MYANMAR

The State of Food Security and Nutrition in Myanmar: Findings from the Myanmar Household Welfare Survey 2021-2022

Key Findings

- The state of food security and nutrition has deteriorated in Myanmar in 2022.
- Four percent of households were in moderate to severe hunger in July/August 2022. Hunger was highest in Kayah (9.8 percent), Chin (9.9 percent), and Tanintharyi (12.6 percent).
- Households with a low food consumption score increased from 9.4 percent in December 2021/January 2022 to 17.2 percent in July/August 2022. The shares in July/August were highest in Kayah (27.5 percent), Chin (46.1 percent), and Magway (25.5 percent).
- Inadequate diet diversity among adults rose from 20.6 percent to 27.6 percent over the same period with rates higher for women, especially in rural areas.
- Decreases in diet quality among adults is driven by lower consumption of milk and dairy products as well as Vitamin A rich fruits, meat, fish, and eggs.
- More than a third of all children aged 6-23 months and 15.8 percent of all children aged 24-59 months have inadequate diet quality, with no significant changes in 2022.
- 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 as well as recently migrated people are found to be particularly vulnerable. Rising food prices, conflict and physical insecurity also 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.

Recommended actions

- Expanded implementation of nutrition-sensitive social protection programs, including maternal and child cash transfers, particularly to vulnerable groups is called for.
- 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 research note, we provide an overview of the state of food security and nutrition in Myanmar using a recently collected household dataset. We examine food security using a household hunger scale and a 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 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 three rounds of the Myanmar Household Welfare Survey (MHWS) collected over the phone in the first three quarters of 2022 – hereafter Q1, Q2 and Q3 – among over 12,000 households in 310 townships of Myanmar. 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 three 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. Findings from 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.

(a) Hunger Household Scale

Table 1 presents the prevalence of hunger at the national level for all three rounds of the survey. **Nearly 4 percent of households reported to be in moderate to severe hunger in Q3**. Nearly 10 percent of households had no food of any kind in the house on at least one day in Q3 which is lower than 11.6 percent reported in Q1. In 3.7 percent of households, at least one member went to sleep hungry on one or more days, and in 1.6 percent of households one member or more went at least one whole day and night without food in Q3. In total, 3.6 percent of the population experiences moderate hunger, and 0.4 percent faces severe hunger in Q3. **At the state level, the rate of hunger continues to be alarmingly high for Kayah (9.8 percent), Chin (9.9 percent), and Tanintharyi (12.6 percent) states/regions going into Q3 (Table A.1)**. The prevalence of hunger also doubled in Kayin from 5.1 percent in Q2 to 9.5 percent in Q3 (see Appendix Table A.1). Such rates of hunger are likely consequences of high levels of conflict and instability in these regions.

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

	Q1 (Dec 21- Feb 22)	Q2 (Apr 22- Jun 22)	Q3 (Jul 22- Aug 22)	Change: Q3 – Q1
	Percentages (%)			*% points*
HHS classifications				
Little to no hunger	95.6	96.0	95.9	0.4
Moderate hunger	4.2	3.7	3.6	-0.6*
Severe hunger	0.2	0.3	0.4	0.2**
There was no food of any kind the house	11.6	9.7	9.9	-1.6***
Rarely (1-2 times) [a]	48.4	39.1	38.2	-10.3***
Sometimes (3-10 times) [a]	48.0	50.0	48.7	0.7
Often (more than 10 times) [a]	3.6	10.9	13.1	9.5***
A household member went to sleep hungry	4.9	3.8	3.7	-1.3***
Rarely (1-2 times) [a]	46.8	38.8	42.2	-4.5
Sometimes (3-10 times) [a]	50.0	55.1	46.7	-3.3
Often (more than 10 times) [a]	3.2	6.1	11.1	7.9***
Household member went full day & night without food	2.1	1.6	1.6	-0.6**
Rarely (1-2 times) [a]	44.9	53.2	50.6	5.6
Sometimes (3-10 times) [a]	50.0	40.7	43.9	-6.1
Often (more than 10 times) [a]	5.1	6.1	5.6	0.5

Note: a. The frequency of occurrence questions are 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 Quarter 3 and Quarter 1: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Next, we explore possible differences in household hunger with respect to location, asset class and poverty status. 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.

