



MYANMAR

STRATEGY SUPPORT PROGRAM | WORKING PAPER 47

FEBRUARY 2024

The State of Food Security and Nutrition in Myanmar 2022-23

Findings from six rounds of the Myanmar Household
Welfare Survey



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ABSTRACT

This working paper explores the state of food security and nutrition in Myanmar using 6 rounds of nationally representative household panel data collected from December 2021 to November 2023. Overall, the state of food security and nutrition has deteriorated in Myanmar in 2022-23. More than 3 percent of households were in moderate to severe hunger in September-November 2023. Hunger was highest in Chin (8.7 percent) and Tanintharyi (7.0 percent). Households with a low food consumption score increased from 9.4 percent in December 2021-February 2022 to 15.9 percent in October-December 2022 and remained high at 14.4 percent in September-November 2023. The shares in September-November 2023 were highest in Chin (38.2 percent), Kayah (22.4 percent), and Magway (20 percent).

Inadequate diet diversity among adults rose from 20.6 percent to 30.9 percent over December 2021-February 2022 to October-December 2022, with an increase of 5.9 percentage points in the past one year. Women saw a faster decline in diet quality from December-February 2022 to September-November 2023 (12.1 percentage points increase in poor diet quality vs 8.4 percentage points for men). Decreases in diet quality among adults are driven by lower consumption of milk and dairy products as well as Vitamin A rich fruits, meat, fish, and eggs. 34.5 percent of all children aged 6-23 months and nearly a quarter (23.6 percent) of all children aged 6-59 months had inadequate diet quality in the latest round of survey.

Regression analysis reveals low income and limited assets to be important risk factors for food security and adequate diet quality. Wage workers and low wage communities are found to be particularly vulnerable. Rising food prices, conflict and physical insecurity increase the likelihood of poor diet quality. Receiving remittances is a source of resilience; remittance-receiving households are less likely to experience hunger or poor dietary diversity at the household, adult, and child level.

To avert a full-blown nutrition crisis in Myanmar, effective multisectoral steps are required to protect nutritionally vulnerable populations. Expanded implementation of nutrition- and gender-sensitive social protection programs, including maternal and child cash transfers, particularly to vulnerable groups is called for. Further, given the importance of remittances as an effective coping mechanism, supporting migration and the flow of remittances would help to improve the welfare of the Myanmar population.

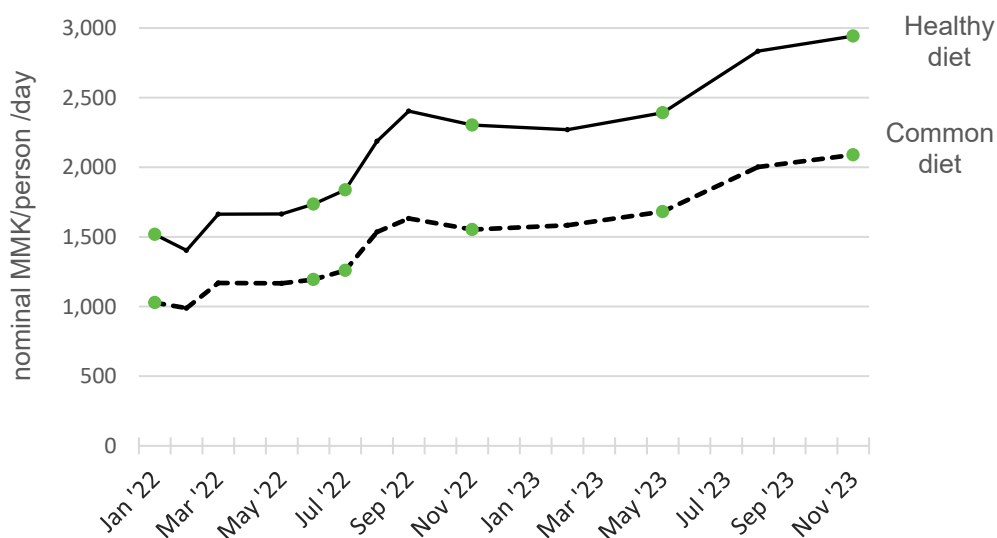
1. INTRODUCTION

In this working paper, we provide an overview of the state of food security and nutrition in Myanmar using household datasets collected across six rounds over two years from December 2021 to November 2023. We examine food security using the household hunger scale and the food consumption score. To examine the state of nutrition, we examine the diet quality of individuals across Myanmar for three separate but important sections of the population: (1) adults (18+ years), (2) women of reproductive age (15-49 years), and (3) children (6-23 and 6-59 months).

We explore these indicators using six rounds of the Myanmar Household Welfare Survey (MHWS) collected over the phone from December 2021 to November 2023 – hereafter R1, R2, R3, R4, R5, and R6 – among over 12,000 households in 310 townships of Myanmar. Four rounds of data collection were spread out roughly over the four quarters in 2022, with two more rounds in 2023. The timing of the sixth round conducted in 2023 overlapped with that of the fourth round of data collection in 2022.

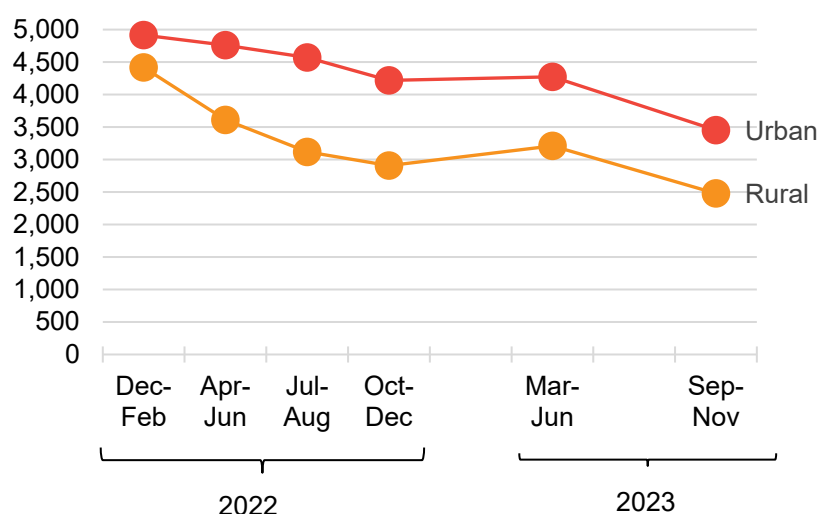
Over this time, Myanmar faced a period of falling real income and rising poverty with real income falling by around 30 percent in urban areas and over 40 percent in rural areas coupled with very high rates of domestic food inflation with the cost of a healthy diet nearly doubling from January 2022 to November 2023 (see Figures 1 & 2) (MAPSA, 2024). Furthermore, escalating conflict and lawlessness gripped many parts of Myanmar in 2023. In February 2021, 6 years of democracy was ended by a military coup that led to an unprecedented 18 percent contraction in Myanmar's GDP (World Bank, 2022), along with massive disruptions to banking, finance, trade, investment, employment, across a wide range of economic sectors. In addition to global food price inflation in the wake of Russia's invasion of Ukraine, the depreciation of Myanmar's currency after the coup led to very high rates of food inflation. Finally, although the country has experienced continuous conflict since World War Two, the coup led to a dramatic escalation in conflict, including in new areas of the country, as well as increased violence and crime, with more than 20 percent of households reporting feeling insecure in 2023 (MAPSA, 2023a). Thus, the surveys help us to understand the dynamic nature of food security and nutrition over a period of more than one year in Myanmar in a time marred by internal conflict, currency devaluation, and global price volatility.

Figure 1. Change in the price of diets, 2022-23



Source: MHWS-FV (Round 1-4), MHWS (Round 1-6) phone surveys

Figure 2. Change in real income, real MMK/person/day (base: R6 MMK)



Source: MHWS (Round 1-6) phone surveys

MWHS is a nationally, urban/rural and state/region representative phone survey (MAPSA 2022a). We use standard food security and diet diversity measures for each of the three subpopulations to examine trends over the six rounds as well as explore heterogeneity with respect to gender, location of residence, and asset and income-based welfare indicators. We also look at disaggregated consumption of the different food groups that constitute the diet diversity measures to investigate the change in the consumption pattern of individuals. Finally, we use regression analysis to look at predictors of food insecurity and inadequate diet diversity, including household wealth and income, self-reported shocks, food prices, and household characteristics.

2. TRENDS IN FOOD SECURITY INDICATORS

The first food insecurity indicator we examine is the household hunger scale (HHS), which measures the experience of hunger in the household based on three questions related to the lack of food at home, going to sleep hungry, and going an entire day without food (Ballard et al. 2011). Based on the frequency of occurrence, i.e. “did not occur”, “rarely” or “sometimes”, and “often”, answers are scored and are used to classify households into three groups: “little to no” (0-1), “moderate” (2-3), or “severe” (4-6) hunger. The second indicator is the WFP Food Consumption Score (FCS), which examines the frequency of consumption of different foods in the past week.

2.1 Hunger Household Scale

Table 1 presents the prevalence of hunger at the national level for all six rounds of the survey. Although moderate or severe hunger was consistent at around 4 percent of households throughout 2022, hunger fell to 3.5 percent in R6. This is about 0.9 percentage points lower compared to about two years ago when we started surveys (i.e. R1). Nearly 8.8 percent of households reported that there were no food to eat of any kind in their house because of lack of resources to get food, 3.8 percent reported that she or another household member went to sleep at night hungry because there was not enough food, and 1.6 percent of households reported that she or another household member went a whole day and night without eating anything at all because there was not enough food, on at least one day in the four weeks preceding the survey interview day in R6. These figures have fallen compared to R1. **However, within the households that reported the occurrence of these hunger**

events, the frequency of occurrence has increased significantly: 8.4 percent of households reported to have experienced lack of food at home, 6.2 percent reported to have a member going to sleep hungry, and 7.9 percent reported a member going all day and night without food more than 10 times in the four weeks preceding the survey in R6.

Hunger is found to be concentrated more in poor households as well as households located in rural areas in the latest round of the survey. From Table A.12, we find that the difference in the prevalence of hunger is 3.4 percentage points between the income poor and not poor, while it is 5.1 percentage points between the asset poor and asset rich¹. This is also evident from the occurrence of the hunger events where, for the event of “no food in the house”, there is a difference of 7.7 percentage points between the income poor and not poor and 12.0 percentage points difference between the asset poor and rich in R6. There is also 2 percentage points difference between rural and urban areas in this regard. Similar results are also found for the other two hunger events namely, “went to sleep hungry” and “went a full day and night without food”.

At the state level, the rate of hunger continues to be high for Chin (8.7 percent), as well as Tanintharyi (7.0 percent) going into R6 (Appendix Table A.1). Over the year from R1 to R6, the prevalence of hunger more than doubled in Sagaing from 1.4 percent in R1 to 3.5 percent in R6, probably as a result of increased conflict in the region. On the other hand, Ayeyarwady and Kayin saw a fall in hunger over the last two years (see Appendix Table A.1).

