among the household types, with the female adult households having the least expenditure (1.9).

The mean daily per capita expenditure decreased with household size. However, when daily per capita expenditure was disaggregated by household educational attainment we find that households with no education had the highest mean daily expenditure. However, the sample size of these households was very small compared to other household categories. Households with secondary education spent more followed by those with less than primary level attainment. Households with primary education spent the least. The distribution of daily per capita expenditure was, however, similar across the household types.

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

Characteristic	Estimate (weighted)						
		Percentile					
	Mean[a]	10th	25th	50th	75th	90th	n[2]
Total (All households)	**2.22**	**0.78**	**1.08**	**1.57**	**2.52**	**3.72**	**2447**
Gendered household type[b]							
Male and female adults	2.21	0.78	1.08	1.57	2.52	3.73	1908
Female adult(s) only	1.93	0.78	1.08	1.58	2.51	3.76	339
Male adult(s) only	3.62	-	-	-	-	3.71	200

Characteristic	Estimate (weighted)						
		Percentile					
	Mean[a]	10th	25th	50th	75th	90th	n[2]
Household size							
Small (1-5 members)	2.74	0.74	1.02	1.49	2.38	3.54	1404
Medium (6-10 members)	1.76	0.74	1.02	1.49	2.38	3.52	965
Large (11+ members)	1.58	0.74	-	-	2.37	-	78
Household educational attainment							
No education	2.67	-	-	1.49	2.37	-	90
Less than primary	2.14	0.74	1.02	1.49	2.38	3.55	2304
Primary	1.65	0.74	1.02	1.48	2.39	3.54	5092
Secondary or more	2.49	0.74	1.02	1.49	2.38	3.53	5106

^ There were no child headed households in the sample.

[1] Per capita expenditures measured in Kenya Shillings local currency units (LCU) were converted to 2010 USD using the Consumer Price Index (CPI) and the PPP Index estimated by the World Bank. We used the formula (2005 CPI LCU/ 2015 CPI LCU)*1/(PPP 2005)* (2010 USD CPI /2005 USD CPI) where LCU PPP 2005 = 0.030599755, 2015 CPI LCU = 0.378584032, 2005 CPI LCU = 100, 2010 USD CPI =111.65, and 2005 USD CPI = 100. The conversion factor was 0.01361941

[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.

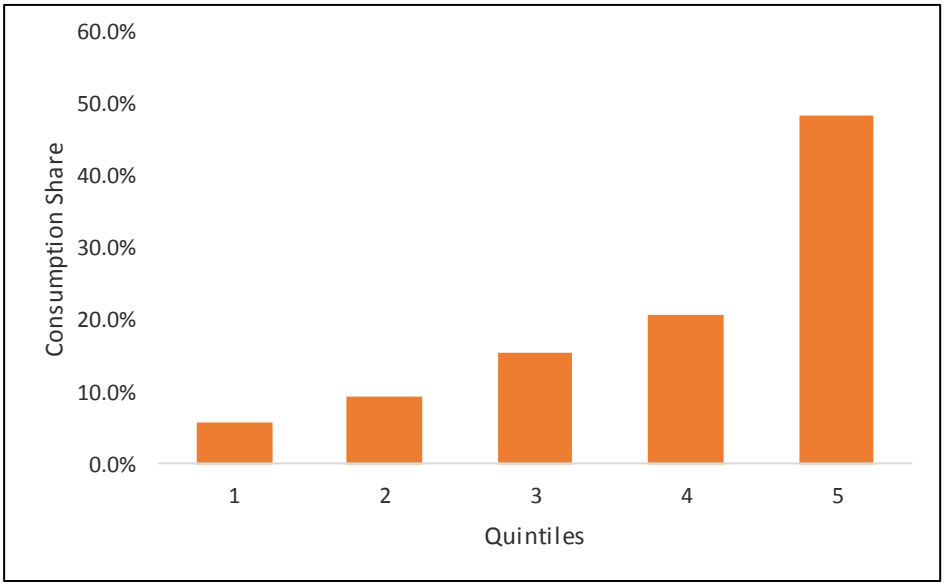
[a] Significance tests were performed for associations between per capita expenditures and household characteristics. For example, a test was done between per capita expenditures and gendered household type. When an association is found to be significant ($p<0.05$), the superscript is noted next to the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

[b] The disaggregates of daily per capita expenditure by gendered household type and ZOI are provided in Annex A1.3

Source: ZOI interim survey, Kenya 2015.

Figure 4.1 shows the share of total consumption per quintile in the ZOI. The top quintile accounted for nearly a half of the total consumption in the ZOI. On the other hand, the bottom quintile only accounted for about five percent of total consumption in the ZOI. This pattern indicates the income inequalities that exist within the ZOI.

Figure 4.1. Share of consumption per quintile[1]: 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.

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.[6] Estimates of poverty 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[7] 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 MDGs focusing on eradicating extreme poverty and hunger.[8] The $1.25 threshold is in effect the extreme poverty threshold and represents the poverty line typical of the world's poorest countries.[9] Poverty estimates are also presented for the country's poverty and extreme poverty thresholds.

[6] 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.

[7] 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.

[8] 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.

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

While 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[10]. 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

Forty seven percent of individuals in the ZOI live below the $1.25 poverty threshold. Among the household types, the male adult households had the least number of individuals living below the $1.25 poverty threshold (28%), with the female only households having the greatest proportion (52%). The prevalence of poverty increased with the size of the household. In terms of disaggregation by education attainment, households with secondary level education and above had the least number of individuals living below the $1.25 poverty threshold, while those who had lower than primary education had the highest number of individuals living below the threshold.

Depth of Poverty

The depth of poverty in the ZOI is 15 percent, which indicates that the average gap between consumption levels of the population and the poverty line is $0.1875 (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 18.5 million per the last population census, a poverty threshold of $1.25 per day, and a poverty gap of 15 percent, a minimum of $3,468,750 (2005 PPP) per day would need to be transferred to the poor to bring their income or expenditures up to the poverty threshold. The depth of poverty was least among male adult

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

households and highest among female adult households. This suggests the vulnerability of female adult households within the ZOI.

Average Consumption Shortfall of the Poor

The average *poor* person within the ZOI lives at 17.2 percent of the poverty line, or 82.8 percent below the poverty line. The average value of consumption of a *poor* person is $0.22 (2005 PPP) per day.

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)	46.92	12586	14.85	12586	0.22	17.21	5608
Gendered household type[d]							
Male and female adults	46.98	11021	14.72	11021	0.21	16.84	4976
Female adult(s) only	51.7	1244	17.74	1244	0.26	20.44	580
Male adult(s) only	27.99	312	8.62	312	0.20	16.19	52
Household size							
Small (1-5 members)	34.33	4757	9.80	4757	0.17	13.46	1318
Medium (6-10 members)	53.56	6907	17.17	6907	0.22	17.71	3723
Large (11+ members)	57.86	922	21.49	992	0.298	23.87	567
Household educational attainment							
No education^	17.27	89	4.06	89			14
Less than primary	63.55	2302	21.78	2302	0.25	20.39	1349
Primary	54.46	5091	17.41	5091	0.22	17.60	2668
Secondary or more	34.06	5104	9.997	5104	0.18	14.43	1577

^ There were no children headed households in the sample; households with no education were less than 30 when computing average consumption shortfall.

[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.

[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

[d] The disaggregates of daily per capita expenditure by gendered household type and ZOI are provided in Annex A1.3

Source: ZOI interim survey, Kenya 2015

4.2.2 The National Poverty Threshold

Table 4.3 presents poverty estimates at the national poverty threshold for Kenya. Similar to the $1.25 per day poverty 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.

In the last household budget survey (KIHBS, 2005/06), the Kenya National Bureau of Statistics estimated the poverty line at 2,913 Kenya shillings per adult equivalent per month for urban households and 1,562 Kenya shillings per adult equivalent per month for rural households. Using the poverty line for rural households, we calculated a poverty threshold of 134 Kenya shillings per person per day at the time of the ZOI interim survey.

Poverty Prevalence

With the national poverty threshold, poverty rates are much higher compared to the $1.25 per day poverty threshold. Sixty two percent of individuals in the ZOI live below the Ksh.134 per day national poverty threshold. Among the household types, male adult households had the least number of individuals (41%) living below the Ksh.134 per day national poverty threshold, with the female only households having the greatest proportion (65%). We also observe the same trends in poverty prevalence reported in Table 4.2 for the $1.25 poverty threshold. The prevalence of poverty also increases with the size of the household, and households with secondary level education and above had the least number of individuals (49%) living below the Ksh.134 poverty threshold, while those who had lower than primary education had the highest proportion (78%).

Depth of Poverty

The depth of poverty in the ZOI rises to 24 percent when we use the national poverty threshold. This indicates that the average gap between consumption levels of the population and the poverty line is Kenya shillings 32.16 ($0.38 2005 PPP). This suggests that approximately Kenya shilling 594,960,000 ($ 7,068,832 2005 PPP) would be required to be transferred and *perfectly* targeted to poor households to bring their expenditures up to the national poverty line.

Average Consumption Shortfall of the Poor

The average *poor* person within the ZOI, when poverty is calculated using the national poverty line, lives at 37.7 percent of the poverty line or 62.3 percent below the poverty line. The average value of consumption of a *poor* person is Ksh.50.52 ($0.6 2005 PPP) per day.