We find that poor households are particularly vulnerable to hunger. 7.6 percent of asset-poor households experienced moderate to severe hunger in Q3, although it has fallen from 9.5 percent in Q1, while 5.9 percent of income poor households remain hungry in Q3 falling from 7.3 percent in Q1 (Figure 1). There is no significant difference with respect to urban/rural location.

Figure 1 Proportion of households in moderate to severe hunger by location, asset, and poverty status
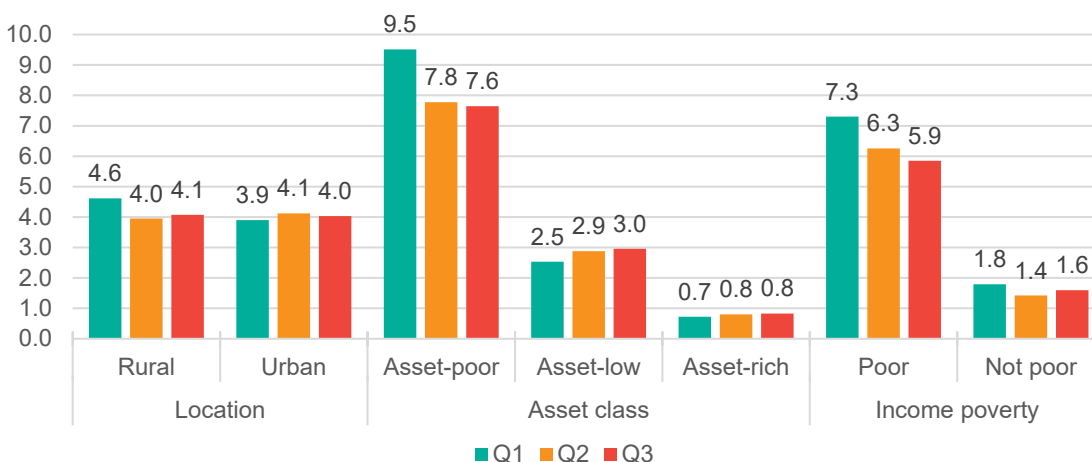
(b) Food Consumption Score

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 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 households' 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 low FCS.

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

	Q1 (Dec-Feb 22)	Q2 (Apr-Jun 22)	Q3 (Jul-Aug 22)	Difference: Q3 – Q1
Main staples	7.0	7.0	7.0	0.0
Pulses/legumes/nuts	3.1	2.5	2.5	-0.6***
Milk and other dairy products	1.2	0.9	0.8	-0.5***
Meat, fish, and eggs	5.0	3.9	4.0	-1.0***
Vegetables	5.2	5.5	5.6	0.4***
Fruits	2.5	3.5	2.9	0.4***
Oil, fats, and butter	6.6	6.7	6.7	0.1***
Sugar or sweet	3.3	2.1	2.2	-1.1***
Food Consumption Score (0-112)	60.9	53.9	53.6	-7.3***
Acceptable food consumption	90.6	83.2	82.9	-7.7***
Borderline food consumption	8.9	15.7	16.1	7.2***
Poor food consumption	0.5	1.2	1.1	0.5***
No. of observations	12,100	12,142	12,128	

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 Quarter 3 and Quarter 1: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

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 Q1 to Q3 of our survey**. 16.1 percent of households have borderline food consumption, while 1.1 percent of households have poor food consumption in Q3 which is a significant increase from Q1 when 8.9 percent and 0.5 percent of households had borderline and poor food consumption, respectively. **This was mainly driven by a decline in the 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 have fallen even lower over the survey period from 1.2 days in Q1 to 0.8 days in Q3. Similarly, consumption of meat, fish, and eggs has also fallen from 5 days in Q1 to 4 days in Q3. There is significant urban/rural disparity with consumption of milk and dairy products, with consumption much higher in urban areas compared to rural areas (1.2 and 40.6 days, respectively, in Q3). The same is seen in meat, fish, and eggs with urban areas consuming these foods 4.6 days compared to 3.8 days in rural areas in Q3. However, frequency of consumption of vegetables and fruits has gone up on average in Q3.

