

# Midline Study of the Maharo Resilience Food Security Activity in Madagascar



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The Implementer-Led Evaluation & Learning Associate Award (IMPEL) works to improve the design and implementation of Bureau for Humanitarian Assistance (BHA)-funded resilience food security activities (RFSAs) through implementer-led evaluations and knowledge sharing. Funded by the United States Agency for International Development (USAID) BHA, IMPEL will gather information and knowledge in order to measure performance of RFSAs, strengthen accountability, and improve guidance and policy. This information will help the food security community of practice and USAID to design projects and modify existing projects in ways that bolster performance, efficiency, and effectiveness. IMPEL is an eight-year activity (2019–2027) implemented by Save the Children (lead), TANGO International, Tulane University, Causal Design, Innovations for Poverty Action, and International Food Policy Research Institute.

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## PHOTO CREDIT AND CONTEXT

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On the cover is a photograph of Voloraza Claire from the Fokontany of Lanirano in the District of Itampolo. She is a mother of 15 children, unmarried, and a dedicated fisherwoman. She received financial assistance through Maharo's Most Vulnerable Household category interventions. With the funds, she ventured into selling dried fish, enabling her to provide better nourishment for her children than ever before.

## DISCLAIMER

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# TABLE OF CONTENTS

<b>Acknowledgments</b> .....	<b>i</b>
<b>Table of Contents</b> .....	<b>ii</b>
<b>List of Tables</b> .....	<b>iv</b>
<b>List of Figures</b> .....	<b>vi</b>
<b>Acronyms</b> .....	<b>vii</b>
<b>Executive Summary</b> .....	<b>viii</b>
<b>1. Introduction</b> .....	<b>1</b>
1.1 Overview of the Evaluation Research .....	1
1.1.1 Overview of the Baseline Study .....	1
1.1.2 Overview of the Midline Study .....	2
1.1.3 Overview of Endline Study .....	2
1.1.4 Overview of Cost-Effectiveness Analysis .....	2
1.2 Midline Evaluation .....	2
1.2.1 Midline Research Objectives.....	3
1.2.2 Research Question .....	3
<b>2. Methodology and Limitations</b> .....	<b>4</b>
2.1 Evaluation Design .....	4
2.1.1 Randomization and Sampling Strategy .....	4
2.1.2 Sampling Frame and Midline Sample.....	6
2.1.3 Questionnaire Development.....	7
2.1.4 Outcome Indicators.....	7
2.1.5 Field Preparation.....	11
2.1.6 Data Collection.....	11
2.2 Limitations and Challenges .....	12
2.2.1 Limitations.....	12
2.2.2 Challenges .....	13
<b>3. Impacts of the Maharo Activity</b> .....	<b>16</b>
3.1 Characteristics of the Study Population.....	16
3.2 Food Security.....	17
3.3 Child Nutrition and Health .....	20
3.4 Women’s Nutrition and Prenatal Care.....	21
3.5 Water, Sanitation, and Hygiene Practices.....	23
3.6 Agriculture.....	24
3.7 Gender Dynamics .....	30
3.7.1 Access to Financial Services .....	32
3.7.2 Additional Decision-Making Areas.....	34
<b>4. Attrition</b> .....	<b>38</b>
<b>5. Conclusion</b> .....	<b>42</b>
<b>6. References</b> .....	<b>46</b>

<b>Annex A: ANCOVA Results for the Indicators.....</b>	<b>47</b>
<b>Annex B: Midline Changes to the Household Roster .....</b>	<b>67</b>
<b>Annex C: Midline as a Representative Sample of the Baseline .....</b>	<b>70</b>
<b>Annex D: Additional Summary Tables .....</b>	<b>79</b>
<b>Annex E: Matching Baseline and Midline Data .....</b>	<b>125</b>

## LIST OF TABLES

Table 1. Commune groups and cluster sample selection in the control group .....	4
Table 2. Sampling strategy .....	6
Table 3. Maharo midline RFSA indicators .....	8
Table 4. Maharo RFSA custom midline indicators .....	9
Table 5. Planned versus actual survey numbers by CRS cluster and assignment at midline .....	11
Table 6. Number of replacement households used by CRS cluster and assignment at midline .....	12
Table 7. Household-level characteristics .....	16
Table 8. Responses to Food Insecurity Experience Scale questions .....	18
Table 9. Prevalence of severe and moderate food insecurity .....	19
Table 10. Food Consumption Score .....	20
Table 11. Breastfeeding practices .....	20
Table 12. Infant and child health indicators .....	21
Table 13. Women’s nutrition and antenatal care .....	22
Table 14. Water, sanitation, and hygiene outcomes .....	23
Table 15. Crop and livestock .....	25
Table 16. Use of specific value chain interventions .....	27
Table 17. Percentage of farming households growing the three target crops or raising goats and poultry (baseline, midline comparisons) .....	28
Table 18. Use of improvement management practices for crops .....	28
Table 19. CRS livestock and seed programs .....	29
Table 20. Cash earners by gender and age .....	30
Table 21. Participation of women in decisions about the use of self-earned cash .....	31
Table 22. Participation of women in decisions about the use of spouse’s earned cash .....	32
Table 23. Access to credit by gender and age .....	33
Table 24. Input of wife of household head into household decisions .....	35
Table 25. Attrition rates and percentage of missing households that could be found .....	38
Table 26. Reasons for missing households leaving their baseline fokontany (percentages) .....	39
Table 27. P-values for attrition tests IV-R and IV-P using different baseline indicators .....	40
Table 28. Percentage of households practicing open defecation .....	41
Table 29. Summary of the estimated effect of treatment on all outcomes .....	43
Table 30. ANCOVA results for Food Insecurity Experience Scale questions .....	47
Table 31. ANCOVA results for Food Insecurity Experience Scale and BL6 .....	48
Table 32. ANCOVA results for Food Consumption Score .....	48
Table 33. ANCOVA results for infant and child health indicators at the fokontany-level .....	49
Table 34. ANCOVA results for diet and prenatal care for women .....	49
Table 35. ANCOVA results for food categories showing significant changes .....	50
Table 36. ANCOVA results for water, sanitation, and hygiene outcomes .....	51
Table 37. ANCOVA results for financial services farmers .....	52
Table 38. ANCOVA results for value chain interventions among farmers .....	52
Table 39. ANCOVA results for the use of specific value chain interventions for crops .....	53
Table 40. ANCOVA results for the use of specific value chain interventions for livestock .....	54

Table 41. ANCOVA results for targeted crops and management practices.....	55
Table 42. ANCOVA results for targeted crop practices for cassava .....	56
Table 43. ANCOVA results for targeted crop practices for cassava (continued) .....	56
Table 44. ANCOVA results for targeted crop practices for sorghum .....	57
Table 45. ANCOVA results for targeted crop practices for sorghum (continued) .....	58
Table 46. ANCOVA results for targeted crop practices for cowpea.....	59
Table 47. ANCOVA results for targeted crop practices for cowpea (continued).....	59
Table 48. ANCOVA results for targeted livestock and management practices .....	60
Table 49. ANCOVA results for CRS livestock and seed programs .....	61
Table 50. ANCOVA results for cash earnings .....	62
Table 51. ANCOVA results for borrowing and savings decisions .....	63
Table 52. ANCOVA results for age-disaggregated credit access .....	64
Table 53. ANCOVA results for spousal input, questions 1-9 (numbers in columns refer to numbered questions in previous table).....	65
Table 54. ANCOVA results for spousal input, questions 1–9 (numbers in columns refer to numbered questions in previous table).....	66
Table 55. Number of household members reported as departed at midline compared to baseline .....	67
Table 56. Reasons given household members reported as departed at midline .....	68
Table 57. Number of members reported as additions at midline .....	69
Table 58. Reasons given for the addition of household members reported at midline.....	69
Table 59. Select balance test results for Module B variables .....	70
Table 60. Select balance test results for Module C variables .....	71
Table 61. Select balance test results for Module F variables .....	72
Table 62. Balance test results for all Module B variables .....	73
Table 63. Balance test results for all Module C Variables.....	75
Table 64. Balance test results for all Module F Variables .....	77
Table 65. Disaggregated tables for Module B.....	79
Table 66. Disaggregated tables for Module C.....	84
Table 67. Disaggregated table for Module D.....	94
Table 68. Disaggregated table for Module E .....	95
Table 69. Disaggregated table for Module F.....	97
Table 70. Disaggregated table for Module G.....	99
Table 71. Disaggregated table for Module J.....	109
Table 72. Disaggregated table for Module K .....	113
Table 73. Baseline and midline people in the 1,171 households interviewed at midline .....	125
Table 74. Criteria to match baseline and midline people within a given household.....	126

## LIST OF FIGURES

Figure 1. Age distribution of children 0–59 months old .....	14
Figure 2. Percentage that answered yes to each of the eight food insecurity questions .....	19
Figure 3. Percentage of women of reproductive age consuming various categories of food.....	22
Figure 4. Percentage of households applying improved practices across areas of intervention .....	26
Figure 5. Histogram for attrition rate at cluster level.....	39



## ACRONYMS

<b>ANCOVA</b>	Analysis of Covariance
<b>ANC</b>	Antenatal Care
<b>ATE</b>	Average Treatment Effect
<b>ATE-R</b>	Average Treatment Effect for the Respondent
<b>BHA</b>	Bureau for Humanitarian Assistance
<b>BL</b>	Baseline
<b>ML</b>	Midline
<b>EL</b>	Endline
<b>CRS</b>	Catholic Relief Services
<b>FAO</b>	Food and Agriculture Organization
<b>FCS</b>	Food Consumption Score
<b>FIES</b>	Food Insecurity Experience Scale
<b>HH</b>	Household
<b>IE</b>	Impact Evaluation
<b>IMPEL</b>	Implementer-Led Evaluation & Learning Associate Award
<b>IP</b>	Implementing Partner
<b>IV-P</b>	Internal Validity for the Study Population
<b>IV-R</b>	Internal Validity for the Respondent Subpopulation
<b>MDD</b>	Minimum Dietary Diversity
<b>NGO</b>	Non-Governmental Organization
<b>PiSP</b>	Maharo Seed Program Private Input Service Provider
<b>RCT</b>	Randomized Controlled Trial
<b>RFSA</b>	Resilience Food Security Activity
<b>SACCO</b>	Savings and Credit Co-Operative Society
<b>WASH</b>	Water, Sanitation, and Hygiene
<b>WRA</b>	Women of Reproductive Age
<b>VSLA</b>	Village Savings and Loans Association

## EXECUTIVE SUMMARY

This report captures midline (ML) survey data collected from February to March 2023 for the impact evaluation (IE) of the Maharo resilience food security activity (RFSA) implemented by Catholic Relief Services (CRS) in the southern region of Madagascar. This activity attempts to address and mitigate acute levels of food insecurity experienced by communities in this region of Madagascar. The ML study examined a smaller set of intermediate indicators than those collected at the baseline (BL), focusing exclusively on indicators where researchers expected the most progress. Indicators studied at the ML include food security; child nutrition and health; women’s maternal nutrition and reproductive health; water, sanitation, and hygiene practice; agricultural practices; and gender dynamics. An accompanying attrition exercise was conducted to understand the rate of attrition among participating households. The BL survey was conducted from February to March 2021. A complementary endline (EL) survey with an accompanying cost-effectiveness analysis is anticipated to be conducted from February to March 2025.

### Midline Study Methodology

The ML surveyed a subsample of the households surveyed at the BL. Treatment clusters were paired with control clusters, and 45 of the 98 pairs were randomly selected. Within the 90 selected clusters, researchers randomly selected a maximum of two fokontany per cluster. Then, researchers randomly selected 12 households per fokontany to survey. The total number of households interviewed at the ML was 1,171.

### Study Limitations

The largest limitation of the study was a limited available sample size of household members that met specific age criteria (e.g., children under 6 months, children under 59 months, and girls or women 15–49 years old). As the participating households were randomly sampled and the sample size for the ML was smaller than for the BL, not all households selected had household members that fit the criteria. Of the households randomly sampled, 89.9% did not have any infants under 6 months. Of the households selected, 32.3% did not have any children under 5 years, and 20.3% of households did not have any girls or women of reproductive age.

### Key Findings

#### Demographic Profiles

By the end of data collection efforts, enumerators surveyed 1,171 households. There were little to no observed trends of variance between the treatment and control group on household characteristics, suggesting that the ML sample is balanced across overall demographics.

#### Food Security

The responses suggest that the area is still suffering from a severe food security crisis, with more than 90% of households reporting food insecurity concerns. The prevalence of severe food insecurity is around 38%. The prevalence of those experiencing moderate or severe food insecurity is 88% in control areas and slightly lower in treatment areas. Roughly 60% of households have an acceptable Food Consumption Score, and 10% of both treatment and control households have poor scores. Overall,

responses between the treatment and control groups are similar; however, all areas receive development, emergency, and nutritional support.

### **Child Nutrition and Health**

Exclusively breastfeeding children under 6 months is higher in treatment areas compared to control areas. The percentage of children with diarrhea in the previous 2 weeks is similar in both groups, while the percentage of children treated with Oral Rehydration Therapy is slightly lower in treatment areas for girls and slightly higher for boys. The estimated effect of treatment on the three indicators shows a positive effect on exclusive breastfeeding, but the effect is not statistically significant. There is no evidence of an effect in the other two indicators.

### **Women’s Health, Maternal Nutrition, and Reproductive Health**

Observations among surveyed households suggested that treatment positively impacted the Dietary Diversity Score and the likelihood of meeting the threshold for a diet of minimum diversity. Girls and women in treatment areas had a higher Dietary Diversity Score and were more likely to consume a diet of minimum diversity. Dairy, meat, and vitamin A-rich fruits and vegetables were the food categories that showed significant differences between treatment and control. Girls and women in treatment areas were also more likely to receive at least four antenatal-care visits during pregnancy.

### **Water, Sanitation, and Hygiene Practices**

Less than 1% of households surveyed have basic drinking water services. Most households have year-round access to water, but collecting water requires more than a 30-minute trip for most households. Less than 7% of households consume at least 20 liters of water a day. Very few households have soap or ash and water available for handwashing. One-third of households properly treat water for drinking. Treatment is seen to have a positive impact on open defecation. Households in treatment areas are nine percentage points less likely to practice open defecation. There is no significant difference between treatment and control areas in other outcomes.

### **Agriculture**

The ML focused on a specific set of agricultural interventions and found that households in treatment areas showed substantial progress. A higher share of treatment households used financial services (by five percentage points), saved (by 13 percentage points), practiced value chain interventions (by 34 percentage points), and adopted improved management practices for all targeted crops. Treatment households were also more likely to grow sorghum and cowpeas. Farm households are eight percentage points more likely to adopt improved management practices for poultry. There is no significant difference in the percentage of households raising targeted livestock. Two Maharo agricultural initiatives were examined at ML—a livestock voucher program and a seed program. Approximately 8% of treatment households reported receiving a livestock voucher, compared to 1% of control households. The results indicated that the seed program, which was delivered to both treatment and control areas, clearly reached treatment areas, where participation was roughly double.

### **Gender Dynamics**

The results show that nearly all women participate in decisions about using their self-earned cash, but a lower percentage of men do the same. There are large gender differences in perceived participation in decisions about husbands’ cash earnings. 83% of men report that wives participate in these decisions, while women report their own participation at 65%. The analysis of covariance results confirm there are

no statistically significant differences between treatment and control households in indicators related to household financial decisions. 46% of households report using credit. The data suggests that treatment increases participation in borrowing from non-governmental organizations, village savings and loans associations, saving and credit cooperatives, and group-based savings, micro-finance, or lending programs. Participation in group-based financial programs was 11% higher in treatment areas. There are no statistically significant differences between treatment and control areas concerning the input of the household head's wife in making a range of decisions affecting the household.

### **Attrition Exercise**

Attrition is defined, in the context of this study, as the decrease in households participating in the study prior to the planned completion of the IE. Attrition most often occurs when participating households relocate and cannot be contacted for follow-up. Its occurrence is expected and was accounted for at the BL when selecting the size of the initial sample. The aim of the attrition exercise is to understand the attrition rate of participating households 3 years after the BL to enable the research team to understand and mitigate attrition at the EL. The overall attrition rate of the sample was 6.86%, slightly higher than what was accounted for at the BL but not exceptionally so. While researchers only obtained data on the reasons behind the departure of households from the BL fokontany for only around half of the missing households, temporary work and family events were the most common reasons for attrition. Although the attrition rate in control areas was 3.92 percentage points higher than in treatment areas, additional attrition tests suggest that this is not a threat to the internal or external validity of the study.

# 1. INTRODUCTION

## 1.1 Overview of the Evaluation Research

Southern Madagascar is experiencing a prolonged drought, and much of the population faces a severe food security crisis. The Maharo resilience food security activity (RFSa), implemented by Catholic Relief Services (CRS), aims to provide development and nutritional support to a large population of households in southern Madagascar. In addition to these services, the RFSa package also includes a range of community-tailored livelihood support activities. The primary objective of the impact evaluation (IE) is to measure the impact of this livelihood support on reducing food insecurity and increasing wellbeing for households in southern Madagascar.

The IE uses a randomized controlled trial (RCT) design which determined the communities that would receive the additional activities through random sampling. General support was planned to be delivered unconditionally in the region of focus, while livelihood activities were designed to be more targeted and tailored to specific community needs. Therefore, the Maharo RFSa created the potential to design an experimental IE to estimate the marginal effect of a set of livelihood activities on the "standard" RFSa package. The evaluation seeks to inform the larger knowledge base around the efficacy of the RFSa among vulnerable populations and how benefits to vulnerable households can be further maximized. Based on this, the IE of the RFSa focuses on the following research question:

- What is the additional impact on food security and nutrition outcomes in communities that receive additional tailored livelihood activities in conjunction with development, emergency, and nutritional support activities?

The IE study comprises the following four reports:

- A baseline (BL) report which summarized and analyzed BL survey data.
- The midline (ML) report, which summarizes and analyzes ML survey data.
- An IE report that will use the BL, ML, and endline (EL) data to estimate the impact of the RFSa.
- A cost-effectiveness analysis at EL, tied to IE data.

This report summarizes the results of the ML study conducted in February–March 2023. The ML study relies on quantitative methods to measure ML indicators collected in the RFSa target area and to evaluate the progress made on those indicators since the BL survey. The following subsections provide a brief description of all the activities part of the IE, while the rest of the document will focus on the analysis of the ML data.

### 1.1.1 Overview of the Baseline Study

The BL study used a RCT design to collect quantitative data in the RFSa target area in February–March 2021. The survey provided BL data on the status of communities and households across Bureau for Humanitarian Assistance (BHA) standard indicators and CRS custom gender indicators. Causal Design worked closely with BHA and relevant stakeholders to identify other key learning objectives to ensure that the BL study could contribute to this learning where possible. Researchers surveyed 4,595

households for the BL. The control group is comprised of 2,317 households, while 2,278 households were in the treatment group.

### 1.1.2 Overview of the Midline Study

The ML study examined a smaller set of intermediate indicators and was conducted in the RFSA target area in February 2023. Causal Design worked closely with BHA and CRS, the implementing partner (IP), to identify the most relevant intermediate indicators where they expected the most progress. The ML revisited a random subsample of both treatment and control households surveyed at the BL.

Researchers surveyed 1,171 households at the ML. Researchers surveyed 597 households in control areas, and 574 households in treatment areas.

### 1.1.3 Overview of Endline Study

The EL study will collect survey data from the same communities and households in the BL survey to estimate the ability of the RFSA interventions to directly impact household food security and wellbeing indicators as listed in BHA's standard indicators. The EL study will be carried out between February to March of 2025, mirroring the timing of the BL survey and allowing suitable time to allow for any potential benefits to occur. A follow-up survey will be administered to the same households as in the BL activity to ensure comparability across the two time periods.

### 1.1.4 Overview of Cost-Effectiveness Analysis

The cost-effectiveness analysis will rely on EL data from the IE, which will be tied to the financial data to understand the costs associated with results found in the IE. Additionally, this analysis will be supported by additional contextual information about other programming in the area that may have contributed to any measured benefits. This analysis will also be supported by insights from the RFSA team as to what they believe was completed relatively cost-effectively and which aspects of their programming they perceived to be relatively expensive. The results of the cost-effectiveness analysis will be presented in the EL report.

## 1.2 Midline Evaluation

The ML survey is a progress assessment conducted 2 years after the BL. Rather than the full, comprehensive survey, the ML is a shorter survey designed to focus on the indicators that were expected to see the most progress. The ML survey omitted indicators that were not yet expected to have been impacted by RFSA activities over the 2-year period between the BL and ML, including expenditure, agricultural yield, and anthropometric measures. Additionally, the ML survey was administered to a subsample of the households interviewed at the BL. The ML survey was also an opportunity to document challenges with household migration and threats to internal validity at EL so that researchers could proactively develop strategies to mitigate the influence of these threats on the interpretation of the results. These threats included attrition, largely because of the ongoing effects of the severe drought in southern Madagascar, and spillover effects of treatment to control areas.

### **1.2.1 Midline Research Objectives**

The objectives of the ML survey were to (1) evaluate progress made since BL on a select set of indicators and (2) assess the rate of attrition among households 2 years after the BL.

### **1.2.2 Research Question**

The research question for the ML exercise was: “What has been the impact of treatment on shorter-term indicators in the past 2 years following baseline?”

## 2. METHODOLOGY AND LIMITATIONS

The IE of the Maharo RFSAs uses a clustered RCT design. Rather than a true control group with no intervention, however, eligible households in the control areas will receive food assistance and maternal support from CRS, and treatment areas will receive this assistance plus additional livelihood support activities, such that the estimated effect reflects the marginal impact of this additional livelihood support. The ML survey was conducted in February 2023 and took place midway between the BL survey conducted in February–March 2021, and the EL survey, which is planned for February–March 2025. A cost-effectiveness analysis, which will utilize both quantitative and qualitative methods, will also be conducted in conjunction with the EL report.

### 2.1 Evaluation Design

#### 2.1.1 Randomization and Sampling Strategy

Based on the results of the power calculations,<sup>1</sup> the evaluation team planned to sample 12–14 households in each of the 90 clusters for an approximate total of 1,203 households. This section will discuss the strategy used to sample clusters, fokontany, households, and individuals within the households. At the end of the section, a description of the operationalization of the sampling is provided.

**Cluster selection:**<sup>2</sup> The BL sample consisted of households in 196 clusters distributed in 20 different communes. The treatment assignment was done using a matched pair randomization approach: 98 of these clusters were assigned to the control group, while their associated 98 pairs were assigned to the treatment group. For the ML sample, 45 clusters were randomly selected in the control group; afterwards 45 treatment pairs associated with the control clusters were also selected. To improve the representativeness of the sample, a greater number of clusters in communes with more clusters were randomly selected, as exemplified in Table 1.

**Table 1. Commune groups and cluster sample selection in the control group**

Commune Groups	Number of Communes	Clusters to be Sampled in the Control Group
Communes with 2–6 clusters	7	1 cluster per commune
Communes with 7–13 clusters	8	2 clusters per commune in 2 communes and 3 clusters per commune in 6 communes
Communes with 14–19 clusters	4	3 clusters per commune
Commune with 20 clusters	1	4 clusters in this commune

<sup>1</sup> Power calculations can be found in the Pre-analysis Plan for the Maharo Midline report (IMPEL (2022)).

<sup>2</sup> As communes were considered too big of an administrative unit for implementation purposes and fokontany were considered too small, the unit of a cluster was created. A cluster is defined in this report as a convenient grouping of fokontany or villages that a CRS team could serve.



**Fokontany selection:** Each of the 196 clusters surveyed in the BL was composed of one to four fokontany. In the 90 clusters selected to be sampled at ML, at most two fokontany were selected. In clusters with one or two fokontany, all fokontany were selected, while in clusters with three or four fokontany, two fokontany were randomly selected. Budgetary considerations drive the decision to limit the number of fokontany per cluster to two.

Of the 196 clusters surveyed at BL, 64 clusters had only one fokontany, 91 clusters had two, and 42 clusters had three or four fokontany. Based on the sampling strategy, the total number of fokontany to be surveyed was 152 (out of 385).

**Household inclusion criteria:** Households surveyed at BL were randomly sampled in each of the selected clusters and fokontany. In clusters with one fokontany, all 12 households surveyed at BL were planned to be surveyed at ML.<sup>3</sup> While in clusters where two fokontany were selected, seven households per fokontany were randomly selected.

To sample the households, a sampling frame of the roster of households in the BL sample was used. For each selected fokontany, households in the BL roster were randomly ranked,<sup>4</sup> and the given set<sup>5</sup> of households were surveyed. Finally, if a household could not be found in the fokontany, the next ranked household was surveyed. For clusters with only one fokontany, no replacements were used, given the intention to sample all the households interviewed at BL.

**Within individual household selection:** Within sampled households, one target individual for each outcome was randomly or purposely<sup>6</sup> selected as opposed to interviewing every eligible individual. Interviewing every eligible individual in the household would have been very time-consuming and costly, not only for the household but also for data collection. Additionally, for power reasons, more than one individual per household was unnecessary and, in general, outcomes would be highly correlated within households. Generally, interviewing multiple individuals per household is most useful to compare outcomes across individuals within the same household. For example, in polygamous households, outcomes could be compared between the first and the second wife. However, given that no such analysis had been planned for ML, the benefit that the additional information would have been provided would have been limited, and ultimately, its collection would not have merited the additional costs required. Given these considerations, Table 2 provides more detail about the sampling strategy.

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<sup>3</sup> There were 64 (out of 196) clusters with only one fokontany. For these clusters, there were no replacement households available. In cases where some households were missing in these clusters, we ended up surveying less than 12 households.

<sup>4</sup> Within fokontany, each household was assigned a random number. Households were ranked by this number.

<sup>5</sup> The number of households surveyed in each fokontany varied depending on the number of fokontany in each cluster.

<sup>6</sup> This selection will be used when we want to target one person more knowledgeable about the set of questions.

**Table 2. Sampling strategy**

Module	Sampling Choice
D: Children’s Nutritional Status and Feeding Practices <sup>7</sup>	Prevalence of exclusive breastfeeding (children 0–5 months): randomly sample one child in this age range. Children’s diarrhea (children 0–59 months): randomly sample one child in this age range.
E: Women’s Health, Nutritional Status, Dietary Diversity, and Family Planning	Randomly sample one girl or woman of reproductive age (15–49 years old).
F. Water, Sanitation and Hygiene (WASH)	Select an adult familiar with household water use.
G: Agriculture	Select the adult most knowledgeable about agriculture production in the household. <sup>8</sup>
J: Gender (Cash)	Select the adult most knowledgeable about household affairs and spouse. <sup>9</sup>
K: Gender Access to Credit and Group Participation	Select the adult most knowledgeable about household affairs and spouse. <sup>10</sup>

Because only one eligible individual was interviewed per household as described above and because of changes in household composition, in some cases we cannot match an individual to their BL values for the analysis. For example, children under 6 months at BL would no longer be under 6 months of age at ML. In these cases, we use either the household or fokontany average value from the BL.

## 2.1.2 Sampling Frame and Midline Sample

The sampling frame was constructed using the list of households initially surveyed at BL. Researchers planned to survey 1,203 households at ML, out of which they effectively surveyed 1,171. In terms of the individuals within a household, the ML sample is based on the members who were reported to be part of the household at the ML survey visit. Because the BL survey took place 2 years ago, some household members left the households while new members joined (see Annex A for more details).

Some of the statistical exercises used in section three employ BL information, and it was necessary to match ML households and individuals with the corresponding BL data. Since households at BL have unique IDs, it was possible to match ML households with their BL data with 100% accuracy. Matching specific household members at ML with their BL data proved to be challenging for several reasons: lack of unique IDs for specific members, discrepancies in the way names were reported at BL and ML, recall

<sup>7</sup> Causal Design randomly selected children between 0–5 months and 0–59 months. Researchers made these selections independently of each other so that the same child could be selected twice (e.g., a child of 8 months old could be selected for both the 6–23-month age bracket and the 0–59-month age bracket).

<sup>8</sup> This selection was done by asking the household head. To address issues around ownership and control, the survey contains follow-up questions on specific individuals involved in different activities.

<sup>9</sup> In the case that the household head is not married or in a union, the questions related to a couple won’t be asked. In the case of polygamous households, we will randomly select from available wives.

<sup>10</sup> If the household head is unmarried or not in a union, researchers would not ask the questions related to a couple. In the case of polygamous households, we will randomly select from available wives.

errors in the age, and mistakes entering the gender of some participants that were not present. Using a matching methodology described in Annex D, it was possible to match 98.9% of the people surveyed at ML who were not new members.

The less-than-perfect match between BL and ML individual-level data, in addition to new members joining households, meant that for some households and indicators, it was not possible to have both BL and ML data. This is relevant for modules that were answered by a randomly or purposefully selected person at ML (Modules D, E, G, J, and K). To avoid dropping ML households without BL data, researchers employed different strategies and ran different statistical models. Section 3 presents results where information was averaged at the household level.