Table 4.3. Poverty at the national threshold of 134 Kenya Shillings per person per day[1]

Characteristic	Prevalence of Poverty[2]		Depth of Poverty[3]		Average consumption shortfall of the poor[4]		
	Percent popula-tion[a]	n[5]	Percent of poverty line[b]	n[5]	In USD 2005 PPP[c]	Percent of poverty line[c]	n[5]
Total (All households)	**62.43**	**12586**	**0.24**	**12586**	**0.60**	**37.68**	**7451**
Gendered household type							
Male and female adults	62.79	11030	0.23	11030	0.60	37.37	6598
Female adult(s) only	65.09	1244	0.27	1244	0.65	40.92	769
Male adult(s) only	40.79	312	0.14	312	0.56	35.05	84
Household size							
Small (1-5 members)	49.37	4757	0.17	4757	0.54	33.84	2043
Medium (6-10 members)	69.19	6907	0.27	6907	0.62	38.81	4723
Large (11+ members)	74.50	922	0.31	922	0.67	41.87	685
Household educational attainment							
No education^	36.6	89	0.09	89			29
Less than primary	77.9	2302	0.32	2302	0.66	41.47	1677
Primary	70.56	5091	0.27	5091	0.62	38.84	3440
Secondary or more	49.42	2305	0.17	2305	0.54	34.02	2305

^ There were no child headed households in the interim survey.

[1] We used the Ksh.1562 per month adult equivalent as the threshold for poverty for rural areas nationally developed in the last household budget survey in Kenya, which was carried out in 2005/06 (Government of Kenya, 2006). After adjusting using CPI and PPP, the threshold is equivalent to Ksh.134 per day or USD 1.58 2005 PPP.

[2] The prevalence of poverty is the percentage of individuals living below the national poverty line. 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] 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] 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 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 interim survey, Kenya 2015.

4.2.3 The National Extreme Poverty Threshold

Table 4.4 presents poverty estimates at the extreme poverty threshold for Kenya. Similar to prior expenditures and poverty tables, 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 three percent of individuals in the ZOI live below the extreme national poverty threshold calculated as 84 Kenya Shillings per day (USD 0.99 2005 PPP). Similar to the earlier tables, the male adult only households had the least number of individuals (20.43%) living below the extreme national poverty threshold, with the female adult only households having the greatest proportion (38.97%). We also observe the same trends in poverty prevalence reported in Table 4.2 for the $1.25 poverty threshold and national poverty thresholds. The prevalence of poverty also increases with the size of the household, and households with secondary level education and above have the least number of individuals living below the extreme national poverty threshold, while those with lower than primary education having the highest proportion.

Depth of Poverty

The depth of poverty in the ZOI is nine percent when we use the extreme national poverty threshold. This indicates that the average gap between consumption levels of the population and the poverty line is Kenya shillings 7.56 ($0.09 2005 PPP). This suggest that, if *perfectly* targeted to extremely poor households, approximately Kenya shilling 139,860,000 ($1,625,575 2005 PPP) would need to be transferred to extremely poor households to bring their expenditures up to the extreme national poverty line.

Average Consumption Shortfall of the Poor

The average *poor* person within the ZOI, when poverty is calculated using the extreme national poverty line, lives at 25.93% of the poverty line, or 74.1 percent below the poverty line. The average value of consumption of a *poor* person is Ksh.21.78 ($0.26 2005 PPP) per day.

Table 4.4. Poverty at the national extreme threshold of Kenya shilling 84 per person per day[1]

Characteristic	Prevalence of Poverty[2]		Depth of Poverty[3]		Average consumption shortfall of the poor[4]		
	Percent popula-tion[a]	n[5]	Percent of poverty line[b]	n[5]	In USD 2005 PPP[c]	Percent of poverty line[c]	n[5]
Total (All households)	**33.46**	**12586**	**0.09**	**12586**	**0.26**	**25.93**	**3877**
Gendered household type							
Male and female adults	33.26	11030	0.09	11030	0.26	25.70	3400
Female adult(s) only	38.97	1244	0.11	1244	0.29	28.47	445
Male adult(s) only	20.43	312	0.04	312	0.21	20.96	32
Household size							
Small (1-5 members)	23.64	4757	0.05	4757	0.22	21.93	878
Medium (6-10 members)	38.11	6907	0.10	6907	0.27	26.59	2549

Large (11+ members)	45.50	922	0.14	922	0.32	31.38	450
Household educational attainment							
No education^	11.05	89	0.02	89			9
Less than primary	48.30	2302	0.13	2302	0.28	27.81	992
Primary	39.32	5091	0.10	5091	0.26	25.97	1893
Secondary or more	22.73	2305	0.06	2305	0.25	24.41	983

There were no child headed households in the first interim survey

^ Results not statistically reliable, n<30.

[1] We used the Ksh.988 per month adult equivalent as the thresholds for extreme poverty for households in rural areas developed in the last household budget survey in Kenya, which was carried out in 2005/06. (Government of Kenya, 2006) After adjusting using CPI and PPP, the threshold is equivalent to Ksh.134 per day or USD 1.58 2005 PPP.

[2] The poverty prevalence is the percentage of individuals living below the national extreme poverty line. 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] 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] 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 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 interim survey, Kenya 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 change 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.[11] For more information, the WEAI questionnaires and manual can be found online.[12]

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 sub-indices: the Five Domains of Empowerment sub index (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.[13] The WEAI score is computed as a weighted sum of the ZOI-level 5DE and the GPI.

The ZOI interim Survey, however, only collects data for nine of the 10 indicators and only for the primary adult *female* decision makers, not for primary adult *male* decision makers, within sampled households. The data collected during the 2015 interim survey allow calculation of nine of the 10 individual empowerment indicators for primary adult female decision makers (referred to hereafter as *surveyed women*), enabling Feed the Future to assess change to the

[11] Alkire, S. Malapit, H., et al. (2013).
[12] IFPRI. (2013).http://feedthefuture.gov/lp/womens-empowerment-agriculture-index
[13] 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.

individual indicators or constraints that are affecting women's empowerment in countries' ZOIs. This section presents findings on these nine empowerment indicators.

Since data were not collected from men and the *Autonomy in Production* indicator is excluded, the WEAI score cannot be calculated for the interim assessment. Interim WEAI data collection was streamlined to reduce the overall length of the WEAI module and survey questionnaire, and to address concerns over the validity of the *Autonomy in Production* sub-module used in the baseline surveys. Feed the Future is still working with partners to revise the *Autonomy in Production* sub-module. Data to calculate the full WEAI will be collected during the 2017 interim survey.

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 nine indicators assessed in the ZOI interim survey. Because it was not possible to calculate whether a woman is empowered or not based on the complete set of indicators that comprises the 5DE, the percentages presented in Table 5.1 reflect the proportion of all surveyed women with adequacy in individual indicators regardless of their empowerment status (i.e., the uncensored headcount) and not the proportion of surveyed women who are disempowered and achieve adequacy in individual indicators (i.e., the censored headcount).[14] The criteria for determining adequacy in each domain are provided in Appendix A2.3.

A large proportion of women had attained the required thresholds for ownership of assets (98%), input in productive decisions (95%), and control over use of income (92%). A relatively lower proportion of women attained the required thresholds for access to and decisions on credit (50%) and work load (61%).

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	95.38	2139
		Autonomy in production	n/a	n/a
Resources	Ownership, access to, and decision making power over productive resources such as land, livestock, agricultural equipment, consumer durables, and credit	Ownership of assets	98.38	2139
		Purchase, sale or transfer of assets	85.76	2139
		Access to and decisions on credit	50.18	2139

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

Domain	Definition of domain	Indicators	Percent with adequate achievement	n
Income	Sole or joint control over income and expenditures	Control over use of income	92.11	2139
Leadership	Membership in economic or social groups and comfort in speaking in public	Group member	87.38	2139
		Speaking in public	78.67	2139
Time	Allocation of time to productive and domestic tasks and satisfaction with the available time for leisure activities	Workload	61.41	2139
		Leisure	74.23	2139

[1] The ZOI interim survey includes an abridged version of the empowerment instrument, and the ZOI interim survey did not include information to measure women's autonomy in agricultural production. Due to this omission, censored headcounts and the 5DE sub-index cannot be calculated.

n/a: Data for this empowerment indicator were not collected for the ZOI interim surveys.

Source: ZOI interim survey, Kenya 2015

5.2 Agricultural Production

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 5.2 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, and 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 the women surveyed participated in economic activities. Eighty four percent reported to have an input into decisions about the activities that they participated in. Among the women surveyed, food crop farming (97%) and livestock raising (86%) were the activities where they had the greatest participation. Lower proportion of women participated in cash crop farming, non-farm economic activities and wage or employment activities. Crop farming and livestock keeping for both small stock such as goats and sheep and large stock mainly cattle are popular in the ZOI.

Women had greatest input in decision making on wage and salaried employment and non-farm economic activities (83% and 79%, respectively). They also had greater input in food crop farming and livestock raising and least input in cash crop farming. An emerging pattern

was that women had greater input in decisions on off-farm related activities compared to farm activities.