Table 1. Composite categories of Household Hunger Score (HHS) and 7-day recall questions, percentage of households

	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R1	Change R6 – R4
	Percentages (%)						% points	
HHS classifications								
Little to no hunger	95.6	96.0	96.0	96.0	96.7	96.5	0.9**	0.5
Moderate hunger	4.2	3.7	3.5	3.7	3.1	3.2	-1.0***	-0.5*
Severe hunger	0.2	0.3	0.4	0.3	0.2	0.4	0.1	0.0
Moderate to severe hunger	4.4	4.0	4.0	4.0	3.3	3.5	-0.9**	-0.5
No food of any kind the house	11.5	9.6	10.1	9.4	7.3	8.8	-2.7***	-0.6
Rarely (1-2 times) ^a	48.6	39.2	37.6	38.9	38.9	45.6	-3.1	6.7**
Sometimes (3-10 times) ^a	47.8	49.9	49.5	49.9	48.8	46.0	-1.7	-3.9
Often (more than 10 times) ^a	3.6	11.0	12.9	11.1	12.3	8.4	4.8***	-2.8*
Went to sleep hungry	4.9	3.7	3.6	4.0	3.4	3.8	-1.1***	-0.2
Rarely (1-2 times) ^a	46.2	38.9	42.0	45.9	48.0	50.2	4.0	4.3
Sometimes (3-10 times) ^a	50.6	55.1	46.9	49.6	46.0	43.6	-7.1	-6.0
Often (more than 10 times) ^a	3.2	6.0	11.1	4.5	6.0	6.2	3.0*	1.7
Went full day & night without food	2.1	1.7	1.6	1.7	1.3	1.6	-0.6**	-0.1
Rarely (1-2 times) ^a	45.0	52.4	50.4	50.9	51.9	49.2	4.2	-1.7
Sometimes (3-10 times) ^a	50.0	41.5	43.2	44.9	42.1	42.9	-7.1	-2.0
Often (more than 10 times) ^a	5.0	6.0	6.4	4.2	6.0	7.9	2.9	3.6
No of observations	12100	12142	12128	12924	12953	12898		

Note: a. The frequency of occurrence questions is for the subsample of households that answered “yes” to the three hunger related questions. Asterisks refer to the level of statistical significance in the difference in means between Rounds: * p < 0.10, ** p < 0.05, *** p < 0.01. “Went to sleep hungry” and “went full day & night without food” refer to any household member undergoing these experiences.

¹ We generate three different categories of asset level using a count of 10 items, where a household is classified as asset-poor if it owns between 0 to 3 items, asset-low if it owns between 4 to 6 items and asset-rich if it owns 7 or more items. Income poverty status of poor or not poor is calculated from the self-reported income level relative to national poverty lines from 2017 updated for inflation trends.

2.2 Food Consumption Score

The second indicator we look at is the household Food Consumption Score (FCS). The FCS is a measure of dietary diversity and food frequency, considering the nutritional importance of the food consumed. It is calculated as the weighted sum of the frequency of food groups eaten over the seven days prior to the survey where weights reflect the relative nutritional value of the food group (Arimond et al., 2010). A higher FCS is considered to be associated with a higher probability that a household's food intake is adequate. Based on the score, households are classified into three groups: poor (0-24.5), borderline (24.6-38.5), or acceptable food consumption status (>38.5). We follow the threshold values as typically agreed upon for Myanmar (Robertson et al. 2018). For some analysis, we further aggregate poor and borderline food consumption (i.e. FCS≤38.5) to generate a dichotomous indicator of inadequate or low FCS.

Table 2 shows the frequency of food groups consumed over the past seven days as well as the aggregate measure of FCS. **At the national level, the percentage of households with inadequate food consumption increased from R1 to R6 of our survey.** 13.7 percent of households have borderline food consumption, while 0.7 percent of households have poor food consumption in R6, which is a significant increase from R1 when 8.9 percent and 0.5 percent of households had borderline and poor food consumption, respectively. However, prevalence of borderline or poor food consumption has decreased slightly by 1.5 percentage points over the past year (i.e. compared to R4). **This was mainly driven by small increases in the household consumption of milk and dairy products as well as meat, fish, and eggs,** which are weighted the highest in the calculation of the FCS because of their nutritional value. Consumption of milk and dairy products is low and has fallen even lower over the survey period from 1.2 days per week in R1 to 0.7 days in R6. 73.8 percent of households also reported not to consume any milk or dairy products in the preceding seven days of the survey in R6. Similarly, consumption of meat, fish, and eggs has also fallen from 5 days in R1 to 4.5 days per week in R6.

Table 2. Frequency of food groups consumed, and Food Consumption Score (FCS) based on 7-day recall, household level

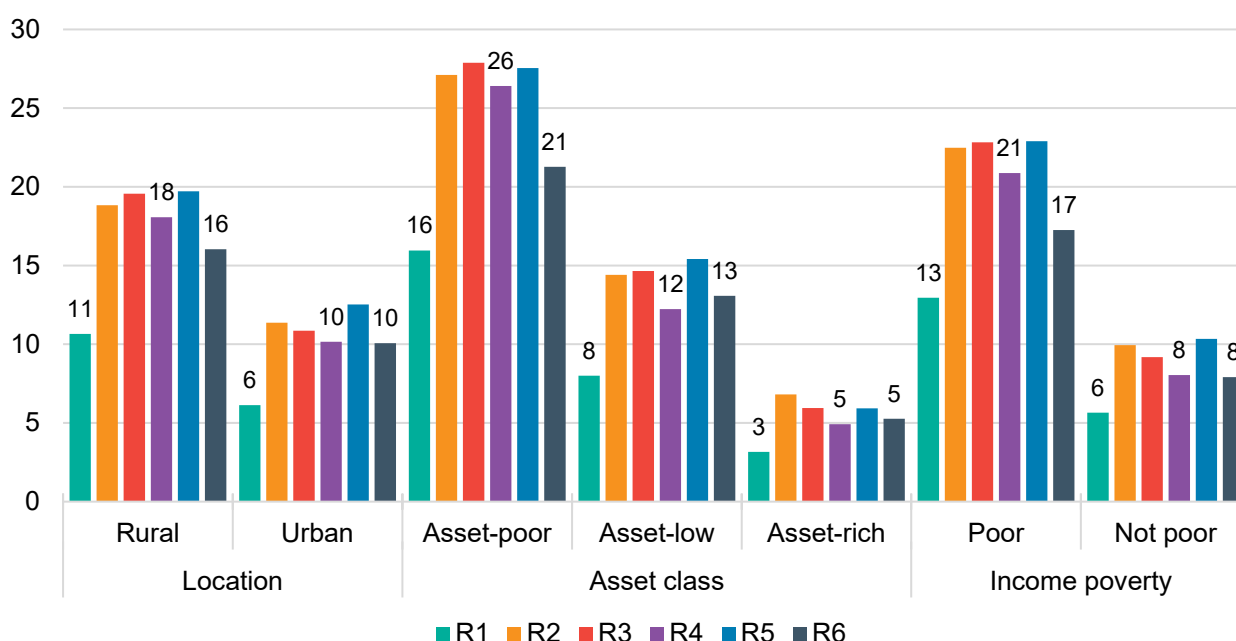
	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R1	Change R6 – R4
	Percentages (%)						% points	
Main staples	7.0	7.0	7.0	7.0	7.0	7.0	0.0***	0.0***
Pulses/legumes/nuts	3.1	2.5	2.5	2.5	2.4	2.5	-0.6***	0.0
Milk/dairy products	1.2	0.9	0.8	0.7	0.7	0.7	-0.5***	0.1***
Meat, fish, and eggs	5.0	3.9	4.0	4.3	4.0	4.5	-0.6***	0.2***
Vegetables	5.3	5.5	5.6	5.5	5.4	5.7	0.5***	0.2***
Fruits	2.5	3.5	2.9	2.4	3.0	2.1	-0.4***	-0.3***
Oil, fats, and butter	6.6	6.7	6.7	6.7	6.8	6.9	0.2***	0.1***
Sugar or sweet	3.3	2.1	2.2	2.1	2.1	2.1	-1.2***	0.0
Food Consumption Score (0-112)	60.9	53.9	53.6	53.7	53.2	54.6	-6.4***	0.9***
	Percentages (%)						% points	
Acceptable food consumption	90.6	83.3	82.9	84.1	82.3	85.6	-5.0***	1.5**
Borderline food consumption	8.9	15.6	16.0	15.0	16.9	13.7	4.8***	-1.3**
Poor food consumption	0.5	1.2	1.1	0.9	0.8	0.7	0.2***	-0.2
No. of observations	12100	12142	12128	12924	12953	12898		

Note: Statistics for food groups are number of days household have consumed in 7 days prior to survey. Food Consumption Score is the average score in the population (out of 112). Acceptable, borderline, and poor food consumption is based on cutoff as described in text; statistics presented are percentage of households in each category of food consumption. Asterisks refer to the level of statistical significance in the difference in means between Rounds: * p < 0.10, ** p < 0.05, *** p < 0.01.

There is significant urban/rural disparity in the consumption of milk and dairy products, with consumption much higher in urban areas compared to rural areas (1.2 and 0.6 days, respectively, in R6, results not shown). The same is seen in meat, fish, and eggs, with urban households consuming these foods 4.8 days per week compared to 4.0 days in rural areas in R6. On the other hand, although frequency of consumption of vegetables has gone up, there is a fall in the consumption of fruits compared to a year before (2.1 days in R6 vs 3.5 days in R2). More than a third of all households reported not to have consumed any fruits in the preceding seven days of the survey in R6. This may be a consequence of an increase in prices of fruits such as bananas, for which the price has gone up nearly 50 percent over the past year according to price data collected in the MHWS.