### 2.1.3 Questionnaire Development

The ML household questionnaire was derived from the BL questionnaire, which drew from selected BHA indicators from the BHA BL/EL Indicators Handbook. However, unlike the BL questionnaire, the ML questionnaire was shorter and focused on assessing progress toward BL and EL intermediate outcome indicators. Researchers streamlined the questionnaire in close collaboration with BHA, Implementer-Led Evaluation and Learning (IMPEL) Associate Award, and CRS. It excluded Modules H (Expenditure) and R (Resilience) as well as aspects of other modules seen excluded below. The questionnaire included the following modules:

- Module A: Household identification and informed consent
- Module B: Household roster
- Module C: Food access (Food Consumption Score (FCS) and Food Insecurity Experience Scale (FIES))
- Module D: Children’s nutrition and health (excluding anthropometry measures and Minimum Dietary Diversity (MDD) for children between 6–24 months)
- Module E: Women’s nutrition, breastfeeding, and antenatal care (ANC) (excluding questions related to family planning)
- Module F: Household water, sanitation, and hygiene (WASH)
- Module G: Agriculture (excluding questions related to yield)
- Module J: Gender–Cash
- Module K: Gender Access to Credit and Group Participation

Where required, researchers adapted the survey to the local context. Adjustments were largely introduced during enumerator training and the piloting period at the suggestion of the data collection firm.

### 2.1.4 Outcome Indicators

The modules, as well as the indicators selected, reflected discussions with USAID-BHA and the IPs based on the interventions that will be implemented by CRS in target areas. The comprehensive list of standard BHA indicators collected can be found in Table 3 below. Anthropometry data will not be collected at ML.

**Table 3. Maharo midline RFSA indicators**

BL #	Maharo RFSA Indicators	Relevant Modules
BL 6	Prevalence of moderate and severe food insecurity in the population, based on the Food Insecurity Experience Scale	C
BL 10	Percent of households with poor, borderline, and adequate Food Consumption Score	C
BL 13	Prevalence of exclusive breastfeeding of children under 6 months of age	D
BL 14	Percent of children under age five who had diarrhea in the prior 2 weeks	D
BL 15	Percent of children under five years old with diarrhea treated with Oral Rehydration Therapy	D
BL 11	Percent of women of reproductive age consuming a diet of minimum diversity	E
BL 26	Percent of births receiving at least four antenatal care visits during pregnancy	E
BL 16	Percent of households using basic drinking water services	F
BL 17	Percent of households with soap and water at a handwashing station on premises	F
BL 18	Percent of households in target areas practicing correct use of recommended household water treatment technologies	F
BL 19	Percent of households in target areas practicing open defecation	F
BL 27	Percent of households with access to a basic sanitation service	F
BL 21	Percent of producers who have applied improved management practices or technologies	G
BL 29	Percent of farmers who used financial services (savings, agricultural credit, and/or agricultural insurance) in the past 12 months	G
BL 30	Percent of farmers who practiced the value chain interventions promoted by the activity in the past 12 months	G
BL 32	Percent of women and men in a union who earned cash in the past 12 months	J
BL 33	Percent of women in union and earning cash who report participation in decisions about the use of self-earned cash	J
BL 34	Percent of women in union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash	J

BL #	Maharo RFSa Indicators	Relevant Modules
BL 35	Percent of men in union and earning cash who report spouse/partner participation in decisions about the use of self-earned cash	J
BL 41	Percent of women/men in a union who are members of a community group	K
BL 42	Percent of women/men in a union with access to credit	K
BL 43	Percent of women/men in a union who make decisions about credit	K
BL 31	Percent of households participating in group-based savings, microfinance or lending programs	R/K

Custom indicators have been added to focus on assessing outcomes that are intermediate to final EL indicators, where movement is most expected. Custom indicators were also added to adjust for the specific programming implemented and unique local context. BL17 measures if soap and water are available at a household's handwashing station. Researchers added ash to BL17 as an alternative to soap, given that Maharo programming sensitizes ash due to water scarcity in the region. New custom indicators have also been included at the request of IPs to focus on the activities of most interest, such as the seed and livestock voucher program. The seed program is universal, and the livestock voucher program is being implemented only in the treatment areas. Questions were added surrounding participation and satisfaction with the vouchers provided. Additionally, 29 of the custom indicators collected at BL that focused on gender norms will be collected again at ML at the request of IPs. Maharo's programming focuses on joint decision-making between adult men and women and equitable sharing of roles and responsibilities in the household, especially sharing household chores. Thus, these indicators will again be collected to assess the intermediary impact of these programs. All custom indicators that will be collected at ML can be found in Table 4.

**Table 4. Maharo RFSa custom midline indicators**

Maharo RFSa Custom midline Indicators
Percent of households using ash for handwashing on premises
Percent of farmers participating in livestock voucher program
Percent of farmers participating in seed program
Prevalence of adults who sit together with the opposite gender at public meetings
Prevalence of men in the village who help with childcare in the household
Percent who act as primary caregivers of the children
Prevalence of men in the village who help collect firewood or carry water for the household
Percent who primarily collect firewood for the household
Percent who primarily fetches water for the household

<b>Maharo RFS Custom midline Indicators</b>
Percent of youth (15–29) who are formally or self-employed
Percent of head of household spouses that report having input in making decisions about the amount of production of nutrient-rich crops to keep at home for household members’ consumption
Percent of head of household spouses that report having input in making decisions about the amount of animal-source foods to keep for home consumption
Percent of head of household spouses that report having input in making decisions about seeking health services when their child/ren is ill
Percent of head of household spouses that report having input in making decisions about the use of inputs (e.g., fertilizers, seeds, pesticides, compost, etc.) on the household’s family plot/plot controlled by their spouse
Percent of head of household spouses that report having input in making decisions about the use of inputs (e.g., fertilizers, seeds, pesticides, compost, etc.) on their own plot of land
Percent of head of household spouses that report having input in making decisions about how to use income generated from the sale of staple agriculture production from the household family plot/plot controlled by their spouse
Percent of head of household spouses that report having input in making decisions about how to use income generated from the sale of staple agriculture production from their own plot
Percent of head of household spouses that report having input in making decisions about how to use income generated from the sale of high-value agriculture production from the household family plot/plot controlled by their spouse
Percent of head of household spouse’s that report having input in making decisions about how to use income generated from the sale of high-value agriculture production from their own plot
Percent of head of household spouses that report having input in making decisions about what breeds to raise for livestock that they own
Percent of head of household spouses that report having input in making decisions about to sell livestock that they own themselves
Percent of head of household spouses that report having input in making decisions about how to use income generated from the sale of their own livestock (large ruminant, small ruminant poultry)
Percent of head of household spouses that report having input in making decisions about their own non-farm economic activities (running a small business, self-employment, buy-and-sell)
Percent of head of household spouses that report having input in making decisions about how to use their share-out from the savings and internal lending communities group
Percent of head of household spouses that report having input in making decisions about routine household purchases (food for daily consumption or other household needs)
Percent of head of household spouses that report having input in making decisions about use of household revenue/financial resources to purchase water for household needs (i.e., drinking, cooking, all household’s water needs)

Maharo RFSa Custom midline Indicators
Percent of head of household spouses that report having input in making decisions about use of household revenue/financial resources to purchase sanitary products or materials for household or women's needs
Percent of head of household spouses that report having input in making decisions about household building a latrine on their own land or communal land

## 2.1.5 Field Preparation

Enumerator training was conducted from January 30, 2023, to February 4, 2023, and was held in the southeastern city of Toliara. On Day 1, CRS and Causal Design staff gave presentations to enumerators to contextualize both the Maharo project and the IE. The remainder of enumerator training focused on full comprehension of each survey question and all possible responses as well as testing and finetuning the survey tool. A Research Analyst from Causal Design joined enumerator training and piloting onsite to support efforts, which streamlined clarifications and enabled the introduction of immediate adjustments to the survey tool. Piloting took place on Day 4 of training and was conducted in the fokontany of Besasavy and Ampasinbo, located just outside of Toliara city limits. Fokontany Basesavy and Ampasinbo also participated in the piloting of the BL questionnaire. Final adjustments based on piloting were then introduced followed by conclusive checks of the survey tool and all gathered data before data collection commenced.

In terms of organization, 30 field staff were organized into six teams. Each team was composed of four enumerators and one supervisor. Each team included at least one female enumerator and one male enumerator. All field staff who participated in Maharo's ML also participated in Maharo BL efforts. Additionally, two teams of supervisors oversaw the entire data collection effort and worked to resolve any logistical or technological problems, such as issues with sending the data.

## 2.1.6 Data Collection

### Overview

Data collection began on February 6, 2023, and concluded on February 25, 2023. At ML, a total of 6,462 people were surveyed across 1,171 households. An additional 634 households participated only in the attrition exercise. Slightly more households were surveyed in the control areas (597) compared to treatment areas (574). This was expected because this reflects the BL sample.

**Table 5. Planned versus actual survey numbers by CRS cluster and assignment at midline**

Number of fokontany sampled at BL	Treatment at ML				Control at ML			
	Number of clusters sampled	Number of fokontany sampled	Number of households (HHs) planned to be surveyed	Number of HHs surveyed	Number of clusters sampled	Number of fokontany sampled	Number of HHs planned to be surveyed	Number of HHs surveyed
1	18	18	215	197	10	10	120	107

Number of fokontany sampled at BL	Treatment at ML				Control at ML			
	Number of clusters sampled	Number of fokontany sampled	Number of households (HHs) planned to be surveyed	Number of HHs surveyed	Number of clusters sampled	Number of fokontany sampled	Number of HHs planned to be surveyed	Number of HHs surveyed
2	18	36	252	252	24	48	336	337
3	7	14	98	97	9	18	126	127
4	2	4	28	28	2	4	28	26
Total	45	72	593	574	45	80	610	597

The number of households sampled was lower than the number researchers planned to sample, as seen in Table 5. Researchers sampled 3.2% fewer households from the treatment group than planned. For the control group, the households sampled were reduced by 2.1%. Only five households refused to participate. The reduction in sample size was largely a result of attrition. Households attrited at an overall rate of 6.86%. Households selected to be surveyed at ML that attrited were replaced where possible, as seen in Table 6. However, there were not enough replacement households in several of the fokontany sampled to replace all the households that had attrited or refused. For this reason, the planned sample size was not achieved. No fokontany needed to be replaced at ML.

**Table 6. Number of replacement households used by CRS cluster and assignment at midline**

Number of fokontany sampled at BL	Number of treatment replacement households used at ML	Number of control replacement households used at ML
1	0	0
2	12	32
3	9	14
4	7	6
Total	28	52

## 2.2 Limitations and Challenges

### 2.2.1 Limitations

#### Limitation #1: Limited Available Sample Size of Household Members Meeting Specific Age Criteria

One of the limitations encountered was a limited available sample size of infants under 6 months and, to a lesser degree, a limited available sample size of children under 59 months, as well as of girls or women of reproductive age (WRA) (15–49 years old). From the 1,171 households surveyed at ML, researchers



surveyed 116 infants under 6 months,<sup>11</sup> 787 children under 59 months, and 878 girls or WRA. ML was a subsample of the households surveyed at BL thus the corresponding number of households selected, and the available sample size, was smaller. As the participating households were randomly sampled, not all households selected had household members that fit the criteria. Additionally, many of the children initially surveyed at BL had aged out and no longer met the age criteria of the survey. Of the households randomly sampled, 89.9% did not have any infants under 6 months. Of the households selected, 32.3% did not have any children under 5 years, and 20.3% of households did not have any girls or WRA. Households, in which no girl or WRA was interviewed, either did not have any eligible members or the WRA was away for an extended time and could not be interviewed.

## 2.2.2 Challenges

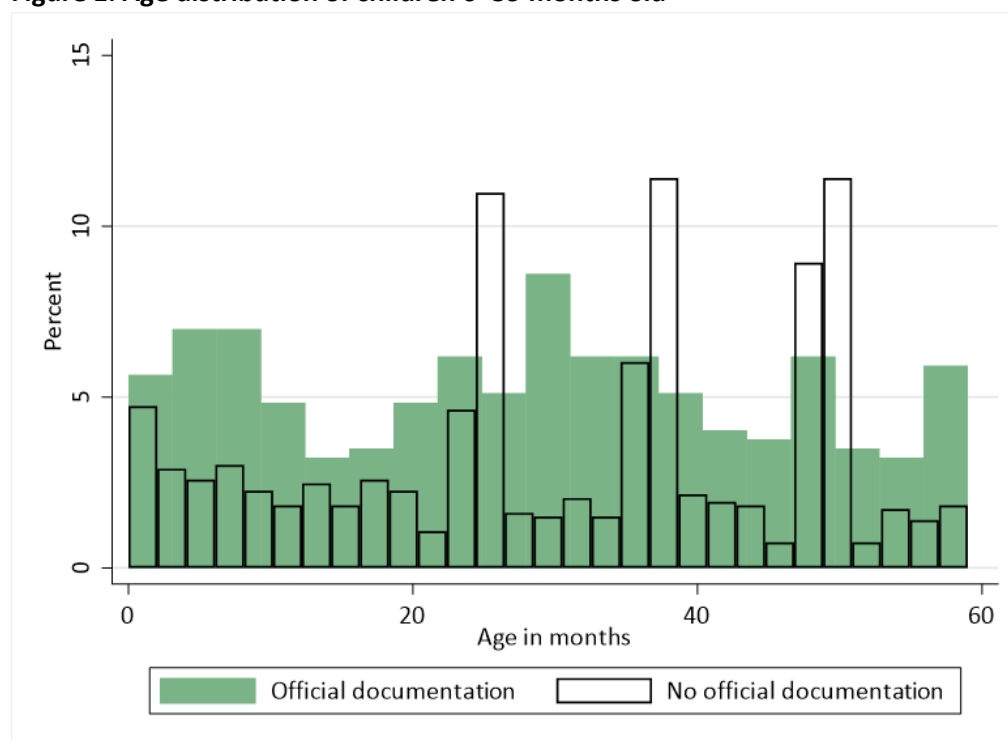
### Challenge #1: Verifying the Ages of Adult Participants

The field team found several cases where the age listed on the individual's national identity card obviously did not reflect the person's actual age. For example, one woman's national identity card listed her age as 25, yet she already had eight successive biological children, which is particularly unlikely without the occurrence of twins. Participants explained that national identity cards had been created at the request of the state, but the participants, not knowing their real date of birth, had just selected a date. No such challenge occurs with age verification for children under 5 years old, as it is now common for parents to receive a health and nutrition book for each newborn that documents their birthdate and vaccination records from a community health center. Despite this, 68% of the children did not have a vaccination/health card with the birth date recorded. In these cases, the caregiver specified the child's birthdate, and no verification was possible. Figure 1 plots the age distribution for children 0–59 months, differentiating between those with and without official documentation. The figure shows three spikes in the distribution around the ages 24–26, 36–37, and 48–49 months old for the children without official documentation. These spikes are not observed for the group of children with official documentation and are most likely related to caregivers approximating the age to years (e.g., 2 years is 24 months, 3 years is 36 months). It is thus possible that children whose age was close but less than 6 years were excluded from the sample because the caregiver specified that they were already 6 years old.

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<sup>11</sup> One child under 6 months and one child 0–59 months old per household were randomly selected among eligible household members. For a more detailed explanation of sampling, see Section 2.1.1 Sample Size and Power Calculations.

**Figure 1. Age distribution of children 0–59 months old**



### Challenge #2: Misreporting by Households

It was discovered that some participating households mistakenly believed that donations of some kind would be distributed at a later date based on BL and ML survey responses and did not respond truthfully to questions including household size, nutrition, income, and the number of livestock owned in the hope that it would result in more donations for their household. This misconception persisted despite repeated attempts on the enumerators’ behalf to explain both at BL and ML that this was not the case.

Several households tried to inflate the total number of household members at ML, hoping to receive more inputs for their household. Enumerators found that this had happened at BL as well. On several occasions, a decrease in household size occurred at ML. When enumerators probed for the reasons for household members’ departures, households admitted to introducing the names of neighbors or relatives as household members during the BL questionnaire, again, hoping that it would result in more donations for their household.

Similar motivations resulted in some households misreporting on questions related to nutrition, income, and the number of livestock owned. Hoping that it would result in more inputs for the household, some household members have falsely minimized their reporting of food consumption and income. One instance that enumerators experienced was when a household claimed to eat almost nothing, including no milk consumption, yet at the end of the survey, they gave milk to enumerators to thank them. In this instance, enumerators then went back and revised their answers to food consumption. Another case occurred when the household reported no livestock owned during the survey, yet in small talk following the completion of the survey, mentioned owning two goats. Enumerators again went back and revised the answers to the relevant questions.

### **Challenge #3: Matching Specific Household Members at Baseline to Midline**

The unique household ID enabled researchers to match ML households with their BL data with 100% accuracy. Matching specific household members at ML with their BL data proved to be more challenging for several reasons: lack of unique IDs for specific members, discrepancies in the way names were reported at BL and ML, recall errors in the age, and mistakes entering the gender of some participants that were not present.

ML individuals who were not specified as being new members were matched with BL members in ML households not specified as missing, using the name, gender, age, and position in the household followed by a manual check. Out of 5,308 people surveyed at ML who were not new members, it was possible to match 5,245 (98.9%) with their BL observations.

### 3. IMPACTS OF THE MAHARO ACTIVITY

This section presents the main findings of the 2023 Maharo ML survey. The main objective of the section is to understand the progress of the Maharo program over the past 2 years since the BL survey in 2021. Each subsection contains tables with the average values of the outcome variables for treatment and control households. To test the difference in outcomes for indicators between treatment and control for statistical significance, the last column includes the coefficient from an analysis of covariance (ANCOVA) regression. This method is preferred to a standard t-test because it allows us to control for BL values. The full ANCOVA results are included in the annex. We omit ANCOVA results for certain subgroups when the number of observations is low. When the outcome is the percentage of households or individuals, the ANCOVA coefficient is interpreted as the percentage point difference between treatment and control. When the outcome is a count or index, the ANCOVA coefficient represents the number of units that treatment increases or decreases the outcome. We have included stars indicating when a difference is statistically significant.

Important contextual factors to consider when interpreting the impact of the Maharo RFSAs include the recent drought, “*soudure*” or lean season, the misrepresentation of data by participants, and the higher level of indicators. The southeastern region of Madagascar experienced a prolonged drought due to scarce rainfall from 2020–2022. The lack of rainfall significantly challenges food security by affecting water access and agricultural and livestock yields. Maharo staff report that as of 2023, the drought is easing. Results at the ML were still impacted by the drought; however, the increase in rain should be reflected in the EL results. Data collection of BL and ML occurred during “*soudure*,” when consumption levels are at their lowest at this time of the year. As discussed in Section 2.2, despite enumerators’ insistence that household survey responses do not affect the level of support given, households may underreport their consumption in the hope that it will yield more inputs to their households. Finally, many indicators are at a higher level where CRS staff do not yet expect to capture progress.

#### 3.1 Characteristics of the Study Population

This section provides the basic demographic information for the ML sample. As mentioned previously, 1,171 of the 4,595 households in the BL survey were surveyed at ML. Table 7 shows that, in terms of household characteristics, the ML sample is balanced. Annex C: Midline as a Representative Sample of Baseline presents further findings of balance tests comparing the sample of the households selected at ML and the sample of households not selected and demonstrates the representativeness of the ML sample compared to the BL sample.

**Table 7. Household-level characteristics**

Outcome	N	Control	N	Treatment
Average household size	597	5.466	574	5.573
Average age of household head	595	44.476	573	44.299
Average number of children (under 5 years) in the household	597	1.104	574	1.141

Outcome	N	Control	N	Treatment
Percent of children (under 5 years) in the household	597	19.622	574	20.88
Percent of children (5–14 years old) in the household	597	34.822	574	34.898
Percent of young people (15–29 years old) in the household	597	21.582	574	21.884
Percent of female in the household	597	54.554	574	53.193
Percent of WRA in the household	597	18.946	574	19.288
Percent of households with at least one WRA	597	79.062	574	80.314
Percent of household members that are farmers (over 15 years old)	597	66.895	574	67.595
Percent of households with at least one farmer	597	98.827	574	98.955
Percent of households with adult male and female present	597	70.017	574	71.08
Percent of households with adult male only	597	4.355	574	2.091
Percent of households with adult female only	597	25.628	574	26.829

## 3.2 Food Security

This section presents findings on household food security. The first indicator in this section is the prevalence of food insecurity, which is measured using the FIES developed by the Food and Agriculture Organization (FAO) of the United Nations. The eight questions that make up the FIES are presented in Table 8 and Figure 2.

The responses look very similar in both treatment and control areas and reflect the ongoing drought and poor harvests. The general trend shows that the treatment households tended to report slightly fewer of these problems, but only the fourth question shows a statistically significant difference—fewer households report having to skip a meal in treatment areas.

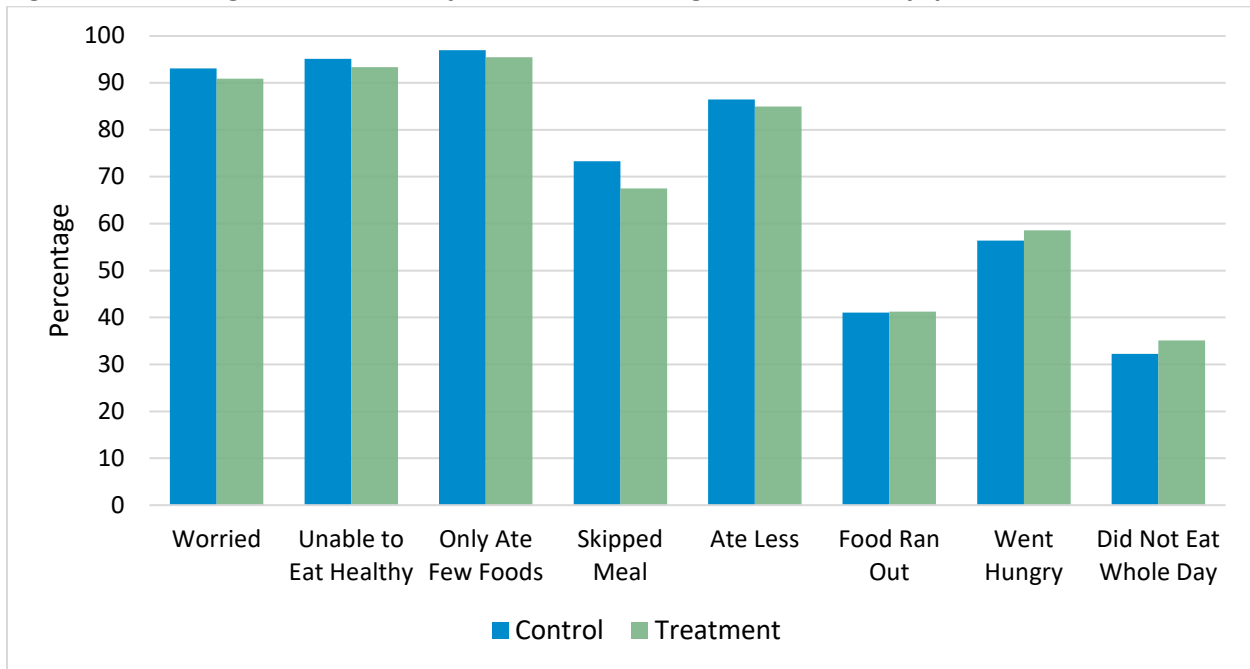
The responses suggest that the area is still dealing with a severe food security crisis. More than 90% of households answered yes when asked about not having enough food to eat, being unable to purchase healthy foods, and limiting the types of foods consumed. Roughly a quarter of households answered yes to all questions, and only 1% of the sample surveyed did not have any food insecurity concerns.

**Table 8. Responses to Food Insecurity Experience Scale questions**

Outcome	N	Control	N	Treatment	Estimated effect of Treatment †
1. Were worried you would not have enough food to eat because of a lack of money or other resources?	592	93.1	572	90.9	-2.5
2. Were unable to eat healthy and nutritious food because of a lack of money or other resources?	592	95.1	572	93.4	-2.1
3. Ate only a few kinds of foods because of a lack of money or other resources?	592	97.0	572	95.5	-1.8
4. Had to skip a meal because there was not enough money or other resources to get food?	592	73.3	572	67.5	-6.3*
5. Ate less than you thought you should because of a lack of money or other resources?	592	86.5	572	85.0	-1.6
6. Did not have food because of a lack of money or other resources?	592	41.0	572	41.3	-0.8
7. Were hungry but did not eat because there was not enough money or other resources?	592	56.4	572	58.6	2.2
8. Went without eating for a whole day because of a lack of money or other resources?	592	32.3	572	35.1	2.8
Raw FIES score (scale 0 to 8)	592	5.7	572	5.7	-0.1
Percent of households that answered yes to all eight questions	592	22.5	572	26.6	3.6
Percent of households that answered no to all eight questions	592	0.8	572	1.2	0.6

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*  $p < 0.1$ . For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

**Figure 2. Percentage that answered yes to each of the eight food insecurity questions**



The responses to the questions are analyzed by estimating a Rasch model using tools developed by the FAO, which allows for the estimation of the prevalence of food insecurity<sup>12</sup> (seen in Table 9). The prevalence of severe food insecurity is around 38%. The prevalence of moderate or severe food insecurity is 88% in control areas and slightly lower in treatment areas, but the differences are not statistically significant.

**Table 9. Prevalence of severe and moderate food insecurity**

Outcome	Control (%)	Treatment (%)	Estimated effect of treatment †
BL 6. Prevalence of severe food insecurity in the household, based on the Food Insecurity Experience Scale	38.4	39.0	0.2
BL 6. Prevalence of moderate or severe food insecurity in the household, based on the Food Insecurity Experience Scale	88.5	85.7	-3.0

The second indicator is the percentage of households with poor, borderline, and acceptable FCS. This is a weighted sum of eight food groups consumed by the household in the previous seven days. Scores below 22 are considered to be a poor consumption score, scores 22–35 are considered borderline, and

<sup>12</sup> The thresholds used were suggested in FAO (N.d.) Some indication of food insecurity corresponds to FIES scores of one or more, moderate or severe food insecurity corresponds to FIES scores of four or more, and severe food insecurity corresponds to FIES scores of seven or eight.

acceptable scores are above 35. Roughly 60% of households have an acceptable consumption score. 10% of both treatment and control households have poor consumption scores (seen in Table 10).

**Table 10. Food Consumption Score**

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
Food Consumption Score (0–112)	582	40.7	560	42.4	1.0
BL 10. Percent of households with poor consumption score (< 22)	582	9.8	560	9.8	0.8
BL 10. Percent of households with borderline consumption score (22–35)	582	31.1	560	29.5	-1.3
BL 10. Percent of households with acceptable consumption score (> 35)	582	59.1	560	60.7	0.7

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

### 3.3 Child Nutrition and Health

This section presents findings on child nutrition and health, covering aspects around breastfeeding practices and the incidence of diarrhea. Minimum Acceptable Diet and anthropometric measures were not collected at ML.

- Breastfeeding practices are summarized in Table 11. Exclusive breastfeeding of children under 6 months is higher in treatment areas (62% compared to 48%), but this difference is not statistically significant, likely because of the small sample size.

**Table 11. Breastfeeding practices**

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
BL 13. Prevalence of exclusive breastfeeding of children (under 6 months)	71	47.9	45	62.2	18.4
BL 13. Prevalence of exclusive breastfeeding of male children (under 6 months)	33	45.5	23	60.9	NA
BL 13. Prevalence of exclusive breastfeeding of female children (under 6 months)	38	50.0	22	63.6	NA

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . NA = Not estimated. For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.



The percentage of children with diarrhea in the previous 2 weeks is similar across the two groups (Table 12). Through Care Groups, Lead Mothers teach other mothers to treat diarrhea with a homemade oral rice-based rehydration solution made of boiled water, salt, and sugar. The percentage of female children treated with Oral Rehydration Therapy is slightly lower in treatment areas. A slightly higher percentage of male children received Oral Rehydration Therapy in treatment areas. These effects are not statistically significant. Maharo staff report that a limiting factor to the delivery of Oral Rehydration Therapy is the lack of access to potable water; households in certain districts do not have enough water even to give children a homemade oral rice-based rehydration solution.