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

Activity	Participates in activity		Has input into decisions about activity	
	Percent	n[2]	Percent	n[1,3]
Total (All surveyed women)	**99.63**	**2139**	**84.23**	**2139**
Type of activity				
Food crop farming	96.88	2139	56.7	2086
Cash crop farming	31.95	2139	43.66	679
Livestock raising	85.82	2139	54.77	1829
Fishing or fishpond culture^	0.6	2139		5
Non-farm economic activities	32.24	2139	79.15	670
Wage or salaried employment	42.76	2139	82.82	965

^ Results not statistically reliable, n<30.
[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.
Source: ZOI interim survey, Kenya 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. Women had the greatest input in decisions on use of income from wage and salaried employment (80%) and the least input on use of income from cash crop farming (40%). Similar to input on decisions on activities, they had more input in decisions on use of income from off-farm related activities compared to income from farm activities.

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	n[2,3]
Total (All surveyed women)	**72.33**	**2139**
Type of activity		
Food crop farming	56.99	978
Cash crop farming	40.12	650
Livestock raising	52.64	1328
Fishing or fishpond culture^		3
Non-farm economic activities	75.35	672
Wage or salaried employment	80.24	964

^ Results not statistically reliable, n<30.
[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.
Source: ZOI interim survey, Kenya 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.

Women felt that they had a higher ability to make decisions on minor household expenditures (49%) and type of crops to grow (42%). However, women appear to have less decision making ability for major household expenditures, getting inputs for agricultural production, livestock raising and their own wage or salary employment.

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]				n
	Not at all	Small extent	Medium extent	High extent	
Getting inputs for agricultural production	9.47	25.74	32.73	32.06	1167
The types of crops to grow	7.98	18.70	31.31	42.02	992
Whether to take crops to the market	9.03	21.99	29.05	39.94	688
Livestock raising	10.13	25.86	32.26	31.75	1121
Her own wage or salary employment	13.58	20.38	29.01	37.03	251
Major household expenditures	15.04	25.94	32.62	26.40	1166
Minor household expenditures	1.77	15.51	33.61	49.10	367

[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.

Source: ZOI interim survey, Kenya 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. The table also presents the percentage of women who can make decisions to purchase or 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.

Presently in Kenya, a wife must give consent for sale of land even though her name does not appear in the title deed. This is enforced through the land control boards, which is made of members within the community including the local Chief (administrator). This, however, works

well in rural areas where people know each other than in urban areas. Ownership of large livestock is usually associated with the head of household (usually male), while ownership of poultry is associated with the spouse (usually female). Similarly, ownership of mechanized equipment is associated with the head of the household and non-mechanized equipment with the spouse.

A larger proportion of women reported to make decisions in purchase of poultry i.e. chickens, ducks, turkeys and pigeons (55%) as well as non-mechanized farm equipment (35%). However, women could not make decisions on purchase of fish ponds or fishing equipment, and a very small proportion could make decisions on mechanized farm equipment and agricultural land. Also, none of the women could make decisions to sell, give out or rent fish ponds or fishing equipment, while only a small proportion could make decisions on mechanized farm equipment and small livestock. The larger proportion of women could, however, make decisions on selling or giving out non mechanized farm equipment (37%) and poultry (21%).

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

	Someone in the household owns item		Woman can decide to purchase items		Woman can decide to sell/give/rent owned items	
Type of resource	Percent	n[1]	Percent	n[1]	Percent	n[1]
Agricultural land	95.12	2139	15.4	2047	16.47	2047
Large livestock	58.9	2139	18.04	1280	16.81	1280
Small livestock	41.05	2139	19.29	1187	6.03	231
Chickens, ducks, turkeys, and pigeons	81.02	2139	54.78	1766	21.3	258
Fish pond or fishing equipment	0.53	2139	0	168	0	168
Non-mechanized farm equipment	94.96	2139	34.84	2030	36.5	2030
Mechanized farm equipment	2.73	2139	5.04	227	6.35	227
Nonfarm business equipment	6.79	2139	n/a		n/a	
House or other structures	91.45	2139	n/a		n/a	
Large consumer durables	72.63	2139	n/a		n/a	
Small consumer durables	98.83	2139	n/a		n/a	
Cell phone	87.33	2139	n/a		n/a	
Non-agricultural land	8.33	2139	n/a		n/a	
Means of transportation	34.89	2139	n/a		n/a	

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

n/a: Questions regarding who can decide to purchase, sell, give or rent the item were not included in the ZOI interim surveys.

Source: ZOI interim survey, Kenya, 2015.

Table 5.6 shows the third indicator of the *Resources* domain, which is access to and decision making on credit. The table presents the percent of surveyed women who reported that a member of the household had in the past 12 months received any loan, either an in-kind loan

(such as food items or raw materials) or a cash loan, though these categories are not mutually exclusive. Further, for women living in households where a household member had received a loan, the table presents the percentage who reported having contributed to the decision to take the loan and the subsequent decisions on how to use the loan. These figures are disaggregated by the source of the loan.

A total of 38.3% of all surveyed women reported that a member of their household received a loan. The largest proportion of loans came from group-based micro-finance (51%) followed by friends and relatives (24%) and formal lender (20%). The proportion that contributed to a credit decision was more than half (56%) with 52% of these contributing on whether to borrow and 48% on how to use the loan.

Table 5.6. Credit access among surveyed women

Estimate	Any source (percent)	Credit source (percent)[1]				
		Non-governmental organization	Informal lender	Formal lender	Friends or relatives	Group-based micro-finance
Type of loan						
Any loan	38.3	2.72	2.72	19.84	23.90	50.82
n[2]	**997**	**16**	**27**	**191**	**246**	**517**
Total contributing to a credit decision (All surveyed women)	**56.1**	**53.01**	**65.24**	**32.53**	**68.46**	**59.17**
Type of decisions[l]						
On whether to borrow	52.3	44.34	61.4	29.05	63.99	55.82
On how to use loan	48.2	53.01	64.48	26.83	63.33	48.30
n[2]	**997**	**16**	**27**	**191**	**246**	**517**

[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.
Source: ZOI interim survey, Kenya, 2015.

5.4 Leadership in the Community

The *Leadership* domain measures an individual's influence and involvement in community organizations and issues impacting her community. The first indicator of the domain is an individual's ease of 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. On this indicator, seventy seven percent of surveyed women in the ZOI achieved adequacy in voicing their opinions on community matters (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)	**77.10**	**2139**
Topics		
To help decide on infrastructure to be built in the community	72.12	2139
To ensure proper payment of wages for public works or other similar programs	67.72	2139
To protest the misbehavior of authorities or elected officials	58.52	2139

[1] Estimates exclude households who have no primary adult female decision maker or whose data are missing/incomplete.
Source: ZOI interim survey, Kenya 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 reported the existence of an organization in their community and the percentage of women who are active members of the organization.

A larger percentage of women surveyed were involved in mutual help and insurance groups (75%), religious groups (70%) and credit and micro finance groups (64%). However, they were less likely to be involved in forest user groups, local government groups, trade and business associations, water user groups and civic or charitable groups.

Table 5.8. Group membership among surveyed women

Group type	Percent[1] Is an active group member	n[2]
Total (All surveyed women)	**86.75**	**2139**
Group type		
Agricultural producers' group	26.92	1081
Water users' group	30.78	639
Forest users' group	13.65	130
Credit or microfinance group	64.17	1971
Mutual help or insurance group	75.15	1647
Trade and business association	17.81	613
Civic or charitable group	32.11	558
Local government	13.34	363
Religious group	69.95	1698

[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 interim survey, Kenya 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.

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	10.77	33.4	1.59
Eating and drinking	99.4	1.26	16.1	0.51
Personal care	86.9	0.54	7.9	0.54
School and homework	2.2	1.89	0.8	1.42
Work as employed	8.7	6.78	0.5	2.49
Own business work	15.3	5.21	2.8	1.74
Farming/livestock/fishing	66.9	3.93	9.7	0.97
Shopping/getting services	24.5	1.17	4.4	0.42
Weaving, sewing, textile care	2.3	2.08	2.4	1.17
Cooking	91.3	1.93	16.4	0.85
Domestic work (fetching food and water)	87.4	2.38	33.7	1.0
Care for children/adults/elderly	39.1	1.28	24.4	1.63
Travel and commuting	60.8	1.23	2.7	0.80
Watching TV/listening to radio/reading	15.8	1.22	35.9	1.97
Exercising	0.2	0.97	0.3	3.33
Social activities and hobbies	50.4	1.99	63.5	2.31
Religious activities	36.0	1.51	1.8	0.73
n	**2189**		**2189**	

[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 interim survey, Kenya 2015

The key primary activities for majority women were: cooking, domestic work, personal care, travelling and farming or livestock activities. Less important activities include exercising, school and homework, and working as employed.

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 Kenya 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.).[15,16]

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.

Eighty six percent of the households reported to have experienced little or no hunger, with thirteen percent experiencing moderate to severe hunger and only one percent experiencing severe hunger. Female adult only households had the largest proportion of households that experienced moderate to severe hunger, although hunger does not differ significantly by household type. On the other hand, all household hunger categories differed significantly by household education attainment, with moderate and severe hunger declining as educational attainment increases.

Table 6.1. Household hunger

Characteristic	Percent			n[1]
	Little to no hunger [a]	Moderate hunger	Severe hunger	
Total (All households)	**86.04**	**12.85**	**1.11**	**2452**
Gendered household type				
Male and female adults	86.95	12.23	0.81	1908

[15] Deitschler, Ballard, Swindale, & Coates (2011).