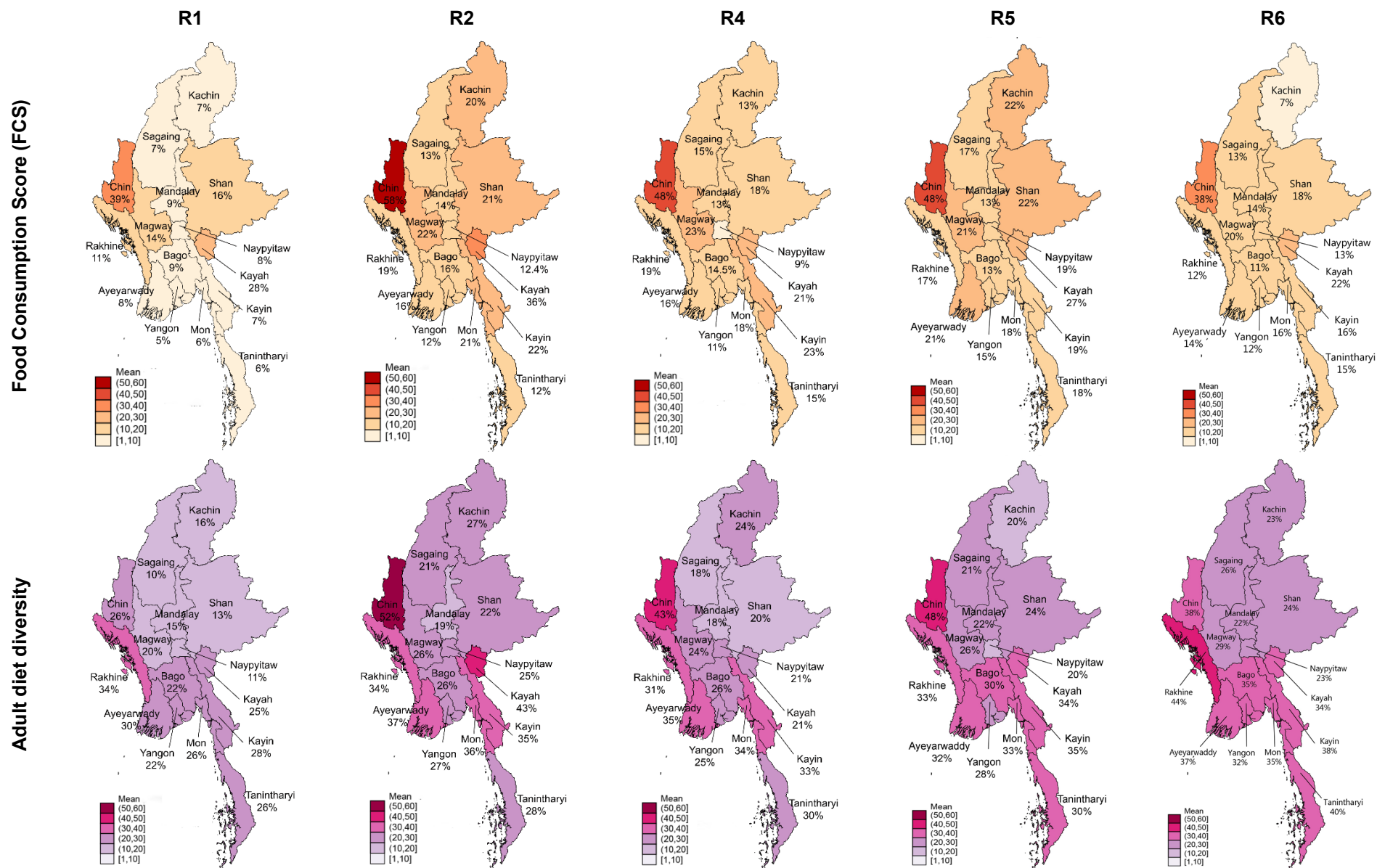
With respect to location, asset class, and poverty status, **households in rural areas and those in asset and income poverty are much more likely to have low food consumption scores, with a sharp increase from R1 to R2 and staying consistently high over the past year (Figure 3).** About 16 percent of households in rural areas had a low FCS compared to 10 percent in urban areas in R6 with the rate of increase from R1 also higher for rural compared to urban areas (5.4 vs 3.8 percentage points). 21 percent of asset-poor and 13 percent of asset-low households have a low FCS in R6 – a statistically significant increase of 5.3 and 5.1 percentage points from R1. The prevalence of a low FCS among income-poor households also saw a large increase from 12.8 percent in R1 to 17.3 percent in R6.

Figure 3. Proportion of households with low food consumption score (FCS≤38.5)



There were large differences in the FCS across states/regions (see Appendix Table A.2/Figure 4). **The prevalence of a low FCS is highest in Chin (38.2 percent), Kayah (22.4 percent), and Magway (20.0 percent) in R6.** On the other hand, **there was a large increase in the prevalence of a low FCS in Mon (9.7 percentage points), Tanintharyi (9.2 percentage points), and Yangon (7.3 percentage points) between R6 and R1.**

Figure 4. Proportion of households with low food consumption score and adult diet diversity by state/region



3. TRENDS IN DIETARY DIVERSITY INDICATORS FOR ADULTS AND YOUNG CHILDREN

In this section, we present results from two indicators of diet diversity to measure diet quality amongst adults (18+ years), women of reproductive age (15-49 years) and children (6-23 and 6-59 months). The minimum diet diversity (MDD) measure for adults is calculated as whether an adult has consumed at least 5 of 10 food groups (grains/root/ tubers, pulses (beans, peas and lentils), nuts/seeds, dairy, meat/poultry/fish, eggs, dark green leafy vegetables, other vitamin A-rich fruits and vegetables, other vegetables, and other fruits) in the 24 hours prior to the survey (FAO and FHI, 2016). We also explore diet diversity in reproductive age women since diet quality of women has significant impact on her children's birthweight and their probability of being stunted or wasted. The MDD for children, aged 6-23 and 6-59 months, is calculated as whether a child was offered at least 4 of 7 food groups (grains/root/tubers, legumes/nuts, dairy products, eggs, flesh food, vitamin-A rich vegetables/fruits, and other vegetables/fruits) in the 24 hours prior to the survey (WHO, 2007). The population level indicator is then calculated as the proportion of children with low diet diversity amongst all children in the age group.

3.1 Minimum Diet Diversity of Adults (18+ Years)

Table 3 shows the proportion of adults not consuming a minimum dietary diversity (5 out of 10 food groups) for the six rounds of survey conducted. There is a large and statistically significant increase in the prevalence of low diet diversity amongst adults from 20.6 percent in R1 to 27.1 percent in R2, with the rate remaining high throughout 2022-2023. **Compared to a year back in 2022, adults with poor diet quality increased from 25.1 percent in R4 to 30.9 percent in R6, an increase of about 6 percentage points.** Adults in rural areas have a higher prevalence of inadequate diet diversity compared to urban areas (32.0 percent vs 28.2 percent in R6), although in the past year the increase has been faster in urban compared to rural areas (6.3 percentage points vs 5.7 percentage points from R4 to R6).

Table 3. Percentage of adults with inadequate diet diversity

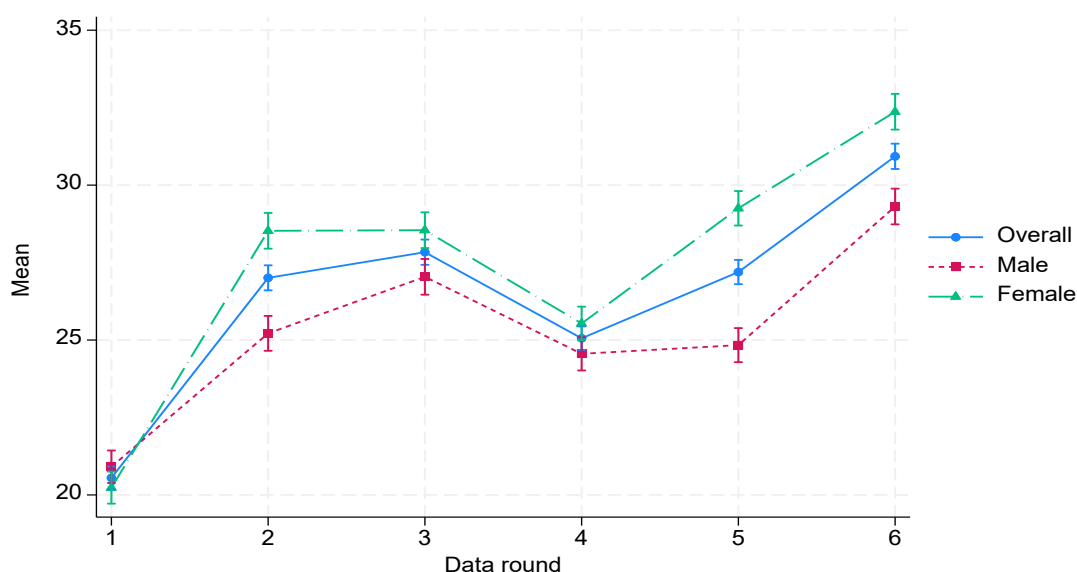
		R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R1	Change R6 – R4
		<i>Means (%)</i>						<i>% points</i>	
National	Overall	20.5	27.0	27.8	25.1	27.2	30.9	10.4***	5.9***
	Male	20.9	25.2	27.0	24.6	24.8	29.3	8.4***	4.8***
	Female	20.2	28.5	28.5	25.5	29.3	32.4	12.1***	6.8***
Rural	Overall	21.3	28.2	29.0	26.3	28.3	32.0	10.8***	5.7***
	Male	21.2	25.8	28.1	26.1	25.8	29.8	8.6***	3.7**
	Female	21.3	30.2	29.7	26.5	30.5	34.1	12.8***	7.5***
Urban	Overall	18.8	24.0	25.0	21.9	24.3	28.2	9.4***	6.3***
	Male	20.2	23.7	24.4	20.9	22.5	28.0	7.8***	7.1***
	Female	17.6	24.3	25.5	22.9	26.0	28.3	10.7***	5.4**
National	Asset-poor	30.5	39.4	37.2	35.4	38.2	41.0	10.5***	5.7***
	Asset-low	18.4	24.3	25.8	21.5	24.6	28.3	9.9***	6.9***
	Asset-rich	12.6	16.9	19.2	16.2	16.1	20.7	8.1***	4.5***
National	Income poor	23.8	32.5	30.6	29.1	31.6	34.1	10.3***	5.0***
	Income not poor	16.6	19.8	23.3	18.1	20.5	23.1	6.5***	4.9***
No. of observations		12,100	12,142	12,128	12,924	12,953			

Note: Asterisks refer to the level of statistical significance in the difference in means across Rounds: *p<0.10, ** p<0.05, *** p<0.01.

We find that irrespective of asset level or poverty status, the proportion of adults with low diet diversity has gone up from R1 to R6 (Table 3). For example, over the past year, the prevalence of low diet diversity amongst adults belonging to asset-rich households has gone up from 16.2 percent in R4 to 20.7 percent in R6, a statistically significant increase of about 4.5 percentage points while it increased around 5.7 percentage points for asset-poor households. Similarly, income-not-poor households saw a 4.9 percentage points increase over the past year compared to 5 percentage points increase in income poor households.

Over our survey period, there was a divergence in the diet quality of men and women (see Figure 5). **Women saw a faster deterioration of diet quality over the survey periods, with a 12.1 percentage point increase of low diet diversity from 20.2 percent in R1 to 32.4 percent in R6.** This contrasts with men who saw a deterioration of 8.4 percentage points over the same period from 21 percent in R1 to 29.3 percent in the latest round of survey. Rural women are the hardest hit, where more than a third of all women (34.1 percent) are not consuming a diverse diet. The gap between men and women is also widest in the rural areas – a difference of 4.3 percentage points compared to 0.2 percentage points in urban areas in R6. This is worrying because poor diet quality can put mothers at risk of micronutrient deficiencies and various health problems, but also their health and nutrition can adversely affect the nutrition, health, and long-term cognitive development of their children.