**Table 12. Infant and child health indicators**

Outcome	N	Control	N	Treatment	Estimated effect of treatment <sup>†</sup>
BL 14. Percent of children under 5 (0–59 months) who had diarrhea in the prior 2 weeks	397	42.8	390	41.5	-1.6
BL 14. Percent of male children under 5 (0–59 months) who had diarrhea in the prior 2 weeks	190	42.6	198	37.9	-5.3
BL 14. Percent of female children under 5 (0–59 months) who had diarrhea in the prior 2 weeks	207	43.0	192	45.3	1.3
BL 15. Percent of children under 5 (0–59 months) with diarrhea treated with Oral Rehydration Therapy	170	19.4	162	14.8	-3.5
BL 15. Percent of male children under 5 (0–59 months) with diarrhea treated with Oral Rehydration Therapy	81	14.8	75	17.3	-4.2
BL 15. Percent of female children under 5 (0–59 months) with diarrhea treated with Oral Rehydration Therapy	89	23.6	87	12.6	-12.3

<sup>†</sup> Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

### 3.4 Women’s Nutrition and Prenatal Care

This section covers the nutrition of girls and WRA and ANC. Table 13 shows that women in treatment areas had both a higher dietary diversity score and were more likely to consume a diet of minimum diversity. WRA in treatment areas have both a higher dietary diversity score and are more likely to meet the threshold for an MDD. The Dietary Diversity Score is, on average, 0.20 points higher for women in treatment areas, which is a 6% improvement. The higher dietary diversity results in women being 6.4 percentage points more likely to consume a diet considered to be diverse. Annex A. ANCOVA Results for the Indicators includes an additional table to explore how selected food categories that make up the MDD might be driving the overall impact on the score. The three categories showing significant

differences between treatment and control are dairy, meat, and other vitamin A-rich fruits and vegetables, seen in Figure 3.

Based on Maharo monitoring data, treatment participants are taking up dietary diversification through support and services provided by Care Groups and Community Health Promoters, reflected in the increase detected in WRA’s dietary diversification. While there has been intermediary progress, their household’s overall food security situation has not yet changed, reflected in the lack of movement seen in Section 3.2’s higher-level food security indicators.

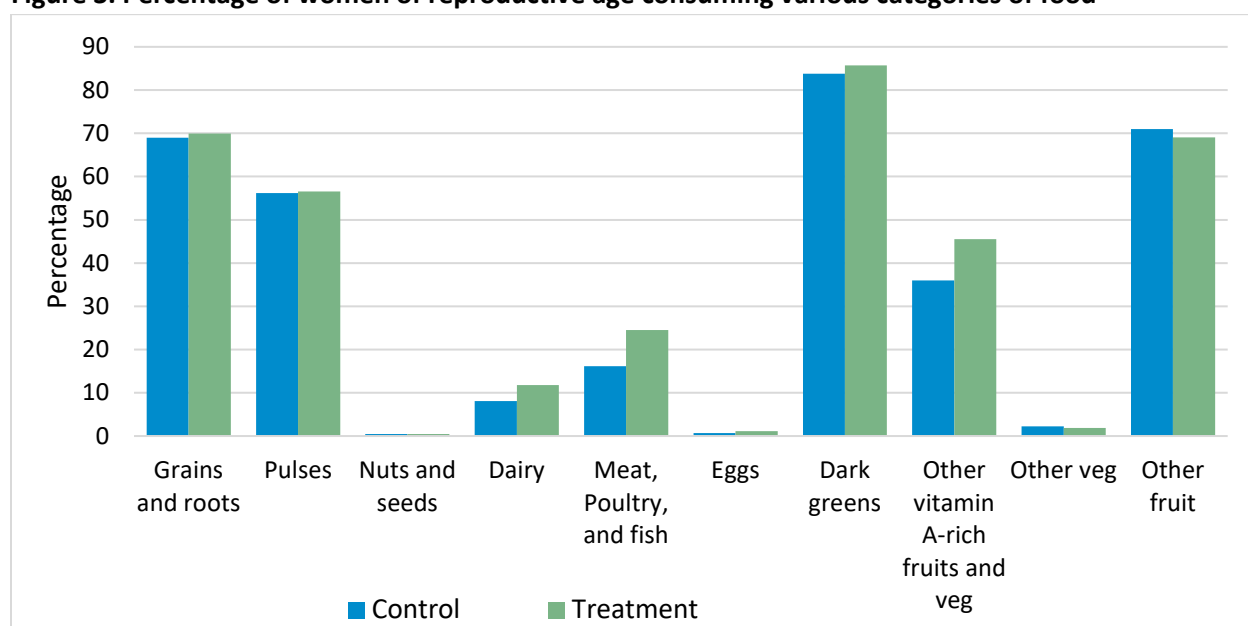
Additionally, the control group is not a pure control group. Some nutrition support services are implemented in control areas. For example, control zones receive gluten-free diets, gluten-free cooking demonstrations, and referrals for children suffering from severe and acute malnutrition. However, they do not receive the full package of Maternal Child Health and Nutrition, health services, or the Social and Behavioral Change programming as treatment areas do.

**Table 13. Women’s nutrition and antenatal care**

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
Dietary Diversity Score	445	3.4	433	3.7	0.2**
BL 11. Percent of women of reproductive age consuming a diet of minimum diversity	445	16.6	433	24.3	6.1**
BL 26. Percent of births receiving at least four ANC visits during pregnancy	331	51.7	329	58.1	-3.5

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*  $p < 0.05$ . For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

**Figure 3. Percentage of women of reproductive age consuming various categories of food**



### 3.5 Water, Sanitation, and Hygiene Practices

The percentage of households using basic drinking water services is an indicator defined by the following criteria: (1) having access to an improved water source, such as a public tap or protected well, (2) having that source within 30 minutes round-trip from the home, (3) having that source available year-round, and (4) accessing at least 20 liters of water per person per day.<sup>13</sup> Fewer than 1% of the households satisfy the four criteria (BL16 in Table 14). While most households have year-round access to water, collecting water requires more than a 30-minute trip for most households, and estimated water consumption is well below the recommended 20 liters. Very few households have soap or ash and water available for handwashing (BL 17). Around one-third of households properly treat water for drinking. There are no notable differences between treatment and control for BL 16–18. CRS has only built two sand dams and installed water infrastructure in a few limited areas, which could explain the smaller impact seen thus far. The last column in the table shows the estimated effect of treatment on the main WASH outcomes. 20% of control households practice open defecation, while 11% of treatment households practice open defecation. Households are nine percentage points less likely to practice open defecation in treated areas. There is no significant difference between treatment and control areas in the other outcomes.

**Table 14. Water, sanitation, and hygiene outcomes**

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
BL 16. Percent of households using basic drinking water services	588	0.85	564	0.88	-0.5 <sup>14</sup>
Percent of households with water available year-round	596	78.7	573	74.2	-3.9
Percent of households using an improved drinking water source	597	27.0	574	27.9	0.7
Percent of households able to fetch water in 30 minutes or less	597	19.3	573	16.8	-3.7
Per capita volume of water a household draws per day	589	7.6	566	7.8	0.1 <sup>15</sup>

<sup>13</sup> Due to a CAPI error at BL, the last variable was not collected for all the households. The estimated effect of treatment on BL16 (Table 14) was computed using only the 528 ML households (out of 1,170) that had information for water per person per day at BL.

<sup>14</sup> The ANCOVA regressions for this variable were run on the subsample of households (528 out of 1,170) that had information for the BL16 indicators.

<sup>15</sup> The ANCOVA regressions for this variable were run on the subsample of households (528 out of 1,170) that had information for water consumption.

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
Percentage of households consuming at least 20 liters per day per person of water	589	6.3	566	5.5	-1.8 <sup>16</sup>
BL 17. Percent of households with soap or ash, and water at a handwashing station	597	0.3	574	1.0	1.0
BL 18. Percent of households in target areas practicing correct use of recommended household water treatment technologies	597	32.2	574	33.6	1.3
BL 19. Percent of households practicing open defecation	597	48.6	574	40.9	-9.1**
BL 27. Percent of households with access to a basic sanitation service	597	9.0	574	12.5	3.4

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*  $p < 0.05$ . For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

## 3.6 Agriculture

The ML focused on a narrow set of agricultural interventions and the targeted crops and livestock. Overall, the ML survey finds substantial changes for farmers in treatment areas. Table 15 presents the findings related to crop and livestock activities. A higher percentage of households in treatment areas use financial services, particularly savings. The estimation results show that farmers are five percentage points more likely to use financial services. This result primarily comes through savings. Farming households are nearly 13 percentage points more likely to save. Farming households in treatment areas are 34 percentage points more likely to practice the value chain interventions promoted by the IP. There were no significant differences across treatment arms for cowpeas either at BL or ML. In the case of sorghum, around 69% of farming households grew the crop in treatment areas compared to 55.2% in control areas.

Figure 4 also presents results associated with the use of improvement practices for crops. Farming households in treatment areas are nearly eight percentage points more likely to use an improved management practice for cassava and five percentage points more likely for cowpea. They are 11 percentage points more likely to grow sorghum. The increase in sorghum adoption is particularly important and demonstrates that efforts to encourage households to grow this drought-tolerant crop have been successful. They use improved sorghum management practices at higher rates, but the effect is not statistically significant. Table 18 presents the reported usage of specific improved practices where a significant difference between treatment and control areas was found. The three improved practices

<sup>16</sup> The ANCOVA regressions for this variable were run on the subsample of households (528 out of 1,170) that had information for water consumption.

use of improved seeds, soil cover, and use of row-cropping techniques are used at higher rates for all three crops in treatment areas.

For the targeted livestock (goats and poultry), there were no significant differences in the percentage of those raising these animals. Improved practices for goats included improved shelter, vaccinations, antiparasitic treatments, castration, dehorning, improved fodder production, purchase of commercial animal feed, and selective breeding. Treated households are somewhat more likely to adopt improved practices for goats, but the effect is not statistically significant. For poultry, improved management practices included the use of improved poultry varieties or breeds, use of improved feed, use of improved shelters, vaccination, and use of veterinary products or services. Farm households are eight percentage points more likely to adopt improved management practices for poultry.

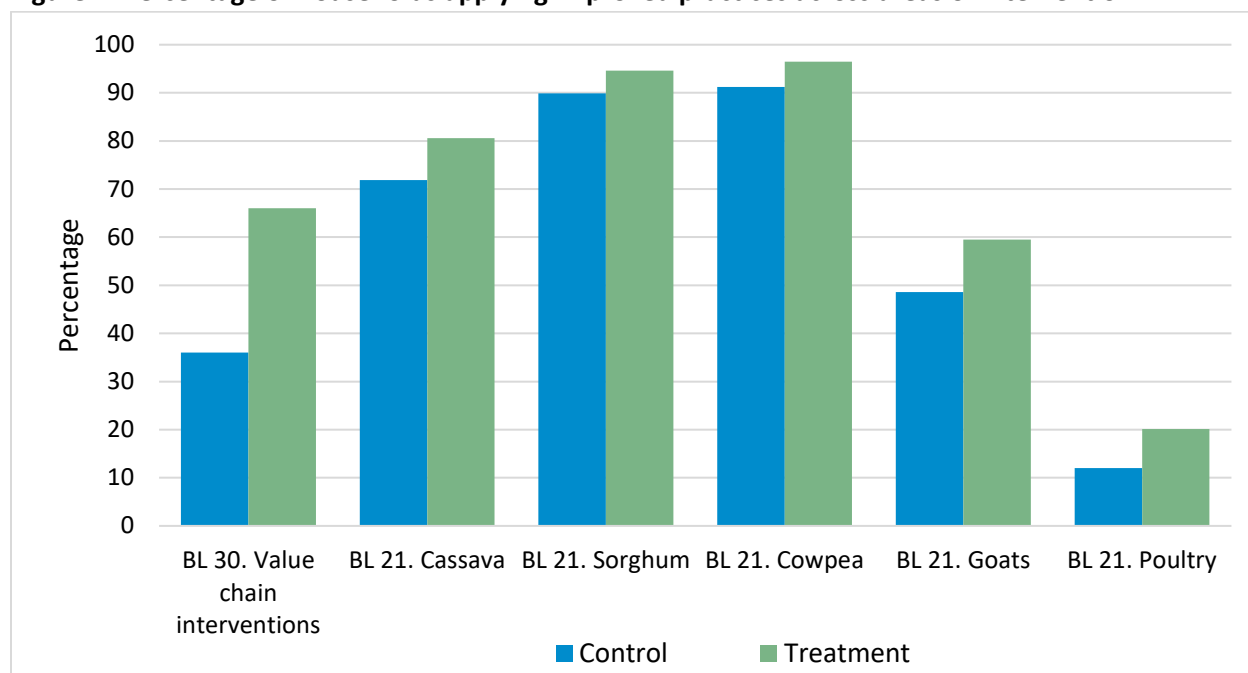
**Table 15. Crop and livestock**

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
BL 29. Percent of farmers who used financial services (savings, agricultural credit, and/or agricultural insurance) in the past 12 months	583	41.9	564	47.0	5.0*
Percent of farming households using agricultural credit	583	35.0	564	33.9	-1.4*
Percent of farming households who saved	583	15.3	564	28.2	12.9***
Percent of farming households using insurance	583	0.0	564	0.0	NA
BL 30. Percent of farmers who practiced the value chain interventions promoted by the activity in the past 12 months	239	36.0	209	66.0	34.3***
Percent of farming households growing cassava	576	81.6	562	81.5	-0.1
BL 21. Percent of producers who have applied targeted improved management practices or technologies (cassava)	470	71.9	458	80.6	7.7*
Percent of farming households growing sorghum	576	55.2	562	69.0	11.5***
BL 21. Percent of producers who have applied targeted improved management practices or technologies (sorghum)	318	89.9	388	94.6	8.1
Percent of farming households growing cowpea	576	96.9	562	96.8	-0.4

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
BL 21. Percent of producers who have applied targeted improved management practices or technologies (cowpea)	558	91.2	544	96.5	4.9**
Percent of farming households raising goats	584	36.6	564	38.1	2.2
BL 21. Percent of producers who have applied targeted improved management practices or technologies (goats)	214	48.6	215	59.5	8.9
Percent of farming households raising poultry	584	63.0	564	65.2	1.1
BL 21. Percent of producers who have applied targeted improved management practices or technologies (poultry)	368	12.0	368	20.1	8.2**

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . NA= Not estimated. For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

**Figure 4. Percentage of households applying improved practices across areas of intervention**



The specific value-chain interventions adopted can be found in Table 16. For crops, treatment farmers are more likely to purchase inputs, use extension services, market products through formal chains, sell products, adopt new techniques, and use pest control. For livestock, treatment farmers use selective breeding, veterinary services, and improved shelters.

**Table 16. Use of specific value chain interventions<sup>17</sup>**

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
Crops					
Purchase inputs for crops	239	13.389	209	20.574	2.8
Use of training and extension services	239	6.695	209	17.225	14.8**
Contract farming	239	0	209	0	0
Drying produce	239	2.51	209	3.349	1
Processing produce	239	0	209	0	0
Trading or marketing produce through agro-dealers and/or community associations	239	0.837	209	0.957	1.4
Adoption of new farming technique	239	4.603	209	20.574	17.5***
Sale of products	239	5.439	209	11.483	4.9
Control of pests	239	7.113	209	20.574	15.0***
Livestock					
Purchase inputs for livestock	583	1.544	564	2.128	-1.7
Use of training and extension services	583	0.515	564	2.128	2.2
Use of formal marketing systems for livestock	583	0	564	0	0
Contract farming	583	0	564	0	0
Animal care	583	6.346	564	10.106	7.8
Breed improvement	583	0.172	564	0.532	1.3
Habitat improvement	583	1.201	564	6.206	7.3***

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

Table 17 shows that a similar percentage of farming households at BL and ML grew cassava or raised goats. For sorghum and cowpeas, a larger share of farming households grew those crops in ML than in BL, with sorghum experiencing an increase of more than 50 percentage points and cowpeas one of around 20 percentage points.

<sup>17</sup> For the variables control of pests, adoption of new farming technique, sale of products, animal care, breed improvement, and habitat improvement, no BL values are included because these categories were not present at BL.

**Table 17. Percentage of farming households growing the three target crops or raising goats and poultry (baseline, midline comparisons)**

Outcome	Baseline		Midline		Estimated effect of treatment †
	N	Mean	N	Mean	
Crops					
Percent of farming households growing cassava	1,017	75.14	1,138	81.54	-1.8
Percent of farming households growing sorghum	1,017	11.02	1,138	62.03	10.9***
Percent of farming households growing cowpeas	1,017	75.17	1,138	96.83	0.1
Livestock					
Percent of farming households raising goats	1,088	41.63	1,148	37.36	2.8
Percent of farming households raising poultry	1,088	56.02	1,148	64.11	4.3

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*\*  $p < 0.01$ . For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

**Table 18. Use of improvement management practices for crops<sup>18</sup>**

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
Cassava					
Organic manure	470	1.915	458	4.585	3.9*
Crop association	470	57.234	458	64.629	6.9
Use of improved seeds	470	3.617	458	10.044	6.5***
Soil cover	470	1.489	458	2.838	1.8*
Use of row-cropping technique	470	0.851	458	3.712	2.8**
Cowpea					
Use of improved seeds	558	18.459	544	42.831	26.8***
Wind break	558	22.939	544	28.309	4.7
Soil cover	558	1.613	544	4.412	1.8**

<sup>18</sup> For the variables, soil cover, use of traditional methods of pest control, use of non-traditional pest control, use of row-cropping technique, use of polyculture technique, and use of chemical weedkiller, no BL values are included because these categories were not present at BL for either cassava, sorghum, or cowpea.



Outcome	N	Control	N	Treatment	Estimated effect of treatment †
Use of non-traditional methods of pest control	558	3.047	544	6.985	3.5**
Use of row-cropping technique	558	4.122	544	7.169	3.6**
Sorghum					
Use of improved seeds	318	22.013	388	44.845	36.0***
Soil cover	318	1.258	388	4.639	2.5
Use of non-traditional methods of pest control	318	1.887	388	6.701	4.4**
Use of row-cropping technique	318	3.774	388	9.536	7.8***

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

The Maharo RFSa includes two significant agricultural initiatives. The first is a livestock voucher program to purchase either poultry or goats. This program was delivered exclusively in treatment areas. The second was a seed program that covered both treatment and control areas to help replenish seed stock depleted during the drought. Approximately 8% of treatment households reported receiving a livestock voucher, compared to 1% of control households. It is not clear how households in control areas could access these, but generally, the program clearly reached treatment areas. Although the Maharo Seed Program Private Input Service Provider (PiSP) was not limited to treatment areas, participation was roughly double that of control areas.

**Table 19. CRS livestock and seed programs<sup>19</sup>**

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
Percent of farming households that received a voucher for livestock through Maharo	584	1.027	564	8.156	7.1***
Percent of farming households receiving a voucher for livestock through Maharo and who chose poultry	6	83.333	46	41.304	-26.1
Percent of farming households receiving a voucher for livestock through Maharo and who chose goats	6	16.667	46	54.348 <sup>20</sup>	26.1

<sup>19</sup> No BL values were included because questions were not asked at BL.

<sup>20</sup> There were two households that answered they received a voucher through Maharo, but that didn't specify if they used it to buy poultry or goats. This is the reason why the shares don't add up to one.

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
Percent of farming households receiving a voucher for livestock through Maharo and who still have it	6	33.333	44	75	47.8
Percent of farming households that purchased seeds using the services provided by Maharo PiSP program	584	43.151	564	86.879	44.0***

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

### 3.7 Gender Dynamics

The module on gender dynamics asks questions of households in which a couple, a man and woman in a union, earns cash. The questions primarily relate to who makes and/or participates in various financial decisions. CRS added a set of custom questions on other household decisions. When categories have low numbers of observations when disaggregated by age, the ANCOVA results are omitted. Table 20 shows the percentage of individuals reporting earning cash. This is lower for women (44%) than for men (69%). For both men and women combined, there are fewer individuals in treatment who report earning cash. This difference is similar (7 percentage points lower in treatment) for both men and women.

**Table 20. Cash earners by gender and age**

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
BL 32. Percent of women and men in a union who earned cash in the past 12 months	606	59.4	562	53.2	-6.9*
Percent of men married or in a union who earned cash in the past 12 months	298	72.1	274	65.7	-7.0
Percent of women married or in a union who earned cash in the past 12 months	308	47.1	288	41.3	-7.2
Percent of women married or in a union who earned cash in the past 12 months (15–19)	17	29.4	16	43.8	NA
Percent of women married or in a union who earned cash in the past 12 months (20–29)	110	46.4	114	48.2	4.3
Percent of women married or in a union who earned cash in the past 12 months (30–49)	131	53.4	100	41.0	-14.1
Percent of men married or in a union who earned cash in the past 12 months (20–29)	60	85.0	62	82.3	2.1

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
Percent of men married or in a union who earned cash in the past 12 months (30+)	238	68.9	212	60.8	4.7

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . NA = Not estimated. For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

The next table shows how participants make decisions about using earned cash. Nearly all women (96% for control households and 98% for treatment) report participating in decisions about the use of the cash they earn. Interestingly, a lower percentage of men report participating in decisions about the use of their self-earned cash. None of the differences are statistically significant.

**Table 21. Participation of women in decisions about the use of self-earned cash**

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
BL 33. Percent of women in a union and earning cash who report participation in decisions about the use of self-earned cash	145	95.9	119	97.5	0.8
Percent of women in a union and earning cash who report participation in decisions about the use of self-earned cash (15–19)	5	80.0	7	85.7	NA
Percent of women in a union and earning cash who report participation in decisions about the use of self-earned cash (20–29)	51	98.0	55	96.4	NA
Percent of women in a union and earning cash who report participation in decisions about the use of self-earned cash (30–49)	70	94.3	41	100.0	NA
Percent of men in a union and earning cash who report participation in decisions about the use of self-earned cash	215	87.9	180	85.6	6.0

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . NA = Not estimated. For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

Regarding decisions about the husbands' cash earnings (Table 22), there are large gender differences in perceived participation. Around 65% of women overall report participating in decisions about their husbands' earnings while 83% of men report that their wives participate in these same decisions. Again, none of these differences is statistically significant, and there are no clear patterns showing a potential impact of treatment.

**Table 22. Participation of women in decisions about the use of spouse's earned cash**

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
BL 34. Percent of women in a union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash	145	66.2	119	63.0	1.2
Percent of women in a union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash (15–19)	5	60.0	7	100.0	NA
Percent of women in a union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash (20–29)	51	74.5	55	70.9	-25.0
Percent of women in a union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash (30–49)	70	67.1	41	53.7	10.3
BL 35. Percent of men in a union and earning cash who report spouse/partner participation in decisions about the use of self-earned cash	215	81.4	180	85.6	4.2
Percent of men in a union and earning cash who report spouse/partner participation in decisions about the use of self-earned cash (20–29)	51	76.5	51	80.4	-13.2
Percent of men in a union and earning cash who report spouse/partner participation in decisions about the use of self-earned cash (30+)	164	82.9	129	87.6	4.0

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . NA = Not estimated. For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

### 3.7.1 Access to Financial Services

This section covers access to financial services for men and women in a union. Only 46% of households report using credit (Table 23). This is higher for younger age groups of both genders. Women report making decisions about credit use at much lower rates than men (BL 43). The last rows of the table show that a higher percentage of treatment households report borrowing from non-governmental organizations (NGOs), Village Savings and Loans Associations (VSLAs), or Savings and Credit Cooperative Society (SACCOs), and saving with group-based savings programs. The results suggest that treatment increased participation in borrowing from NGOs, VSLAs or SACCOs, group-based savings, and group-based savings, microfinance, or lending programs. Specifically, participation in the group-based financial programs was 11 percentage points higher in treatment areas, and borrowing was seven percentage points higher.

**Table 23. Access to credit by gender and age<sup>21</sup>**

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
BL 42. Percent of women/men in a union with access to credit	606	45.4	562	46.4	0.8
Percent of men married or in a union who have access to credit	298	49.3	274	50.0	2.7
Percent of men married or in a union who have access to credit (20–19)	60	50.0	62	56.5	6.8
Percent of men married or in a union who have access to credit (30–49)	147	56.5	118	51.7	0.0
Percent of men married or in a union who have access to credit (50+)	91	37.4	94	43.6	13.8
Percent of women married or in a union who have access to credit	308	41.6	288	43.1	-0.7
Percent of women married or in a union who have access to credit (15–19)	17	29.4	16	37.5	NA
Percent of women married or in a union who have access to credit (20–29)	110	46.4	114	50.0	3.3
Percent of women married or in a union who have access to credit (30–49)	131	42.0	100	43.0	0.8
Percent of women married or in a union who have access to credit (50+)	50	34.0	58	31.0	-9.7
Percent of men and women married or in a union who report making the borrowing decision	275	38.2	261	37.5	-7.0
BL 43. Percent of men in a union who make decisions about credit	147	49.0	137	46.7	-21.1
Percent of men married or in a union who report making the borrowing decision (20–29)	30	56.7	35	48.6	NA
Percent of men married or in a union who report making the borrowing decision (30–49)	83	50.6	61	54.1	NA

<sup>21</sup> It was not possible to construct indicator BL41, because the associated questions were mistakenly omitted from the survey tool.

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
Percent of men married or in a union who report making the borrowing decision (50+)	34	38.2	41	34.1	NA
BL 43. Percent of women in a union who make decisions about credit	128	25.8	124	27.4	16.6
Percent of women married or in a union who report making the borrowing decision (15–19)	5	0.0	6	16.7	NA
Percent of women married or in a union who report making the borrowing decision (20–29)	51	19.6	57	28.1	NA
Percent of women married or in a union who report making the borrowing decision (30–49)	55	30.9	43	25.6	NA
Percent of women married or in a union who report making the borrowing decision (50+)	17	35.3	18	33.3	NA
BL31 Percent of men and women married or in a union who participate in group-based savings, micro-finance, or lending programs	605	13.1	562	23.7	11.3*
Percent of men and women married or in a union who took loans or borrowed from NGOs, VSLAs or SACCOs	606	8.3	562	13.5	6.6*
Percent of men and women married or in a union who participate in group-based saving programs	605	8.3	562	18.7	11.1***

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . NA = Not estimated. For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

### 3.7.2 Additional Decision-Making Areas

The following custom questions concern the input of the wife of the household head in making a range of decisions affecting the household. The responses are very similar between households in treatment and control areas. The areas with the highest rates of reported input are decisions regarding routine household purchases, the purchase of sanitary products or materials for household or women's needs, and seeking health services for sick children. The ANCOVA results confirm that there are no statistically significant differences between the two groups. Using only information from the ML survey, it is impossible to understand why treatment and control groups show no differences. Additional

information from the IPs and field teams will be important to enhance the understanding of these results.

**Table 24. Input of wife of household head into household decisions**

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
1. Percent of head of household spouse's that report having input in making decisions about the amount of production of nutrient-rich crops to keep at home for household members' consumption	302	94.0	279	95.7	1.2
2. Percent of head of household spouse's that report having input in making decisions about the amount of animal-source foods to keep for home consumption	229	85.2	225	84.0	-5.9
3. Percent of head of household spouse's that report having input in making decisions about seeking health services when their child/ren is ill	300	94.7	282	95.7	2.1
4. Percent of head of household spouse's that report having input in making decisions about the use of inputs, e.g., fertilizers, seeds, pesticides, compost, etc., on the household's family plot/plot controlled by their spouse	290	84.8	275	87.3	-2.9
5. Percent of head of household spouse's that report having input in making decisions about the use of inputs, e.g., fertilizers, seeds, pesticides, compost, etc., on their own plot of land	196	95.4	181	92.8	-0.1
6. Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of staple agriculture production from the household family plot/plot controlled by their spouse	229	88.6	222	87.8	-3.7
7. Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of staple agriculture production from their own plot	160	93.8	148	96.6	-4.6

Outcome	N	Control	N	Treatment	Estimated effect of treatment †
8. Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of high-value agriculture production from the household family plot/plot controlled by their spouse	217	79.3	214	85.5	3.9
9. Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of high-value agriculture production from their own plot	162	85.2	143	88.8	2.7
10. Percent of head of household spouse's that report having input in making decisions about what breeds to raise for livestock that they own	167	91.0	163	93.9	-0.6
11. Percent of head of household spouse's that report having input in making decisions about to sell livestock that they own themselves	146	94.5	135	95.6	1.8
12. Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of their own livestock (large ruminant, small ruminant poultry)	168	86.9	162	84.0	2.1
13. Percent of head of household spouse's that report having input in making decisions about their own non-farm economic activities (running a small business, self-employment, buy-and-sell)	241	92.1	205	90.7	-1.1
14. Percent of head of household spouse's that report having input in making decisions about how to use their share-out from the savings and internal lending communities group	58	91.4	86	86.0	0.0
15. Percent of head of household spouse's that report having input in making decisions about routine household purchases (food for daily consumption or other household needs)	303	98.7	285	97.5	-1.1
16. Percent of head of household spouse's that report having input in making decisions about household building a latrine on their own land or communal land	131	90.1	124	95.2	3.0



Outcome	N	Control	N	Treatment	Estimated effect of treatment †
17. Percent of head of household spouse's that report having input in making decisions about use of household revenue/financial resources to purchase sanitary products or materials for household or women's needs	303	96.7	281	97.9	0.0
18. Percent of head of household spouse's that report having input in making decisions about household building a latrine on their own land or communal land	208	76.9	206	74.8	0.5

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  NA = Not estimated. For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

## 4. ATTRITION

One of the objectives of the ML activity is to understand the pervasiveness of attrition in the population of interest and to determine if attrition might pose problems in estimating the causal impact of the Maharo program at EL. For this reason, in each of the fokontany included in the ML (152), enumerators asked whether all the households interviewed at BL (1,805) were still present in the same location or fokontany. This section presents basic descriptive statistics of missing households and a set of statistical tests that help us understand the impact of attrition on the IE of the Maharo program.