[16] 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.

Characteristic	Percent			n[1]
	Little to no hunger [a]	Moderate hunger	Severe hunger	
Female adult(s) only	80.36	16.99	2.65	340
Male adult(s) only	86.73	11.9	1.37	204
Household size				
Small (1-5 members)	87.05	11.9	1.06	1409
Medium (6-10 members)	84.65	14.12	1.23	965
Large (11+ members)	86	13.38	0.64	78
Household educational attainment[abc]				
No education	71.06	23.62	5.32	69
Less than primary	80.41	17.32	2.28	572
Primary	83.9	14.85	1.26	914
Secondary or more	92.12	7.81	0.07	897

^ There were no child headed households in the interim survey

[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 interim survey, Kenya, 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.

The mean score for dietary diversity for all women aged 15-49 years was 4.14, implying that women in reproductive age consumed food from four food groups within the preceding 24 hours. Women dietary score increased significantly with educational attainment with those with less than primary education attaining the least score. Women in male and female adult had higher scores than those in female adult only households, although this did not differ significantly. On the other hand, women dietary score was significantly lower in households that reported moderate to severe hunger as opposed to those with little to no hunger.

Table 6.2. Women's dietary diversity score

Characteristic	Mean [a]	Median	n[1]
Total (All women 15-49)	**4.14**	**4**	**2329**
Age			
15-19	4.20	4	518
20-24	4.13	4	341
25-29	4.13	4	391
30-34	4.13	4	324
35-39	4.23	4	291
40-44	4.02	4	262
45-49	4.01	4	202
Educational attainment[a]			
No education^			2
Less than primary	3.87	4	334
Primary	4	4	998
Secondary or more	4.34	4	995
Gendered household type			
Male and female adults	4.17	4	2050
Female adult(s) only	3.86	4	270
Male adult(s) only^			9
Household size			
Small (1-5 members)	4.15	4	911
Medium (6-10 members)	4.11	4	1265
Large (11+ members)	4.22	4	153

Characteristic	Mean [a]	Median	n[1]
Household hunger[a]			
Little to no hunger	4.24	4	1988
Moderate or severe hunger	3.53	3	341

There were no child headed households in the interim survey

^ 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.

Source: ZOI interim survey, Kenya, 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.[17] 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.[18]

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.

Overall, 38.5% of the women achieved minimum dietary diversity. There was no distinct pattern for women's minimum dietary diversity when compared across the age categories, and the minor differences are not significant. Achieving minimum dietary diversity differs significantly by education attainment and household hunger. Women in households that had attained primary level of education had higher scores compared to those who had attained less than primary education and those that had attained secondary education. In addition, the proportion of women that attained minimum dietary diversity is more than twice for

[17] 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.

[18] 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.

households with little or no hunger (42%) as opposed to those that that reported moderate to severe hunger (18%).

Table 6.3. Women's minimum dietary diversity*

Characteristic	Percent [a]	n[1]
Total (All Women 15-49)	**38.49**	**2706**
Age		
15-19	41.81	518
20-24	37.44	341
25-29	36.95	391
30-34	35.85	324
35-39	41.00	291
40-44	38.80	262
45-49	34.87	202
Educational attainment[a]		
No education^		2
Less than primary	31.67	334
Primary	47.43	998
Secondary or more	28.97	995
Gendered household type		
Male and female adults	39.09	2050
Female adult(s) only	32.52	270
Male adult(s) only^		9
Household size		
Small (1-5 members)	38.14	911
Medium (6-10 members)	38.09	1265
Large (11+ members)	42.90	153
Household hunger[a]		
Little to no hunger	41.78	1988
Moderate or severe hunger	18.26	341

*Note we collected 9 food groups instead of 10 (other fruits and vegetables were collected as one variable)
There were no child headed households in the interim survey
^ 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.
Source: ZOI interim survey, Kenya 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.

Grains, roots and tubers were largely consumed by all women. Consumption of each food group differed significantly with women's achievement of minimum dietary diversity. Large differences between the two categories were observed in legumes and beans, dairy products, eggs, vitamin A rich dark green leafy vegetables, and other vegetables and fruits.

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]	99.96	99.03
Legumes and beans[a]	65.19	34.87
Dairy products[a]	93.22	61.92
Meat and organ meats[a]	50.42	25.59
Eggs[a]	21.92	4.16
Vitamin A-rich dark green leafy vegetables[a]	89.13	64.86
Other Vitamin A-rich vegetables and fruits[a]	43.41	8.91
Other fruits and vegetables[a]	76.68	34.47
n	**959**	**1370**

**Note we collected 9 food groups instead of 10 (legumes, nuts and seed were collected together). Other vegetables category was also collected with other fruits

[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 interim survey, Kenya 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 primary caregiver. The caregiver's educational categories include no education, less than primary, completed primary, and completed secondary or more. Note

that the data are collected for the self-identified *primary caregiver* and not strictly for the biological mother (although it is often the same person).

Approximately half of the children under six months of age were exclusively breastfed. However, the proportion of females (61%) being exclusively breastfed was much higher than that of boys (39%) and this difference was significant. The proportion of children being exclusively breastfed where caregivers had attained primary education was also much higher than that where the caregivers had less than primary education.

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

Characteristic	Percent [a]	n[1]
Total (All children under 6 months)	**49.52**	**116**
Child sex[a]		
Male	38.76	61
Female	60.9	55
Caregiver's educational attainment[2a]		
No education^		3
Less than primary	28.63	41
Primary	64.75	50
Secondary or more^	-	21

^ 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 ZOI interim survey identifies the primary caregiver of each age-eligible child. This person is likely, but not necessarily, the child's biological mother.

[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: ZOI interim survey, Kenya 2015

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 caregiver 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, caregiver and household. Children's characteristics include children's sex and age group. Caregivers' characteristics include age and sex categories, as well as caregivers' educational attainment. Household characteristics include gendered household type, household size and household hunger.

Eighteen percent of children aged 6 to 23 months received a minimum acceptable diet. Minimum acceptable diet differs significantly by household gender type and household hunger. The proportion of children in male and female adult households received a minimum acceptable diet was 19% compared to only 7% in female adult only households.

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

Characteristic	Percent [a]	n[1]
Total (All children 6-23 months)	**18.13**	**423**
Child sex		
Male	17.91	218
Female	18.35	205
Child age		
6-11 months	12.51	132
12-17 months	19.49	138
18-23 months	20.86	153
Caregiver's educational attainment[2]		
Less than primary	13.83	173
Primary	23.25	155
Secondary or more	17.62	68
Gendered household type[a]		
Male and female adults	19.13	384
Female adult(s) only	6.71	38
Household size		
Small (1-5 members)	23.17	162
Medium (6-10 members)	16.22	220
Large (11+ members)	11.69	41
Household hunger[a]		
Little to no hunger	20.38	357
Moderate or severe hunger	5.459	66

^There were no child headed households in the interim survey. The number of observations for male adult only households and where the caregiver education attainment was no education were too small to obtain a valid estimate.

[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 ZOI interim survey identifies the primary caregiver of each age-eligible child. This person is likely, but not necessarily, the child's biological mother.

[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: ZOI interim survey, Kenya, 2015.

Table 6.7 presents the percentage of children achieving the MAD components (e.g., 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. Components of a minimum acceptable diet among children age 6-23 months

MAD components and food groups	Percent			
	All children [a]	By child age (in months)		
		6 to 11	12 to 17	18 to 23
Breastfed children				
Achieving minimum meal frequency	100	100	100	100
Achieving minimum dietary diversity	23.41	12.29	22.89	36.93
Consuming:				
Grains, roots, and tubers	92.1	87.84	93.65	95.01
Legumes and nuts	.88	1.11	0.5	1.1
Dairy products	100	100	100	100
Flesh foods	18.94	10.92	26.13	18.92
Eggs	11.31	9.06	9.93	15.70
Vitamin A-rich fruits and vegetables	55.63	34.53	58.60	76.18
Other fruits and vegetables	36.03	26.65	38.55	43.61
n	**303**	**111**	**106**	**86**
Non-breastfed children				
Achieving minimum meal frequency	12.31	22.69	25.40	2.85
Achieving minimum dietary diversity	40.7	33.20	40.58	42.40
Consuming:				
Grains, roots, and tubers	96.67	94.05	94.55	98.41
Legumes and nuts	1.65	7.66	2.27	0.0
Dairy products	100	100	100	100
Flesh foods	27.32	0	29.39	32.13
Eggs	10.17	9.04	9.75	10.64
Vitamin A-rich fruits and vegetables	63.57	54.12	64.69	65.02
Other fruits and vegetables	41.60	43.37	23.36	51.24
n	**120**	**^21**	**32**	**67**

^ 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: ZOI interim survey, Kenya, 2015

Grains, roots, tubers and dairy products were the most consumed food groups for both breast feeding and non-breastfeeding children. A larger proportion of children not being breast fed (41%) attained a minimum dietary diversity compared to those being breast fed (23%). For both cases, children aged 18 to 23 months had the highest scores compared to other age groups.