Figure 5. Trend in the percentage of adults with inadequate diet diversity by gender



In Table 4, we look at the proportion of adults consuming 10 different food groups for each round of our survey to explore which food groups are driving the decrease in diet quality. **We find that, over the past year from R4 to R6, consumption of nuts and seeds, meat and fish, and some categories of fruits and vegetables fell for adults.** On the other hand, when compared from R1 to R6 (i.e. a period of two years), we find a large decrease in the consumption of nearly all food groups for adults. Large declines in nutrient-dense foods are a potential risk factor for elevated malnutrition and declining health in the population. We also find significant differences in consumption of food groups by men and women. **In R6, men are more likely to consume almost all food groups with significantly more consumption of beans, eggs, meat/fish, vegetables** (see Appendix Table A.3 and A.4).

Table 4. Percentage of adults consuming different food groups in the past 24 hours

	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R1	Change R6 – R4
	<i>Means (%)</i>						<i>% points</i>	
Cereals/grains/roots	99.3	98.9	99.6	99.6	99.4	99.6	0.3***	0.1
Beans	53.7	52.7	52.4	49.6	48.7	50.0	-3.7***	0.4
Nuts or seeds	44.0	38.0	35.7	37.8	35.7	35.4	-8.6***	-2.4**
Milk/dairy products	16.4	16.6	13.5	12.8	12.0	13.4	-3.0***	0.6
Eggs	52.6	47.1	47.8	47.4	49.0	47.7	-5.0***	0.3
Meat and Fish	89.0	80.8	81.5	85.0	82.5	83.3	-5.7***	-1.7**
Other fruits	40.9	52.1	49.7	50.8	53.5	40.2	-0.7	-10.5***
Vit-A rich fruit/vegetables	49.4	26.0	26.6	30.9	27.9	33.2	-16.2***	2.3**
Dark green vegetables	84.2	84.1	81.0	84.3	84.4	81.7	-2.5***	-2.6***
Other vegetables	82.0	72.6	77.7	78.1	72.1	73.5	-8.5***	-4.6***

Note: Asterisks refer to the level of statistical significance in the difference in means across Rounds: *p<0.10, ** p<0.05, *** p<0.01.

Appendix Table A.5 explores the spatial trend in the prevalence of low diet diversity amongst adults. **Sagaing (16.1 percentage points), Shan (11.1 pp), and Rakhine (9.3 pp) saw the biggest increase in the prevalence of low adult diet diversity from R1 to R6, particularly also in the past one year, while the highest rates are found in Chin, Kayin, Tanintharyi, and Rakhine where more than a third of all adults have inadequate diet quality in R6** (see Figure 4). These are also states most affected by conflicts, restrictions on mobility due to curfews and checkpoints, and increasing transport costs as well as increasing feelings of insecurity and reports of crime (MAPSA 2023b; MAPSA 2023c).

3.2 Minimum Diet Diversity of Women of Reproductive Age (14-59 Years)

We find similar dietary trends for women of reproductive age (14-59 years) compared to those of all adult women. **In Round 6, more than a third of all reproductive age women (about 33.5 percent) did not consume minimum diet diversity (5 out of 10 food groups),** a statistically significant increase of 7.6 percentage points over the past year (i.e. from R4) and an increase of 12 percentage points over the past two years (i.e. from R1) (Appendix Table A.6). The prevalence of low diet diversity is higher in rural areas (34.6 percent) than urban areas (30.6 percent) in R6. 42.2 percent of women in asset poor and 35.8 percent of women in income poor households have inadequate diet quality with a statistically significant increase in asset-rich (5.8 percentage points) and asset-low household (8.6 percentage points) and households that are not income poor (7.7 percentage points) categories as well (see Appendix Table A.6).

Looking at individual food groups (see Appendix Table A.7), **we find a decrease in consumption of nearly all food groups for reproductive age women from R1 to R6,** particularly nutrient dense food groups such as Vitamin A-rich fruits and vegetables, milk/dairy products, meat and fish, and eggs which is worrying given the potential threat of intergenerational transmission of inadequate nutrition by this special demographic group. Spatially, states with conflict such as **Tanintharyi, Rakhine, and Sagaing saw an increase in the prevalence of low diet diversity of reproductive age women over the past year (i.e. from R4 to R6) with the highest rates prevailing in Tanintharyi, Rakhine, and Kayin in R6** (see Appendix Table A.8).

3.3 Minimum Diet Diversity of Children, 6-23 and 6-59 Months

In our survey, for households with children under the age of 5 years, the primary caregiver is asked questions regarding the food intake of the youngest child. In R1, we asked only for children less than 2 years old, while in the rest of the rounds, namely R2 to R6, we expanded our sample to include any children below age 5. Table 5 presents the estimates for the proportion of children, 6-23 and 6-59 months, not consuming minimum diet diversity i.e. not consuming 4 out of 7 food groups (FANTA, 2006).

We find 34.5 percent of all children aged 6-23 months have inadequate diet quality in R6, with no improvement in the prevalence over the past year. Girls have a higher prevalence of inadequate diet quality compared to boys in R6 (40.6 percent compared to 29.1 percent for boys) (see Table 5). This difference in the prevalence of poor diet quality between girls and boys is also statistically significant ($p=.029$). With respect to children 24-59 months of age, we see a slight worsening of the situation, with more children having poor diet quality, although the change is not statistically significant; 18.5 percent of children aged 24-59 months has poor diet quality in R6 compared to 15.8 percent a year back in R4.

When we consider all children under 5 years old, **we find that 23.6 percent of all children under 5 are without adequate diet diversity**, with an increase in the prevalence from R4 to R6 of 2.1 percentage points (see Table 5). The rate is higher in girls, who also saw a deterioration in diet quality over the past year with a 3.1 percentage point increase in girls with poor diet quality. Overall, children from rural areas, and asset and income poor households are worse off.

Table 5. Percentage of children with inadequate diet diversity

	6-23 months						Change R6 – R1	Change R6 – R4
	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)		
	Means (%)						% Points	
Overall	40.5	39.9	37.6	34.5	39.5	34.5	-6.0*	-0.1
Boys	39.4	37.0	36.6	32.8	42.0	29.1	-10.2*	-3.7
Girls	41.7	42.7	38.5	36.4	37.2	40.6	-1.1	4.2
No of obs.	684	601	739	712	702	746		
	6-59 months						Change R6 – R2	Change R6 – R4
	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)		
	Means (%)						% Points	
Overall	-	23.4	22.9	21.4	24.3	23.6	0.2	2.1
Boys	-	21.8	21.3	21.4	25.3	22.6	0.8	1.2
Girls	-	25.1	24.6	21.5	23.3	24.6	-0.5	3.1**
No of obs.	-	2092	2390	2398	2352	2375		

Note: Asterisks refer to the level of statistical significance in the difference in age adjusted trend between rounds: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Next, we look at individual food groups to examine what is driving the changes. For children aged 6-23 months, we **find an increase in the consumption of legumes and nuts (3.7 percentage points) over the past year. This increase in the consumption of legumes is primarily driven by boys with an 8.2 percentage point increase in the past year (see Appendix Table A.9). However, there is a considerable drop in the consumption of other fruits and vegetables of 8.8 percentage points for this age group from R4 to R6 (see Table 6).** The fall in consumption is driven primarily by girls (11.2 percentage points, see Appendix Table A.10). On the other hand, for children aged 6-59 months, we find an increase in the consumption of eggs (1.2 percentage points) over the past year from R4 to R6. Further, similar to the previous group, we also find a decrease in the consumption of **other fruits and vegetables (7.1 percentage points) over the past year.** On

the other hand, compared to R2, there was a big decrease in the consumption of milk and dairy products for both age groups and an increase in the consumption of grains and meat and fish. The fall in consumption of milk was possibly a consequence of increasing prices in the market while cost of fruits such as banana has also increased considerably by about 50 percent over the past year (MAPSA 2024).

Table 6. Percentage of children consuming different food groups in past 24 hours

	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	6-23 months			R6 (Sep 23 to Nov 23)	Change R6 – R1	Change R6 – R4
				R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)				
	<i>Means (%)</i>						<i>% Points</i>		
Grains	95.0	95.8	98.3	98.9	95.5	99.0	4.0***	0.1	
Legumes & Nuts	45.2	44.9	48.6	47.5	47.2	51.2	6.0**	3.7*	
Milk/dairy products	39.9	38.7	33.4	35.2	29.9	35.9	-4.0*	0.7	
Meat & Fish	54.7	57.1	60.7	61.4	56.0	66.1	11.4***	4.7	
Eggs	50.3	46.5	45.7	48.4	49.4	49.8	-0.5	1.4	
Vit-A rich fruit/vegetables	42.2	54.7	53.4	57.5	55.6	57.1	15.0***	-0.4	
Other fruits/vegetables	68.4	59.3	60.7	68.1	56.1	59.3	-9.1***	-8.8***	
	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	6-59 months			R6 (Sep 23 to Nov 23)	Change R6 – R2	Change R6 – R4
				R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)				
	<i>Means (%)</i>						<i>% Points</i>		
Grains	-	98.0	99.3	99.4	98.1	99.5	1.5***	0.1	
Legumes & Nuts	-	58.7	59.1	57.7	57.1	56.5	-2.2	-1.2	
Milk/dairy products	-	35.2	27.1	29.1	29.5	28.7	-6.4***	-0.4	
Meat & Fish	-	71.9	73.1	75.8	72.6	76.9	5.1***	1.2	
Eggs	-	52.5	53.3	54.9	57.7	56.1	3.7***	1.2*	
Vit-A rich fruit/vegetables	-	67.4	67.4	66.7	68.1	69.0	1.6	2.4	
Other fruits/vegetables	-	74.2	75.9	77.2	67.2	70.1	-4.2**	-7.1***	

Note: Asterisks refer to the level of statistical significance in the difference in age adjusted trend between rounds: * p < 0.10, ** p < 0.05, *** p < 0.01.

Overall, we see a fall in consumption of meat, fish, egg, milk products, and Vitamin A rich fruits and vegetables. This is also evident by households reporting a reduction in expenditure on these items. In our survey, we asked respondents to report whether they reduced food expenditure in the past 30 days prior to the interview day, and on which items they have reduced it. **Around 43 percent of our respondents in R6 has reported to have reduced expenditure on food in the preceding 30 days of the survey day. Around 30 percent of households reported reducing expenditure on dairy and eggs, 90 percent on meat and fish, and about 50 percent of households reported expenditure reductions on fruits and vegetables** (see Appendix Table A.11). These may be a consequence of falling income and rising prices in the face of multiple shocks that have affected the country. 45 percent of our respondents have reported that they have faced a significant decrease in income in the preceding 3 months of the survey date.