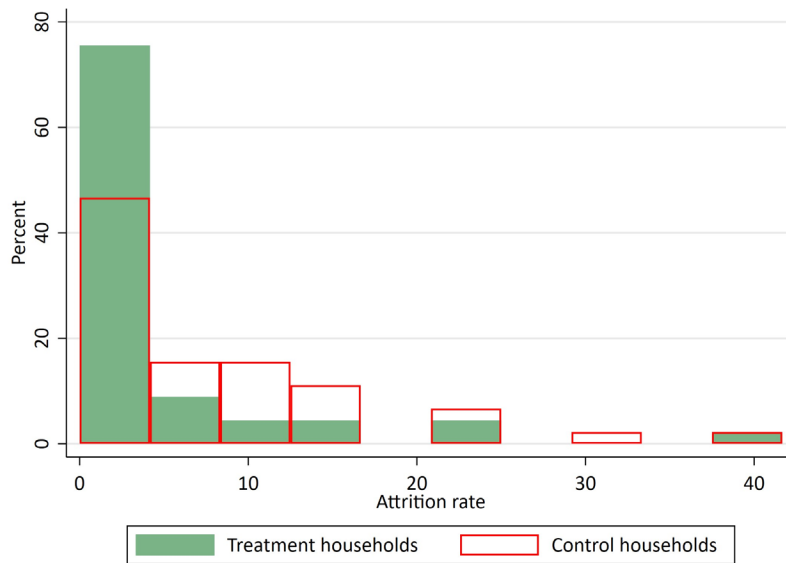
The attrition rate for the whole ML sample was 6.86% (124 households). Table 25 shows that the attrition rate in control areas was 3.92 percentage points higher than in treatment areas. Even though the difference across treatment arms is statistically significant, a proper assessment of the impacts of differential attrition rates relies on comparing BL outcomes, as will be shown in the last part of this section.

**Table 25. Attrition rates and percentage of missing households that could be found**

	N	Control	N	Treatment	Difference
Percent of BL households missing at ML	952	8.718	853	4.807	-3.912***
		(28.23)		(21.40)	(1.43)
Percent of households missing at ML whose migration location is known	83	55.422	41	48.78	-6.641
		(50.01)		(50.61)	(11.29)

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

To understand how the attrition rate varies between clusters, Figure 5 shows the histogram of attrition at the cluster level. More than 80% of the clusters have attrition rates below 13%, while around 62% have attrition rates below 5%. A higher share of treatment clusters has attrition rates close to zero, while the opposite is true for attrition rates above 10%.

**Figure 5. Histogram for attrition rate at cluster level**

For all the missing households, enumerators tried to find out more information about them (e.g., where they migrated and their reason for migration). Out of 124 missing households, it was possible to obtain additional information about 66 of them. In most cases, the information about the missing households was provided by the president of the fokontany. The answers were provided as text information and grouped into six mutually exclusive categories (Table 26). The most important reasons were temporary work (31.8%) and a family event (25.8%). Since these are reasons to leave the fokontany only temporarily, it suggests that over 50% of the missing households that could be found at ML might be present for EL. Because information about the reasons for households leaving the BL fokontany was only obtained for around half of the missing households, it is not possible to understand if the high level of attrition in some clusters is due to a common cause (e.g., famine).<sup>22</sup>

**Table 26. Reasons for missing households leaving their baseline fokontany (percentages)**

Reason	Control	Treatment	All
Temporary work	34.8	25.0	31.8
Family event	23.9	30.0	25.8
Other, n/a	19.6	10.0	16.7
Famine	6.5	25.0	12.1
Marriage or separation	8.7	5.0	7.6
Death, sickness	6.5	5.0	6.1
Number of households	46	20	66

<sup>22</sup> For example, Cluster 5 and Cluster 9 had the highest attrition levels (41.6%), but researchers only obtained additional information on one out of 20 missing households.

Despite missing information on the reasons for attrition, it is still possible to test if attrition may cause a problem for the evaluation by using BL outcomes. The main threat attrition poses to the evaluation is if attrition is related to treatment. For example, certain households could be more likely to stay in treatment areas because of the interventions. Ghanem et Al. (2022) document the use of attrition tests in field experiments and create two tests to understand the implications of attrition on the estimation of treatment effects. The tests exploit the BL outcomes of both attritors and respondents<sup>23</sup> and help assess if attrition affects the internal or external validity of the study. The internal validity of the study is related to the average treatment effect (ATE) for the respondent subpopulation (ATE-R). The objective of the attrition test in this case—called internal validity for the respondent subpopulation (IV-R)—is to assess if the households present at ML in the control clusters are a good counterfactual for the households present at ML in the treatment clusters. On the other hand, the external validity is related to the ATE for the study population. The attrition test for this case—called internal validity for the study population (IV-P)—assesses if the treatment and control households present at ML can be used to identify the ATE of the Maharo program on the target population. For the Maharo IE, both tests are important and the results for both are presented below.

To conduct the attrition tests, the main regression run is given by:

$$y_{bl,i} = \delta_{pair} + \pi_{01}R_i + \pi_{10}T_i + \pi_{11}T_iR_i + \epsilon_i$$

where  $R_i$  is equal to 1 if the household was present at ML and 0 if it was missing, and  $T_i$  is 1 if the household lives in a treatment cluster.

Following Ghanem et Al. (2022), we ran tests of internal and external validity for the eight outcomes presented in Table 27.<sup>24</sup> All of the eight outcomes selected passed the internal validity test, meaning that there is no evidence that treatment and control households are systematically different based on the eight outcomes. In the case of the external validity test, all but one outcome (BL19) passed the test; there is no evidence that the four groups (treatment attritors, control attritors, treatment respondents, and control respondents) differed for seven of the eight outcomes. The main reason BL19 did not pass the external validity test is that the treatment and control attritors have higher levels of open defecation than treatment and control respondents, as evidenced in Table 28.

**Table 27. P-values for attrition tests IV-R and IV-P using different baseline indicators**

Test	N	Pass IV-R test	Pass IV-P test
BL06 Prevalence of severe food insecurity in the household	1,792	YES	YES
BL10 Percent of households with poor FCS (< 22)	1,805	YES	YES
BL26 Percent of births receiving at least four antenatal care	808	YES	YES

<sup>23</sup> In the case of the ML survey, attritors are those households interviewed at BL but that were missing at ML, while respondents are households that were present at both the BL and the ML.

<sup>24</sup> The two attrition tests are related by the following null hypothesis: (i) internal validity,  $H_0: \pi_{10} = \pi_{11} = 0$ , and (ii) external validity,  $H_0: \pi_{01} = \pi_{10} = \pi_{11} = 0$ .

Test	N	Pass IV-R test	Pass IV-P test
visits during pregnancy			
BL01 Prevalence of Poverty: Percent of people living on less than \$1.90/day 2011 PPP	1,805	YES	YES
BL29 Percent of farming households who used financial services	1,651	YES	YES
BL30 Percent of farmers reporting at least one value chain activity	1,064	YES	YES
BL18 Percent of households in target areas practicing correct use of recommended household water treatment technologies	1,804	YES	YES
BL19 Percent of households in target areas practicing open defecation	1,804	YES	NO

**Table 28. Percentage of households practicing open defecation**

Test	N	BL19
Treatment respondents	811	56.59
Control respondents	869	52.01
Treatment attritors	41	82.93
Control attritors	83	63.85

The results of this section showed that even though the attrition rate was higher in control clusters, this should not pose a problem for the internal or external validity of the study. In the case of the BL19 indicator, it is important to investigate further why the attritors have higher shares of open defecation.

The average attrition rate in the study is not unusual in experimental studies, although it is slightly higher than what was accounted for at BL (5%). Nonetheless, it is important to remember that the EL survey will take place in 2 years, and most likely, more BL households will leave the areas of study. For example, if a similar attrition rate of 6.8% is observed between ML and EL, the total attrition rate from BL to EL would be around 13%. The attrition tests run in this section suggest that surveying new households at EL to compensate for the attritors can be a promising strategy.

## 5. CONCLUSION

The ML data collection surveyed 1,171 households with the goal of assessing the impact of Maharo activities on a select set of indicators and identifying any potential threats to the EL evaluation, with a particular focus on attrition. The smaller set of ML indicators focused on activities and outcomes most likely to change over the 2 years since BL. The analysis finds that the Maharo treatment areas saw significant improvements in women's health, agriculture, and access to finance. The attrition rate was nearly 7%, but the analysis shows that this does not threaten the validity of the results.

The treatment areas did not show improvements in the household food security measures included in the BL. This result is not surprising because both treatment and control areas received emergency food assistance and access to seeds. However, significant improvements were seen in dietary diversity among WRA. The percentage of women who meet the threshold for a diet of minimum acceptable diversity was more than 30% higher in treatment areas compared to control. These changes came primarily from increased consumption of dairy, meats, poultry and fish, and vitamin A-rich vegetables.

Southern Madagascar faces severe problems with access to drinking water. While roughly 75% of the sample reported year-round access to water, fewer than 20% of households had sources within a 30-minute round-trip. There were no observed improvements in water access in treatment areas, but this may be due to infrastructure projects being limited to a few areas. There were improvements in sanitation in treatment areas. Specifically, the practice of open defecation fell by 14%.

The ML survey found significant changes in agriculture in treatment areas. Participation in value chain activities was 66% for farmers in treatment areas compared to 36% in control areas. Input purchases, extension/training, adoption of new techniques, and sales and marketing practices saw the most improvement. Farmers in treatment areas adopted a range of improved practices for each targeted crop (cassava, sorghum, and cowpea). The percentage of farmers growing sorghum more than doubled—highlighting success in helping farmers diversify and grow more drought-tolerant crops. For targeted livestock, farmers adopted improved poultry practices at higher rates in treatment areas, but there were no differences for goats.

Access to financial services among men and women in a union was higher in treatment areas. Nearly 24% of men and women in a union participated in group-based savings, micro-finance, or lending programs in treatment areas compared to only 13% in control areas. Alone, the participation rate in group-based savings programs more than doubled from 8.3% to 18.7%. Table 29 shows a complete summary of the estimated effect of treatment on all outcomes.

**Table 29. Summary of the estimated effect of treatment on all outcomes**

Outcome	Estimated effect of treatment †
BL6 Percent of households that experienced approximately severe food insecurity	0.2
BL 6. Prevalence of moderate or severe food insecurity in the household, based on the Food Insecurity Experience Scale	-3.0
BL 10. Percent of households with poor consumption score (< 22)	0.8
BL 10. Percent of households with borderline consumption score (22–35)	-1.3
BL 10. Percent of households with acceptable consumption score (> 35)	0.7
BL 13. Prevalence of exclusive breastfeeding of children (under 6 months)	18.4
BL 14. Percent of children under five (0–59 months) who had diarrhea in the prior 2 weeks	-1.6
BL 15. Percent of children under five (0–59 months) with diarrhea treated with Oral Rehydration Therapy	-3.5
BL 11. Percent of women of reproductive age consuming a diet of minimum diversity	0.2**
BL 26. Percent of births receiving at least four ANC visits during pregnancy	6.1**
BL 16. Percent of households using basic drinking water services	-0.5
BL 17. Percent of households with soap or ash, and water at a handwashing station	1.0
BL 18. Percent of households in target areas practicing correct use of recommended household water treatment technologies	1.3
BL 19. Percent of households practicing open defecation	-9.1**
BL 27. Percent of households with access to a basic sanitation service	3.4
BL 29. Percent of farmers who used financial services (savings, agricultural credit, and/or agricultural insurance) in the past 12 months	5.0*
BL 30. Percent of farmers who practiced the value chain interventions promoted by the activity in the past 12 months	34.3***
Percent of farming households growing cassava	-0.1
BL 21. Percent of producers who have applied targeted improved management practices or technologies (cassava)	7.7*
Percent of farming households growing sorghum	11.5***
BL 21. Percent of producers who have applied targeted improved management practices or technologies (sorghum)	8.1
Percent of farming households growing cowpea	-0.4

Outcome	Estimated effect of treatment †
BL 21. Percent of producers who have applied targeted improved management practices or technologies (cowpea)	4.9**
Percent of farming households raising goats	2.2
BL 21. Percent of producers who have applied targeted improved management practices or technologies (goats)	8.9
Percent of farming households raising poultry	1.1
BL 21. Percent of producers who have applied targeted improved management practices or technologies (poultry)	8.2**
Percent of farming households that received a voucher for livestock through Maharo	7.1***
Percent of farming households receiving a voucher for livestock through Maharo and who chose poultry	-26.1
Percent of farming households receiving a voucher for livestock through Maharo and who chose goats	26.1
Percent of farming households receiving a voucher for livestock through Maharo and who still have it	47.8
Percent of farming households that purchased seeds using the services provided by Maharo PiSP program	44.0***
BL 32. Percent of women and men in a union who earned cash in the past 12 months	-6.9
BL 33. Percent of women in a union and earning cash who report participation in decisions about the use of self-earned cash	0.8
Percent of men in a union and earning cash who report participation in decisions about the use of self-earned cash	6.0
BL 34. Percent of women in a union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash	1.2*
BL 35. Percent of men in a union and earning cash who report spouse/partner participation in decisions about the use of self-earned cash	4.2
BL 42. Percent of women/men in a union with access to credit	0.8
Percent of men and women married or in a union who report making the borrowing decision	-7.0
BL 43. Percent of men in a union who make decisions about credit	-21.1
BL 43. Percent of women in a union who make decisions about credit	16.6
BL31 Percent of men and women married or in a union who participate in group-based savings, micro-finance, or lending programs	11.33*



Outcome	Estimated effect of treatment †
Percent of men and women married or in a union who took loans or borrowed from NGOs, VSLAs or SACCOs	6.6*
Percent of men and women married or in a union who participate in group-based saving programs	11.1***

† Based on results of an ANCOVA regression with treatment dummy and BL value of the outcome. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . NA = Not estimated. For the outcomes shown, the coefficients shown represent the percentage point change in the outcome due to treatment.

The changes observed at ML provide evidence of significant progress in key areas of Maharo activities. These changes and the results of the attrition analysis provide confidence that the EL survey will be able to capture the effects of treatment for the full set of outcomes.

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## ANNEX A: ANCOVA RESULTS FOR THE INDICATORS

This annex presents the full ANCOVA results for the indicators in section 3. To test the difference in outcomes between treatment and control for statistical significance, the tables present the results of the ANCOVA regressions. This method is preferred to a standard t-test because it allows us to control for BL values. Each column is a linear regression of an outcome on a treatment indicator plus the BL value for the outcome and controls for the matched pairs.

Specifically, with an outcome of interest,  $y$ , we run a regression of the form:

$$y_{ml,i} = \beta_0 + \beta_1 \cdot Treatment_i + \gamma \cdot y_{bl,i} + \delta_{pair} + \epsilon_i$$

The coefficient of interest for this section is  $\beta_1$ . A statistically significant value for this coefficient means that treatment and control households have a significant difference in the outcome of interest. The regression tables display the value of  $\beta_0$  (Constant),  $\beta_1$  (Treatment), and  $\gamma$  (BL value). The standard deviation for each coefficient is displayed in parenthesis below the coefficient. The matched pair control ( $\delta$ ) is included to improve the precision of results, but not shown.

When the outcome is the percentage of households or individuals, the coefficient for treatment is the percentage point difference in the outcome between treatment and control. When the outcome is a count or index, the interpretation of the coefficient for treatment is the number of units that the outcome increases or decreases because of treatment.

The coefficient for the BL values is the estimated relationship between the observed BL value for the outcome and the ML value. Specifically, the interpretation is the amount the ML value changes for a one-unit increase in the BL value. Generally, we should expect a positive correlation between BL and ML values and the size, and significance of the coefficient reveal how close the relationship is.

**Table 30. ANCOVA results for Food Insecurity Experience Scale questions**

Variables	1. Worried about lack of food	2. Ate less healthy foods	3. Ate fewer kinds of foods	4. Skipped meals	5. Ate less	6. Did not have food	7. Went hungry
Treatment	-2.5 (1.524)	-2.1 (1.500)	-1.8 (1.498)	-6.335* (3.164)	-1.6 (2.218)	-0.8 (3.126)	2.2 (3.276)
Baseline value	0.0674 (0.174)	-0.0925*** (0.0253)	-0.0464** (0.0204)	0.143** (0.0557)	0.00804 (0.0556)	-0.00543 (0.0423)	0.0889** (0.0440)
Constant	80.21*** (17.45)	88.88*** (2.857)	91.26*** (2.130)	60.82*** (5.896)	82.13*** (5.870)	50.81*** (4.205)	34.47*** (4.274)
Observations	1,155	1,155	1,155	1,155	1,155	1,155	1,155
R-squared	0.126	0.094	0.066	0.089	0.090	0.056	0.079
Pair-match dummies	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 31. ANCOVA results for Food Insecurity Experience Scale and BL6**

Variables	Raw FIES score	Answered yes to all questions	Answered no to all questions	BL 6. Severe food insecurity	BL 6. Moderate food insecurity
Treatment	-0.0974	3.615	0.626	0.159	-2.994
	(0.132)	(3.103)	(0.588)	(3.508)	(2.058)
Baseline value	0.0979*	0.0514	-0.0110	0.0587	-0.0841*
	(0.0489)	(0.0320)	(0.00859)	(0.0440)	(0.0455)
Constant	4.643***	15.77***	13.97***	27.03***	92.05***
	(0.391)	(3.208)	(0.294)	(4.595)	(4.817)
Observations	1,155	1,155	1,155	1,155	1,155
R-squared	0.094	0.063	0.077	0.066	0.090
Pair-match dummies	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 32. ANCOVA results for Food Consumption Score**

Variables	BL10 FCX	Poor FCS	Borderline FCS	Acceptable FCS
Treatment	1.0	0.8	-1.3	0.709
	(1.211)	(2.100)	(3.172)	(3.569)
Baseline value	0.147***	0.0556***	-0.000558	0.0507
	(0.0515)	(0.0190)	(0.0309)	(0.0348)
Constant	37.17***	18.56***	22.88***	54.84***
	(1.261)	(1.524)	(1.812)	(1.742)
Observations	1,106	1,142	1,142	1,142
R-squared	0.127	0.084	0.077	0.117
Pair-match dummies	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table 33 shows the estimated effect of treatment on the three indicators (BL13–15). Because the same children or even the same households are not always observed in both BL and ML as children age out or were not selected to be interviewed, the BL fokontany average replaces the BL individual value in the estimation. The unit of observation is still the individual child at ML, but the child is compared to the fokontany average at BL.

**Table 33. ANCOVA results for infant and child health indicators at the fokontany-level**

Variables	BL13 Prevalence of exclusive breastfeeding	BL14 Children with diarrhea in the prior 2 weeks	BL15 Children with diarrhea in the prior 2 weeks receiving oral rehydration therapy
Treatment	18.38	-1.565	-3.544
	(14.44)	(4.545)	(6.124)
BL fokontany average	-0.296**	-0.140	0.109
	(0.121)	(0.149)	(0.192)
Constant	19.76**	54.90***	-0.455
	(8.055)	(4.561)	(3.501)
Observations	59	152	129
R-squared	0.877	0.306	0.351
Pair-match dummies	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Because only one woman was interviewed per household for the ML and this woman may not have been present for BL, the ANCOVA results, the BL household average replaces the BL individual value in the estimation. The unit of observation is still the individual woman at ML, but the woman is compared to the household average at BL.

**Table 34. ANCOVA results for diet and prenatal care for women**

Variables	Dietary Diversity Score	BL 11. Women consuming MDD	BL 26. Women receiving at least four ANC visits
Treatment	0.203**	6.396**	-4.863
	(0.0840)	(2.800)	(5.496)
Baseline value	0.0486	6.577	
	(0.0424)	(11.20)	
Constant	2.820***	-2.952**	90.35***
	(0.0807)	(1.292)	(5.549)
Observations	728	728	369
R-squared	0.122	0.084	0.227
Pair-match dummies	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 35. ANCOVA results for food categories showing significant changes**

Variables	Dairy	Meat, poultry, and fish	Other vitamin A-rich fruits and vegetables
Treatment	4.308*	6.588**	7.921**
	(2.420)	(3.162)	(3.072)
Baseline value	21.16**	-0.394	-32.83**
	(9.691)	(5.709)	(12.55)
Constant	-2.154*	3.005	33.54***
	(1.210)	(1.866)	(1.536)
Observations	796	816	796
R-squared	0.085	0.132	0.099
Pair-match dummies	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 36. ANCOVA results for water, sanitation, and hygiene outcomes**

Variables	BL 16. Year-round availability	BL 16. Water within 30 min.	Estimated water per cap (liters)	BL 16. Minimum of 20 l consumption	BL17. Hand-washing station	BL18. Water treated	BL 19. Practice open defecation	BL 27. Basic sanitation service
Treatment	-3.920 (3.422)	-3.708 (3.353)	0.0783 (0.682)	-1.127 (2.311)	0.981 (0.606)	1.307 (3.046)	-9.109** (4.200)	3.392 (2.315)
Baseline value	0.0682** (0.0258)	0.209*** (0.0469)	0.213** (0.0861)	0.616 (0.377)	-0.0108 (0.00664)	0.128*** (0.0306)	0.173*** (0.0377)	0.0540 (0.0569)
Constant	78.26*** (2.663)	46.86*** (3.857)	9.738*** (1.321)	13.06*** (1.155)	-0.491 (0.303)	27.84*** (1.802)	52.32*** (3.480)	-1.696 (1.157)
Observations	1,168	1,169	529	529	1,025	1,170	1,170	1,170
R-squared	0.124	0.389	0.204	0.155	0.050	0.151	0.165	0.425
Pair-match dummies	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

In the agriculture section, only one farmer was interviewed to represent the farming decisions for the household. Therefore, for the ANCOVA estimation, the BL household average replaces the BL individual value in the estimation.

**Table 37. ANCOVA results for financial services farmers**

Variables	BL29. Percent of farmers who used financial services (savings, agricultural credit, and/or agricultural insurance) in the past 12 months	BL 29. Percent of farming households using agricultural credit	BL 29. Farmers saved	BL29. Farmers using insurance
Treatment	5.039*	-1.385	12.91***	0
	(2.794)	(2.639)	(2.920)	(0)
Baseline value	-0.111**	-0.0908*	-0.0715	0
	(0.0487)	(0.0483)	(0.0918)	(0)
Constant	39.19***	25.81***	26.10***	0
	(1.643)	(1.540)	(1.727)	(0)
Observations	1,056	1,041	1,056	1,056
R-squared	0.134	0.112	0.151	N/A
Pair-match dummies	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 38. ANCOVA results for value chain interventions among farmers**

Variables	BL30. Value chain interventions
Treatment	34.27***
	(7.755)
Baseline value	-0.00547
	(0.0964)
Constant	63.34***
	(4.524)
Observations	258
R-squared	0.313
Pair-match dummies	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .



**Table 39. ANCOVA results for the use of specific value chain interventions for crops** <sup>25</sup>

Variables	Purchase inputs for crops	Use of training and extension services	Contract farming	Drying produce	Processing produce	Trading or marketing produce through agro-dealers and/or community associations	Control of pest	Adoption of new farming technique	Sale of products
Treatment	2.813	14.84**	0	0.954	0	1.374	15.01***	17.54***	4.936
	(8.189)	(6.961)	(0)	(3.128)	(0)	(1.106)	(5.086)	(5.045)	(3.295)
Baseline value	0.000929	0.0424**	N/A	-0.0300	N/A	N/A	N/A	N/A	N/A
	(0.0926)	(0.0199)	N/A	(0.0335)	N/A	N/A	N/A	N/A	N/A
Constant	38.03***	19.61***	0	-0.668	0	-0.961	-2.830	9.004***	-2.361
	(5.732)	(4.872)	(0)	(2.190)	(0)	(0.774)	(2.432)	(2.413)	(1.576)
Observations	245	245	245	245	245	245	444	444	444
R-squared	0.185	0.216	N/A	0.295	N/A	0.461	0.198	0.166	0.191
Pair-match dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

<sup>25</sup> For the variables pest controls, adoption of new farming technique, sale of products, animal care, breed improvement, and habitat improvement, no BL values are included because these categories were not present at BL.

**Table 40. ANCOVA results for the use of specific value chain interventions for livestock<sup>26</sup>**

Variables	Purchase inputs for livestock	Use of training and extension services	Contract Farming	Use of formal marketing systems for livestock	Animal care	Breed improvement	Habitat improvement
Treatment	-1.686	2.247	0	0	7.824	1.291	7.252***
	(2.668)	(1.927)	(0)	(0)	(4.672)	(0.926)	(2.191)
Baseline value	-0.00204	0.0112	N/A	0	N/A	N/A	N/A
	(0.00633)	(0.00963)	N/A	(0)	N/A	N/A	N/A
Constant	0.937	-1.248	0	0	5.179**	-0.645	-3.626***
	(1.482)	(1.070)	(0)	(0)	(2.336)	(0.463)	(1.095)
Observations	185	185	185	185	388	388	388
R-squared	0.196	0.150	N/A	N/A	0.211	0.067	0.234
Pair-match dummies	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

<sup>26</sup> For the variables pest controls, adoption of new farming technique, sale of products, animal care, breed improvement, and habitat improvement, no BL values are included because these categories were not present at BL.

**Table 41. ANCOVA results for targeted crops and management practices**

Variables	Grows cassava	BL21 Improved management practices for cassava	Grows sorghum	BL21 Improved management practices for sorghum	Grows cowpea	BL21 Improved management practices for cowpea
Treatment	-0.130	7.714*	11.52***	8.071	-0.416	4.864**
	(2.876)	(4.182)	(3.211)	(6.573)	(1.203)	(2.342)
Baseline value	0.113***	-0.000180	0.166***	-0.175***	0.0152	-0.0249
	(0.0407)	(0.0442)	(0.0531)	(0.0494)	(0.0144)	(0.0167)
Constant	66.67***	65.93***	58.98***	91.93***	99.48***	97.39***
	(2.877)	(4.252)	(2.140)	(6.573)	(0.891)	(2.504)
Observations	993	633	993	90 <sup>27</sup>	993	725
R-squared	0.138	0.122	0.120	0.493	0.045	0.184
Pair-match dummies	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

The following tables present reported usage of specific improved practices where a significant difference between treatment and control areas was found.<sup>28</sup> The three improved practices—use of improved seeds, soil cover, and row-cropping techniques—are used at higher rates for all three crops in treatment areas.

<sup>27</sup> The small number of observations is explained by the low number of households growing sorghum at BL (interviewed at ML). While at ML 706 households grew sorghum, only 114 did so at BL. In addition to this, 24 of the households that grew sorghum at BL, didn't do so at ML.

<sup>28</sup> Average values for all the practices can be found in the Appendix.

**Table 42. ANCOVA results for targeted crop practices for cassava<sup>29</sup>**

Variables	Organic manure	Compost	Performing weeding (manually)	Crop association	Crop rotation	Use of improved seeds	Use of climate information
Treatment	3.851*	1.494	0	6.924	3.593	6.534***	0.948
	(1.952)	(1.471)	(0)	(4.281)	(2.977)	(2.145)	(1.185)
Baseline value	-5.928*	0.534	0	-5.824	6.996	-8.267***	-0.553
	(3.362)	(0.525)	(0)	(4.543)	(5.099)	(1.072)	(0.691)
Constant	-2.750*	-1.067	0	11.00***	-2.566	23.90***	13.61***
	(1.394)	(1.051)	(0)	(3.456)	(2.126)	(1.532)	(0.846)
Observations	644	644	644	644	644	644	644
R-squared	0.082	0.078	N/A	0.225	0.086	0.209	0.101
Pair-match dummies	YES	YES	YES	YES	YES	YES	YES

**Table 43. ANCOVA results for targeted crop practices for cassava (continued)**

Variables	Wind break	Soil cover	Use of traditional methods of pest control	Use of non-traditional pest control	Use of row-cropping technique	Use of polyculture technique	Use of chemical weedkiller
Treatment	2.171	1.758*	0.904	-1.321	2.821**	0.713	-0.245
	(3.141)	(0.993)	(1.090)	(0.898)	(1.082)	(0.803)	(0.366)
Baseline value	-4.901	N/A	N/A	N/A	N/A	N/A	N/A
	(5.575)	N/A	N/A	N/A	N/A	N/A	N/A

<sup>29</sup> For the variables pest controls, adoption of new farming technique, sale of products, animal care, breed improvement, and habitat improvement, no BL values are included because these categories were not present at BL.