6.2.3 Consumption of Targeted Nutrient-Rich Value Chain Commodities

U.S. Government-funded programming supports nutrition-sensitive agricultural value chain[19] 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 (e.g. 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 Kenya include: pumpkin, carrots, squash, or sweet potatoes (that are yellow or orange inside), any dark green leafy vegetables such as sukuma wiki, spinach, managu, Vitamin A rich fruits like ripe mangoes, ripe papayas and dairy products (milk, yogurt, cheese), eggs, organ meat and flesh foods.

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

Table 6.8 presents women's consumption of targeted NRVCC. Estimates are shown for all women age 15-49, as well as by women's individual and household characteristics. Women's individual characteristics include age and educational attainment. Household characteristics include gendered household type, household size and household hunger.

[19] 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)."

NRVCC are grouped into 1) roots and tubers 2) legumes 3) horticultural products and 4) livestock products[20]. All women of reproductive age consumed at least one of the NRVCC groups. However, the most consumed commodity group was livestock products, with 74% having consumed commodities in this group. Roots and tubers, on the other hand, were the least consumed NRVCC group with only 0.16% of women in reproductive age group reporting to consume commodities in this group. This pattern was consistent across age groups, educational attainment, type of gendered household, size, and whether the household faced hunger. However, we find a lower proportion of women consuming at least one NRVCC commodity where women has attained secondary education or higher and in large (11+ members) households.

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

Characteristic	Percent					n[1]
	Any targeted commodity	Commodity 1[a]	Commodity 2[b]	Commodity 3[c]	Commodity 4[d]	
Total (All women 15-49)	**84.6**	**0.16**	**1.73**	**8.83**	**73.91**	**2706**
Age						
15-19	72.37	0.42	1.76	9.05	61.14	691
20-24	80.04	0.30	0.95	8.99	69.8	436
25-29	89.31	0	2.12	9.51	77.68	441
30-34	92.74	0	1.02	5.75	85.97	347
35-39	94.08	0	2.98	5.73	85.37	305
40-44	87.6	0	0.86	13.35	73.39	278
45-49	94.71	0	3.24	9.69	81.78	208
Educational attainment						
No education^						2
Less than primary	90.18	0	2.47	12.69	75.02	360
Primary	87.81	0	2.13	11.31	74.37	1119
Secondary or more	80.26	0	1.21	5.82	73.23	1225
Gendered household type						
Male and female adults	84.68	0.12	1.57	8.48	74.51	2380
Female adult(s) only	83.91	0.49	3.0	11.06	69.36	314
Male adult(s) only^						12
Household size						
Small (1-5 members)	89.82	0	1.33	9.41	79.08	998
Medium (6-10 members)	82.62	0.20	2.15	8.51	71.76	1501
Large (11+ members)	76.51	0.59	0.64	8.49	66.79	207
Household hunger						
Little to no hunger	84.7	0.13	1.37	7.47	75.73	2310

[20] These are referred to as Commodity 1, 2, 3 and 4, respectively in Tables 6.8 and 6.9.

Characteristic	Percent					n[1]
	Any targeted commodity	Commodity 1[a]	Commodity 2[b]	Commodity 3[c]	Commodity 4[d]	
Moderate or severe hunger	84.22	0.38	3.95	17.21	62.68	396

There were no child headed households in the interim survey

^ 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-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 interim survey, Kenya, 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.

About 90% of children 6-23 months consumed at least one of the NRVCC groups. Consumption of NRVCC was similar for male and female children, with 90% and 91% respectively consuming at least one NRVCC commodity. A slightly higher proportion of children in male and female adult households (90%) consumed at least one NRVCC compared to 83% in female only households. Looking at specific commodity groups, the most consumed commodity group was livestock products (71%) with roots and tubers being the least consumed (1%) NRVCC group. Education attainment of caregivers influences whether a child consumed NRVCC foods. A larger proportion of children consumed there foods where the care giver had attained primary education with the least proportion of children found where the care giver had less than primary education. Children in male and female adult households were more likely to consume NRVCC compared to children in female adult only households. Children in large households were also less likely to consume NRVCC foods compared to medium and small households. This was particularly more so for animal protein commodities. Children in households that reported facing moderate to severe hunger were less likely to consume NRVCC commodities, with less than half consuming animal proteins.

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

Characteristic	Percent					n1
	Any targeted commodity[a]	Commodity 1[b]	Commodity 2[c]	Commodity 3[d]	Commodity 4[e]	
Total (All children 6-23 months)	**90.32**	**1.36**	**2.06**	**15.82**	**71.08**	**423**

Characteristic	Percent					n1
	Any targeted commodity[a]	Commodity 1[b]	Commodity 2[c]	Commodity 3[d]	Commodity 4[e]	
Child sex						
Male	89.95	1.37	4.15	14.26	70.17	218
Female	90.66	1.34	0.08	17.29	71.95	205
Child age						
6-11 months	83.97	2.69	4.88	2.52	73.88	132
12-17 months	87.79	1.95	2.06	19.78	64.0	138
18-23 months	96.51	0	0.27	20.9	75.34	153
Caregiver's educational attainment[2]						
No education	87.56	0.0	0.66	23.15	63.75	28
Less than primary	85.36	1.45	1.88	11.53	70.5	174
Primary	92.44	1.26	3.28	20.39	67.51	155
Secondary or more	91.16	0	2.61	9.66	78.89	66
Gendered household type						
Male and female adults	90.18	1.67	2.68	15.73	70.1	384
Female adult(s) only	83.39	0	0.39	10.41	72.59	38
Male adult(s) only^						1
Household size						
Small (1-5 members)	93.79	1.36	0.38	17.17	74.88	162
Medium (6-10 members)	88	0.18	3.28	13.65	70.89	220
Large (11+ members)	80.78	3.72	5.14	16.17	55.75	41
Household hunger						
Little to no hunger	91.7	1.52	1.63	13.3	75.25	357
Moderate or severe hunger	76.91	0.59	7.24	26.29	42.79	66

There are no child headed households in the interim survey

^ 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 ZOI interim survey 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: ZOI interim survey, Kenya, 2015

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, household size and household hunger.

The mean BMI for women in reproductive age was 22.37, which was within the normal weight. However, 14 percent of the women in this category were underweight and 23% either overweight or obese. The proportion that was either overweight or obese seems to increase with age. Women aged 15-19 years had the highest proportion of underweight at 21.4%.

The proportion of women who were either overweight or obese increased with educational attainment. On the other hand, the proportion of those underweight decreased with educational attainment and similarly, with increase in the household size. Also, the proportion of women who were either overweight or obese decreased as the household size increased. Women in male and female adult only households had the least proportion that were underweight.

The proportion of women who were underweight was smaller in households that reported little or no hunger compared to those that reported moderate to severe hunger. However, the proportion that was overweight or obese was larger in households that reported little or no hunger.

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

Characteristic	Mean BMI[a]	Body Mass Index (BMI) category (percent)[b]				n[1]
		Under-weight[c]	Normal weight	Over-weight	Obese	
Total (All women age 15-49)	**22.37**	**14.09**	**63.22**	**17.54**	**5.15**	**1620**
Age						
15-19	21.42	27.98	68.17	3.85	0.0	305
20-24	22.98	16.42	71.47	11.13	0.98	209
25-29	22.99	7.36	65.62	22.11	4.91	271
30-34	23.60	7.44	66.98	20.16	5.42	234

Characteristic	Mean BMI[a]	Body Mass Index (BMI) category (percent) [b] Under-weight[c]	Normal weight	Over-weight	Obese	n[1]
35-39	23.59	11.57	58.45	20.12	9.87	220
40-44	23.50	13.78	49.52	28.21	8.49	220
45-49	23.89	8.72	55.91	24.28	11.09	161
Educational attainment						
No education	-	-	-	-	-	-
Less than primary	21.49	20.75	64.22	11.97	3.06	248
Primary	22.18	15.06	64.30	16.09	4.55	729
Secondary or more	23.07	11.03	61.78	20.78	6.41	643
Gendered household type						
Male and female adults	22.49	13.17	64.37	17.19	5.27	1425
Female adult(s) only	21.41	20.23	54.55	20.82	4.40	187
Male adult(s) only^						8
Household size						
Small (1-5 members)	22.81	14.69	58.25	21.88	5.18	642
Medium (6-10 members)	22.29	14.43	64.69	15.67	5.21	871
Large (11+ members)	22.02	9.05	76.19	10.17	4.59	107
Household hunger						
Little to no hunger	22.62	13.60	62.50	18.24	5.66	1392
Moderate or severe hunger	21.50	17.19	67.82	13.11	1.89	228

There are no child headed households in the interim survey

^ 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-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: ZOI interim survey, Kenya, 2015].

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).[21] 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, household size and household hunger.

Twenty one percent of children under five years of age were stunted, with eight percent among these being severely stunted. A higher proportion of male children (22%) were stunted compared to females (20%). Children aged 12-23 months had the highest prevalence of stunting (32%) and severe stunting (13%), while those aged 36-47 months had the least prevalence of stunting. Higher prevalence of stunting was also found where the caregivers had no education or where they had attained only primary level education. The lowest prevalence of stunting and severe stunting was found where caregivers had attained secondary level of education or higher. Although the prevalence of stunting was higher in male and female adult households, the prevalence of severe stunting was higher in female adult only households. Male adult only households had very few observations to obtain viable estimates. On the other hand, the prevalence of stunting and severe stunting increased with household size.