Figure 2 Proportion of households with low food consumption score (FCS<=38.5)
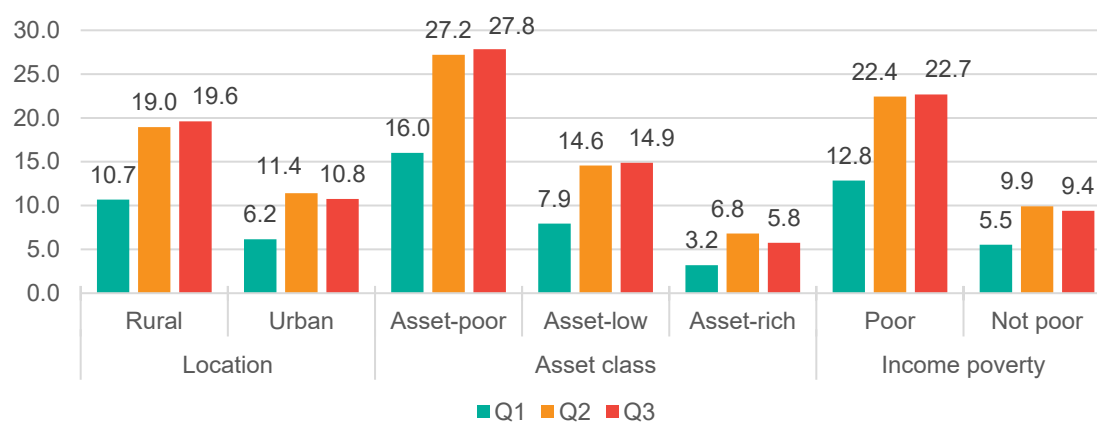
Households in rural areas and those in asset and income poverty are much more likely to have low food consumption scores, with an increase from Q1 to Q3 (Figure 2). 19.6 percent of households in rural areas had a low FCS compared to 10.8 percent in urban areas in Q3 with the rate of increase from Q1 also higher for rural compared to urban areas (8.9 vs 4.6 percentage points). 27.8 percent of asset-poor and 14.9 percent of asset-low households have low FCS in Q3 – a statistically significant increase of 11.8 and 6.9 percentage points from Q1. Prevalence of low FCS among income-poor households also saw a large increase from 12.8 percent in Q1 to 22.7 percent in Q3.

There were large differences in the FCS across states/regions (see Table 3). **The prevalence of low FCS is highest in Kayah (27.5 percent), Chin (46.1 percent), and Magway (25.5 percent) in Q3.** On the other hand, **there was a large increase in the prevalence of low FCS in Ayeyawady (12.8 percentage points), Kayin (12.3 percentage points), and Rakhine (11.6 percentage points) between Q3 and Q1.**

Table 3 Proportion of households with low food consumption score (FCS<=38.5) by state/region

	Q1 (Dec-Feb 22)	Q2 (Apr-Jun 22)	Q3 (Jul-Aug 22)	Difference: Q3 – Q1
	Percentages (%)			% points
Kachin	7.1	20.3	11.2	4.1***
Kayah	28.5	36.1	27.5	-0.9
Kayin	7.6	22.0	19.9	12.3***
Chin	39.3	58.0	46.1	6.8
Sagaing	7.4	14.0	14.4	7.0***
Tanintharyi	6.1	12.4	12.5	6.5**
Bago	8.8	15.9	20.0	11.2***
Magway	14.2	22.4	25.5	11.3***
Mandalay	9.2	13.8	11.7	2.5***
Mon	6.2	21.4	17.1	10.9***
Rakhine	11.0	19.0	22.7	11.6***
Yangon	4.9	12.3	11.4	6.5***
Shan	16.3	21.0	17.9	1.6*
Ayeyawady	8.2	15.7	21.0	12.8***
Nay Pyi Taw	8.0	12.4	10.3	2.3
No. of observations	12100	12142	12128	

Note: Asterisks refer to the level of statistical significance in the difference in means between Quarter 3 and Quarter 1: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3. Findings from Nutrition indicators

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.

Table 4 shows the proportion of adults not consuming a minimum dietary diversity (5 out of 10 food groups) for each quarter. **There is a large and statistically significant increase in the prevalence of low diet diversity amongst adults from 20.6 percent in Q1 to 27.6 percent in Q3.** Adults in rural areas have a higher prevalence of inadequate diet diversity compared to urban areas (28.8 percent vs 24.6 percent in Q3) along with a larger rate of increase between Q1 and Q3 (7.5 percentage points vs 5.7 percentage points). **Women are the hardest hit, especially in rural areas where almost 30 percent of women are not consuming a diverse diet.** This is worrying because poor diet quality can put mothers at risk as well as adversely affect the health and long-term cognitive ability of their children.