Variables	Wind break	Soil cover	Use of traditional methods of pest control	Use of non-traditional pest control	Use of row-cropping technique	Use of polyculture technique	Use of chemical weedkiller
Constant	12.74***	13.03***	-0.474	0.692	-1.478**	-0.373	0.128
	(2.244)	(0.709)	(0.571)	(0.471)	(0.567)	(0.421)	(0.192)
Observations	644	644	928	928	928	928	928
R-squared	0.272	0.157	0.082	0.121	0.083	0.074	0.053
Pair-match dummies	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 44. ANCOVA results for targeted crop practices for sorghum<sup>30</sup>**

Variables	Organic manure	Compost	Performing weeding (manually)	Crop association	Crop rotation	Use of improved seeds	Use of climate information
Treatment	6.230	0**	3.585	5.191	14.22	35.81***	-2.987
	(4.741)	(0)	(4.030)	(8.016)	(12.64)	(8.628)	(3.792)
Baseline value	-6.230		3.911	6.388	-40.41**	1.141	-3.259
	(4.741)		(4.397)	(29.45)	(14.62)	(3.984)	(4.137)
Constant	-6.230	0	-3.585	94.81***	-14.22	64.19***	2.987
	(4.741)	(0)	(4.030)	(8.016)	(12.64)	(8.628)	(3.792)
Observations	91	91	91	91	91	91	91

<sup>30</sup> For the variables pest controls, adoption of new farming technique, sale of products, animal care, breed improvement, and habitat improvement, no BL values are included because these categories were not present at BL.

Variables	Organic manure	Compost	Performing weedings (manually)	Crop association	Crop rotation	Use of improved seeds	Use of climate information
R-squared	0.134	1.000	0.112	0.474	0.343	0.597	0.510
Pair-match dummies	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 45. ANCOVA results for targeted crop practices for sorghum (continued)**

Variables	Wind break	Soil cover	Use of traditional methods of pest control	Use of non-traditional pest control	Use of row-cropping technique	Use of polyculture technique	Use of chemical weedkiller
Treatment	-8.989	2.520	1.117	4.402**	6.775***	2.909*	0.254
	(10.20)	(4.150)	(1.881)	(1.757)	(2.236)	(1.724)	(0.261)
Baseline value	-9.115	N/A	N/A	N/A	N/A	N/A	N/A
	(12.18)	N/A	N/A	N/A	N/A	N/A	N/A
Constant	109.0***	97.48***	-0.682	-2.690**	23.64***	20.44***	-0.155
	(10.20)	(4.150)	(1.149)	(1.074)	(1.367)	(1.054)	(0.160)
Observations	91	91	706	706	706	706	706
R-squared	0.426	0.405	0.136	0.174	0.160	0.134	0.052
Pair-match dummies	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 46. ANCOVA results for targeted crop practices for cowpea<sup>31</sup>**

Variables	Organic manure	Compost	Performing weeding (manually)	Crop association	Crop rotation	Use of improved seeds	Use of climate information
Treatment	1.201	1.007	0.663	-1.806	4.993	26.84***	1.549
	(1.398)	(1.117)	(0.824)	(2.682)	(3.749)	(5.091)	(1.095)
Baseline value	-0.232	-3.300	-5.983***	-2.363	-4.187	4.067	
	(0.375)	(2.005)	(0.191)	(2.064)	(6.872)	(6.075)	
Constant	-1.092	-0.915	-0.603	75.87***	-4.539	39.24***	16.77***
	(1.271)	(1.015)	(0.749)	(2.957)	(3.408)	(4.628)	(0.995)
Observations	728	728	728	728	728	728	728
R-squared	0.070	0.062	0.106	0.232	0.183	0.352	0.084
Pair-match dummies	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 47. ANCOVA results for targeted crop practices for cowpea (continued)**

Variables	Wind break	Soil cover	Use of traditional methods of pest control	Use of non-traditional pest control	Use of row-cropping technique	Use of polyculture technique	Use of chemical weedkiller
Treatment	4.680	1.766	2.228	3.474**	3.637**	1.153	-0.356
	(2.987)	(1.371)	(1.405)	(1.616)	(1.438)	(1.025)	(0.258)
Baseline value	-3.986	N/A	N/A	N/A	N/A	N/A	N/A

<sup>31</sup> For the variables pest controls, adoption of new farming technique, sale of products, animal care, breed improvement, and habitat improvement, no BL values are included because these categories were not present at BL.

Variables	Wind break	Soil cover	Use of traditional methods of pest control	Use of non-traditional pest control	Use of row-cropping technique	Use of polyculture technique	Use of chemical weedkiller
	(3.797)	N/A	N/A	N/A	N/A	N/A	N/A
Constant	23.02***	16.58***	-1.155	-1.801**	16.63***	6.810***	0.184
	(2.716)	(1.246)	(0.729)	(0.838)	(0.745)	(0.531)	(0.134)
Observations	728	728	1,102	1,102	1,102	1,102	1,102
R-squared	0.348	0.085	0.083	0.218	0.111	0.094	0.043
Pair-match dummies	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 48. ANCOVA results for targeted livestock and management practices**

Variables	Raises goats	BL 21 Improved management practices for goats	Raises poultry	BL21 Improved management practices for poultry
Treatment	2.175	8.928	1.100	8.158**
	(3.694)	(7.654)	(2.854)	(3.584)
Baseline value	0.209***	0.146	0.173***	0.218***
	(0.0314)	(0.121)	(0.0368)	(0.0765)
Constant	57.77***	37.76***	62.64***	9.624***
	(2.280)	(4.374)	(2.114)	(2.048)
Observations	1,067	228 <sup>32</sup>	1,067	416

<sup>32</sup> The small number of observations is because many of the households raising goats at BL (interviewed at ML), didn't do so at ML. Out of 459 households raising goats, only 231 did also so at ML.



Variables	Raises goats	BL 21 Improved management practices for goats	Raises poultry	BL21 Improved management practices for poultry
R-squared	0.106	0.294	0.074	0.214
Pair-match dummies	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 49. ANCOVA results for CRS livestock and seed programs<sup>33</sup>**

Variables	Received livestock through Maharo	Received livestock and picked poultry	Received livestock and picked goats	Received livestock and still have it	Purchased seeds through Maharo PiSP
Treatment	7.104***	-26.09	26.09	47.83	44.01***
	(1.823)	(50.52)	(50.52)	(29.25)	(3.285)
Baseline value	0.0203	26.09	73.91	52.17*	54.96***
	(0.945)	(50.52)	(50.52)	(29.25)	(1.704)
Constant	7.104***	-26.09	26.09	47.83	44.01***
	(1.823)	(50.52)	(50.52)	(29.25)	(3.285)
Observations	1,148	52	52	50	1,148
R-squared	0.118	0.842	0.843	0.558	0.288
Pair-match dummies	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

<sup>33</sup> No BL values were included because questions were not asked at BL.

**Table 50. ANCOVA results for cash earnings**

Variables	BL32 Men earning cash	BL32 Women earning cash	BL32 Women 20–29	Q1	BL32 Men 20–29	BL32 Men over-30M	BL 33. Women participating in decisions over own cash	Men participating in decisions over own cash	BL 34. Women reporting participating in decision over spouse’s cash	BL 35. Men reporting wife participating in decision over his cash
Treatment	-6.972	-7.225	4.3	-14.1	-2.1	-4.7	0.823	5.966	1.172	4.211
	(5.243)	(5.467)	(12.38)	(12.67)	(14.38)	(6.075)	(1.564)	(4.733)	(20.82)	(6.130)
Baseline value	0.101**	0.0373	-0.0981	-0.00304	0.0141	0.0951	-0.0428	0.0993	0.0137	-0.0459
	(0.0476)	(0.0591)	(0.154)	(0.125)	(0.173)	(0.0590)	(0.0823)	(0.102)	(0.271)	(0.102)
Constant	73.17***	47.48***	-2.143	57.21***	99.63***	75.10***	103.5***	71.41***	98.83***	84.99***
	(4.143)	(3.990)	(6.190)	(9.492)	(20.08)	(4.490)	(9.114)	(10.38)	(20.82)	(7.789)
Observations	451	466	127	134	85	318	78	247	78	247
R-squared	0.230	0.199	0.370	0.419	0.528	0.275	0.313	0.207	0.488	0.278
Pair-match dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 51. ANCOVA results for borrowing and savings decisions**

Variables	BL 42. Percent of women/men in a union with access to credit	Percent of men married or in a union who have access to credit	Percent of women married or in a union who have access to credit	Percent of men and women married or in a union who report making the borrowing decision	BL 43. Percent of men in a union who make decisions about credit	BL 43. Percent of women in a union who make decisions about credit	Percent of men and women married or in a union who took loans or borrowed from NGOs, VSLAs or SACCOs	Percent of men and women married or in a union who participate in group- based saving programs	Percent of men and women married or in a union who participate in group-based savings, micro-finance, or lending programs
Treatment	0.821	2.683	-0.729	-6.951	-21.05	16.59	6.611*	11.10***	11.33**
	(4.176)	(4.950)	(5.036)	(8.682)	(14.19)	(18.61)	(3.420)	(3.379)	(4.381)
Baseline value	0.124***	0.124**	0.0793*	0.0921	0.467***	0.0480	-0.0812	-0.0788***	0.0508
	(0.0453)	(0.0561)	(0.0468)	(0.129)	(0.155)	(0.189)	(0.123)	(0.0227)	(0.107)
Constant	31.24***	29.70***	12.54***	64.77***	44.61***	41.70***	-3.526*	-5.920***	-6.042**
	(2.525)	(3.430)	(4.047)	(8.197)	(15.38)	(9.303)	(1.824)	(1.802)	(2.336)
Observations	587	459	485	150	101	91	591	590	590
R-squared	0.230	0.246	0.258	0.331	0.424	0.350	0.154	0.189	0.183
Pair-match dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table 52 presents the results for BL43 disaggregated by gender and age. Several categories are omitted due to insufficient observations.

**Table 52. ANCOVA results for age-disaggregated credit access**

Variables	Access to credit men 20–29	Access to credit men 50 plus	Access to credit women 20–29	Access to credit women 30–49	Access to credit women 50 plus
Treatment	6.8	13.8	3.3	0.8	-9.7
	(20.87)	(9.489)	(13.11)	(11.59)	(22.75)
Baseline value	0.398***	0.0861	0.136	0.0111	-0.237
	(0.125)	(0.139)	(0.145)	(0.110)	(0.254)
Constant	-3.378	-9.047	48.37***	-0.967	9.663
	(10.43)	(6.239)	(6.553)	(8.446)	(22.75)
Observations	84	129	133	142	66
R-squared	0.578	0.432	0.490	0.413	0.647
Pair-match dummies	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 53. ANCOVA results for spousal input, questions 1-9 (numbers in columns refer to numbered questions in previous table)**

Variables	Input 1	Input 2	Input 3	Input 4	Input 5	Input 6	Input 7	Input 8	Input 9
Treatment	1.165	-5.854	2.076	-2.946	-0.0797	-3.691	-4.613	3.894	2.729
	(2.714)	(4.980)	(1.785)	(4.427)	(3.471)	(4.447)	(6.032)	(6.710)	(9.500)
Baseline value	0.0262	-0.0550	-0.056**	-0.068**	0.0151	0.0201	0.0601	-0.0112	0.157
	(0.0364)	(0.0493)	(0.0258)	(0.0325)	(0.0360)	(0.0486)	(0.0807)	(0.0647)	(0.118)
Constant	97.50***	108.0***	104.2***	106.5***	99.31***	61.75***	100.5***	77.56***	90.12***
	(3.515)	(5.024)	(2.229)	(4.054)	(2.036)	(4.532)	(2.074)	(6.653)	(7.385)
Observations	261	238	443	370	149	274	109	240	104
R-squared	0.162	0.243	0.111	0.160	0.254	0.205	0.293	0.195	0.253
Pair-match dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 54. ANCOVA results for spousal input, questions 1–9 (numbers in columns refer to numbered questions in previous table)**

Variables	Input 10	Input 11	Input 12	Input 13	Input 14	Input 15	Input 16	Input 17	Input 18
Treatment	-0.622	1.838	2.051	-1.062	-0	-1.063	2.990	-0.0433	0.533
	(4.542)	(6.203)	(5.301)	(3.947)	(3.627)	(1.376)	(5.806)	(1.701)	(7.250)
Baseline value	-0.0461	0.135	0.0753	0.0382	0	-0.0122	0.0762	0.0273	0.0132
	(0.0511)	(0.0972)	(0.0863)	(0.0626)	(0.245)	(0.00976)	(0.0894)	(0.0527)	(0.0825)
Constant	102.8***	91.87***	69.70***	81.49***	100***	102.0***	91.18***	97.30***	49.27***
	(3.568)	(6.949)	(5.523)	(4.833)	(12.24)	(1.500)	(9.643)	(5.920)	(5.129)
Observations	135	102	135	292	37	477	168	402	235
R-squared	0.248	0.266	0.233	0.140	0.681	0.067	0.118	0.088	0.192
Pair-match dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

## ANNEX B: MIDLINE CHANGES TO THE HOUSEHOLD ROSTER

The ML questionnaire included a series of questions added at the beginning of the survey to understand any changes to the household roster since BL. The survey displayed the names of each household member reported at BL, and the enumerator would ask the household to indicate which individuals were still a part of the household. For the members who reported to have left the household, the enumerator asked the household to specify a reason for their departure. Enumerators then asked households to report new members since BL and indicate a reason for their addition.

### Members Departed From the Household Roster Since Baseline

Of the total number of members interviewed at BL, 14.77% of the household members originally reported had since departed. Both treatment and control groups experienced member departure at roughly the same rate. 464 members, or 15.8% of the member observations recorded at BL from the treatment group were removed. For the control group, 453 members or 14.37% of BL observations, were no longer household members at ML.

**Table 55. Number of household members reported as departed at midline compared to baseline**

	Number of people interviewed at BL	Number of departed observations	Share of Missing observations (%)
Treatment	3,057	464	15.8
Control	3,152	453	14.37
Total	6,209	917	14.77

The two most common reasons for departures were to join family living in a different location, accounting for 23.5% of departures reported, or to move with family, which accounted for 21.1%. The high rates of mobility of both individuals and families can likely be attributed to the severe drought and difficult living conditions of the region. The third most common reason for the departure of members from households was for partnership reasons. 18.63% of departed members left their households for new marriage or cohabitation arrangements.

Members inaccurately recorded at BL accounted for 5.29% of member departures. As discussed in Section 2.1.6, through this exercise, it was discovered at ML that several households had fabricated household members at BL. Although they did not meet the household member definition, households falsely claimed neighbors or relatives as members in the hopes that by inflating their household size, they would receive additional aid or resources.

**Table 56. Reasons given household members reported as departed at midline**

Reasons Given for Missing Person	Treatment		Control		Total	
	Number of People Left	Share of People Left (%)	Number of People Left	Share of People Left (%)	Number of People Left	Share of People Left (%)
Divorce/Separation	25	5.42	29	6.42	54	5.95
Left for studies or an educational opportunity	11	2.39	22	4.87	33	3.64
Left for work	26	5.64	13	2.88	39	4.30
Left to find better land	17	3.69	13	2.88	30	3.31
Health reasons	0	0	1	0.22	0	0
For marriage/cohabitation	82	17.79	87	19.25	169	18.63
To join family already living in another location	110	23.86	103	22.79	213	23.48
Moved with family	102	22.13	89	19.69	191	21.06
Left to set up own home	37	8.03	35	7.74	72	7.94
Deceased	21	4.56	24	5.31	45	4.96
Stayed with original household	12	2.60	1	0.22	13	1.43
Never been a member/recorded wrongly in BL	18	3.90	30	6.64	48	5.29
Other	0	0	5	1	0	0

## Members Added to the Household Roster Since Baseline

1,166 members were reported as additions to household rosters since BL. Both treatment and control groups experienced member additions at roughly the same rate. 604 members, representing a share of 18.9% of people interviewed at ML, were added to treatment household rosters, while 562 new members, or 17.22%, were reported in control groups.



**Table 57. Number of members reported as additions at midline**

	Number of people interviewed at ML	Number of new observations	Share of new observations (%)
Treatment	3,199	604	18.88
Control	3,263	562	17.22
Total	6,462	1,166	18.04

The most common reason for the addition of a household member was birth, which accounted for 35% of members added to household rosters at ML. The second most common reason was that the member had been a member at BL but had been mistakenly forgotten or otherwise not reported. This occurred in 231 instances and accounted for 20% of the members added. This phenomenon seems to be a fairly common occurrence. Household members can often be forgotten if they are often away from home. For example, during piloting for Maharo's BL, one of the heads of household forgot to include two of her daughters, who spent most of the day in the nearest city and only returned to the house at night to sleep. She only remembered their inclusion in the roster after enumerators probed her. The third most common reason for a household member addition was return from work migration, which occurred in 173 instances and accounted for 15% of the member additions.

**Table 58. Reasons given for the addition of household members reported at midline**

Reasons Given for Added HH Member	Treatment		Control		Total	
	Number of People Added	Share of People Added (%)	Number of People Added	Share of People Added (%)	Number of People Added	Share of People Added (%)
Newborn	211	35	200	36	411	35
Adopted child	41	7	31	6	72	6
Marriage/Cohabitation	33	5	36	6	69	6
Divorce/Separation	13	2	5	1	18	2
Returned from institution	14	2	7	1	21	2
Moved in with parent or relative	58	10	72	13	130	11
Return from work migration	87	14	86	15	173	15
Mistakenly not reported or forgotten last visit	122	20	109	19	231	20
Fled problem areas/Internally displaced persons/Crisis	16	3	11	2	27	2
Other	10	2	5	1	15	1

## ANNEX C: MIDLINE AS A REPRESENTATIVE SAMPLE OF THE BASELINE

The households surveyed at ML were a randomly selected sub-sample of those surveyed at BL. Of the households originally interviewed at BL, 1,171 of those households were surveyed again at ML. Treatment clusters were matched with control clusters, and 45 out of the 98 pairs were chosen randomly. Within these ninety clusters, up to two fokontany (local administrative units) per cluster were selected at random, with twelve households per fokontany also randomly chosen for the survey. For further details on the sampling strategy, see Section 2.1.1.

To provide further evidence that the ML sample of selected households is a representative sample of households surveyed at BL, this annex presents the findings of balance tests comparing the sample of the households selected at ML and the sample of households not selected. The comparisons will focus on Modules B, C, and F. The samples were compared using 52 variables.

Of the 52 variables, only one variable (1.9%) was statistically significant at a 5% significance level, an expected result. At a 5% significance level, for every 100 tests run, it is expected that 0-5 tests could yield statistically significant results purely by chance. In this study, 52 tests were conducted at a 5% significance level, meaning that anywhere from 0-3 tests could reasonably yield statistically significant results purely by chance. The balance tests’ findings, that one of the 52 tests conducted resulted in statistically significant results, corroborate that the two samples are balanced.

### Module B Variables

Balance tests were conducted for 21 variables in Module B. For the variable household size, the difference between samples was -0.160, indicating that the ML sample had an average household size 0.160 smaller than the sample not selected, a minor, statistically insignificant difference. Researchers found similarly small differences in the other conducted balance tests. Findings indicated that the ML sample had -0.478% fewer children younger than 5 years old in the household, and -0.022% less WRA. Only one variable, the average age of male household heads, had a statistically significant difference between samples with a difference of 1.665, meaning that the ML sample’s male head of household was 1.665 years older on average than that of the sample not selected. A complete table comparing all Module B variables can be found in Table 62.

**Table 59. Select balance test results for Module B variables**

Outcome	N	Not ML	N	ML	Difference	CI 95% - Lower	CI 95% - Upper
Household size	3,424	5.462	1,171	5.301	-0.160	-0.3995	0.0789
		(2.53)		(2.50)	(0.12)		
Percent of children (younger than 5 years old) in the household	3,424	25.359	1,171	24.88	-0.478	-1.6904	0.7337
		(18.70)		(18.61)	(0.61)		

Outcome	N	Not ML	N	ML	Difference	CI 95% - Lower	CI 95% - Upper
Average age of male household head	2,127	41.713	716	43.378	1.665*	-0.0044	3.3336
		(16.00)		(17.44)	(0.84)		
Percent of WRA in the household	3,424	33.876	1,171	33.853	-0.022	-1.5974	1.5531
		(22.29)		(22.20)	(0.79)		

Notes: Standard deviations are in parentheses.

## Module C Variables

Balance tests were also conducted for 17 variables in Module C. For the variable FCS, the difference between samples was -0.774, meaning that the ML sample's FCS was on average -0.774 less. Small statistically insignificant differences were also seen with the variable percentage of households that experienced severe food insecurity (-1.712), the percentage of households worried they would not have enough food to eat because of a lack of money or other resources (0.101), and the percentage of households that went without eating for a whole day because of a lack of money or other resources (-0.545) as displayed in Table 60. No variables were found to have a statistically significant difference; the results suggest that samples were balanced on these variables. A complete table comparing all Module C variables can be found in Table 63.

**Table 60. Select balance test results for Module C variables**

Outcome	N	Not ML	N	ML	Difference	CI 95% - Lower	CI 95% - Upper
Food Consumption Score (0–100)	3,316	25.601	1,133	24.827	-0.774	-2.5839	1.0362
		(12.44)		(12.90)	(0.91)		
Percent of households that experienced severe food insecurity	3,402	81.746	1,162	80.034	-1.712	-7.8306	4.4074
		(38.63)		(39.99)	(3.08)		
Worried: Percent of households worried they would not have enough food to eat because of a lack of money or other resources	3,402	99.383	1,162	99.484	0.101	-0.3902	0.592
		(7.83)		(7.17)	(0.25)		
No food whole day: Percent of households that went without eating for a whole day because of a lack of money or other resources	3,402	76.19	1,162	75.645	-0.545	-6.7824	5.6923
		(42.60)		(42.94)	(3.14)	-2.5839	1.0362

Notes: Standard deviations are in parentheses.

## Module F Variables

Balance tests were conducted for 14 variables in Module F. No balance test yielded statistically significant differences between samples. The balance test for indicator 16 yielded a difference of -0.9682, signifying that there was less than a 1% difference in access to basic drinking water services between samples. Negligible differences were also found between samples for the percentage of households with handwashing available (-1.712), treating water (0.101), and practicing open defecation (-0.545). A complete table comparing all Module F variables can be found in Table 64.

**Table 61. Select balance test results for Module F variables**

Outcome	N	Not ML	N	ML	Difference	CI 95% - Lower	CI 95% - Upper
BL16. Percent with access to basic drinking water services including water use	1,563	0.704	539	0.557	-0.774	-0.9682	0.6738
		(8.36)		(7.45)	(0.91)		
BL17. Handwashing available	3,052	4.227	1,025	3.415	-1.712	-2.8082	1.184
		(20.12)		(18.17)	(3.08)		
BL18. Percent treating water	3,420	44.532	1,170	44.359	0.101	-8.1441	7.7977
		(49.71)		(49.70)	(0.25)		
BL19. Percent practicing open defecation	3,420	55.439	1,170	55.897	-0.545	-7.4261	8.3438
		(49.71)		(49.67)	(3.14)		

*Notes: Standard deviations are in parentheses.*

**Table 62. Balance test results for all Module B variables**

Outcome	N	Not ML	N	ML	Diff	CI 95% - Lower	CI 95% - Upper
Household size	3,424	5.462	1,171	5.301	-0.160	-0.3995	0.0789
		(2.53)		(2.50)	(0.12)		
Percent of children (younger than 5 years) in the household	3,424	25.359	1,171	24.88	-0.478	-1.6904	0.7337
		(18.70)		(18.61)	(0.61)		
Average age of household head	3,421	42.08	1,167	42.638	0.559	-0.6977	1.8154
		(16.95)		(17.53)	(0.63)		
Percent of household heads who are married	3,421	57.629	1,167	55.955	-1.674	-5.786	2.4382
		(49.41)		(49.67)	(2.07)		
Percent of household head with some schooling	3,418	31.202	1,165	31.502	0.300	-4.4269	5.0263
		(46.33)		(46.47)	(2.38)		
Percent of household heads that are female	3,421	37.884	1,167	38.689	0.805	-2.726	4.3366
		(48.49)		(48.70)	(1.78)		
Average age of female household head	1,298	42.634	452	41.518	-1.116	-3.0897	0.857
		(18.40)		(17.65)	(0.99)		
Percent of female household heads with some schooling	1,297	34.695	452	36.726	2.030	-4.1838	8.2443
		(47.62)		(48.26)	(3.13)		
Percent of household heads that are male	3,421	62.116	1,167	61.311	-0.805	-4.3366	2.726
		(48.49)		(48.70)	(1.78)		
Average age of male household head	2,127	41.713	716	43.378	1.665*	-0.0044	3.3336
		(16.00)		(17.44)	(0.84)		

Outcome	N	Not ML	N	ML	Diff	CI 95% - Lower	CI 95% - Upper
Percent of male household heads with some schooling	2,124	29.143	714	28.151	-0.992	6.4706	4.4868
		(45.45)		(45.01)	(2.76)		
Percent of children (5–14 years old) in the household	3,424	30.488	1,171	30.235	-0.254	-1.6611	1.1541
		(21.78)		(22.29)	(0.71)		
Percent of young people (15–29 years old) in the household	3,424	22.745	1,171	22.794	0.049	-1.4522	1.55
		(21.17)		(22.13)	(0.76)		
Percent of adults (more than 30 years) in the household	3,424	19.731	1,171	20.091	0.360	-1.0159	1.7355
		(19.42)		(19.83)	(0.69)		
Percent of female in the household	3,424	53.516	1,171	53.988	0.472	-1.0798	2.0239
		(21.09)		(21.18)	(0.78)		
Percent of WRA in the household	3,424	33.876	1,171	33.853	-0.022	-1.5974	1.5531
		(22.29)		(22.20)	(0.79)		
Percent of people (older than 15 years old) in the household that are farmers	3,424	56.493	1,171	58.411	1.919	-0.8968	4.734
		(30.56)		(30.39)	(1.42)		
Percent of people (older than 5 years old) in the household with at least some schooling	3,424	49.882	1,171	51.503	1.621	-3.3457	6.5881
		(35.09)		(34.99)	(2.50)		
Percent of adults (older than 15 years) in the household with at least some schooling	3,424	38.689	1,171	38.898	0.209	-4.5684	4.986
		(39.70)		(39.92)	(2.41)		
Percent of people (older than 10 years) in the household who did any work in the last 12 months	3,424	51.64	1,171	54.341	2.701	-1.1559	6.5578
		(33.66)		(33.85)	(1.94)		

Outcome	N	Not ML	N	ML	Diff	CI 95% - Lower	CI 95% - Upper
Percent of people (older than 10 years) who did any work in the household and were paid in cash	3,424	57.125	1,171	59.758	2.633	-1.923	7.1889
		(36.51)		(37.04)	(2.30)		

Notes: Standard deviations are in parentheses. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. Standard errors are clustered at the kebele level.

**Table 63. Balance test results for all Module C Variables**

Outcome	N	Not ML	N	ML	Diff	CI 95% - Lower	CI 95% - Upper
Food Consumption Score (0–100)	3,316	25.601	1,133	24.827	-0.774	-2.5839	1.0362
		(12.44)		(12.90)	(0.91)		
Percent with poor consumption score (< 22)	3,424	44.042	1,171	47.054	3.012	-2.9574	8.9809
		(49.65)		(49.93)	(3.01)		
Percent with borderline consumption score (22–35)	3,424	32.856	1,171	31.085	-1.772	-6.1099	2.5664
		(46.98)		(46.30)	(2.19)		
Percent with acceptable consumption score (> 35)	3,424	23.102	1,171	21.862	-1.240	-6.8052	4.3252
		(42.15)		(41.35)	(2.80)		
Raw FIES score (scale 0 to 8)	3,402	7.312	1,162	7.257	-0.055	-0.2488	0.1391
		(1.28)		(1.38)	(0.10)		
Percent of households that answered yes to all eight questions	3,402	70.106	1,162	70.31	0.204	-6.3525	6.7604
		(45.79)		(45.71)	(3.30)		
Percent of households that answered no to all eight questions	3,402	0.206	1,162	0.344	0.138	-0.244	0.521
		(4.53)		(5.86)	(0.19)		
Percent of households that experienced approx. severe food insecurity	3,402	81.746	1,162	80.034	-1.712	-7.8306	4.4074
		(38.63)		(39.99)	(3.08)		

Outcome	N	Not ML	N	ML	Diff	CI 95% - Lower	CI 95% - Upper
Percent of households that experienced approx. moderate-or-severe food insecurity	3,402	98.236	1,162	97.504	-0.732	-2.2516	0.7875
		(13.16)		(15.61)	(0.77)		
Worried: Percent of households worried they would not have enough food to eat because of a lack of money or other resources	3,402	99.383	1,162	99.484	0.101	-0.3902	0.592
		(7.83)		(7.17)	(0.25)		
Healthy: Percent of households unable to eat healthy and nutritious food because of a lack of money or other resources	3,402	99.471	1,162	99.398	-0.073	-0.6295	0.4829
		(7.26)		(7.74)	(0.28)		
Ate few: Percent of households that ate only a few kinds of foods because of a lack of money or other resources	3,402	99.53	1,162	99.398	-0.132	-0.6284	0.3642
		(6.84)		(7.74)	(0.25)		
Skipped meals: Percent of households that had to skip a meal because there was not enough money or other resources	3,402	93.827	1,162	93.89	0.063	-2.3567	2.4821
		(24.07)		(23.96)	(1.22)		
Ate less: Percent of households that ate less than you thought you should because of a lack of money or other resources	3,402	98.178	1,162	97.246	-0.931	-2.4811	0.6183
		(13.38)		(16.37)	(0.78)		
Runout: Percent of households that did not have food because of a lack of money or other resources	3,402	82.305	1,162	81.497	-0.807	-6.382	4.7678
		(38.17)		(38.85)	(2.81)		
Hungry: Percent of households that were hungry but did not eat because there was not enough money or other resources	3,402	82.334	1,162	79.174	-3.160	-9.3676	3.0474
		(38.14)		(40.62)	(3.13)		
No food whole day: Percent of households that went without eating for a whole day because of a lack of money or other resources	3,402	76.19	1,162	75.645	-0.545	-6.7824	5.6923
		(42.60)		(42.94)	(3.14)		

Notes: Standard deviations are in parentheses. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. Standard errors are clustered at the kebele level.