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)	**20.93**	**8.27**	**-0.46**	**1140**
Child sex				
Male	21.96	8.15	-0.458	606
Female	19.78	8.41	-0.455	534
Child age				
0-11 months	15.53	5.05	0.313	193
12-23 months	32.24	12.77	-0.944	246
24-35 months	26.78	12.41	-0.742	222
36-47 months	9.47	5.49	0.036	200
48-59 months	16.68	4.35	-0.553	278

[21] WHO. (2006).

Characteristic	% Stunted (<-2 SD)[a]	% Severely stunted (<-3 SD)	Mean Z-score [b]	n[1]
Caregiver's educational attainment[2]				
No education	22.22	6.49	-0.531	53
Less than primary	20.89	8.91	-0.480	495
Primary	25.94	10.0	-0.563	431
Secondary or more	9.55	3.40	-0.172	152
Gendered household type				
Male and female adults	20.95	8.07	-0.49	1027
Female adult(s) only	20.37	9.78	-0.09	109
Male adult(s) only^				4
Household size				
Small (1-5 members)	18.21	7.90	-0.197	401
Medium (6-10 members)	22.17	8.38	-0.666	626
Large (11+ members)	23.44	8.92	-0.289	113
Household hunger				
Little to no hunger	20.94	7.95	-0.471	967
Moderate or severe hunger	20.86	10.43	-0.363	173

There were no child headed households in the interim survey

^ 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 ZOI interim survey 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 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: ZOI interim survey, Kenya, 2015

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 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, household size and household hunger.

Ten percent of children under five years were wasted, with six percent among these being severely wasted, four percent overweight and two percent obese. The proportion of wasted and severely wasted was higher for male children compared to female children. Children aged 36-47 months had the highest prevalence of wasting (14%) and severe wasting (9%).

Amongst the education categories, the highest prevalence of wasting was found where the caregiver had no education. The prevalence of wasting was lower in male and female adult households (9%) as compared to female adult only households (12%). Severe wasting was also higher in female adult only households.

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)	**9.69**	**4.99**	**4.02**	**2.09**	**-0.211**	**1115**
Child sex						
Male	10.24	5.73	4.20	2.73	-0.197	593
Female	9.06	4.13	3.81	1.35	-0.240	522
Child age						
0-11 months	10.92	5.05	10.21	7.77	0.336	184
12-23 months	8.44	5.72	6.93	0.85	0.112	243
24-35 months	5.28	2.25	3.86	1.62	0.042	221
36-47 months	13.82	8.94	0.13	0.33	-0.749	195
48-59 months	11.19	4.11	0.70	1.59	-0.700	271
Caregiver's educational attainment[2]						
No education	13.37	0.38	3.69	0.24	-0.486	53
Less than primary	9.05	4.35	3.91	1.10	-0.226	488
Primary	10.56	6.56	5.48	3.44	-0.090	419
Secondary or more	7.76	3.81	0.85	1.92	-0.437	146
Gendered household type						
Male and female adults	9.45	4.48	3.68	2.30	-0.201	1004
Female adult(s) only	12.03	9.80	7.27	0.1	-0.376	107
Male adult(s) only^						4
Household size						
Small (1-5 members)	12.74	8.60	5.83	1.10	-0.367	394
Medium (6-10 members)	7.08	2.97	3.02	2.77	-0.113	610
Large (11+ members)	12.24	3.28	3.08	2.00	-0.205	111
Household hunger						
Little to no hunger	10.96	5.78	3.76	2.35	-0.204	944
Moderate or severe hunger	9.23	7.76	5.78	0.32	-0.257	171

There were no child headed households in the interim survey

^ 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 ZOI interim survey identifies the primary caregiver of each age-eligible child. This person is likely, but not necessarily, the child's biological mother.
[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: ZOI interim survey, Kenya, 2015

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, caregiver and household characteristics. Children's characteristics include sex and age. Caregivers' characteristics include educational attainment. Household characteristics include gendered household type, household size and household hunger.

Nine percent of children under five years were underweight, with three percent among these being severely underweight. Children aged 36-47 months had the highest prevalence of being underweight (12%) with those aged 24-35 months having the highest prevalence of severe underweight (4%). The prevalence of underweight decreases with caregiver's education attainment, and it was also higher in female adult only households. Similarly, severe underweight was highest in female adult only households and in households where the caregiver had no education. In addition, households that reported moderate to severe hunger had higher prevalence of children who were underweight and severely underweight.

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)	**8.67**	**2.83**	**-0.332**	**1129**
Child sex				
Male	8.41	2.75	-0.322	601
Female	8.97	2.93	-0.344	528
Child age				
0-11 months	4.37	1.24	0.622	191
12-23 months	7.03	1.03	-0.322	244
24-35 months	7.49	4.41	-0.366	221

Characteristic	% Underweight (<-2 SD)[a]	% Severely underweight (<-3 SD)	Mean Z-score [b]	n[1]
36-47 months	11.85	2.92	-0.457	198
48-59 months	11.53	3.86	-0.777	274
Caregiver's educational attainment[2]				
No education	17.82	14.41	-0.628	53
Less than primary	8.24	2.91	-0.405	488
Primary	9.7	2.91	-0.299	427
Secondary or more	5.72	0.00	-0.182	152
Gendered household type				
Male and female adults	8.40	2.36	-0.340	1017
Female adult(s) only	11.25	7.45	-0.251	108
Male adult(s) only^				4
Household size				
Small (1-5 members)	9.02	3.04	-0.344	399
Medium (6-10 members)	8.53	2.38	-0.331	618
Large (11+ members)	8.31	4.27	-0.301	112
Household hunger				
Little to no hunger	8.46	2.75	-0.348	956
Moderate or severe hunger	10.1	3.42	-0.224	173

There were no children headed households in the interim survey

^ 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 ZOI interim survey 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: ZOI interim survey, Kenya, 2015

8. Summary and Conclusions

Results of the interim survey 2015 show that the mean per capita expenditure per day was USD 2.2, with a wide disparity across expenditure quartiles and deciles. On the other hand, 47% of individuals in the survey were poor, meaning that their per capita expenditure fell below the poverty line of $1.25 per person per day. Average poverty gap was 15%.

In terms of women empowerment, results show a large proportion of women attained adequacy in most of the indicators, especially on input in productive decisions, ownership of assets and control over use of income, where above 90% of women surveyed attained adequacy. Women also performed well in participation in certain economic activities such as food crop farming (97%) and livestock raising at 86%. It is in these same on-farm activities that a good proportion (more than 50%) had some input into decision making on use of income. Results also show that more than a third of the surveyed women came from household that accessed a loan (38%) and that most of these loans were obtained from group-based micro-finance institutions. Similarly, most women were actively involved in credit and micro finance groups (64%). The key primary activities that most women spent time on were cooking, domestic work and personal care.

Results on household hunger show that only about 14% of households experienced moderate or severe hunger. In terms of dietary diversity for women aged 15-49, the mean was 4.14, implying that they consumed food from four food groups on average within the preceding 24 hours. On average, 39% of the women achieved minimum dietary diversity, and this was significantly different by education attainment and household hunger.

On the other hands, results on children feeding show that about half of those under six months were being exclusively breastfed. However, more girls than boys attained exclusive breastfeeding. For older children aged 6 to 23 months, only a small proportion of them (18%) received a minimum acceptable diet. Minimum acceptable diet differed significantly by caregiver's education attainment, gendered household type and household hunger.

Results for nutritional status show that the mean BMI for women of reproductive age was 22.37. The proportion of underweight women was 14%, with 23% being either overweight or obese. For children 0-5 years, prevalence for stunting was 20.9%, 9.7% for wasting and 8.7% for underweight.

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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.

	Estimate						n
Feed the Future indicator	Indicator[a]	SD	95% CI		DEFF	Non-response rate[1]	
Daily per capita expenditures (as a proxy for income) in USG-assisted areas (2010 USD)							
All households	2.22	0.12	1.20	2.45	4.03		2447
Male and female adults	2.21	0.13	1.96	2.46	3.84		1908
Female adult(s) only	1.93	0.13	1.68	2.18	7.65		339
Male adult(s) only	3.62	0.35	2.92	4.32	3.18		200
Prevalence of Poverty: Percent of people living on less than $1.25 per day (2005 PPP)							
All households	46.92	0.02	42.99	50.85	19.89		2447
Male and female adults	46.98	0.02	42.92	51.03	18.63		1908
Female adult(s) only	51.7	0.05	42.68	60.71	9.91		339
Male adult(s) only	27.99	0.07	14.21	41.78	7.98		200
Depth of Poverty: Mean percent shortfall relative to the $1.25 per day (2005 PPP) poverty line							
All households	0.149	0.008	0.133	0.164	18.86		2447
Male and female adults	0.147	0.008	0.131	0.163	17.31		1908
Female adult(s) only	0.177	0.019	0.139	0.216	9.24		339
Male adult(s) only	0.086	0.027	0.033	0.139	10.45		200
Percent of women achieving adequacy on Women's Empowerment in Agriculture Index Indicators [2]							
Input in productive decisions	95.38	0.120	93.70	96.62	2.55		2139
Autonomy in production	n/a	n/a	n/a	n/a	n/a		n/a
Ownership of assets	98.38	0.126	97.50	98.95	1.67		2139
Purchase, sale or transfer of assets	85.76	0.349	83.88	87.46	1.41		2139
Access to and decisions on credit	50.18	0.500	46.51	53.84	2.91		2139
Control over use of income	92.11	0.270	90.43	93.52	1.76		2139