4. REGRESSION ANALYSIS OF THE PREDICTORS OF FOOD INSECURITY AND INADEQUATE DIET DIVERSITY

To explore possible risk factors of food security and nutrition, we conduct a panel random effects linear probability model exploring how welfare measures, self-reported shocks, prices, and household characteristics affect the probability of households experiencing moderate to severe hunger, and of having low food consumption scores as well as the likelihood of low diet diversity score for adults and children aged 6-59 months. We also control for principal household income source and other household and respondent characteristics as well as include survey month and state fixed effects in the model. The estimates of the proportional change in risk of hunger and inadequate diet diversity of different associates are presented in Figures 6 and 7 respectively. Full regression results are presented in appendix Table A.14.

Findings from the regression analysis are summarized below:

- **Low income and limited assets are a significant risk for food insecurity and inadequate diet diversity.** Income poor households are more likely to experience moderate to severe hunger as well as low food consumption. Such households are also likely to have adults, reproductive age women and children aged 6-59 months with poor diet quality. Similarly, households that are asset-poor and asset-low have a higher probability of experiencing hunger, having low FCS, have inadequate diet diversity for adults and reproductive aged women as well as young children compared to asset-rich households.
- **Farm households are found to be protected against food insecurity and inadequate diet quality.** Households who have some form of own farm income are less likely to experience hunger and have low household food consumption. Such households are also likely to have adults, reproductive age women and children aged 6-59 months with poor diet quality. On the other hand, **wage worker households are particularly vulnerable to hunger and low household diet diversity. Non-farm business activities also decrease the likelihood of hunger and low diet quality for adults and children.**
- **Households in low-wage communities are more likely to experience hunger and have a low FCS as well have inadequate diet diversity for reproductive aged women.** On the other hand, households in medium wage communities are likely at risk of hunger.
- **Remittance-receiving households have a lower likelihood of experiencing hunger or having adults or children with inadequately diverse diets.** Remittances seem to offer substantial resilience in this sense.
- **Self-reported income shocks increase the likelihood of experiencing hunger and having inadequate diet diversity** both at the household and individual levels. Compared to the other kind of shocks considered in the regression framework, only income shock is found to have a statistically significant association for young children. This indicates that even though households are able to compensate for children's diet in the face of other shocks, such as natural, health or conflict, households are particularly vulnerable and fail to mitigate consumption in the face of income shocks.
- **High levels of physical insecurity are a significant risk factor for food insecurity and diet quality.** Households reporting high levels of physical insecurity are more likely to be hungry and more likely to have inadequate diet diversity at the household level. Community violence also increases the likelihood of households experiencing hunger the diet quality of adults. No significant association is found for young children.

- **Adults in communities with higher food prices² are more likely to have poor dietary diversity.**
- **Women-only households are particularly vulnerable to food insecurity** with higher likelihood of having a low food consumption score as well as have inadequate diet diversity for adults and reproductive aged women. However, women-only households seem to provide more resilience to children's diet quality.
- **Low education level of adult members is also a significant risk factor for food insecurity and poor diet quality.** A higher share of dependents also increases the likelihood of hunger and poor diet quality at the household and individual level.

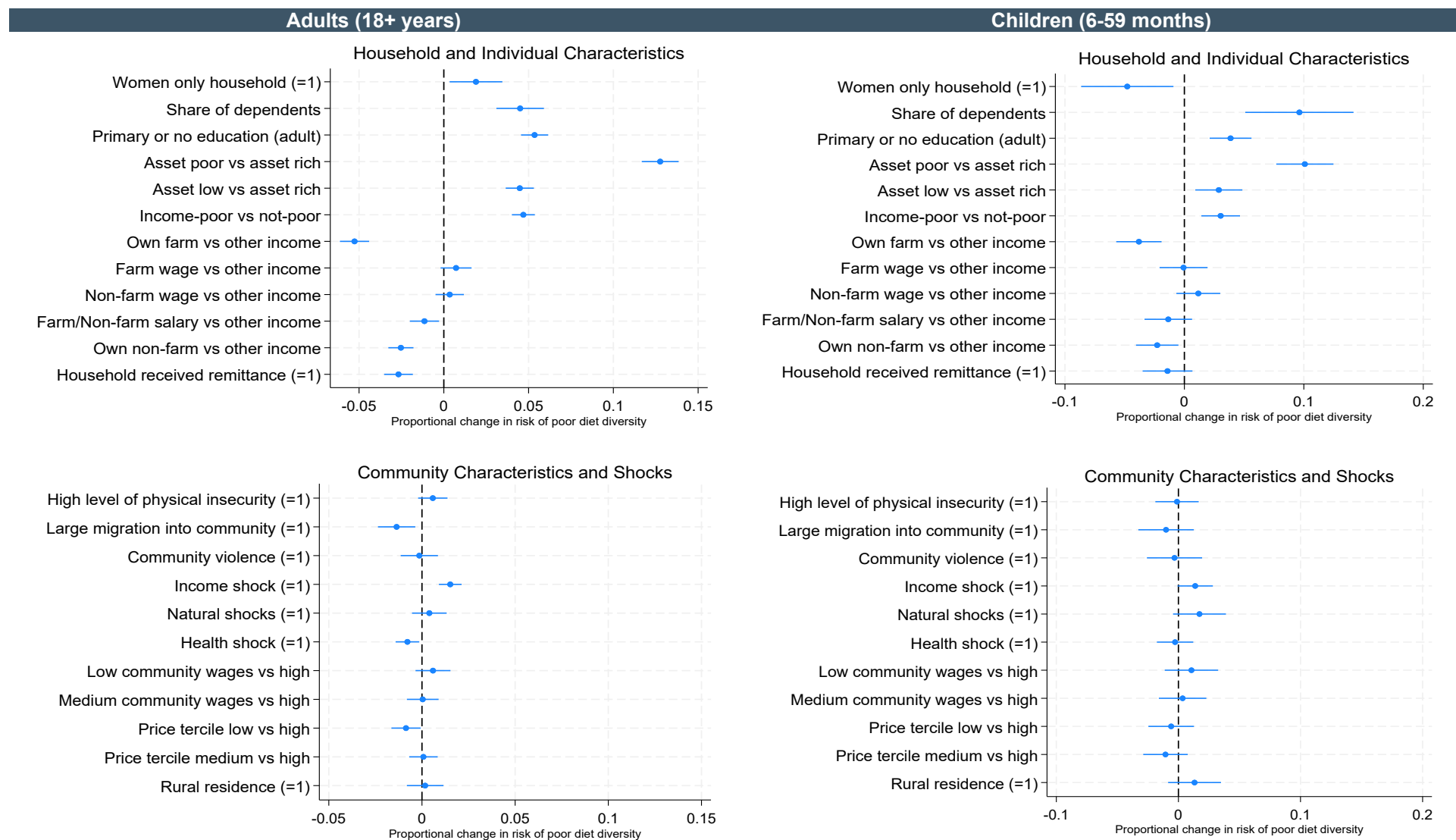
² We generated a food price index using prices of ten types of sentinel foods: rice, potatoes, pulses, chicken, fresh fish, dried fish, green leafy vegetables, onions, bananas, and oils. We then categorized each household into price terciles by each survey round i.e. households were placed in high-price group, medium-price group, or low-price group.

Figure 6. Linear probability model regressions of household and community level predictors of proportional changes in risk of moderate to severe hunger



Note: Additional controls not presented in the figures are age, female, household size, recall day is a special day, survey rounds and state fixed effects.

Figure 7. Linear probability model regressions of household and community level predictions of proportional changes in risks of inadequate diet diversity among adults and children 6-59 months of age



Note: Additional controls not presented in the figures are age, female, household size, recall day is a special day, survey rounds and state fixed effects

5. CONCLUDING REMARKS

The combined economic and political crises in Myanmar have adversely affected food security and nutrition. Using six rounds of the Myanmar Household Welfare Survey (MHWS) collected from December 2021-February 2022 to September-November 2023, we document trends in food insecurity and inadequate diet diversity for different regions, socioeconomic groups and demographics groups. Our six key findings are as follows.

First, although prevalence of extreme hunger is relatively low, on average, it is far more prevalent in poorer households and in more conflict affected regions like Chin, Rakhine and Tanintharyi in the latest round of the survey.

Second, among households and adults specifically, there are strong indications of deteriorating dietary quality over the year 2022-23, either in terms of reduced frequency of consumption of nutrient-dense foods such as Vitamin-A rich fruits and vegetables, meat and fish, and eggs, or in adequate dietary diversity in the past 24 hours. We find the largest increase in the prevalence of inadequate diet quality in Sagaing, Shan, and Rakhine over the survey period while the highest rates are found in Chin, Kayah, Tanintharyi and Rakhine in the latest round of survey.

Third, we find a divergence in the diet quality of adult men and women over our survey period with women experiencing a larger increase in the prevalence of low diet diversity over the past year with a 6.8 percentage point increase from October-December 2022 to September-November 2023 compared to an increase of 4.8 percentage points for men.

Fourth, there is a tremendous increase in inadequate diet diversity for women of reproductive age (15-49 year old): 7.6 percentage points over the past year and an increase of 12 percentage points over the past two years. Women in this subpopulation are also less likely to consume almost all food groups in the latest round of survey compared to the past two years.

Fifth, a third (34.5 percent) of all children aged 6-23 months and nearly a quarter (23.6 percent) of all children aged 6-59 months have inadequately diverse diet in the latest round of survey.

Sixth, regression analysis reveals low income and asset ownership to be important risk factors for food security and diet quality, along with conflict and physical insecurity in the past year. Falling income is found to be a significant shock for hunger and diets and is the only shock that significantly affects young children's diets. Even controlling for various forms of poverty and insecurity, wage workers are found to be especially vulnerable to risks of low diet quality, possibly driven by the decline in real wages over the last year (MAPSA 2023b). Adults in communities with higher food prices are also more likely to have poor dietary diversity. In contrast, children and adults from farming households appear to be somewhat less at risk of food insecurity and inadequate diet diversity, as are households that received remittances. Women-only households are found to be vulnerable to food insecurity.

Of note, the deterioration of diets captured through our phone survey is likely to be an underestimation of the true deterioration in diet quality in Myanmar due to various factors. First, the survey struggled to capture some of the most conflict-affected areas due to limited access to cellphone and electricity, especially in Sagaing. Second, our ability to survey internally displaced persons (IDPs), which rose to about 2.2 million according to reports from UNHCR, were limited since IDPs are in the most precarious situations and have limited access to phones, and thus are under sampled. Third, dietary diversity indicators do not capture quantities, so households and individuals could continue consuming some food groups, but in smaller quantities, with important implications for nutrient intake that are not fully captured by standard dietary diversity metrics.

To avert an even more severe nutrition crisis in Myanmar, effective multisectoral steps are required to protect nutritionally vulnerable populations. In the face of multiple economic shocks such

as falling income and rising prices, there is a need for renewed implementation of social protection programs, including maternal and child cash transfers, to improve food security and diet quality. Cash-plus programs hold considerable promise in providing resilience to vulnerable households with recent evidence from Maffioli et al. (2023) showing that maternal cash transfers and nutrition behavioral change communication (BCC) had sustained benefits on maternal and child diet diversity during 2020-2021 economic crises which is about three years post-program. Remote implementation through digital cash transfers as well as BCC through phone or online sessions - where phone connections still exist - should be piloted and evaluated.