**Table 64. Balance test results for all Module F Variables**

Outcome	N	Not ML	N	ML	Diff	CI 95% - Lower	CI 95% - Upper
Percent with water available year-round	3,420	66.93	1,170	62.735	-4.195	-9.5269	1.1374
		(47.05)		(48.37)	(2.69)		
Percent with improved water source	3,417	38.777	1,170	31.026	-7.751	-17.5053	2.0032
		(48.73)		(46.28)	(4.91)		
Percent with water source within 30 minutes	3,417	30.524	1,170	24.701	-5.823	-13.8386	2.1926
		(46.06)		(43.15)	(4.04)		
Water use per capita (liters)	1,563	7.895	539	7.377	-0.518	-1.5751	0.5398
		(6.63)		(7.42)	(0.53)		
BL16 Percent with access to basic drinking water services including water use	1,563	0.704	539	0.557	-0.147	-0.9682	0.6738
		(8.36)		(7.45)	(0.41)		
BL17 Handwashing available	3,052	4.227	1,025	3.415	-0.812	-2.8082	1.184
		(20.12)		(18.17)	(1.01)		
BL18 Percent treating water	3,420	44.532	1,170	44.359	-0.173	-8.1441	7.7977
		(49.71)		(49.70)	(4.02)		
Percent with treated water by adding bleach or chlorine before drinking	3,420	4.825	1,170	5.385	0.560	-2.0136	3.1337
		(21.43)		(22.58)	(1.30)		
Percent with treated water by flocculation before drinking	3,420	28.012	1,170	28.376	0.364	-5.6634	6.3921
		(44.91)		(45.10)	(3.04)		
Percent with treated water by filtration before drinking	3,420	3.655	1,170	3.162	-0.493	-1.96	0.9748
		(18.77)		(17.51)	(0.74)		

Outcome	N	Not ML	N	ML	Diff	CI 95% - Lower	CI 95% - Upper
Percent with treated water by solar disinfection	3,420	14.474	1,170	13.248	-1.226	-4.8885	2.4369
		(35.19)		(33.92)	(1.85)		
Percent with treated water by boiling before drinking	3,420	0.38	1,170	0.427	0.047	-0.4531	0.5475
		(6.15)		(6.53)	(0.25)		
BL19 Percent practicing open defecation	3,420	55.439	1,170	55.897	0.459	-7.4261	8.3438
		(49.71)		(49.67)	(3.97)		
BL27 Percent using improved sanitation facilities	3,420	5.292	1,170	4.872	-0.421	-2.9176	2.0764
		(22.39)		(21.54)	(1.26)		

Notes: Standard deviations are in parentheses. \* denotes significance at 10 pct., \*\* at 5 pct., and \*\*\* at 1 pct. Standard errors are clustered at the kebele level.

## ANNEX D: ADDITIONAL SUMMARY TABLES

### Module B

Table 65. Disaggregated tables for Module B

Outcome	N	Control	N	Treatment	N	All	Difference
Household level characteristics							
Average household size	597	5.466	574	5.573	1,171	5.518	0.108
		(2.47)		(2.34)		(2.41)	(0.18)
Average number of children under the age of 5 in the household	597	1.104	574	1.141	1,171	1.122	0.037
		(0.98)		(0.99)		(0.99)	(0.07)
Percent of children under five in the household	597	19.622	574	20.88	1,171	20.239	1.258
		(18.13)		(18.73)		(18.43)	(1.10)
Average age of household head	595	44.476	573	44.299	1,168	44.389	-0.176
		(16.50)		(17.70)		(17.09)	(1.06)
Percent of household heads who are married	597	57.119	574	54.791	1,171	55.978	-2.328
		(49.53)		(49.77)		(49.64)	(3.00)
Percent of household head with some schooling	593	35.919	569	33.04	1,162	34.509	-2.879
		(48.02)		(47.08)		(47.56)	(3.35)
Percent of household heads that are female	597	36.013	574	41.463	1,171	38.685	5.450*
		(48.04)		(49.31)		(48.72)	(3.06)
Average age of female household head	214	45.033	237	43.266	451	44.104	-1.767
		(17.11)		(17.80)		(17.48)	(1.63)

Outcome	N	Control	N	Treatment	N	All	Difference
Percent of female household heads with some schooling	214	38.785	235	37.021	449	37.862	-1.764
		(48.84)		(48.39)		(48.56)	(5.11)
Percent of household heads that are male	597	63.987	574	58.537	1,171	61.315	-5.450*
		(48.04)		(49.31)		(48.72)	(3.06)
Average of male household head	381	44.163	336	45.028	717	44.568	0.866
		(16.16)		(17.62)		(16.85)	(1.36)
Percent of male household heads with some schooling	379	34.301	334	30.24	713	32.398	-4.061
		(47.53)		(46.00)		(46.83)	(3.96)
Percent of children (5–14 years old) in the household	597	34.822	574	34.898	1,171	34.859	0.077
		(21.61)		(21.64)		(21.62)	(1.18)
Percent of young people (15–29 years old) in the household	597	21.582	574	21.884	1,171	21.73	0.302
		(21.51)		(19.18)		(20.39)	(1.23)
Percent of adults (more than 30 years) in the household	597	22.911	574	20.975	1,171	21.962	-1.936
		(20.57)		(20.38)		(20.49)	(1.30)
Percent of female in the household	597	54.554	574	53.193	1,171	53.887	-1.361
		(21.27)		(20.56)		(20.93)	(1.26)
Percent of WRA in the household	597	18.946	574	19.288	1,171	19.114	0.342
		(13.90)		(13.83)		(13.86)	(0.86)
Percent of people (older than 15) in the household that are farmers	597	66.895	574	67.595	1,171	67.238	0.701
		(29.20)		(29.17)		(29.17)	(1.91)
Percent of people (older than 5 years) in the household with at least	597	55.89	574	57.557	1,171	56.707	1.667

Outcome	N	Control	N	Treatment	N	All	Difference
some schooling		(33.88)		(33.61)		(33.74)	(2.68)
Percent of adults (older than 15 years) in the household with at least some schooling	597	43.307	574	44.756	1,171	44.017	1.449
		(40.56)		(39.88)		(40.22)	(3.14)
Percent of people (older than 10 years) in the household who did any work in the last 12 months	597	46.447	574	43.713	1,171	45.107	-2.734
		(35.96)		(36.82)		(36.40)	(2.39)
Percent of people (older than 10 years) who did any work in the household and were paid in cash	597	46.352	570	42.771	1,167	44.603	-3.581
		(36.00)		(36.91)		(36.48)	(2.48)
Percent of households with at least one child younger than 5 years	597	66.834	574	68.641	1,171	67.72	1.807
		(47.12)		(46.44)		(46.77)	(2.96)
Percent of households with at least one child (5–14 years old)	597	81.24	574	82.23	1,171	81.725	0.990
		(39.07)		(38.26)		(38.66)	(2.05)
Percent of households with at least one girl or woman of reproductive age	597	79.062	574	80.314	1,171	79.675	1.252
		(40.72)		(39.80)		(40.26)	(2.45)
Percent of households with at least one farmer	597	98.827	574	98.955	1,171	98.89	0.127
		(10.77)		(10.18)		(10.48)	(0.67)
Percent households with adult male and female	597	70.017	574	71.08	1,171	70.538	1.063
		(45.86)		(45.38)		(45.61)	(3.19)
Percent households with adult female only	597	4.355	574	2.091	1,171	3.245	-2.265*
		(20.43)		(14.32)		(17.73)	(1.15)
Percent households with adult male only	597	25.628	574	26.829	1,171	26.217	1.201
		(43.69)		(44.35)		(44.00)	(3.34)

Outcome	N	Control	N	Treatment	N	All	Difference
Individual level characteristics							
Average age	3,261	18.434	3,197	18.193	6,458	18.315	-0.241
		(18.24)		(18.28)		(18.26)	(0.43)
Percent of children under 5 years old	3,263	20.196	3,199	20.475	6,462	20.334	0.279
		(40.15)		(40.36)		(40.25)	(0.96)
Percent of children (5–14 years old)	3,263	38.431	3,199	38.324	6,462	38.378	-0.106
		(48.65)		(48.63)		(48.63)	(1.04)
Percent of adults (more than 30 years)	3,263	20.38	3,199	18.881	6,462	19.638	-1.499**
		(40.29)		(39.14)		(39.73)	(0.70)
Percent of females	3,263	53.141	3,199	52.141	6,462	52.646	-1.000
		(49.91)		(49.96)		(49.93)	(1.00)
Percent of Women of reproductive age (WRA)	3,263	17.683	3,199	18.131	6,462	17.905	0.448
		(38.16)		(38.53)		(38.34)	(0.62)
Percent of adults who are married	1,350	50.815	1,318	48.331	2,668	49.588	-2.484
		(50.01)		(49.99)		(50.01)	(2.15)
Percent of women (15 or more years old) who are married	731	46.922	741	42.915	1,472	44.905	-4.007
		(49.94)		(49.53)		(49.76)	(2.45)
Percent of men (15 or more years old) who are married	619	55.412	577	55.286	1,196	55.351	-0.126
		(49.75)		(49.76)		(49.73)	(2.92)
Percent of people (15 or more years old) with at least some schooling	1,346	45.691	1,310	46.336	2,656	46.009	0.645
		(49.83)		(49.88)		(49.85)	(3.18)

Outcome	N	Control	N	Treatment	N	All	Difference
Percent of population (older than 5 years) with at least some schooling	2,600	58.731	2,535	59.408	5,135	59.065	0.678
		(49.24)		(49.12)		(49.18)	(2.63)
Percent of children (8-20) that attended school in 2022	1,134	75.485	1,119	75.246	2,253	75.366	-0.239
		(43.04)		(43.18)		(43.10)	(2.70)
Percent of people (15 or more years old) who are farmers	1,348	57.641	1,316	58.359	2,664	57.995	0.718
		(49.43)		(49.32)		(49.37)	(1.95)
Percent of people (older than 10 years) who did any work in the last 12 months	1,727	39.896	1,691	37.788	3,418	38.853	-2.107
		(48.98)		(48.50)		(48.75)	(2.02)
Percent of people (older than 10 years) who did any work and were paid in cash	1,723	39.756	1,665	36.817	3,388	38.312	-2.939
		(48.95)		(48.25)		(48.62)	(2.11)
Percent of people (older than 10 years) who worked for someone else in the past 12 months	1,727	26.867	1,691	23.655	3,418	25.278	-3.213
		(44.34)		(42.51)		(43.47)	(2.02)
Percent of people (older than 10 years) who were self-employed in the past 12 months	1,727	15.055	1,691	16.381	3,418	15.711	1.326
		(35.77)		(37.02)		(36.40)	(1.53)
Percent of people (older than 10 years) who did group work in the past 12 months	1,727	0.116	1,691	0.71	3,418	0.41	0.594*
		(3.40)		(8.40)		(6.39)	(0.32)
Average number of hours worked during the past 30 days for people who did some work in the past 12 months	688	78.651	638	80.373	1,326	79.48	1.722
		(63.35)		(68.43)		(65.82)	(4.50)

Notes: Standard deviations are in parentheses.

## Module C

**Table 66. Disaggregated tables for Module C**

Outcome	N	Control	N	Treatment	N	All	Difference
BL10 Food Consumption Score (0–112)	582	40.675	560	42.362	1,142	41.502	1.686
		(16.16)		(17.09)		(16.64)	(1.25)
F&M Food Consumption Score (0–112)	406	41.504	396	43.042	802	42.263	1.538
		(16.63)		(17.59)		(17.12)	(1.42)
FNM Food Consumption Score (0–112)	151	38.526	152	40.664	303	39.599	2.138
		(14.87)		(14.88)		(14.89)	(1.85)
MNF Food Consumption Score (0–112)	25	40.2	12	41.417	37	40.595	1.217
		(15.17)		(25.36)		(18.72)	(5.21)
Percent of households with poor consumption score (<22)	582	9.794	560	9.821	1,142	9.807	0.028
		(29.75)		(29.79)		(29.75)	(2.14)
F&M Percent of households with poor consumption score (<22)	406	9.36	396	9.848	802	9.601	0.489
		(29.16)		(29.83)		(29.48)	(2.41)
FNM Percent of households with poor consumption score (<22)	151	11.258	152	8.553	303	9.901	-2.706
		(31.71)		(28.06)		(29.92)	(4.03)
MNF Percent of households with poor consumption score (<22)	25	8	12	25	37	13.514	17.000
		(27.69)		(45.23)		(34.66)	(13.02)
Percent of households with borderline consumption score (22–35)	582	31.1	560	29.464	1,142	30.298	-1.635
		(46.33)		(45.63)		(45.97)	(3.09)
F&M Percent of households with borderline consumption score (22–	406	29.064	396	28.03	802	28.554	-1.034



Outcome	N	Control	N	Treatment	N	All	Difference
35)		(45.46)		(44.97)		(45.20)	(3.54)
FNM Percent of households with borderline consumption score (22–35)	151	36.424	152	32.895	303	34.653	-3.529
		(48.28)		(47.14)		(47.67)	(5.79)
MNF Percent of households with borderline consumption score (22–35)	25	32	12	33.333	37	32.432	1.333
		(47.61)		(49.24)		(47.46)	(13.55)
Percent of households with acceptable consumption score (>35)	582	59.107	560	60.714	1,142	59.895	1.608
		(49.21)		(48.88)		(49.03)	(3.54)
F&M Percent of households with acceptable consumption score (>35)	406	61.576	396	62.121	802	61.845	0.545
		(48.70)		(48.57)		(48.61)	(3.93)
FNM Percent of households with acceptable consumption score (>35)	151	52.318	152	58.553	303	55.446	6.235
		(50.11)		(49.43)		(49.78)	(5.31)
MNF Percent of households with acceptable consumption score (>35)	25	60	12	41.667	37	54.054	-18.333
		(50.00)		(51.49)		(50.52)	(14.76)
Raw FIES score (scale 0 to 8)	592	5.747	572	5.671	1,164	5.71	-0.075
		(1.80)		(1.96)		(1.88)	(0.13)
F&M Raw FIES score (scale 0 to 8)	415	5.617	407	5.634	822	5.625	0.017
		(1.81)		(1.97)		(1.89)	(0.14)
FNM Raw FIES score (scale 0 to 8)	152	6.158	153	5.725	305	5.941	-0.432**
		(1.64)		(1.91)		(1.79)	(0.20)
MNF Raw FIES score (scale 0 to 8)	25	5.4	12	6.25	37	5.676	0.850
		(2.10)		(2.34)		(2.19)	(0.60)

Outcome	N	Control	N	Treatment	N	All	Difference
Percent of households that answered yes to all eight questions	592	22.466	572	26.573	1,164	24.485	4.107
		(41.77)		(44.21)		(43.02)	(3.05)
F&M Percent of households that answered yes to all eight questions	415	19.518	407	26.536	822	22.993	7.018**
		(39.68)		(44.21)		(42.10)	(3.26)
FNM Percent of households that answered yes to all eight questions	152	30.263	153	25.49	305	27.869	-4.773
		(46.09)		(43.72)		(44.91)	(5.85)
MNF Percent of households that answered yes to all eight questions	25	24	12	41.667	37	29.73	17.667
		(43.59)		(51.49)		(46.34)	(18.83)
Percent of households that answered no to all questions	592	0.845	572	1.224	1,164	1.031	0.379
		(9.16)		(11.00)		(10.11)	(0.56)
F&M Percent of households that answered no to all eight questions	415	0.964	407	1.474	822	1.217	0.510
		(9.78)		(12.07)		(10.97)	(0.79)
FNM Percent of households that answered no to all eight questions	152	0	153	0	305	0	0.000
		(0.00)		(0.00)		(0.00)	(.)
MNF Percent of households that answered no to all eight questions	25	4	12	8.333	37	5.405	4.333
		(20.00)		(28.87)		(22.92)	(3.50)
Percent of households that experienced approx. severe food insecurity	592	38.345	572	38.986	1,164	38.66	0.641
		(48.66)		(48.81)		(48.72)	(3.45)
F&M Percent of households that experienced approx. severe food insecurity	415	35.904	407	38.084	822	36.983	2.180
		(48.03)		(48.62)		(48.31)	(3.84)
FNM Percent of households that experienced approx. severe food	152	46.053	153	39.869	305	42.951	-6.183

Outcome	N	Control	N	Treatment	N	All	Difference
insecurity		(50.01)		(49.12)		(49.58)	(6.61)
MNF Percent of households that experienced approx. severe food insecurity	25	32	12	58.333	37	40.541	26.333
		(47.61)		(51.49)		(49.77)	(17.37)
Percent of households that experienced approx. moderate-or-severe food insecurity	592	88.345	572	85.664	1,164	87.027	-2.680
		(32.12)		(35.07)		(33.61)	(2.01)
F&M Percent of households that experienced approx. moderate-or-severe food insecurity	415	86.988	407	85.504	822	86.253	-1.484
		(33.68)		(35.25)		(34.46)	(2.34)
FNM Percent of households that experienced approx. moderate-or-severe food insecurity	152	93.421	153	85.621	305	89.508	-7.800**
		(24.87)		(35.20)		(30.70)	(3.09)
MNF Percent of households that experienced approx. moderate-or-severe food insecurity	25	80	12	91.667	37	83.784	11.667
		(40.82)		(28.87)		(37.37)	(8.90)
Staples	582	5.204	560	5.284	1,142	5.243	0.079
		(2.54)		(2.55)		(2.54)	(0.19)
F&M Staples	406	5.16	396	5.258	802	5.208	0.097
		(2.56)		(2.58)		(2.57)	(0.22)
FNM Staples	151	5.411	152	5.388	303	5.399	-0.022
		(2.44)		(2.45)		(2.44)	(0.32)
MNF Staples	25	4.68	12	4.833	37	4.73	0.153
		(2.73)		(3.07)		(2.81)	(1.09)
Pulses	582	3.694	560	3.771	1,142	3.732	0.077
		(2.81)		(2.81)		(2.81)	(0.22)

Outcome	N	Control	N	Treatment	N	All	Difference
F&M Pulses	406	3.833	396	3.806	802	3.819	-0.027
		(2.81)		(2.82)		(2.81)	(0.26)
FNM Pulses	151	3.238	152	3.789	303	3.515	0.551*
		(2.77)		(2.75)		(2.77)	(0.31)
MNF Pulses	25	4.2	12	2.417	37	3.622	-1.783*
		(2.96)		(3.00)		(3.05)	(1.00)
Vegetables	582	6.086	560	6.17	1,142	6.127	0.084
		(1.87)		(1.78)		(1.83)	(0.14)
F&M Vegetables	406	6.128	396	6.162	802	6.145	0.034
		(1.82)		(1.83)		(1.82)	(0.17)
FNM Vegetables	151	5.927	152	6.158	303	6.043	0.231
		(2.06)		(1.72)		(1.89)	(0.26)
MNF Vegetables	25	6.36	12	6.583	37	6.432	0.223
		(1.35)		(1.00)		(1.24)	(0.35)
Fruit	582	5.773	560	5.789	1,142	5.781	0.016
		(2.28)		(2.24)		(2.26)	(0.20)
F&M Fruit	406	5.872	396	5.896	802	5.884	0.025
		(2.23)		(2.17)		(2.20)	(0.22)
FNM Fruit	151	5.45	152	5.487	303	5.469	0.037
		(2.43)		(2.39)		(2.41)	(0.31)
MNF Fruit	25	6.12	12	6.083	37	6.108	-0.037

Outcome	N	Control	N	Treatment	N	All	Difference
		(2.03)		(2.23)		(2.07)	(0.88)
Meat and Fish	582	0.811	560	0.8	1,142	0.806	-0.011
		(1.74)		(1.56)		(1.65)	(0.11)
F&M Meat and Fish	406	0.887	396	0.879	802	0.883	-0.008
		(1.83)		(1.62)		(1.73)	(0.14)
FNM Meat and Fish	151	0.649	152	0.566	303	0.607	-0.083
		(1.52)		(1.21)		(1.37)	(0.17)
MNF Meat and Fish	25	0.56	12	1.167	37	0.757	0.607
		(1.33)		(2.72)		(1.88)	(0.61)
Milk and Dairy	582	0.57	560	0.829	1,142	0.697	0.258**
		(1.68)		(2.01)		(1.85)	(0.13)
F&M Milk and Dairy	406	0.579	396	0.879	802	0.727	0.300**
		(1.71)		(2.07)		(1.90)	(0.13)
FNM Milk and Dairy	151	0.563	152	0.658	303	0.611	0.095
		(1.65)		(1.80)		(1.72)	(0.22)
MNF Milk and Dairy	25	0.48	12	1.333	37	0.757	0.853
		(1.23)		(2.71)		(1.85)	(0.68)
Sugar	582	0.722	560	0.696	1,142	0.709	-0.025
		(1.95)		(1.90)		(1.93)	(0.15)
F&M Sugar	406	0.727	396	0.773	802	0.749	0.046
		(1.94)		(2.03)		(1.98)	(0.17)

Outcome	N	Control	N	Treatment	N	All	Difference
FNM Sugar	151	0.689	152	0.553	303	0.62	-0.136
		(1.93)		(1.61)		(1.78)	(0.22)
MNF Sugar	25	0.84	12	0	37	0.568	-0.840*
		(2.32)		(0.00)		(1.94)	(0.47)
Oil	582	2.876	560	3.316	1,142	3.092	0.440*
		(3.08)		(3.16)		(3.12)	(0.25)
F&M Oil	406	2.921	396	3.27	802	3.094	0.349
		(3.10)		(3.19)		(3.15)	(0.29)
FNM Oil	151	2.841	152	3.408	303	3.125	0.567
		(3.05)		(3.04)		(3.05)	(0.40)
MNF Oil	25	2.36	12	3.667	37	2.784	1.307
		(2.96)		(3.52)		(3.16)	(0.90)
Condiments	582	2.28	560	1.784	1,142	2.037	-0.496*
		(3.18)		(2.89)		(3.05)	(0.29)
F&M Condiments	406	2.18	396	1.808	802	1.996	-0.372
		(3.14)		(2.94)		(3.04)	(0.33)
FNM Condiments	151	2.464	152	1.651	303	2.056	-0.812**
		(3.27)		(2.75)		(3.04)	(0.37)
MNF Condiments	25	2.8	12	2.667	37	2.757	-0.133
		(3.50)		(3.08)		(3.33)	(1.23)
Worried: Percent of households that were worried they would not	592	93.074	572	90.909	1,164	92.01	-2.165

Outcome	N	Control	N	Treatment	N	All	Difference
have enough food to eat because of a lack of money or other resources?		(25.41)		(28.77)		(27.13)	(1.45)
F&M Worried: Percent of households that were worried they would not have enough food to eat because of a lack of money or other resources?	415	93.494	407	91.892	822	92.701	-1.602
		(24.69)		(27.33)		(26.03)	(1.91)
FNM Worried: Percent of households that were worried they would not have enough food to eat because of a lack of money or other resources?	152	92.763	153	88.235	305	90.492	-4.528*
		(26.00)		(32.32)		(29.38)	(2.33)
MNF Worried: Percent of households that were worried they would not have enough food to eat because of a lack of money or other resources?	25	88	12	91.667	37	89.189	3.667
		(33.17)		(28.87)		(31.48)	(6.55)
Healthy: Percent of households that were unable to eat healthy and nutritious food because of a lack of money or other resources?	592	95.101	572	93.357	1,164	94.244	-1.745
		(21.60)		(24.93)		(23.30)	(1.44)
F&M Healthy: Percent of households that were unable to eat healthy and nutritious food because of a lack of money or other resources?	415	94.94	407	94.103	822	94.526	-0.837
		(21.94)		(23.59)		(22.76)	(1.73)
FNM Healthy: Percent of households that were unable to eat healthy and nutritious food because of a lack of money or other resources?	152	96.053	153	91.503	305	93.77	-4.549
		(19.54)		(27.97)		(24.21)	(2.74)
MNF Healthy: Percent of households that were unable to eat healthy and nutritious food because of a lack of money or other resources?	25	92	12	91.667	37	91.892	-0.333
		(27.69)		(28.87)		(27.67)	(5.21)
Ate few: Percent of households that ate only a few kinds of foods because of a lack of money or other resources?	592	96.959	572	95.455	1,164	96.22	-1.505
		(17.18)		(20.85)		(19.08)	(1.43)
F&M Ate few: Percent of households that ate only a few kinds of foods because of a lack of money or other resources?	415	96.867	407	95.086	822	95.985	-1.781
		(17.44)		(21.64)		(19.64)	(1.68)
FNM Ate few: Percent of households that ate only a few kinds of	152	98.026	153	96.732	305	97.377	-1.294

Outcome	N	Control	N	Treatment	N	All	Difference
foods because of a lack of money or other resources?		(13.96)		(17.84)		(16.01)	(2.09)
MNF Ate Few: Percent of households that ate only a few kinds of foods because of a lack of money or other resources?	25	92	12	91.667	37	91.892	-0.333
		(27.69)		(28.87)		(27.67)	(5.47)
Skipped Meals: Percent of households that had to skip a meal because there was not enough money or other resources to get food?	592	73.311	572	67.483	1,164	70.447	-5.828*
		(44.27)		(46.89)		(45.65)	(3.11)
F&M Skipped Meals: Percent of households that had to skip a meal because there was not enough money or other resources to get food?	415	70.602	407	67.322	822	68.978	-3.281
		(45.61)		(46.96)		(46.29)	(3.70)
FNM Skipped Meals: Percent of households that had to skip a meal because there was not enough money or other resources to get food?	152	82.237	153	67.974	305	75.082	-14.263***
		(38.35)		(46.81)		(43.32)	(4.93)
MNF Skipped Meals: Percent of households that had to skip a meal because there was not enough money or other resources to get food?	25	64	12	66.667	37	64.865	2.667
		(48.99)		(49.24)		(48.40)	(14.51)
Ate Less: Percent of households that ate less than you thought you should because of a lack of money or other resources?	592	86.486	572	84.965	1,164	85.739	-1.521
		(34.22)		(35.77)		(34.98)	(2.19)
F&M Ate Less: Percent of households that ate less than you thought you should because of a lack of money or other resources?	415	85.06	407	84.275	822	84.672	-0.785
		(35.69)		(36.45)		(36.05)	(2.74)
FNM Ate Less: Percent of households that ate less than you thought you should because of a lack of money or other resources?	152	92.105	153	86.275	305	89.18	-5.831*
		(27.05)		(34.52)		(31.11)	(3.07)
MNF Ate Less: Percent of households that ate less than you thought you should because of a lack of money or other resources?	25	76	12	91.667	37	81.081	15.667
		(43.59)		(28.87)		(39.71)	(9.60)
Runout: Percent of households that did not have food because of a	592	41.047	572	41.259	1,164	41.151	0.211



Outcome	N	Control	N	Treatment	N	All	Difference
lack of money or other resources?		(49.23)		(49.27)		(49.23)	(3.02)
F&M Runout: Percent of households that did not have food because of a lack of money or other resources?	415	37.831	407	41.032	822	39.416	3.201
		(48.56)		(49.25)		(48.90)	(3.27)
FNM Runout: Percent of households that did not have food because of a lack of money or other resources?	152	49.342	153	40.523	305	44.918	-8.819
		(50.16)		(49.25)		(49.82)	(5.99)
MNF Runout: Percent of households that did not have food because of a lack of money or other resources?	25	44	12	58.333	37	48.649	14.333
		(50.66)		(51.49)		(50.67)	(18.10)
Hungry: Percent of households that were hungry but did not eat because there was not enough money or other resources for food?	592	56.419	572	58.566	1,164	57.474	2.148
		(49.63)		(49.30)		(49.46)	(3.19)
F&M Hungry: Percent of households that were hungry but did not eat because there was not enough money or other resources for food?	415	53.976	407	55.283	822	54.623	1.307
		(49.90)		(49.78)		(49.82)	(3.35)
FNM Hungry: Percent of households that were hungry but did not eat because there was not enough money or other resources for food?	152	65.132	153	66.013	305	65.574	0.881
		(47.81)		(47.52)		(47.59)	(5.63)
MNF Hungry: Percent of households that were hungry but did not eat because there was not enough money or other resources for food?	25	44	12	75	37	54.054	31.000
		(50.66)		(45.23)		(50.52)	(20.16)
No Food Whole Day: Percent of households that went without eating for a whole day because of a lack of money or other resources?	592	32.264	572	35.14	1,164	33.677	2.876
		(46.79)		(47.78)		(47.28)	(3.32)
F&M No Food Whole Day: Percent of households that went without eating for a whole day because of a lack of money or other resources?	415	28.916	407	34.398	822	31.63	5.482
		(45.39)		(47.56)		(46.53)	(3.70)
FNM No Food Whole Day: Percent of households that went without	152	40.132	153	35.294	305	37.705	-4.837

Outcome	N	Control	N	Treatment	N	All	Difference
eating for a whole day because of a lack of money or other resources?		(49.18)		(47.95)		(48.54)	(5.79)
MNF No Food Whole Day: Percent of households that went without eating for a whole day because of a lack of money or other resources?	25	40	12	58.333	37	45.946	18.333
		(50.00)		(51.49)		(50.52)	(16.23)

Notes: Standard deviations are in parentheses.