Feed the Future indicator	Estimate						n
	Indicator[a]	SD	95% CI		DEFF	Non-response rate[1]	
Group member	87.38	0.332	84.95	89.46	2.48		2139
Speaking in public	78.67	0.410	74.82	82.07	4.22		2139
Workload	61.41	0.487	57.62	65.06	3.16		2139
Leisure	74.23	0.437	71.61	76.69	1.82		2139
Prevalence of households with moderate or severe hunger							
All households	13.96	0.35	12.11	16.03	1.99		2452
Male and female adults	13.05	0.34	11.04	15.35	1.98		1908
Female adult(s) only	19.64	0.40	14.18	26.55	2.05		340
Male adult(s) only	13.27	0.34	8.08	21.03	1.84		204
Women's Dietary Diversity: Mean number of food groups consumed by women of reproductive age							
All women age 15-49	4.14	1.24	4.04	4.23	3.56		2329
Prevalence of exclusive breastfeeding among children under 6 months of age							
All children	49.52	0.24	37.24	61.86	1.82		116
Male children	38.76	0.23	24.27	55.55	1.63		61
Female children	60.90	0.27	45.31	74.54	1.33		55
Prevalence of children 6-23 months receiving a minimum acceptable diet							
All children	18.13	0.23	13.87	23.35	1.62		423
Male children	17.91	0.22	12.81	24.47	1.23		218
Female children	18.35	0.24	12.37	26.36	1.74		205
Prevalence of women of reproductive age who consume targeted nutrient-rich value chain commodities							
NRVCC 1: All women age 15-49	73.9	1.38	71.1	76.54	2.66		2306
NRVCC 2: All women age 15-49	77.6	1.2	75.18	79.77	2.1		2306
Prevalence of women of reproductive age who consume at least one targeted nutrient-rich value chain commodity							
All women age 15-49	84.6	0.92	82.72	86.36	1.75		2306
Prevalence of children 6-23 months who consume specific targeted nutrient-rich value chain commodities							
NRVCC 1: All children	71.1	3.92	62.74	78.21	3.16		423
NRVCC 2: All children	66.0	3.82	58.1	73.12	2.74		423
Prevalence of children 6-23 months who consume at least one targeted nutrient-rich value chain commodity							
All children	90.32	2.13	86.1	94.54	2.19		423

Feed the Future indicator	Estimate						n
	Indicator[a]	SD	95% CI		DEFF	Non-response rate[1]	
Male children	89.96	2.89	82.63	94.4	1.89		218
Female children	90.66	2.77	83.55	94.89	1.96		205
Prevalence of underweight women							
All non-pregnant women age 15-49	14.30	0.36	11.90	17.08	2.25		1625
Prevalence of stunted children under 5 years of age							
All children	20.93	0.43	16.93	25.57	3.27		1140
Male children	21.93	0.43	17.00	27.81	2.64		606
Female children	19.79	0.40	14.78	25.96	2.66		534
Prevalence of wasted children under 5 years of age							
All children	9.69	0.29	7.18	12.95	2.65		1115
Male children	10.24	0.29	6.29	16.24	3.93		593
Female children	9.06	0.29	5.30	15.07	3.62		522
Prevalence of underweight children under 5 years of age							
All children	8.67	0.29	6.55	11.40	2.10		1129
Male children	8.41	0.28	6.01	11.65	1.55		601
Female children	8.97	0.29	5.95	13.31	2.14		528

n/a – Not available.
There were no child headed households in the interim survey.
^ 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] The full WEAI score cannot be calculated because interim data were collected from women only and the autonomy indicator was dropped. The second interim survey (2017) will collect the full set of data from women and men and will report on the full WEAI.
[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 disaggregate variable is found to be significant ($p<0.05$), the superscript is noted next to the indicator.
Source: ZOI interim survey, Kenya, 2015

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 popula-tion[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)	**64.06**	12586	**24.88**	12586	**0.71**	**37.53**	**7692**
Gendered household type							
Male and female adults	64.58	11021	24.84	11021	0.71	37.11	6830
Female adult(s) only	65.65	1244	27.96	1244	0.79	41.67	777
Male adult(s) only	40.91	312	15.20	312	0.68	35.68	85
Household size							
Small (1-5 members)	51.36	4757	17.86	4757	0.63	33.02	2160
Medium (6-10 members)	70.50	6907	28.32	6907	0.74	39.00	4823
Large (11+ members)	76.68	922	32.71	922	0.79	41.76	709
Household educational attainment							
No education	36.60	89	9.85	89	0.46	24.34	29
Less than primary	78.14	2302	33.87	2302	0.81	42.51	1689
Primary	72.38	5091	33.86	5091	0.74	38.75	3559
Secondary or more	51.41	2305	17.96	2305	0.63	33.20	2415

There were no child headed households in the interim survey

^ 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 interim survey, Kenya, 2015

A1.3 Poverty ($1.25, 2010 USD), depth of poverty and per capita expenditure by ZOI

	N	Interim Value	95% CI	Standard error	DEFF
	Unweighted	Weighted			
Prevalence of Poverty: Percent of people living on less than $1.25/day					
Overall	**12586**	**46.92**	**43.02, 50.87**	**1.98**	**19.89**
M&F (both male and female adults)	11030	46.98	42.95, 51.05	2.05	18.63
MNF (male adult(s) only)	312	27.99	16.40, 43.51	6.96	7.98
FNM (female adult(s) only)	1244	51.70	42.73, 60.56	4.55	9.91
By ZOI					
HR1	5506	49.28	44.46, 54.12	2.44	21.91
SA2	7080	40.57	34.34, 47.12	3.24	14.84
Disaggregates by ZOI					
HR1					
M&F (both male and female adults)	4863	48.97	43.93, 54.03	2.52	12.28
FNM (Female adult(s) only)	511	56.37	44.09, 67.90	6.03	7.53
MNF (Male adult(s) only)	132	35.18	20.16, 53.83	8.66	4.88
SA2					
M&F (both male and female adults)	6167	41.56	34.92, 48.53	3.43	29.90
FNM (Female adult(s) only)	733	40.28	31.77, 49.42	4.46	5.97
MNF (Male adult(s) only)	180	7.10	1.55, 27.06	5.22	7.29
Depth of Poverty					
Overall	12586	0.148	**0.13, 0.16**	**0.008**	**18.86**
M&F (both male and female adults)	11030	0.147	0.13, 0.16	0.008	17.31
MNF (male adult(s) only)	312	0.086	0.03, 0.14	0.027	10.49
FNM (female adult(s) only)	1244	0.177	0.14, 0.22	0.019	9.24
By ZOI					
HR1	5506	0.157	0.14, 0.18	0.01	20.22
SA2	7080	0.126	0.10, 0.15	0.01	15.15
Disaggregates by ZOI					
HR1					
M&F (both male and female adults)	4863	0.155	0.135, 0.174	0.01	10.93
MNF (male adult(s) only)	132	0.110	0.041, 0.179	0.03	6.48
FNM (female adult(s) only)	511	0.190	0.138, 0.241	0.03	7.09
SA2					
M&F (both male and female adults)	6167	0.127	0.099, 0.154	0.01	31.89
MNF (male adult(s) only)	180	0.016	-0.01, 0.014	0.01	7.51
FNM (female adult(s) only)	733	0.147	0.104, 0.191	0.02	6.71
Per capita expenditures of USG targeted beneficiaries					
Overall	**12,586**	**2.22**	**1.99, 2.45**	**0.12**	**4.04**
M&F (both male and female adults)	11030	2.21	1.95, 2.46	0.13	3.84
MNF (male adult(s) only)	312	3.62	2.92, 4.33	0.35	3.18
FNM (female adult(s) only)	1244	1.93	1.68, 2.18	0.13	7.65

	N	Interim Value	95% CI	Standard error	DEFF
	Unweighted	Weighted			
By ZOI					
HR1	5506	2.01	1.85, 2.16	0.08	17.23
SA2	7080	2.80	2.07, 3.52	0.37	3.14
Disaggregates by ZOI					
HR1					
M&F (both male and female adults)	4863	1.99	1.83, 2.15	0.08	9.86
MNF (male adult(s) only)	132	3.07	2.24, 3.89	0.41	3.01
FNM (female adult(s) only)	511	1.80	1.48, 2.13	0.16	6.06
SA2					
M&F (both male and female adults)	6167	2.79	1.97, 3.62	0.41	6.44
MNF (male adult(s) only)	180	5.22	4.14, 6.31	0.54	2.23
FNM (female adult(s) only)	733	2.23	1.91, 2.55	0.16	6.27

Significance Tests by ZOI

Feed the Future Indicator	Baseline (2013)	Interim (2015)	Chi/t-test
Daily per capita expenditures (as a proxy for income) in USG-assisted areas (2010 USD)			
All households	2.03	2.22	1.39
HR1	2.03	2.01	-0.25
SA2	2.05	2.80	1.92*
Prevalence of Poverty: Percent of people living on less than $1.25 per day (2005 PPP)			
All households	44.73	46.92	12.3736
HR1	43.71	49.28	46.7054*
SA2	47.40	40.57	49.7780
Depth of Poverty: Mean percent shortfall relative to the $1.25 per day poverty line (2005 PPP)			
All households	0.14	0.149	0.67
HR1	0.13	0.157	2.15**
SA2	0.17	0.13	-1.42

Appendix 2. Methodology

A2.1 Sampling and Weighting

Sampling

The sample of households for the interim survey followed a two-stage stratified cluster sampling design. In the first stage, 113 enumeration areas (EAs) were selected from [fifth National Sample Survey and Evaluation Programme (NASSEP V) household sample frame developed and maintained by the Kenya National Bureau of Statistics (KNBS), in 22 counties by probability proportional to size (PPS) sampling. In the second stage, 25 households were selected for interview at random from a comprehensive list of households within each enumeration area.