In addition, recent evidence suggests a faster deterioration of diet quality for women, especially in rural areas. This new and worrying trend of a gender gap is disconcerting given the potential threat of intergenerational transmission of inadequate nutrition by this special demographic group, and suggests not just the need for maternal and child transfers in the first 1000 days, but perhaps also the need for combinations of social protection, nutrition and gender interventions for women.

Another potential avenue for improving welfare of the Myanmar population is facilitating emigration overseas, improving remuneration of overseas migrations and their ability to send money to family members back in Myanmar. Improving the welfare, working conditions and legal rights of Myanmar migrants in countries such as Thailand may also help. Remittances are clearly an effective coping mechanism for households in Myanmar's current political and economic circumstances. At the same time, migration-related disruptions to production and supply chain functions should be monitored and minimized – such as through support to mechanization services – in order to keep the agri-food system functioning as smoothly as possible.

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APPENDIX TABLES

Table A.1 Prevalence of moderate to severe hunger by state, sorted by highest prevalence in R6

	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R1	Change R6 – R4
Means (%)						% points		
Chin	7.1	11.6	7.0	9.9	10.1	8.7	1.6	-1.2
Tanintharyi	5.7	9.9	11.7	5.5	5.0	7.0	1.3	1.5
Nay Pyi Taw	6.9	4.0	3.2	3.0	4.7	6.2	-0.7	3.2
Kayah	4.5	12.4	8.0	4.4	5.3	5.3	0.8	0.9
Mon	5.7	5.5	5.6	6.7	3.4	4.8	-0.9	-2.0
Rakhine	6.2	3.9	6.5	6.3	7.6	4.5	-1.6	-1.8
Shan	3.5	3.6	1.9	3.5	3.2	4.0	0.5	0.5
Yangon	3.9	3.2	2.5	3.5	2.6	4.0	0.1	0.5
Bago	2.7	4.8	4.6	5.2	3.9	3.7	0.9	-1.5
Sagaing	1.4	2.3	2.9	2.5	2.3	3.5	2.1***	1.0
Kachin	3.8	2.7	0.9	3.6	3.2	3.4	-0.4	-0.2
Magway	6.2	4.2	3.2	4.4	2.8	2.9	-3.3***	-1.5
Kayin	6.1	5.3	9.7	6.2	5.9	2.7	-3.4*	-3.5**
Ayeyawady	6.4	4.7	5.0	3.6	2.4	2.3	-4.1***	-1.3*
Mandalay	3.7	2.6	3.1	2.9	2.4	2.1	-1.7**	-0.9
No. of observations	12,100	12,142	12,128	12,924	12,953			

Note: Asterisks refer to the level of statistical significance in the difference in means across Rounds: *p<0.10, ** p<0.05, *** p<0.01.

Table A.2 Prevalence of low food consumption score (FCS≤38.5) by state/region, sorted by highest prevalence in R6

	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R1	Change R6 – R4
Percentages (%)						% points		
Chin	37.8	58.0	47.6	50.2	48.4	38.2	0.4	-12.0**
Kayah	33.2	36.7	22.6	20.6	27.0	22.4	-10.8	1.8
Magway	14.1	22.1	25.6	22.9	21.0	19.9	5.8***	-3.0
Shan	16.2	20.9	18.3	18.4	21.9	17.9	1.8	-0.5
Kayin	7.5	21.7	20.7	23.2	19.0	16.0	8.5**	-7.3
Mon	6.2	21.3	16.6	16.7	18.2	15.9	9.7***	-0.8
Tanintharyi	5.9	12.3	11.9	14.7	17.8	15.1	9.2***	0.4
Mandalay	9.2	13.8	11.8	13.4	13.1	14.5	5.2***	1.1
Ayeyawady	8.3	15.7	21.6	15.7	20.9	13.7	5.4***	-2.0
Sagaing	7.3	13.9	14.5	15.9	17.5	13.4	6.2***	-2.5
Nay Pyi Taw	7.9	12.3	9.7	9.0	19.3	13.4	5.5*	4.4
Yangon	4.9	12.2	11.2	10.6	14.5	12.2	7.3***	1.6
Rakhine	10.8	18.9	22.1	18.5	17.0	12.1	1.3	-6.4**
Bago	8.7	15.7	19.6	14.9	13.1	11.5	2.8*	-3.4**
Kachin	7.3	20.0	11.0	12.5	22.0	7.4	0.1	-5.1**
No. of observations	12,100	12,142	12,128	12,924	12,953			

Note: Asterisks refer to the level of statistical significance in the difference in means across Rounds: *p<0.10, ** p<0.05, *** p<0.01.

Table A.3 Percentage of adult men consuming different food groups in the past 24 hours

	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R1	Change R6 – R4
	Means (%)						% points	
Cereals/grains/roots	99.3	98.8	99.6	99.6	99.4	99.6	0.4**	0.0
Beans	55.0	53.4	53.0	50.9	51.1	51.8	-3.2**	0.9
Nuts or seeds	43.6	38.1	36.2	37.1	36.6	35.9	-7.7***	-1.2
Milk and dairy products	15.9	16.8	13.1	11.9	11.3	13.5	-2.4**	1.6*
Egg	50.0	47.8	48.6	47.0	49.5	49.6	-0.4	2.7**
Meat and Fish	89.3	83.6	83.3	86.7	84.4	84.9	-4.5***	-1.8*
Other fruits	38.9	52.4	49.8	50.7	54.3	40.0	1.1	-10.7***
Vit-A rich fruit/vegetables	47.4	26.9	26.5	30.1	27.9	34.0	-13.4***	4.0***
Dark green vegetables	85.0	85.5	82.5	84.6	85.3	82.9	-2.2**	-1.7*
Other vegetables	82.1	73.9	78.6	79.2	73.6	75.7	-6.5***	-3.5***
No. of observations	6,029	5,984	5,964	6,428	6,226			

Note: Asterisks refer to the level of statistical significance in the difference in means across Rounds: *p<0.10, ** p<0.05, *** p<0.01.

Table A.4 Percentage of adult women consuming different food groups in the past 24 hours

	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R1	Change R6 – R4	Diff: R6 Male – Female
	Means (%)						% points		
Cereals/grains/roots	99.4	99.0	99.6	99.6	99.4	99.7	0.3*	0.1	0.0
Beans	52.6	52.1	51.9	48.2	46.6	48.4	-4.2***	0.1	3.5**
Nuts or seeds	44.3	37.9	35.3	38.4	34.9	34.9	-9.4***	-3.5***	1.0
Milk and dairy products	16.8	16.5	13.9	13.7	12.6	13.3	-3.5***	-0.4	0.2
Egg	55.0	46.6	47.1	47.9	48.5	46.0	-9.0***	-1.9	3.6**
Meat and Fish	88.6	78.4	79.9	83.4	80.8	81.8	-6.8***	-1.6	3.0**
Other fruits	42.5	51.9	49.6	50.8	52.8	40.4	-2.2*	-10.5***	-0.4
Vit-A rich fruit/vegetables	51.0	25.2	26.7	31.6	27.9	32.4	-18.6***	0.8	1.6
Dark green vegetables	83.5	82.9	79.7	84.1	83.6	80.7	-2.8***	-3.4***	2.2*
Other vegetables	82.0	71.5	76.8	77.1	70.8	71.7	-10.3***	-5.5***	4.0***
No. of observations	6,071	6,158	6,164	6,496	6,727				

Note: Asterisks refer to the level of statistical significance in the difference in means across Rounds: *p<0.10, ** p<0.05, *** p<0.01.

Table A.5 Percentage of adults with inadequate diet diversity by state/region, sorted by highest prevalence in R6

	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R1	Change R6 – R4
Means (%)						% points		
Rakhine	34.3	34.0	36.8	29.7	33.3	43.6	9.3*	13.9***
Tanintharyi	25.8	28.0	33.5	30.4	30.3	39.6	13.8**	9.2*
Chin	28.2	51.0	37.2	43.8	48.3	38.1	9.9	-5.7
Kayin	28.4	34.9	38.8	33.7	35.0	37.9	9.5	4.2
Ayeyawady	29.5	36.7	35.6	34.3	32.1	37.4	7.9***	3.0
Mon	25.8	35.2	30.8	33.6	33.6	34.9	9.1**	1.3
Bago	21.7	25.4	34.7	25.1	30.1	34.9	13.2***	9.8***
Kayah	24.5	41.7	21.6	21.1	34.3	34.1	9.6	13.0*
Yangon	22.1	26.8	29.7	25.4	27.7	31.8	9.7***	6.3***
Magway	19.5	25.6	28.0	23.9	26.3	28.8	9.3***	4.9*
Sagaing	10.0	21.4	21.0	18.3	20.9	26.1	16.1***	7.8***
Shan	13.4	21.6	19.4	20.1	24.1	24.5	11.1***	4.4
Kachin	16.0	26.6	20.8	23.9	19.9	23.1	7.2*	-0.8
Nay Pyi Taw	10.7	24.4	23.0	21.1	19.8	22.6	11.8***	1.5
Mandalay	15.1	19.1	18.1	17.9	21.6	21.8	6.7***	3.9**
No. of observations	12,100	12,142	12,128	12,924	12,953			

Note: Asterisks refer to the level of statistical significance in the difference in means across Rounds: *p<0.10, ** p<0.05, *** p<0.01.

Table A.6 Percentage of reproductive age women (15-49 years) with inadequate diet diversity

	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R1	Change R6 – R4
Means (%)						% points		
National	21.5	29.3	29.3	25.9	30.2	33.5	12.0***	7.6***
Rural	22.8	31.2	30.7	26.7	31.6	34.6	11.9***	8.0***
Urban	18.6	24.6	25.6	23.7	26.7	30.6	12.0***	6.9***
Asset-poor (0-3)	30.2	41.7	38.0	34.6	38.7	42.2	11.9***	7.5***
Asset-low (4-6)	20.1	25.7	26.5	21.9	28.5	30.5	10.4***	8.6***
Asset-rich (7-10)	12.3	17.2	20.7	17.4	19.0	23.2	10.9***	5.8**
Income poor	24.3	33.9	32.0	29.5	33.6	35.8	11.4***	6.3***
Income not poor	17.3	21.7	24.2	18.8	23.4	26.5	9.2***	7.7***
No. of observations	4955	5138	5197	5406	5512	5486		

Note: Asterisks refer to the level of statistical significance in the difference in means across Rounds: *p<0.10, ** p<0.05, *** p<0.01.