## Module D

**Table 67. Disaggregated table for Module D**

Outcome	N	Control	N	Treatment	N	All	Difference
BL 13 Prevalence of exclusive breastfeeding of children under 6 months	71	47.887	45	62.222	116	53.448	14.335*
		(50.31)		(49.03)		(50.10)	(7.63)
Prevalence of exclusive breastfeeding of male children under 6 months	33	45.455	23	60.87	56	51.786	15.415
		(50.56)		(49.90)		(50.42)	(12.71)
Prevalence of exclusive breastfeeding of female children under 6 months	38	50	22	63.636	60	55	13.636
		(50.67)		(49.24)		(50.17)	(10.79)
BL14 Percent of children under five (0–59 months) who had diarrhea in the prior 2 weeks	397	42.821	390	41.538	787	42.186	-1.283
		(49.54)		(49.34)		(49.42)	(3.61)
Percent of male children under 5 (0–59 months) who had diarrhea in the prior 2 weeks	190	42.632	198	37.879	388	40.206	-4.753
		(49.58)		(48.63)		(49.09)	(4.91)
Percent of female children under 5 (0–59 months) who had diarrhea in the prior 2 weeks	207	42.995	192	45.313	399	44.11	2.317
		(49.63)		(49.91)		(49.71)	(5.02)
BL 15 Percent of children under 5 (0–59 months) with diarrhea	170	19.412	162	14.815	332	17.169	-4.597

Outcome	N	Control	N	Treatment	N	All	Difference
treated with oral rehydration therapy		(39.67)		(35.63)		(37.77)	(4.52)
Percent of male children under 5 (0–59 months) with diarrhea treated with oral rehydration therapy	81	14.815	75	17.333	156	16.026	2.519
		(35.75)		(38.11)		(36.80)	(7.07)
Percent of female children under 5 (0–59 months) with diarrhea treated with oral rehydration therapy	89	23.596	87	12.644	176	18.182	-10.952*
		(42.70)		(33.43)		(38.68)	(5.94)

Notes: Standard deviations are in parentheses.

## Module E

Table 68. Disaggregated table for Module E

Outcome	N	Control	N	Treatment	N	All	Difference
Minimum Dietary Diversity Score	445	3.436	433	3.665	878	3.549	0.229***
		(1.15)		(1.26)		(1.21)	(0.08)
BL11 Percent of women of reproductive age consuming a diet of minimum diversity MDD-W	445	16.629	433	24.249	878	20.387	7.620***
		(37.28)		(42.91)		(40.31)	(2.44)
Percent of women of reproductive age consuming a diet of minimum diversity MDD-W (15–18)	39	17.949	42	28.571	81	23.457	10.623
		(38.88)		(45.72)		(42.64)	(9.08)
Percent of women of reproductive age consuming a diet of minimum diversity MDD-W (19+)	406	16.502	391	23.785	797	20.075	7.283***
		(37.17)		(42.63)		(40.08)	(2.59)
Percent of young women of reproductive age (15–29 years old) consuming a diet of minimum diversity MDD-W	229	0.153	252	0.246	481	0.202	0.093**
		(0.36)		(0.43)		(0.40)	(0.04)
BL26 Percent of births receiving at least four antenatal care visits	331	51.662	329	58.055	660	54.848	6.393

Outcome	N	Control	N	Treatment	N	All	Difference
during pregnancy		(50.05)		(49.42)		(49.80)	(4.37)
BL26 Percent of births receiving at least four antenatal care visits during pregnancy (15–29)	176	0.5	196	0.597	372	0.551	0.097*
		(0.50)		(0.49)		(0.50)	(0.05)
Grains and roots	445	68.989	433	69.977	878	69.476	0.988
		(46.31)		(45.89)		(46.08)	(3.99)
Pulses (beans, peas, and lentils)	445	56.18	433	56.582	878	56.378	0.402
		(49.67)		(49.62)		(49.62)	(4.51)
Nuts and seeds (including groundnuts)	445	0.449	433	0.462	878	0.456	0.012
		(6.70)		(6.79)		(6.74)	(0.33)
Dairy	445	8.09	433	11.778	878	9.909	3.688*
		(27.30)		(32.27)		(29.90)	(2.17)
Meat, Poultry, and fish	445	16.18	433	24.48	878	20.273	8.301**
		(36.87)		(43.05)		(40.23)	(3.23)
Eggs	445	0.674	433	1.155	878	0.911	0.481
		(8.19)		(10.70)		(9.51)	(0.73)
Dark green leafy veg	445	83.82	433	85.681	878	84.738	1.861
		(36.87)		(35.07)		(35.98)	(2.71)
Other vitamin A-rich fruits and veg	445	35.955	433	45.497	878	40.661	9.541***
		(48.04)		(49.85)		(49.15)	(3.01)
Other veg	445	2.247	433	1.848	878	2.05	-0.400
		(14.84)		(13.48)		(14.18)	(1.30)

Outcome	N	Control	N	Treatment	N	All	Difference
Other fruit	445	71.011	433	69.053	878	70.046	-1.958
		(45.42)		(46.28)		(45.83)	(3.45)

Notes: Standard deviations are in parentheses.

## Module F

Table 69. Disaggregated table for Module F

Outcome	N	Control	N	Treatment	N	All	Difference
BL16 Percent of households using basic drinking water services	588	0.85	564	0.887	1,152	0.868	0.036
		(9.19)		(9.38)		(9.28)	(0.56)
F&M BL16 Percent of households using basic drinking water services	416	0.481	402	0.746	818	0.611	0.265
		(6.93)		(8.62)		(7.80)	(0.73)
FNM BL16 Percent of households using basic drinking water services	147	2.041	151	0.662	298	1.342	-1.379
		(14.19)		(8.14)		(11.53)	(0.92)
MNF BL16 Percent of households using basic drinking water services	25	0	11	9.091	36	2.778	9.091
		(0.00)		(30.15)		(16.67)	(7.37)
BL18 Percent of households practicing correct use of recommended household water treatment technologies	597	32.161	574	33.624	1,171	32.878	1.463
		(46.75)		(47.28)		(47.00)	(2.90)
Percent of households who treated water by adding bleach or chlorine before drinking	597	0	574	0	1,171	0	0.000
		(0.00)		(0.00)		(0.00)	(.)
Percent of households who treated water by flocculation before drinking	597	6.03	574	4.878	1,171	5.465	-1.152
		(23.82)		(21.56)		(22.74)	(1.96)
Percent of households who treated water by filtration before drinking	597	0.503	574	1.22	1,171	0.854	0.717

Outcome	N	Control	N	Treatment	N	All	Difference
		(7.08)		(10.99)		(9.21)	(0.54)
Percent of households who treated water by solar disinfection	597	0.168	574	0.348	1,171	0.256	0.181
		(4.09)		(5.90)		(5.06)	(0.30)
Percent of households who treated water by boiling before drinking	597	27.471	574	29.965	1,171	28.693	2.494
		(44.67)		(45.85)		(45.25)	(2.68)
BL27 Percent of households with access to a basic sanitation service	597	9.045	574	12.544	1,171	10.76	3.498
		(28.71)		(33.15)		(31.00)	(2.32)
F&M BL27 Percent of households with access to a basic sanitation service	418	8.373	408	12.255	826	10.291	3.882
		(27.73)		(32.83)		(30.40)	(2.64)
FNM BL27 Percent of households with access to a basic sanitation service	153	11.765	154	13.636	307	12.704	1.872
		(32.32)		(34.43)		(33.36)	(3.43)
MNF BL27 Percent of households with access to a basic sanitation service	26	3.846	12	8.333	38	5.263	4.487
		(19.61)		(28.87)		(22.63)	(8.54)
BL19 Percent of households practicing open defecation	597	48.576	574	40.941	1,171	44.833	-7.635*
		(50.02)		(49.22)		(49.75)	(4.37)
F&M BL19 Percent of households practicing open defecation	418	46.651	408	40.441	826	43.584	-6.210
		(49.95)		(49.14)		(49.62)	(4.95)
FNM BL19 Percent of households practicing open defecation	153	53.595	154	40.26	307	46.906	-13.335**
		(50.03)		(49.20)		(49.99)	(6.42)
MNF BL19 Percent of households practicing open defecation	26	50	12	66.667	38	55.263	16.667
		(50.99)		(49.24)		(50.39)	(14.78)

Outcome	N	Control	N	Treatment	N	All	Difference
BL17 Percent of households with soap or ash, and water at a handwashing station on premises	597	0.335	574	1.045	1,171	0.683	0.710
		(5.78)		(10.18)		(8.24)	(0.54)
F&M BL17 Percent of households with soap or ash, and water at a handwashing station on premises	418	0.478	408	1.225	826	0.847	0.747
		(6.91)		(11.02)		(9.17)	(0.74)
FNM BL17 Percent of households with soap or ash, and water at a handwashing station on premises	153	0	154	0.649	307	0.326	0.649
		(0.00)		(8.06)		(5.71)	(0.66)
MNF BL17 Percent of households with soap or ash, and water at a handwashing station on premises	26	0	12	0	38	0	0.000
		(0.00)		(0.00)		(0.00)	(.)

Notes: Standard deviations are in parentheses.

## Module G

Table 70. Disaggregated table for Module G

Outcome	N	Control	N	Treatment	N	All	Difference
BL29 Percent of farming households who used financial services	583	41.852	564	46.986	1,147	44.377	5.133*
		(49.37)		(49.95)		(49.70)	(2.84)
Male: BL29 Percent of farming households who used financial services	381	36.745	350	35.762	731	36.275	-0.984
		(48.14)		(47.34)		(47.73)	(3.43)
Female: BL29 Percent of farming households who used financial services	365	32.466	379	36.544	744	34.543	4.078
		(46.67)		(47.74)		(47.23)	(3.33)
Percent of farming households using agricultural credit	583	34.991	564	33.865	1,147	34.438	-1.126
		(47.74)		(47.37)		(47.54)	(2.67)
Male: Percent of farming households using agricultural credit	381	29.921	350	25.905	731	27.998	-4.016

Outcome	N	Control	N	Treatment	N	All	Difference
		(45.71)		(43.23)		(44.56)	(3.04)
Female: Percent of farming households using agricultural credit	365	25.068	379	23.879	744	24.462	-1.190
		(43.16)		(42.30)		(42.70)	(2.86)
Percent of farming households who saved	583	15.266	564	28.191	1,147	21.622	12.926***
		(36.00)		(45.03)		(41.18)	(2.69)
Male: Percent of farming households who saved	381	12.861	350	18.81	731	15.709	5.949**
		(33.52)		(38.78)		(36.23)	(2.82)
Female: Percent of farming households who saved	365	12.466	379	24.142	744	18.414	11.677***
		(32.97)		(42.62)		(38.61)	(3.05)
Percent of farming households using insurance	583	0	564	0	1,147	0	0.000
		(0.00)		(0.00)		(0.00)	(.)
Male: Percent of farming households using insurance	381	0	350	0	731	0	0.000
		(0.00)		(0.00)		(0.00)	(.)
Female: Percent of farming households using insurance	365	0	379	0	744	0	0.000
		(0.00)		(0.00)		(0.00)	(.)
BL30 Percent of farming households who practiced at least one value chain activity	239	35.983	209	66.029	448	50	30.045***
		(48.10)		(47.47)		(50.06)	(5.59)
Male: Percent of farming households who practiced at least one value chain activity	168	29.762	139	55.396	307	41.368	25.634***
		(45.86)		(49.52)		(49.16)	(6.27)
Female: Percent of farming households who practiced at least one value chain activity	144	26.042	130	50.385	274	37.591	24.343***
		(43.84)		(49.61)		(48.15)	(7.58)



Outcome	N	Control	N	Treatment	N	All	Difference
BL30 Percent of farming households who practiced at least one value chain activity (15–29)	77	14.286	83	53.012	160	34.375	38.726***
		(33.30)		(48.36)		(45.97)	(7.04)
Percent of farming households with a plot over which they make decisions, who practiced at least one value chain activity	236	32.203	208	61.058	444	45.721	28.854***
		(46.82)		(48.88)		(49.87)	(5.80)
Male: Percent of farming households with a plot over which they make decisions, who practiced at least one value chain activity	168	27.381	138	48.551	306	36.928	21.170***
		(44.72)		(49.80)		(48.17)	(6.20)
Female: Percent of farming households with a plot over which they make decisions, who practiced at least one value chain activity	141	24.823	129	47.674	270	35.741	22.852***
		(43.35)		(49.95)		(47.92)	(7.60)
Percent of farming households with a plot over which they make decisions, who practiced at least one value chain activity (15–29)	76	12.5	83	50	159	32.075	37.500***
		(31.75)		(48.77)		(45.45)	(7.19)
Percent of farming households with animals, who practiced at least one value chain activity	206	14.563	182	25.275	388	19.588	10.712**
		(35.36)		(43.58)		(39.74)	(4.26)
Male: Percent of farming households with animals, who practiced at least one value chain activity	148	10.135	126	22.619	274	15.876	12.484**
		(30.28)		(41.76)		(36.49)	(4.87)
Female: Percent of farming households with animals, who practiced at least one value chain activity	120	9.583	109	14.679	229	12.009	5.096
		(29.20)		(34.90)		(32.07)	(4.33)
Percent of farming households with animals, who practiced at least one value chain activity (15–29)	64	3.125	70	13.571	134	8.582	10.446**
		(15.11)		(32.88)		(26.39)	(4.55)
Purchase inputs for crops	236	13.559	208	20.673	444	16.892	7.114
		(34.31)		(40.59)		(37.51)	(4.89)
Use of training and extension services	236	6.78	208	17.308	444	11.712	10.528***

Outcome	N	Control	N	Treatment	N	All	Difference
		(25.19)		(37.92)		(32.19)	(3.61)
Contract farming	236	0	208	0	444	0	0.000
		(0.00)		(0.00)		(0.00)	(.)
Drying produce	236	2.542	208	3.365	444	2.928	0.823
		(15.77)		(18.08)		(16.88)	(2.11)
Processing produce	236	0	208	0	444	0	0.000
		(0.00)		(0.00)		(0.00)	(.)
Trading or marketing produce through agro-dealers and/or community associations	236	0.847	208	0.962	444	0.901	0.114
		(9.19)		(9.78)		(9.46)	(0.65)
Control of pests	236	7.203	208	20.673	444	13.514	13.470***
		(25.91)		(40.59)		(34.23)	(4.31)
Adoption of new farming technique	236	4.661	208	20.673	444	12.162	16.012***
		(21.13)		(40.59)		(32.72)	(4.42)
Sale of products	236	5.508	208	11.538	444	8.333	6.030*
		(22.86)		(32.03)		(27.67)	(3.24)
Purchase inputs for livestock	206	1.456	182	3.846	388	2.577	2.390
		(12.01)		(19.28)		(15.87)	(1.54)
Use of training and extension services	206	0	182	2.747	388	1.289	2.747**
		(0.00)		(16.39)		(11.29)	(1.18)
Use of formal marketing systems for livestock	206	0	182	0	388	0	0.000
		(0.00)		(0.00)		(0.00)	(.)

Outcome	N	Control	N	Treatment	N	All	Difference
Contract farming	206	0	182	0	388	0	0.000
		(0.00)		(0.00)		(0.00)	(.)
Animal care	206	13.107	182	19.231	388	15.979	6.124
		(33.83)		(39.52)		(36.69)	(4.04)
Breed improvement	206	0	182	1.099	388	0.515	1.099
		(0.00)		(10.45)		(7.17)	(0.75)
Habitat improvement	206	0.485	182	9.341	388	4.639	8.855***
		(6.97)		(29.18)		(21.06)	(2.46)
Percent of farming households growing cassava	576	81.597	562	81.495	1,138	81.547	-0.103
		(38.78)		(38.87)		(38.81)	(2.87)
Percent of farming households who have applied at least one improvement practice for cassava	470	71.915	458	80.568	928	76.185	8.653**
		(44.99)		(39.61)		(42.62)	(3.30)
Organic manure	470	1.915	458	4.585	928	3.233	2.670**
		(13.72)		(20.94)		(17.70)	(1.25)
Compost	470	2.128	458	2.838	928	2.478	0.711
		(14.45)		(16.62)		(15.56)	(1.27)
Performing weeding (manually)	470	0	458	0.218	928	0.108	0.218
		(0.00)		(4.67)		(3.28)	(0.22)
Crop association	470	57.234	458	64.629	928	60.884	7.395*
		(49.53)		(47.86)		(48.83)	(3.69)
Crop rotation	470	8.298	458	11.135	928	9.698	2.837

Outcome	N	Control	N	Treatment	N	All	Difference
		(27.61)		(31.49)		(29.61)	(2.50)
Use of improved seeds	470	3.617	458	10.044	928	6.789	6.427***
		(18.69)		(30.09)		(25.17)	(2.24)
Use of climate information (rain forecast, disaster risks, etc.)	470	2.553	458	2.838	928	2.694	0.285
		(15.79)		(16.62)		(16.20)	(0.85)
Wind break (brise vent)	470	16.596	458	20.742	928	18.642	4.147
		(37.24)		(40.59)		(38.97)	(2.96)
Soil cover (couverture de sol)	470	1.489	458	2.838	928	2.155	1.349*
		(12.13)		(16.62)		(14.53)	(0.74)
Use of traditional methods of pest control	470	1.489	458	2.62	928	2.047	1.131
		(12.13)		(15.99)		(14.17)	(1.11)
Use of non-traditional methods of pest control	470	1.702	458	0.873	928	1.293	-0.829
		(12.95)		(9.31)		(11.30)	(0.68)
Use of row-cropping technique	470	0.851	458	3.712	928	2.263	2.861**
		(9.20)		(18.93)		(14.88)	(1.07)
Use of polyculture technique	470	0.426	458	1.31	928	0.862	0.885
		(6.52)		(11.38)		(9.25)	(0.80)
Use of chemical weedkiller	470	0.426	458	0.218	928	0.323	-0.207
		(6.52)		(4.67)		(5.68)	(0.37)
Percent of farming households growing sorghum	576	55.208	562	69.039	1,138	62.039	13.831***
		(49.77)		(46.27)		(48.55)	(3.31)

Outcome	N	Control	N	Treatment	N	All	Difference
Percent of farming households who have applied at least one improvement practice for sorghum	318	89.937	388	94.588	706	92.493	4.651**
		(30.13)		(22.66)		(26.37)	(1.93)
Organic manure	318	1.887	388	2.32	706	2.125	0.433
		(13.63)		(15.07)		(14.43)	(1.12)
Compost	318	0.629	388	1.804	706	1.275	1.175
		(7.92)		(13.33)		(11.23)	(0.95)
Performing weeding (manually)	318	0.629	388	2.32	706	1.558	1.691*
		(7.92)		(15.07)		(12.39)	(0.93)
Crop association	318	82.39	388	81.959	706	82.153	-0.431
		(38.15)		(38.50)		(38.32)	(3.44)
Crop rotation	318	15.723	388	19.845	706	17.989	4.122
		(36.46)		(39.94)		(38.44)	(4.16)
Use of improved seeds	318	22.013	388	44.845	706	34.561	22.833***
		(41.50)		(49.80)		(47.59)	(4.31)
Use of climate information (rain forecast, disaster risks, etc.)	318	1.887	388	2.577	706	2.266	0.691
		(13.63)		(15.87)		(14.89)	(1.29)
Wind break (brise vent)	318	27.358	388	31.701	706	29.745	4.343
		(44.65)		(46.59)		(45.75)	(3.93)
Soil cover (couverture de sol)	318	1.258	388	4.639	706	3.116	3.381**
		(11.16)		(21.06)		(17.39)	(1.32)
Use of traditional methods of pest control	318	2.516	388	4.639	706	3.683	2.123

Outcome	N	Control	N	Treatment	N	All	Difference
		(15.68)		(21.06)		(18.85)	(2.02)
Use of non-traditional methods of pest control	318	1.887	388	6.701	706	4.533	4.814***
		(13.63)		(25.04)		(20.82)	(1.65)
Use of row-cropping technique	318	3.774	388	9.536	706	6.941	5.762***
		(19.09)		(29.41)		(25.43)	(2.11)
Use of polyculture technique	318	2.516	388	4.124	706	3.399	1.608
		(15.68)		(19.91)		(18.13)	(1.66)
Use of chemical weedkiller	318	0	388	0.258	706	0.142	0.258
		(0.00)		(5.08)		(3.76)	(0.26)
Percent of farming households growing cowpea	576	96.875	562	96.797	1,138	96.837	-0.078
		(17.41)		(17.62)		(17.51)	(1.06)
Percent of farming households who have applied at least one improvement practice for cowpea	558	91.219	544	96.507	1,102	93.829	5.289***
		(28.33)		(18.38)		(24.07)	(1.57)
Organic manure	558	1.434	544	2.574	1,102	1.996	1.140
		(11.90)		(15.85)		(13.99)	(0.87)
Compost	558	0.717	544	1.654	1,102	1.18	0.938
		(8.44)		(12.77)		(10.80)	(0.70)
Performing weeding (manually)	558	0.896	544	2.206	1,102	1.543	1.310
		(9.43)		(14.70)		(12.33)	(1.02)
Crop association	558	84.946	544	84.191	1,102	84.574	-0.755
		(35.79)		(36.52)		(36.14)	(2.14)

Outcome	N	Control	N	Treatment	N	All	Difference
Crop rotation	558	17.921	544	20.404	1,102	19.147	2.483
		(38.39)		(40.34)		(39.36)	(3.75)
Use of improved seeds	558	18.459	544	42.831	1,102	30.49	24.372***
		(38.83)		(49.53)		(46.06)	(3.92)
Use of climate information (rain forecast, disaster risks, etc.)	558	1.792	544	3.125	1,102	2.45	1.333
		(13.28)		(17.42)		(15.47)	(0.86)
Wind break (brise vent)	558	22.939	544	28.309	1,102	25.59	5.370*
		(42.08)		(45.09)		(43.66)	(3.00)
Soil cover (couverture de sol)	558	1.613	544	4.412	1,102	2.995	2.799**
		(12.61)		(20.55)		(17.05)	(1.28)
Use of traditional methods of pest control	558	1.971	544	4.228	1,102	3.085	2.257
		(13.91)		(20.14)		(17.30)	(1.37)
Use of non-traditional methods of pest control	558	3.047	544	6.985	1,102	4.991	3.939**
		(17.20)		(25.51)		(21.79)	(1.60)
Use of row-cropping technique	558	4.122	544	7.169	1,102	5.626	3.047**
		(19.90)		(25.82)		(23.05)	(1.41)
Use of polyculture technique	558	2.151	544	2.757	1,102	2.45	0.607
		(14.52)		(16.39)		(15.47)	(0.96)
Use of chemical weedkiller	558	0.358	544	0	1,102	0.181	-0.358
		(5.98)		(0.00)		(4.26)	(0.25)
Percent of farming households raising goats	584	36.644	564	38.121	1,148	37.369	1.477

Outcome	N	Control	N	Treatment	N	All	Difference
		(48.22)		(48.61)		(48.40)	(3.62)
Percent of farming households using at least one improvement practice for goats	214	48.598	215	59.535	429	54.079	10.937**
		(50.10)		(49.20)		(49.89)	(4.45)
Improved shelter	214	4.673	215	13.953	429	9.324	9.281**
		(21.16)		(34.73)		(29.11)	(3.47)
Vaccinations	214	42.056	215	47.442	429	44.755	5.386
		(49.48)		(50.05)		(49.78)	(4.93)
Antiparasitic treatments	214	11.682	215	20.465	429	16.084	8.783**
		(32.20)		(40.44)		(36.78)	(4.04)
Castration	214	20.093	215	21.395	429	20.746	1.302
		(40.16)		(41.11)		(40.60)	(4.36)
De-horning	214	1.869	215	3.721	429	2.797	1.852
		(13.58)		(18.97)		(16.51)	(1.54)
Improved fodder production	214	0	215	2.326	429	1.166	2.326**
		(0.00)		(15.11)		(10.75)	(0.99)
Purchase of commercial animal feed	214	0	215	0	429	0	0.000
		(0.00)		(0.00)		(0.00)	(.)
Selective breeding	214	0.467	215	0.465	429	0.466	-0.002
		(6.84)		(6.82)		(6.82)	(0.66)
Percent of farming households raising poultry	584	63.014	564	65.248	1,148	64.111	2.235
		(48.32)		(47.66)		(47.99)	(3.08)



Outcome	N	Control	N	Treatment	N	All	Difference
Percent of farming households using at least one improvement practice for poultry	368	11.957	368	20.109	736	16.033	8.152***
		(32.49)		(40.14)		(36.72)	(2.52)
Use of improved poultry variety/breed	368	0.272	368	0	736	0.136	-0.272
		(5.21)		(0.00)		(3.69)	(0.27)
Use of improved feed	368	0.272	368	0	736	0.136	-0.272
		(5.21)		(0.00)		(3.69)	(0.27)
Use of improved shelters	368	0.815	368	1.63	736	1.223	0.815
		(9.00)		(12.68)		(11.00)	(0.72)
Vaccinations	368	10.598	368	18.75	736	14.674	8.152***
		(30.82)		(39.08)		(35.41)	(2.41)
Use of veterinary products and services (antibiotics, vitamins, etc.)	368	1.359	368	2.174	736	1.766	0.815
		(11.59)		(14.60)		(13.18)	(1.10)

Notes: Standard deviations are in parentheses.