Weighting

Data required for weighting of survey data were collected throughout the sampling process, and included: (1) EA measure of size (where size is in terms of number of population or number of households) used for selection of EAs; (2) measure of size of strata from which EAs are drawn; (3) measure of size of EAs at time of listing; and (4) response rates among households, women, and men. 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:

$$W_{hi} = D_{hi} * \frac{S_{hi}}{L_{hi}} * \frac{C_h}{c_h}$$

Where,

W_{hi} = Overall cluster gross weight for the i-th cluster in the h-th stratum (in this case HR1 or SA2)

D_{hi} = Sample cluster design weight obtained from cluster selection probabilities for the i-th cluster in the h-th stratum

S_{hi} = Number of listed households in the i-th cluster in the h-th stratum

L_{hi} = Number of responding households in i-th cluster in the h-th stratum

C_h = Number of operating clusters in h-th stratum

c_h = Number of selected clusters in the h-th stratum

Gross weights were first developed for households (per cluster) and then the same weights applied to individuals within the cluster before they were normalized.

The gross weights were normalized for the whole sample so that the total number of weighted cases was equal to the number of un-weighted cases. Normalization of weights was done independently for households and individuals. Normalized weights have a mean of 1.0 and are used to avoid generating incorrect standard errors and confidence intervals and are valid for estimation of proportions and means.

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).

A2.2 Poverty Prevalence and Expenditure Methods

Data Source

Data used in calculating poverty and expenditure indicators came from the interim survey.

Data Preparation

Data excluded from analysis:

- Often various types of consumption goods or expenses are excluded; include in the appendix a rationale for the items that are excluded from the indicator calculation. For example, wedding and funeral ceremonies are often excluded because these are large, infrequent expenses that impose considerable measurement error into the consumption aggregates.
- If durable goods are included in the estimate, were these depreciated according to the approach advocated by Deaton and Zaidi (2002)?
- If housing is included in the estimate, what method was used for calculating a rental value?

Imputations:

- How were missing data handled?
  Were the data inspected for outliers or other features of data quality?
- Were imputations used?

Prices:

- Were market surveys performed to identify quantity conversions and prices?
- Were prices adjusted to make the data comparable across time or across areas of the country? For example, many national household budget and LSMS surveys are conducted throughout a calendar year. As market prices and consumption patterns vary across areas of a country and through different seasons of the year, Paasche or

Laspeyres Price Indexes are often used to put all price measurements into a single, comparable price.

Other adjustments:
Describe any other adjustments made in the analysis. For example, consumption may be deflated to compensate for elevated spending during a holiday.

Currency Conversions using CPI and PPP

- Document the 2005 PPP and consumer price index (CPI) used to adjust for inflation.
- World Bank CPI values are now normalized such that 2010=100. In order to achieve consistency with baseline, normalize all CPI values such that 2005=100.

Poverty Thresholds

- USAID Missions and other partners may request alternative poverty thresholds. In addition to the international extreme threshold of $1.25 per capita per day in 2005 PPP, information regarding alternative thresholds may be incorporated into sections 4.2.2 and 4.2.3.
- Provide the threshold and the method of estimation for establishing the threshold. If the threshold is established using an alternative data source, such as a prior LSMS using the cost of basic needs approach, remember that the threshold will need to be inflated to current prices.

Weights

Describe the weights used for all indicator calculations. If multiple weights are applied, describe each weight separately and discuss how it is applied in the indicator calculations.

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	G2.02 A-C, F How much input did you have in making decisions about: food crop farming, cash crop farming, livestock raising, fish culture; G5.02 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.
Resources	Ownership of assets	G3.02 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	G3.03-G3.05 A-G Who would you say can decide whether to sell, give away, rent/mortgage [ITEM] most of the time? G3.06 A-G Who contributes most to decisions regarding a new purchase of [ITEM]? Ag land; Large livestock, Small livestock; Chickens etc; Fish pond; Farm equipment (non-mechanized); Farm equipment (mechanized)	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	G3.08-G3.09 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	G2.03 A-F 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; G5.02 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	G4.05 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	G4.01 – G4.03 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	G6 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	G6.02 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)

Appendix 3. Addendum

A3.1 Table: Test of Means

Feed the Future Indicator	Baseline (2013)	Interim (2015)	Chi/t-test
Daily per capita expenditures (as a proxy for income) in USG-assisted areas (2010 USD)			
All households	2.0	2.22	1.39
Male and female adults	2.0	2.21	1.43
Female adult(s) only	1.9	1.93	1.17
Male adult(s) only	4.6	3.62	-1.63
Prevalence of Poverty: Percent of people living on less than $1.25 per day (2005 PPP)			
All households	44.7	46.92	12.37
Male and female adults	45.4	46.98	5.45
Female adult(s) only	45.3	51.7	10.74
Male adult(s) only	4.9	27.99	44.19***
Depth of Poverty: Mean percent shortfall relative to the $1.25 per day poverty line (2005 PPP)			
All households	0.14	0.149	0.67
Male and female adults	0.14	0.147	0.38
Female adult(s) only	0.14	0.177	1.56
Male adult(s) only	0.02	0.086	2.38**
Percent of women achieving adequacy on Women's Empowerment in Agriculture Index Indicators			
Input in productive decisions	94.0	95.38	4.41
Ownership of assets	94.6	98.38	46.42***
Purchase, sale or transfer of assets	84.2	85.76	2.1808
Access to and decisions on credit	50.3	50.18	0.16
Control over use of income	94.3	92.11	6.67*
Group member	90.0	87.38	1.20
Speaking in public	82.3	78.67	6.48
Workload	63.0	61.41	1.17
Leisure	73.8	74.23	0.03
Autonomy in production	n/a	n/a	
Prevalence of households with moderate or severe hunger			
All households	13.51	13.96	3.79
Male and female adults	13.18	13.05	1.51
Female adult(s) only	17.42	19.64	1.65
Male adult(s) only	6.41	13.27	5.14**
All women age 15-49	4.08	4.14	1.05
Prevalence of exclusive breastfeeding among children under 6 months of age			
All children	48.50	49.52	4.29
Male children	46.75	38.76	0.97
Female children	50.66	60.90	1.34

Statistically significantly different at the 10% (*) 5% (**) or 1% (***) levels

Errata (July 2017)

Kenya Feed the Future Zone of Influence Interim Assessment Report (August 2016)

This errata revises the population numbers in Table 11 of the Kenya Feed the Future Zone of Influence Interim Assessment Report. The original table reported the 2009 population as captured by the Kenya Population and Housing Census. The revised table, included in the errata, adheres to the guidance and reports the 2015 projected population. The updated values are based on projections carried out and published by the Kenya National Bureau of Statistics (KNBS).

The revised table provides the required population categories which were missing in the original report. Where estimates of the ZOI population by categories were not given, we used the survey data to construct the estimates.

Feed the Future Southern Kenya 2015 Population of Individuals, by Category in the ZOI

Category of individuals	HR1	SA2	Total
Total population	**16,315,694**	**5,410,250**	**21,725,944**
Total population, by subpopulation			
Women of reproductive age (15-49 years)	3,474,008	1,170,961	4,644,968
Children 0-59 months	2,138,307	574,405	2,712,711
Children 0-5 months	168,814	45,066	213,880
Children 6-23 months	592,329	183,321	775,649
Children 6-59 months	1,969,493	529,338	2,498,831
Total number of households, by type of household			
Male and female adult households	2,401,933	840,398	3,242,330
Female adults only households	411,800	156,111	567,910
Male adults only households	217,097	101,080	318,176
Total population, by gendered household type			
Male and female adult(s)	14,402,472	4,710,576	19,113,049
Female adult(s) only	1,513,400	560,656	2,074,055
Male adult(s) only	399,822	139,018	538,840
Women of reproductive age, by pregnancy status			
Non-pregnant	3,391,082	1,136,588	4,527,670
Pregnant	82,926	34,373	117,299
Children 0-59 months, by child sex			
Male	1,107,655	310,117	1,417,772
Female	1,030,652	264,287	1,294,939
Children 0-5 months, by child sex			
Male	91,811	24,443	116,254
Female	77,003	20,624	97,626
Children 6-23 months, by child sex			
Male	290,241	99,299	389,540
Female	302,088	84,022	386,110
Children 6-59 months, by child sex			
Male	1,015,844	285,675	1,301,518
Female	953,649	243,664	1,197,313

Source: Population projections are based on reports by KNBS. The numbers are published in the analytical report volume XIV. The proportion of demographic categories is calculated from the survey data carried out in 2015. Population proportions are applied the to the projected numbers to get estimated population numbers in the ZOI.