Table A.7 Percentage of reproductive age women (15-49 years) consuming different food groups in the past 24 hours

	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R1	Change R6 – R4
	Means (%)						% points	
Cereals/grains/roots	99.3	99.0	99.5	99.6	99.4	99.7	0.4**	0.1
Beans	51.7	50.7	50.8	47.0	45.2	47.4	-4.3***	0.4
Nuts or seeds	42.7	37.5	34.6	38.2	34.2	34.8	-7.9***	-3.4**
Milk and dairy products	16.3	16.8	13.6	13.8	12.2	12.4	-3.8***	-1.3
Egg	53.5	45.6	46.6	47.7	48.4	45.8	-7.7***	-1.9
Meat and Fish	87.9	78.1	79.2	82.8	80.3	81.0	-6.9***	-1.7*
Other fruits	41.2	51.4	49.0	49.2	51.6	39.4	-1.7	-9.8***
Vit-A rich fruit/vegetables	49.8	24.4	26.4	31.3	27.6	31.8	-17.9***	0.6
Dark green vegetables	83.3	82.6	79.5	83.9	82.8	79.8	-3.5***	-4.1***
Other vegetables	80.8	71.4	76.8	76.8	69.9	69.8	-11.0***	-7.0***
No. of observations	4,955	5,119	5,197	5,397	5,512	5,486		

Note: Asterisks refer to the level of statistical significance in the difference in means across Rounds: *p<0.10, ** p<0.05, *** p<0.01.

Table A.8 Percentage of reproductive age women (15-49 years) with inadequate diet diversity by state/region, sorted by highest prevalence in R6

	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R1	Change R6 – R4
	Means (%)						% points	
Tanintharyi	32.4	31.4	34.4	32.7	33.9	48.6	16.2*	15.9**
Rakhine	38.5	37.8	35.7	28.3	38.2	47.2	8.7	18.9**
Kayin	25.0	33.0	37.8	30.7	38.3	42.3	17.3**	11.5
Ayeyawady	30.1	38.0	37.7	35.7	33.1	40.5	10.5***	4.9
Bago	25.3	25.7	35.4	24.0	32.0	39.2	13.9***	15.2***
Mon	25.7	38.4	34.5	29.3	36.7	36.4	10.7*	7.1
Yangon	23.2	29.1	30.5	27.1	31.6	36.4	13.2***	9.3***
Chin	23.9	54.1	37.3	46.0	49.6	34.1	10.2	-11.8
Magway	19.0	28.0	32.6	27.7	29.7	30.9	11.9***	3.1
Sagaing	9.8	24.1	24.3	20.1	21.5	26.9	17.2***	6.8**
Kayah	42.1	49.6	22.6	26.6	39.8	26.7	-15.4	0.1
Nay Pyi Taw	10.4	27.7	26.0	26.2	23.9	26.5	16.1**	0.3
Kachin	15.8	23.4	24.3	24.2	20.1	26.0	10.2*	1.8
Shan	13.7	23.5	18.8	18.8	28.4	22.9	9.2***	4.2
Mandalay	14.9	23.7	18.4	20.6	25.5	21.8	6.9**	1.1

Note: Asterisks refer to the level of statistical significance in the difference in means across Rounds: *p<0.10, ** p<0.05, *** p<0.01.

Table A.9 Percentage of boys consuming different food groups in the past 24 hours

Panel A 6-23 months	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R1	Change R6 – R4
Means (%)						% points		
Grains	95.9	96.3	98.9	99.2	95.3	99.2	3.4**	0.1
Legumes & Nuts	43.5	46.7	46.0	46.9	48.7	55.1	11.6**	8.2*
Milk/dairy products	41.9	39.7	32.4	32.9	29.3	39.6	-2.3	6.7
Meat and Fish	57.7	55.6	60.9	63.4	55.8	67.1	9.4**	3.7
Egg	49.2	52.3	46.5	46.9	47.8	49.1	-0.1	2.2
Vit-A rich fruits/veg	42.7	54.6	53.0	57.5	56.8	58.9	16.2***	1.4
Other fruits/veg	69.1	61.3	57.1	68.1	54.3	61.5	-7.6	-6.6
No. of observations	339	300	369	366	344	390		
Panel B 6-59 months	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R2	Change R6 – R4
Means (%)						% points		
Grains	-	98.5	99.6	99.7	98.1	99.5	1.0**	-0.2
Legumes & Nuts	-	59.0	57.8	56.2	56.0	57.5	-1.5	1.2
Milk/dairy products	-	34.6	26.7	29.1	29.5	30.7	-3.9	1.6
Meat and Fish	-	69.6	74.6	77.3	72.6	76.2	6.6**	-1.1
Egg	-	54.8	55.9	54.1	56.7	55.9	1.1	1.8
Vit-A rich fruits/veg	-	67.0	66.5	65.5	68.0	67.1	0.1	1.6
Other fruits/veg	-	75.0	74.5	77.7	68.9	70.4	-4.6*	-7.2***
No. of observations		1094	1231	1242	1170	1185		

Note: Asterisks refer to the level of statistical significance in the difference in means across Rounds: *p<0.10, ** p<0.05, *** p<0.01.

Table A.10 Percentage of girls consuming different food groups in the past 24 hours

Panel A 6-23 months	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R1	Change R6 – R4
Means (%)						% points		
Grains	94.1	95.3	97.7	98.6	95.8	98.8	4.6***	0.1
Legumes & Nuts	46.8	43.3	51.2	48.2	45.8	46.7	-0.2	-1.5
Milk/dairy products	37.8	37.8	34.3	37.8	30.4	31.7	-6.1	-6.2
Meat and Fish	51.6	58.7	60.6	59.3	56.2	64.9	13.4**	5.6
Egg	51.5	40.7	45.0	50.1	51.0	50.7	-0.8	0.6
Vit-A rich fruits/veg	41.7	54.8	53.8	57.6	54.4	55.2	13.5**	-2.5
Other fruits/veg	67.7	57.3	64.2	68.0	57.8	56.8	-10.9**	-11.2**
No. of observations	345	301	370	346	358	356		
Panel B 6-59 months	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R2	Change R6 – R4
Means (%)						% points		
Grains	-	97.6	98.9	99.1	98.1	99.6	2.0***	0.5
Legumes & Nuts	-	58.3	60.5	59.3	58.3	55.4	-2.9	-3.8
Milk/dairy products	-	35.8	27.7	29.2	29.6	26.6	-9.2***	-2.6
Meat and Fish	-	74.4	71.6	74.2	72.7	77.7	3.3	3.6
Egg	-	49.8	50.5	55.8	58.7	56.3	6.5**	0.5
Vit-A rich fruits/veg	-	67.8	68.4	67.9	68.2	71.1	3.3	3.2
Other fruits/veg	-	73.3	77.3	76.7	65.5	69.7	-3.6	-7.0***
No. of observations		998	1159	1156	1182	1190		

Note: Asterisks refer to the level of statistical significance in the difference in means across Rounds: *p<0.10, ** p<0.05, *** p<0.01.

Table A.11 Percentage of households reporting reduction in food expenditure in the past 30 days by food groups

	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)	Change R6 – R1/R2	Change R6 – R4
	Means (%)						% points	
Reduced food expenditures?	59.2	46.8	47.1	50.0	40.4	42.8	-16.5***	-7.2***
Staple grains, roots & tubers	-	29.9	29.9	39.1	39.5	47.5	17.7***	8.4***
Beans and nuts	-	26.6	30.1	37.0	35.7	42.8	16.2***	5.8***
Dairy	-	21.4	20.6	28.4	29.4	26.9	5.5***	-1.5
Eggs	-	26.7	26.6	32.9	32.7	36.7	10.0***	3.7***
Meat and Fish	-	86.3	87.0	87.5	89.6	88.7	2.4***	1.2
Fruits	-	38.5	43.7	52.9	49.0	59.5	21.0***	6.6***
Vegetables	-	31.8	37.9	45.5	42.1	50.8	18.9***	5.3***
Sugary products	-	38.6	45.5	56.6	50.2	60.8	22.2***	4.2***
Oils, fats and butter	-	72.9	80.7	84.4	72.7	84.1	11.2***	-0.2
Condiments	-	44.1	52.3	63.4	56.8	66.6	22.4***	3.2**
Restaurant / takeaway meals	-	47.9	55.2	57.9	54.0	64.6	16.7***	6.6***
No. of observations	12,100	12,142	12,128	12,924	12,953	12,898		

Note: Asterisks refer to the level of statistical significance in the difference in means across Rounds: *p<0.10, ** p<0.05, *** p<0.01.

Table A.12 Household hunger scale measures by location, poverty and asset level in R6

	Location		Poverty		Asset level		Rural – Urban	Diff:	Asset poor – rich
	Rural	Urban	Poor	Not poor	Asset poor	Asset rich		Income poor – not poor	
Percentages (%)							% points		
HHS classifications									
Little to no hunger	96.4	96.6	95.4	98.7	93.7	98.8	-0.1	-3.4***	-5.1***
Moderate hunger	3.2	3.2	4.2	1.2	5.6	1.1	0.0	3.0***	4.5***
Severe hunger	0.4	0.3	0.5	0.1	0.7	0.1	0.1	0.4***	0.6***
Moderate to severe hunger	3.6	3.4	4.6	1.3	6.3	1.2	0.1	3.4***	5.1***
No food of any kind the house	9.4	7.3	11.3	3.6	14.7	2.7	2.0***	7.7***	12.0***
Rarely (1-2 times) ^a	45.4	46.3	43.9	58.0	43.0	51.6	-0.9	-14.1**	-8.6
Sometimes (3-10 times) ^a	46.1	45.9	47.2	37.4	48.2	37.4	0.2	9.8*	10.8
Often (more than 10 times) ^a	8.6	7.8	8.9	4.6	8.8	11.0	0.7	4.3*	-2.2
Went to sleep hungry	3.8	3.9	5.0	1.4	6.8	1.1	-0.1	3.6***	5.7***
Rarely (1-2 times) ^a	49.0	53.3	47.6	69.8	47.8	66.3	-4.3	-22.3**	-18.5
Sometimes (3-10 times) ^a	44.5	41.2	46.4	24.9	45.5	25.8	3.3	21.4**	19.8*
Often (more than 10 times) ^a	6.5	5.4	6.1	5.2	6.7	8.0	1.1	0.8	-1.3
Went full day & night without food	1.6	1.6	2.1	0.4	3.0	0.4	0.0	1.7***	2.7***
Rarely (1-2 times) ^a	42.4	66.8	49.8	43.5	47.3	81.5	-24.4***	6.3	-34.2**
Sometimes (3-10 times) ^a	49.6	25.5	43.5	36.4	44.8	18.5	24.1***	7.2	26.3*
Often (more than 10 times) ^a	8.0	7.6	6.7	20.1	7.9	0.0	0.3	-13.4	7.9**
No of observations	9,053	3,845	8,270	4,498	4,241	3,387			

Note: a. The frequency of occurrence questions is for the subsample of households that answered “yes” to the three hunger related questions. Asterisks refer to the level of statistical significance in the difference in means between Rounds: * p < 0.10, ** p < 0.05, *** p < 0.01. “Went to sleep hungry” and “went full day & night without food” refer to any household member undergoing these experiences.