## Module J

**Table 71. Disaggregated table for Module J**

Outcome	N	Control	N	Treatment	N	All	Difference
BL 32 Percent of women and men married or in a union who earned cash in the past	337	59.644	310	52.903	647	56.414	-6.741*
		(39.95)		(42.09)		(41.09)	(3.42)
Percent of women married or in a union who earned cash in the past 12 months	308	47.078	288	41.319	596	44.295	-5.758
		(50.00)		(49.33)		(49.72)	(4.68)
Percent of women married or in a union who earned cash in the past	17	29.412	16	43.75	33	36.364	14.338

Outcome	N	Control	N	Treatment	N	All	Difference
12 months (15–19)		(46.97)		(51.23)		(48.85)	(18.18)
Percent of women married or in a union who earned cash in the past 12 months (20–29)	110	46.364	114	48.246	224	47.321	1.882
		(50.10)		(50.19)		(50.04)	(7.32)
Percent of women married or in a union who earned cash in the past 12 months (30–49)	131	53.435	100	41	231	48.052	-12.435*
		(50.07)		(49.43)		(50.07)	(7.23)
Percent of men married or in a union who earned cash in the past 12 months	298	72.148	274	65.693	572	69.056	-6.454
		(44.90)		(47.56)		(46.27)	(4.36)
Percent of men married or in a union who earned cash in the past 12 months (15–19)	n/a		n/a		n/a		
Percent of men married or in a union who earned cash in the past 12 months (20–29)	60	85	62	82.258	122	83.607	-2.742
		(36.01)		(38.51)		(37.17)	(5.88)
Percent of men married or in a union who earned cash in the past 12 months (30+)	238	68.908	212	60.849	450	65.111	-8.059
		(46.38)		(48.92)		(47.71)	(5.07)
Percent of men and women married or in a union who earned cash in the past 12 months (15–29)	138	57.246	136	55.515	274	56.387	-1.732
		(42.95)		(45.81)		(44.32)	(5.14)
BL 33 Percent of women in a union and earning cash who report participation in decisions about the use of self-earned cash	145	95.862	119	97.479	264	96.591	1.617
		(19.99)		(15.74)		(18.18)	(2.19)
Percent of women in a union and earning cash who report participation in decisions about the use of self-earned cash (15–19)	5	80	7	85.714	12	83.333	5.714
		(44.72)		(37.80)		(38.92)	(24.68)
Percent of women in a union and earning cash who report participation in decisions about the use of self-earned cash (20–29)	51	98.039	55	96.364	106	97.17	-1.676
		(14.00)		(18.89)		(16.66)	(3.15)

Outcome	N	Control	N	Treatment	N	All	Difference
Percent of women in a union and earning cash who report participation in decisions about the use of self-earned cash (30–49)	70	94.286	41	100	111	96.396	5.714**
		(23.38)		(0.00)		(18.72)	(2.71)
Percent of men in a union and earning cash who report participation in decisions about the use of self-earned cash	215	87.907	180	85.556	395	86.835	-2.351
		(32.68)		(35.25)		(33.85)	(3.78)
Percent of men in a union and earning cash who report participation in decisions about the use of self-earned cash (15–19)	n/a		n/a		n/a		
Percent of men in a union and earning cash who report participation in decisions about the use of self-earned cash (20–29)	51	90.196	51	88.235	102	89.216	-1.961
		(30.03)		(32.54)		(31.17)	(6.40)
Percent of men in a union and earning cash who report participation in decisions about the use of self-earned cash (30+)	164	87.195	129	84.496	293	86.007	-2.699
		(33.52)		(36.34)		(34.75)	(4.55)
(15–29) Percent of men and women in a union and earning cash who report participation in decisions about the use of self-earned cash	96	94.271	86	93.023	182	93.681	-1.248
		(21.61)		(23.22)		(22.33)	(3.56)
BL 34: Married cash earning women with decision making power over spouse/partner's self-earned cash	145	66.207	119	63.025	264	64.773	-3.182
		(47.46)		(48.48)		(47.86)	(7.02)
BL 34: Married cash earning women with decision making power over spouse/partner's self-earned cash (15–19)	5	60	7	100	12	83.333	40.000
		(54.77)		(0.00)		(38.92)	(24.10)
BL 34: Married cash earning women with decision making power over spouse/partner's self-earned cash (20–29)	51	74.51	55	70.909	106	72.642	-3.601
		(44.01)		(45.84)		(44.79)	(10.23)
BL 34: Married cash earning women with decision making power over spouse/partner's self-earned cash (30–49)	70	67.143	41	53.659	111	62.162	-13.484
		(47.31)		(50.49)		(48.72)	(10.62)
Married cash earning women with decision making power over	56	73.214	62	74.194	118	73.729	0.979

Outcome	N	Control	N	Treatment	N	All	Difference
spouse/partners earned cash (15–29)		(44.69)		(44.11)		(44.20)	(9.46)
BL35 Percent of men in a union and earning cash who report spouse/partner participation in decisions about cash	215	81.395	180	85.556	395	83.291	4.160
		(39.01)		(35.25)		(37.35)	(4.83)
(15–19) BL35 Percent of men in a union and earning cash who report spouse/partner participation in decisions about cash	n/a		n/a		n/a		
(20–29) BL35 Percent of men in a union and earning cash who report spouse/partner participation in decisions about cash	51	76.471	51	80.392	102	78.431	3.922
		(42.84)		(40.10)		(41.33)	(10.13)
(30+) BL35 Percent of men in a union and earning cash who report spouse/partner participation in decisions about cash	164	82.927	129	87.597	293	84.983	4.670
		(37.74)		(33.09)		(35.78)	(4.26)
(15–29) Percent of men in a union and earning cash who report spouse/partner participation in decisions about cash	51	76.471	51	80.392	102	78.431	3.922
		(42.84)		(40.10)		(41.33)	(10.13)

Notes: Standard deviations are in parentheses.

## Module K

**Table 72. Disaggregated table for Module K**

Outcome	N	Control	N	Treatment	N	All	Difference
BL42 Percent of people married or in a union who have access to credit	337	46.142	310	47.097	647	46.6	0.954
		(47.56)		(47.85)		(47.66)	(3.63)
BL42 Percent of men married or in a union who have access to credit	298	49.329	274	50	572	49.65	0.671
		(50.08)		(50.09)		(50.04)	(4.19)
BL42 Percent of women married or in a union who have access to credit	308	41.558	288	43.056	596	42.282	1.497
		(49.36)		(49.60)		(49.44)	(4.19)
Percent of men married or in a union who have access to credit (15–19)							
Percent of men married or in a union who have access to credit (20–29)	60	50	62	56.452	122	53.279	6.452
		(50.42)		(49.99)		(50.10)	(9.08)
Percent of men married or in a union who have access to credit (30–49)	147	56.463	118	51.695	265	54.34	-4.768
		(49.75)		(50.18)		(49.91)	(6.32)
Percent of men married or in a union who have access to credit (50+)	91	37.363	94	43.617	185	40.541	6.254
		(48.64)		(49.86)		(49.23)	(6.97)
Percent of women married or in a union who have access to credit (15–19)	17	29.412	16	37.5	33	33.333	8.088
		(46.97)		(50.00)		(47.87)	(19.03)
Percent of women married or in a union who have access to credit (20–29)	110	46.364	114	50	224	48.214	3.636
		(50.10)		(50.22)		(50.08)	(6.91)
Percent of women married or in a union who have access to credit	131	41.985	100	43	231	42.424	1.015

Outcome	N	Control	N	Treatment	N	All	Difference
(30–49)		(49.54)		(49.76)		(49.53)	(7.49)
Percent of women married or in a union who have access to credit (50+)	50	34	58	31.034	108	32.407	-2.966
		(47.85)		(46.67)		(47.02)	(7.86)
Percent of people married or in a union who have access to credit (15–29)	138	48.188	136	51.103	274	49.635	2.915
		(48.11)		(48.10)		(48.04)	(5.48)
BL43 Percent of men and women married or in a union who report making the borrowing decision	171	39.181	159	38.994	330	39.091	-0.188
		(40.76)		(40.43)		(40.54)	(4.20)
BL43 Percent of men married or in a union who report making the borrowing decision	147	48.98	137	46.715	284	47.887	-2.264
		(50.16)		(50.08)		(50.04)	(5.71)
BL 43 Percent of women married or in a union who report making the borrowing decision	128	25.781	124	27.419	252	26.587	1.638
		(43.91)		(44.79)		(44.27)	(6.85)
Percent of men married or in a union who report making the borrowing decision (15–19)							
Percent of men married or in a union who report making the borrowing decision (20–29)	30	56.667	35	48.571	65	52.308	-8.095
		(50.40)		(50.71)		(50.34)	(11.87)
Percent of men married or in a union who report making the borrowing decision (30–49)	83	50.602	61	54.098	144	52.083	3.496
		(50.30)		(50.25)		(50.13)	(7.53)
Percent of men married or in a union who report making the borrowing decision (50+)	34	38.235	41	34.146	75	36	-4.089
		(49.33)		(48.01)		(48.32)	(9.91)
Percent of men married or in a union who report making the borrowing decision (15–19)	5	0	6	16.667	11	9.091	16.667
		(0.00)		(40.82)		(30.15)	(13.80)

Outcome	N	Control	N	Treatment	N	All	Difference
Percent of men married or in a union who report making the borrowing decision (20–29)	51	19.608	57	28.07	108	24.074	8.462
		(40.10)		(45.33)		(42.95)	(8.89)
Percent of men married or in a union who report making the borrowing decision (30–49)	55	30.909	43	25.581	98	28.571	-5.328
		(46.64)		(44.15)		(45.41)	(8.80)
Percent of men married or in a union who report making the borrowing decision (50+)	17	35.294	18	33.333	35	34.286	-1.961
		(49.26)		(48.51)		(48.16)	(19.04)
Percent of men and women married or in a union who report making the borrowing decision (15–29)	72	31.25	75	32	147	31.633	0.750
		(43.96)		(41.62)		(42.64)	(7.45)
BL31 Percent of men and women married or in a union who participate in group-based savings, micro-finance, or lending programs	337	13.205	310	24.032	647	18.393	10.828***
		(32.68)		(41.16)		(37.35)	(3.93)
F&M BL31 Percent of men and women married or in a union who participate in group-based savings, micro-finance, or lending programs	336	13.244	310	24.032	646	18.421	10.788***
		(32.72)		(41.16)		(37.37)	(3.93)
MNF BL31 Percent of men and women married or in a union who participate in group-based savings, micro-finance, or lending programs							
FNM BL31 Percent of men and women married or in a union who participate in group-based savings, micro-finance, or lending programs							
Percent of men and women married or in a union who took loans or borrowed from NGOs, VSLAs or SACCOs	337	8.605	310	14.355	647	11.36	5.749*
		(27.01)		(33.83)		(30.58)	(3.10)
F&M Percent of men and women married or in a union who took loans or borrowed from NGOs, VSLAs or SACCOs	336	8.631	310	14.355	646	11.378	5.724*
		(27.04)		(33.83)		(30.60)	(3.10)

Outcome	N	Control	N	Treatment	N	All	Difference
FNM Percent of men and women married or in a union who took loans or borrowed from NGOs, VSLAs or SACCOs							
MNF Percent of men and women married or in a union who took loans or borrowed from NGOs, VSLAs or SACCOs							
Percent of men and women married or in a union who participate in group-based savings	337	8.012	310	18.548	647	13.06	10.537***
		(26.07)		(37.12)		(32.26)	(3.09)
F&M Percent of men and women married or in a union who participate in group-based savings	336	8.036	310	18.548	646	13.08	10.513***
		(26.11)		(37.12)		(32.28)	(3.10)
FNM Percent of men and women married or in a union who participate in group-based savings							
MNF Percent of men and women married or in a union who participate in group-based savings							
Percent of head of household spouse's that report having input in making decisions about the amount of production of nutrient-rich crops to keep at home for household members' consumption	302	94.04	279	95.699	581	94.836	1.659
		(23.71)		(20.32)		(22.15)	(1.81)
Percent of head of household spouse's that report having input in making decisions about the amount of production of nutrient-rich crops to keep at home for household members' consumption (15–19)	17	82.353	16	93.75	33	87.879	11.397
		(39.30)		(25.00)		(33.14)	(11.20)
Percent of head of household spouse's that report having input in making decisions about the amount of production of nutrient-rich crops to keep at home for household members' consumption (20–29)	108	91.667	111	93.694	219	92.694	2.027
		(27.77)		(24.42)		(26.08)	(3.15)
Percent of head of household spouse's that report having input in making decisions about the amount of production of nutrient-rich crops to keep at home for household members' consumption (30–49)	128	96.094	96	95.833	224	95.982	-0.260
		(19.45)		(20.09)		(19.68)	(2.71)



Outcome	N	Control	N	Treatment	N	All	Difference
Percent of head of household spouse's that report having input in making decisions about the amount of animal-source foods to keep for home consumption	229	85.153	225	84	454	84.581	-1.153
		(35.63)		(36.74)		(36.15)	(3.18)
Percent of head of household spouse's that report having input in making decisions about the amount of animal-source foods to keep for home consumption (15–19)	11	54.545	9	88.889	20	70	34.343
		(52.22)		(33.33)		(47.02)	(20.73)
Percent of head of household spouse's that report having input in making decisions about the amount of animal-source foods to keep for home consumption (20–29)	81	82.716	88	79.545	169	81.065	-3.171
		(38.05)		(40.57)		(39.29)	(5.73)
Percent of head of household spouse's that report having input in making decisions about the amount of animal-source foods to keep for home consumption (30–49)	98	86.735	82	86.585	180	86.667	-0.149
		(34.09)		(34.29)		(34.09)	(5.34)
Percent of head of household spouse's that report having input in making decisions about seeking health services when their child/ren is ill	300	94.667	282	95.745	582	95.189	1.078
		(22.51)		(20.22)		(21.42)	(1.68)
Percent of head of household spouse's that report having input in making decisions about seeking health services when their child/ren is ill (15–19)	15	93.333	13	84.615	28	89.286	-8.718
		(25.82)		(37.55)		(31.50)	(12.03)
Percent of head of household spouse's that report having input in making decisions about seeking health services when their child/ren is ill (20–29)	106	93.396	114	96.491	220	95	3.095
		(24.95)		(18.48)		(21.84)	(2.78)
Percent of head of household spouse's that report having input in making decisions about seeking health services when their child/ren is ill (30–49)	130	93.846	99	94.949	229	94.323	1.103
		(24.12)		(22.01)		(23.19)	(3.24)
"Percent of head of household spouse's that report having input in making decisions about the use of inputs, e.g., fertilizers, seeds, pesticides, compost, etc., on the household's family plot/plot controlled by their spouse	290	84.828	275	87.273	565	86.018	2.445
		(35.94)		(33.39)		(34.71)	(3.30)

Outcome	N	Control	N	Treatment	N	All	Difference
"Percent of head of household spouse's that report having input in making decisions about the use of inputs, e.g., fertilizers, seeds, pesticides, compost, etc., on the household's family plot/plot controlled by their spouse (15–19)	17	64.706	14	92.857	31	77.419	28.151
		(49.26)		(26.73)		(42.50)	(17.85)
"Percent of head of household spouse's that report having input in making decisions about the use of inputs, e.g., fertilizers, seeds, pesticides, compost, etc., on the household's family plot/plot controlled by their spouse (20–29)	107	80.374	109	86.239	216	83.333	5.865
		(39.90)		(34.61)		(37.35)	(5.68)
"Percent of head of household spouse's that report having input in making decisions about the use of inputs, e.g., fertilizers, seeds, pesticides, compost, etc., on the household's family plot/plot controlled by their spouse (30–49)	121	89.256	98	84.694	219	87.215	-4.562
		(31.10)		(36.19)		(33.47)	(5.28)
Percent of head of household spouse's that report having input in making decisions about the use of inputs, e.g., fertilizers, seeds, pesticides, compost, etc., on their own plot of land	196	95.408	181	92.818	377	94.164	-2.590
		(20.98)		(25.89)		(23.47)	(2.44)
Percent of head of household spouse's that report having input in making decisions about the use of inputs, e.g., fertilizers, seeds, pesticides, compost, etc., on their own plot of land (15–19)	11	81.818	9	88.889	20	85	7.071
		(40.45)		(33.33)		(36.63)	(18.19)
Percent of head of household spouse's that report having input in making decisions about the use of inputs, e.g., fertilizers, seeds, pesticides, compost, etc., on their own plot of land (20–29)	66	93.939	68	95.588	134	94.776	1.649
		(24.04)		(20.69)		(22.33)	(4.19)
Percent of head of household spouse's that report having input in making decisions about the use of inputs, e.g., fertilizers, seeds, pesticides, compost, etc., on their own plot of land (30–49)	85	98.824	68	89.706	153	94.771	-9.118*
		(10.85)		(30.61)		(22.33)	(4.64)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of staple agriculture production from the household family plot/plot controlled by their spouse	229	88.646	222	87.838	451	88.248	-0.808
		(31.79)		(32.76)		(32.24)	(2.68)

Outcome	N	Control	N	Treatment	N	All	Difference
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of staple agriculture production from the household family plot/plot controlled by their spouse (15–19)	10	90	12	83.333	22	86.364	-6.667
		(31.62)		(38.92)		(35.13)	(16.81)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of staple agriculture production from the household family plot/plot controlled by their spouse (20–29)	84	88.095	94	90.426	178	89.326	2.330
		(32.58)		(29.58)		(30.97)	(4.88)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of staple agriculture production from the household family plot/plot controlled by their spouse (30–49)	98	90.816	72	80.556	170	86.471	-10.261*
		(29.03)		(39.85)		(34.30)	(5.63)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of staple agriculture production from their own plot	160	93.75	148	96.622	308	95.13	2.872
		(24.28)		(18.13)		(21.56)	(2.72)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of staple agriculture production from their own plot (15–19)	6	83.333	6	100	12	91.667	16.667
		(40.82)		(0.00)		(28.87)	(16.67)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of staple agriculture production from their own plot (20–29)	51	92.157	62	96.774	113	94.69	4.617
		(27.15)		(17.81)		(22.52)	(3.50)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of staple agriculture production from their own plot (30–49)	75	94.667	51	94.118	126	94.444	-0.549
		(22.62)		(23.76)		(23.00)	(5.78)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of high-value agriculture production from the household family plot/plot controlled by their spouse	217	79.263	214	85.514	431	82.367	6.251*
		(40.64)		(35.28)		(38.15)	(3.43)

Outcome	N	Control	N	Treatment	N	All	Difference
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of high-value agriculture production from the household family plot/plot controlled by their spouse (15–19)	10	70	12	83.333	22	77.273	13.333
		(48.30)		(38.92)		(42.89)	(14.95)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of high-value agriculture production from the household family plot/plot controlled by their spouse (20–29)	80	83.75	89	83.146	169	83.432	-0.604
		(37.12)		(37.65)		(37.29)	(5.76)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of high-value agriculture production from the household family plot/plot controlled by their spouse (30–49)	91	80.22	70	85.714	161	82.609	5.495
		(40.05)		(35.25)		(38.02)	(5.51)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of high-value agriculture production from their own plot	162	85.185	143	88.811	305	86.885	3.626
		(35.63)		(31.63)		(33.81)	(3.49)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of high-value agriculture production from their own plot (15–19)	9	66.667	7	85.714	16	75	19.048
		(50.00)		(37.80)		(44.72)	(21.61)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of high-value agriculture production from their own plot (20–29)	53	88.679	57	92.982	110	90.909	4.303
		(31.99)		(25.77)		(28.88)	(4.43)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of high-value agriculture production from their own plot (30–49)	72	86.111	50	82	122	84.426	-4.111
		(34.83)		(38.81)		(36.41)	(5.93)
Percent of head of household spouse's that report having input in making decisions about what breeds to raise for livestock that they own	167	91.018	163	93.865	330	92.424	2.847
		(28.68)		(24.07)		(26.50)	(2.78)
Percent of head of household spouse's that report having input in	6	83.333	5	60	11	72.727	-23.333

Outcome	N	Control	N	Treatment	N	All	Difference
making decisions about what breeds to raise for livestock that they own (15–19)		(40.82)		(54.77)		(46.71)	(29.49)
Percent of head of household spouse's that report having input in making decisions about what breeds to raise for livestock that they own (20–29)	56	87.5	65	92.308	121	90.083	4.808
		(33.37)		(26.85)		(30.01)	(4.75)
Percent of head of household spouse's that report having input in making decisions about what breeds to raise for livestock that they own (30–49)	76	96.053	61	95.082	137	95.62	-0.971
		(19.60)		(21.80)		(20.54)	(4.02)
Percent of head of household spouse's that report having input in making decisions about to sell livestock that they own themselves	146	94.521	135	95.556	281	95.018	1.035
		(22.84)		(20.68)		(21.80)	(1.89)
Percent of head of household spouse's that report having input in making decisions about to sell livestock that they own themselves (15–19)	5	80	3	100	8	87.5	20.000
		(44.72)		(0.00)		(35.36)	(20.66)
Percent of head of household spouse's that report having input in making decisions about to sell livestock that they own themselves (20–29)	46	93.478	55	96.364	101	95.05	2.885
		(24.96)		(18.89)		(21.80)	(4.28)
Percent of head of household spouse's that report having input in making decisions about to sell livestock that they own themselves (30–49)	69	95.652	50	92	119	94.118	-3.652
		(20.54)		(27.40)		(23.63)	(3.84)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of their own livestock (large ruminant, small ruminant poultry)	168	86.905	162	83.951	330	85.455	-2.954
		(33.84)		(36.82)		(35.31)	(4.11)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of their own livestock (large ruminant, small ruminant poultry) (15–19)	6	83.333	6	100	12	91.667	16.667
		(40.82)		(0.00)		(28.87)	(16.67)
Percent of head of household spouse's that report having input in	51	86.275	67	80.597	118	83.051	-5.677

Outcome	N	Control	N	Treatment	N	All	Difference
making decisions about how to use income generated from the sale of their own livestock (large ruminant, small ruminant poultry) (20–29)		(34.75)		(39.84)		(37.68)	(7.47)
Percent of head of household spouse's that report having input in making decisions about how to use income generated from the sale of their own livestock (large ruminant, small ruminant poultry) (30–49)	81	90.123	60	81.667	141	86.525	-8.457
		(30.02)		(39.02)		(34.27)	(6.33)
Percent of head of household spouse's that report having input in making decisions about their own non-farm economic activities (running a small business, self-employment, buy-and-sell)	241	92.116	205	90.732	446	91.48	-1.384
		(27.00)		(29.07)		(27.95)	(2.50)
Percent of head of household spouse's that report having input in making decisions about their own non-farm economic activities (running a small business, self-employment, buy-and-sell) (15–19)	11	72.727	10	90	21	80.952	17.273
		(46.71)		(31.62)		(40.24)	(15.96)
Percent of head of household spouse's that report having input in making decisions about their own non-farm economic activities (running a small business, self-employment, buy-and-sell) (20–29)	92	90.217	89	92.135	181	91.16	1.917
		(29.87)		(27.07)		(28.47)	(3.75)
Percent of head of household spouse's that report having input in making decisions about their own non-farm economic activities (running a small business, self-employment, buy-and-sell) (30–49)	107	95.327	72	87.5	179	92.179	-7.827*
		(21.21)		(33.30)		(26.93)	(4.61)
Percent of head of household spouse's that report having input in making decisions about how to use their share-out from the savings and internal lending communities group	58	91.379	86	86.047	144	88.194	-5.333
		(28.31)		(34.85)		(32.38)	(5.68)
Percent of head of household spouse's that report having input in making decisions about how to use their share-out from the savings and internal lending communities group (15–19)	3	66.667	5	100	8	87.5	33.333
		(57.74)		(0.00)		(35.36)	(31.43)
Percent of head of household spouse's that report having input in making decisions about how to use their share-out from the savings and internal lending communities group (20–29)	21	95.238	37	91.892	58	93.103	-3.346
		(21.82)		(27.67)		(25.56)	(6.62)

Outcome	N	Control	N	Treatment	N	All	Difference
Percent of head of household spouse's that report having input in making decisions about how to use their share-out from the savings and internal lending communities group (30–49)	20	90	32	78.125	52	82.692	-11.875
		(30.78)		(42.00)		(38.20)	(9.59)
Percent of head of household spouse's that report having input in making decisions about routine household purchases (food for daily consumption or other household needs)	303	98.68	285	97.544	588	98.129	-1.136
		(11.43)		(15.51)		(13.56)	(1.14)
Percent of head of household spouse's that report having input in making decisions about routine household purchases (food for daily consumption or other household needs) (15–19)	17	100	16	93.75	33	96.97	-6.250
		(0.00)		(25.00)		(17.41)	(6.33)
Percent of head of household spouse's that report having input in making decisions about routine household purchases (food for daily consumption or other household needs) (20–29)	109	98.165	114	99.123	223	98.655	0.958
		(13.48)		(9.37)		(11.55)	(1.53)
Percent of head of household spouse's that report having input in making decisions about routine household purchases (food for daily consumption or other household needs) (30–49)	128	99.219	99	96.97	227	98.238	-2.249
		(8.84)		(17.23)		(13.19)	(1.83)
Percent of head of household spouse's that report having input in making decisions about household building a latrine on their own land or communal land	131	90.076	124	95.161	255	92.549	5.085
		(30.01)		(21.55)		(26.31)	(3.69)
Percent of head of household spouse's that report having input in making decisions about household building a latrine on their own land or communal land (15–19)	6	83.333	8	87.5	14	85.714	4.167
		(40.82)		(35.36)		(36.31)	(20.36)
Percent of head of household spouse's that report having input in making decisions about household building a latrine on their own land or communal land (20–29)	41	87.805	58	98.276	99	93.939	10.471*
		(33.13)		(13.13)		(23.98)	(6.11)
Percent of head of household spouse's that report having input in making decisions about household building a latrine on their own land or communal land (30–49)	56	91.071	38	89.474	94	90.426	-1.598
		(28.77)		(31.10)		(29.58)	(5.89)

Outcome	N	Control	N	Treatment	N	All	Difference
Percent of head of household spouse's that report having input in making decisions about use of household revenue/financial resources to purchase sanitary products or materials for household or women's needs	303	96.7	281	97.865	584	97.26	1.165
		(17.89)		(14.48)		(16.34)	(1.30)
Percent of head of household spouse's that report having input in making decisions about use of household revenue/financial resources to purchase sanitary products or materials for household or women's needs (15–19)	16	93.75	16	93.75	32	93.75	0.000
		(25.00)		(25.00)		(24.59)	(8.57)
Percent of head of household spouse's that report having input in making decisions about use of household revenue/financial resources to purchase sanitary products or materials for household or women's needs (20–29)	108	95.37	113	98.23	221	96.833	2.860
		(21.11)		(13.24)		(17.55)	(2.33)
Percent of head of household spouse's that report having input in making decisions about use of household revenue/financial resources to purchase sanitary products or materials for household or women's needs (30–49)	130	96.923	96	98.958	226	97.788	2.035
		(17.34)		(10.21)		(14.74)	(2.07)
Percent of head of household spouse's that report having input in making decisions about household building a latrine on their own land or communal land	208	76.923	206	74.757	414	75.845	-2.166
		(42.23)		(43.55)		(42.85)	(4.74)
Percent of head of household spouse's that report having input in making decisions about household building a latrine on their own land or communal land (15–19)	12	83.333	12	66.667	24	75	-16.667
		(38.92)		(49.24)		(44.23)	(15.16)
Percent of head of household spouse's that report having input in making decisions about household building a latrine on their own land or communal land (20–29)	70	67.143	84	71.429	154	69.481	4.286
		(47.31)		(45.45)		(46.20)	(7.62)
Percent of head of household spouse's that report having input in making decisions about household building a latrine on their own land or communal land (30–49)	92	82.609	69	79.71	161	81.366	-2.899
		(38.11)		(40.51)		(39.06)	(6.66)

Notes: Standard deviations are in parentheses.



## ANNEX E: MATCHING BASELINE AND MIDLINE DATA

The sampling frame to select ML households was constructed using the list of households initially surveyed at BL. To be able to carry out different exercises it was necessary to match ML households and individuals with the corresponding BL data. Since households at BL have unique IDs, it was possible to match ML households with their BL data with 100% accuracy. Matching specific household members at ML with their BL data proved to be challenging for several reasons: lack of unique IDs for specific members, discrepancies in the way names were reported at BL and ML, recall errors in the age, and mistakes entering the gender of some participants that were not present. This annex presents the methodology used to match ML with BL individual-level data.

The first step of a matching methodology is to clearly define the datasets that will be matched. In the case of this report, the objective was to match individual-level data at ML with the corresponding data at BL. During the last 2 years since the BL survey, some household members left the household, while new members joined (see Annex B for more details). Therefore, only a subset of the BL and ML individuals should be matched. More precisely, researchers could only use BL individuals who were not reported missing at ML and ML individuals who were not reported as new household members. Out of 6,462 people interviewed at BL in 1,171 households interviewed at ML, 5,292 individuals were not reported missing. In the case of ML individuals, out of 6,464 people interviewed at ML, 5,308 people were not reported to be new members (Table 73). The objective of the matching methodology was then to match 5,308 people at ML with 5,292 people at BL.

**Table 73. Baseline and midline people in the 1,171 households interviewed at midline**

	Baseline	Midline
Total number of people	6,462	6,464
People reported to be missing	1,170	–
People reported to be new members	–	1,156
People reported to be present at BL and ML	5,292	5,308

Because a unique ID identifies households in ML and BL, the matching of people took place within a household. For example, for the household identified with the ID 11298, the objective was to match the seven non-missing members at BL with the seven non-new members at ML. Given that this had to be done for the 1,171 ML households, a combination of machine and manual matching was used. Four individual-level variables were used to match BL and ML individuals: (i) name,<sup>34</sup> (ii) age, (iii) gender, and (iv) position in the family.<sup>35</sup> Households were matched sequentially following the criteria presented in Table 74. For example, all the BL and ML people who could not be matched in rounds 1–5 were included in Round 6.

<sup>34</sup> A Jako-Winker distance measure was used to determine if two names are similar. This measure ranges from 0 to 1. It takes a value of 0 if the match is perfect and higher values as the match is more imperfect.

<sup>35</sup> E.g., Household head, spouse, child.

**Table 74. Criteria to match baseline and midline people within a given household.**

Round	Criteria
1	Perfect match: name is exactly the same, person at ML is 1–3 years older than at BL, same gender and same family position.
2	Perfect name match, same gender and same family position.
3	Perfect name match, same gender and age difference between BL and ML is 6 years or less.
4	Jaro-Winkler name distance is less than 0.1, person at ML is 1–3 years older than at BL, same gender and same family position.
5	Jaro-Winkler name distance is less than 0.1, age difference between BL and ML is 6 years or less, same gender and same family position.
6	Jaro-Winkler name distance is less than 0.1, age difference between BL and ML is 12 years or less, same gender and same family position.
7	Jaro-Winkler name distance is less than 0.1, age difference between BL and ML is 12 years or less.
8	Jaro-Winkler name distance is less than 0.2 and there is only one potential match.
9	Manual match, age difference between BL and ML is 6 years or less.
10	Manual match, age difference between BL and ML is more than 6 years and the name match is not very certain.

Rounds 1–8 use a machine, not manual, matching, while Rounds 9–10 use manual matching. Around 50% (2,551) of ML people were perfectly matched to the corresponding ML person. Out of 368 ML people that couldn't be matched in Rounds 1–8, it was possible to manually match 305 of them. This means that out of 5,308 people in 1,171 households surveyed at ML, and that were not new members, 63 people in 51 households couldn't be matched.