Table A.13 Mean of household and community predictors by survey round

	R1 (Dec 21 to Feb 22)	R2 (Apr 22 to Jun 22)	R3 (Jul 22 to Aug 22)	R4 (Oct 22 to Dec 22)	R5 (Apr 23 to May 23)	R6 (Sep 23 to Nov 23)
Respondent age (in years)	38.5	38.4	37.7	37.8	38.9	38.5
Women only household	9.4	9.4	9.4	9.4	9.4	9.4
Share of dependents	47.3	44.0	44.0	43.6	44.4	45.0
Household size (number)	4.6	4.3	4.2	4.1	4.1	4.0
Primary or no education (adult)	59.4	59.3	59.0	58.9	58.9	56.0
Female	54.4	55.2	54.1	52.2	54.4	54.0
Asset poor	33.5	33.6	34.9	37.5	37.1	37.2
Asset low	39.8	40.8	40.4	39.4	39.6	40.2
Asset rich	26.6	25.6	24.7	23.2	23.3	22.6
Income-poor	45.5	51.5	56.8	60.5	57.3	67.5
Own farm income	37.0	38.6	37.7	37.9	35.3	39.4
Farm wage income	24.2	20.6	26.0	27.2	19.6	23.3
Non-farm wage income	23.7	27.7	25.9	26.0	26.4	21.9
Farm/Non-farm salary income	21.4	23.1	22.6	22.0	21.8	21.8
Own non-farm income	43.9	43.9	42.0	39.5	35.5	33.8
Other income (gifts, donations)	9.8	13.4	11.9	11.6	10.5	12.1
Household received remittance	14.9	15.8	14.2	16.0	16.3	17.0
High level of physical insecurity	18.6	19.6	22.1	23.1	21.0	23.3
Large migration into community	5.6	8.4	8.2	8.4	15.6	16.0
Community violence	6.3	7.0	7.6	8.3	15.0	16.3
Income shock	54.6	50.1	46.8	44.4	41.6	39.2
Natural shocks	10.9	12.1	13.6	11.9	11.4	14.5
Health shock	58.5	34.4	32.4	44.2	29.2	43.1
Number of observations	12,100	12,142	12,128	12,924	12,953	12,898

Note: All figures in the table are percentages unless otherwise stated.

Table A.14 Factors associated with household hunger and diet diversity, Panel random effects regression, MHWS R1 - R6

	(1) Moderate/ severe hunger	(2) Low FCS	(3) Inadequate diet diversity (adult)	(4) Inadequate diet diversity (Reproductive age women)	(5) Inadequate diet diversity (children 6- 59 months)
Respondent age (years)	-0.001*** (0.000)	-0.001*** (0.000)	-0.003*** (0.000)	-0.003*** (0.000)	-0.006*** (0.000)
Women only household	0.003 (0.004)	0.026*** (0.007)	0.019** (0.008)	0.018** (0.009)	-0.048** (0.020)
Share of dependents	0.008** (0.003)	0.029*** (0.006)	0.045*** (0.007)	0.057*** (0.011)	0.096*** (0.023)
Household size	0.001** (0.001)	-0.005*** (0.001)	-0.004*** (0.001)	-0.003* (0.002)	-0.002 (0.002)
Primary or no education (adult)	0.017*** (0.002)	0.041*** (0.003)	0.054*** (0.004)	0.049*** (0.006)	0.039*** (0.009)
Female (=1)	-0.001 (0.002)	-0.011*** (0.003)	-0.010*** (0.004)	0.159*** (0.026)	0.005 (0.008)
Asset poor vs asset rich	0.045*** (0.002)	0.111*** (0.004)	0.128*** (0.006)	0.125*** (0.009)	0.101*** (0.012)
Asset low vs asset rich	0.011*** (0.002)	0.037*** (0.003)	0.045*** (0.004)	0.043*** (0.007)	0.029*** (0.010)
Income-poor vs not-poor	0.013*** (0.001)	0.047*** (0.003)	0.047*** (0.003)	0.045*** (0.006)	0.031*** (0.008)
Own farm vs other income	-0.023*** (0.002)	-0.035*** (0.004)	-0.053*** (0.004)	-0.062*** (0.007)	-0.038*** (0.010)
Farm wage vs other income	0.011*** (0.002)	0.028*** (0.004)	0.007 (0.005)	-0.002 (0.007)	-0.001 (0.010)
Non-farm wage vs other income	0.011*** (0.002)	0.004 (0.003)	0.003 (0.004)	0.005 (0.007)	0.011 (0.009)
Farm/Non-farm salary vs other income	-0.007*** (0.002)	-0.019*** (0.003)	-0.011*** (0.004)	-0.008 (0.007)	-0.014 (0.010)
Own non-farm vs other income	-0.006*** (0.002)	-0.035*** (0.003)	-0.025*** (0.004)	-0.029*** (0.006)	-0.023** (0.009)
Household received remittance (=1)	-0.007*** (0.002)	-0.025*** (0.003)	-0.027*** (0.004)	-0.017** (0.007)	-0.014 (0.011)
High level of physical insecurity (=1)	0.013*** (0.002)	0.018*** (0.003)	0.005 (0.004)	0.009 (0.006)	-0.002 (0.009)
Large migration into community (=1)	-0.000 (0.001)	0.002 (0.002)	0.005* (0.003)	0.005 (0.004)	-0.000 (0.006)
Community violence (=1)	0.000 (0.001)	0.002 (0.002)	0.008*** (0.003)	0.008 (0.005)	0.001 (0.006)
Income shock (=1)	0.008*** (0.001)	0.011*** (0.002)	0.015*** (0.003)	0.017*** (0.005)	0.014* (0.007)
Natural shocks (=1)	0.027*** (0.003)	0.011*** (0.004)	0.004 (0.005)	0.011 (0.008)	0.017 (0.011)
Health shock (=1)	0.011*** (0.001)	0.001 (0.003)	-0.008** (0.003)	-0.004 (0.005)	-0.003 (0.008)
Low community wages vs high	0.016*** (0.002)	0.018*** (0.004)	0.006 (0.005)	0.014* (0.008)	0.011 (0.011)
Medium community wages vs high	0.006*** (0.002)	0.002 (0.003)	0.000 (0.004)	0.004 (0.007)	0.003 (0.010)
Price tercile low vs high	0.002 (0.002)	-0.000 (0.003)	-0.009** (0.004)	-0.008 (0.006)	-0.006 (0.010)
Price tercile medium vs high	0.001 (0.002)	-0.000 (0.003)	0.001 (0.004)	0.004 (0.006)	-0.011 (0.009)
Yesterday was a special day (=1)	0.001 (0.002)	-0.012*** (0.003)	-0.030*** (0.004)	-0.029*** (0.007)	-0.019* (0.011)
Rural residence (=1)	-0.012*** (0.002)	0.015*** (0.004)	0.002 (0.005)	0.006 (0.008)	0.014 (0.011)

Kachin	-0.020** (0.008)	0.008 (0.012)	0.012 (0.015)	-0.005 (0.024)	0.007 (0.034)
Kayah	-0.002 (0.011)	0.089*** (0.018)	0.042** (0.019)	0.036 (0.029)	0.010 (0.037)
Kayin	0.001 (0.009)	0.022* (0.012)	0.105*** (0.016)	0.075*** (0.025)	0.080** (0.036)
Chin	-0.003 (0.010)	0.235*** (0.018)	0.151*** (0.019)	0.138*** (0.029)	0.087** (0.041)
Sagaing	-0.029*** (0.007)	-0.012 (0.010)	-0.024** (0.012)	-0.022 (0.019)	0.030 (0.030)
Tanintharyi	0.023** (0.010)	0.005 (0.012)	0.103*** (0.016)	0.118*** (0.026)	0.097*** (0.036)
Bago	-0.004 (0.007)	0.003 (0.010)	0.061*** (0.012)	0.054*** (0.020)	0.097*** (0.031)
Magway	-0.019*** (0.007)	0.045*** (0.011)	0.020 (0.013)	0.016 (0.021)	0.077** (0.031)
Mandalay	-0.019*** (0.007)	0.005 (0.010)	-0.006 (0.012)	-0.008 (0.019)	0.039 (0.029)
Mon	0.007 (0.008)	0.036*** (0.012)	0.102*** (0.015)	0.103*** (0.023)	0.092*** (0.035)
Rakhine	-0.013 (0.008)	0.005 (0.012)	0.092*** (0.015)	0.090*** (0.024)	0.065* (0.034)
Yangon	-0.006 (0.007)	0.021** (0.010)	0.086*** (0.012)	0.091*** (0.020)	0.082*** (0.030)
Shan	-0.015** (0.007)	0.053*** (0.010)	-0.006 (0.012)	-0.011 (0.019)	0.033 (0.030)
Ayeyawady	-0.022*** (0.007)	-0.007 (0.010)	0.098*** (0.012)	0.097*** (0.020)	0.072** (0.031)
Round 2	-0.001 (0.002)	0.067*** (0.004)	0.053*** (0.005)	0.072*** (0.008)	-0.052*** (0.019)
Round 3	-0.004* (0.002)	0.063*** (0.004)	0.056*** (0.005)	0.075*** (0.008)	-0.070*** (0.019)
Round 4	-0.009*** (0.002)	0.039*** (0.004)	0.027*** (0.005)	0.039*** (0.008)	-0.091*** (0.019)
Round 5	-0.010 (0.006)	0.044*** (0.010)	-0.005 (0.013)	0.020 (0.021)	-0.062* (0.032)
Round 6	-0.012** (0.006)	0.013 (0.010)	0.028** (0.013)	0.050** (0.021)	-0.091*** (0.032)
Constant	0.027*** (0.008)	0.022* (0.012)	0.187*** (0.015)	0.000 (0.000)	0.301*** (0.040)
Observations	72,627	72,627	72,627	30,628	11,985
Number of ID	27,926	27,926	27,926	12,486	5,898

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

ACKNOWLEDGEMENTS

This work was undertaken as part of the Myanmar Agricultural Policy Support Activity (MAPSA) led by the International Food Policy Research Institute (IFPRI) in partnership with Michigan State University (MSU). Funding support for this study was provided by the United States Agency of International Development (USAID). This Policy Note has not gone through IFPRI's standard peer-review procedure. The opinions expressed here belong to the authors, and do not necessarily reflect those of IFPRI, MSU, USAID, or CGIAR.

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The Myanmar Strategy Support Program (Myanmar SSP) is led by the International Food Policy Research Institute (IFPRI) in partnership with Michigan State University (MSU). Funding support for Myanmar SSP is provided by the CGIAR Research Program on Policies, Institutions, and Markets; the Livelihoods and Food Security Fund (LIFT); and the United States Agency for International Development (USAID). This publication has been prepared as an output of Myanmar SSP. It has not been independently peer reviewed. Any opinions expressed here belong to the author(s) and do not necessarily reflect those of IFPRI, MSU, LIFT, USAID, or CGIAR.

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