We find that irrespective of asset level or poverty status, the proportion of adults with low diet diversity has gone up from Q1 to Q3 (Table 4). For example, the prevalence of low diet diversity amongst adults belonging to asset-rich households has gone up from 12.6 percent in Q1 to 19.4 percent in Q3, a statistically significant increase of about 6.8 percentage points, similar to the increases observed for asset-poor households (6.7 points).

Table 4 Percentage of adults with inadequate diet diversity

		Q1 (Dec-Feb 22)	Q2 (Apr-Jun 22)	Q3 (Jul-Aug 22)	Difference: Q3 – Q1
		Means (%)			% points
	Overall	20.6	27.1	27.6	7.0***
National	Male	21.0	25.3	26.7	5.7***
	Female	20.2	28.6	28.4	8.2***
	Overall	21.2	28.3	28.8	7.5***
Rural	Male	21.3	25.9	27.9	6.6***
	Female	21.2	30.3	29.6	8.4***
	Overall	18.9	24.1	24.6	5.7***
Urban	Male	20.2	23.8	23.6	3.4*
	Female	17.7	24.4	25.5	7.8***
	Asset-poor (0-3 asset)	30.5	39.7	37.2	6.7***
National	Asset-low (4-6 assets)	18.4	24.3	25.3	6.9***
	Asset-rich (7-10 assets)	12.6	16.9	19.4	6.8***
National	Income poor	23.7	32.5	31.1	7.4***
	Income not poor	16.6	19.9	22.3	5.6***
No. of observations		12,100	12,142	12,128	

Note: Asterisks refer to the level of statistical significance in the difference in means across Quarter 3 and Quarter 1: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5 Percentage of adults consuming different food groups in the past 24 hours

	Q1 (Dec-Feb 22)	Q2 (Apr-Jun 22)	Q3 (Jul-Aug 22)	Difference: Q3 – Q1
	Means (%)			% points
Cereals, grains, roots & tubers	99.3	98.9	99.6	0.3**
Beans	53.7	52.7	52.7	-1.0
Nuts or seeds	43.9	37.9	36.1	-7.8***
Milk and dairy products	16.4	16.6	13.7	-2.7***
Egg	52.7	47.1	48.3	-4.3***
Meat and Fish	88.9	80.7	81.8	-7.0***
Other fruits	40.7	52.0	50.2	9.5***
Vitamin A rich fruits & vegetables	49.3	25.9	27.0	-22.3***
Dark green vegetables	84.3	84.1	80.8	-3.4***
Other vegetables	82.0	72.6	77.3	-4.7***

Note: Asterisks refer to the level of statistical significance in the difference in means across Quarter 3 and Quarter 1: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

In Table 5, we look at 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 consumption of nearly all food groups fell for adults from Q1 to Q3, with a large decrease in the consumption of Vitamin-A rich fruits and vegetables, meat and fish, and eggs**. Large

declines in nutrient-dense foods are a potential risk factor for elevated malnutrition and declining health in the population. **Compared to men, decreases in the consumption of Vitamin-A rich fruits and vegetables, meat and fish, and eggs are higher for women** (see Appendix Table A.2 and A.3).

Table 6 explores the spatial trend in the prevalence of low diet diversity amongst adults. **Bago, Nay Pyi Taw, and Sagaing saw the biggest *increase* in the prevalence of low adult diet diversity from Q1 to Q3 while the highest *rates* are found in Rakhine, Kayin, Ayeyawady, and Chin where more than a third of all adults have inadequate diet quality in Q3**. 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 2022b; MAPSA 2022c).

Table 6 Percentage of adults with inadequate diet diversity by state/region

	Q1 (Dec-Feb 22)	Q2 (Apr-Jun 22)	Q3 (Jul-Aug 22)	Difference: Q3 – Q1
	Means (%)			*% points*
Kachin	15.5	27.1	20.8	5.2***
Kayah	24.6	42.6	21.5	-3.1*
Kayin	28.0	35.0	36.9	8.9
Chin	26.2	51.5	33.2	7.0*
Sagaing	10.2	21.4	19.6	9.4***
Tanintharyi	26.0	27.9	32.8	6.9
Bago	21.9	25.8	35.3	13.4***
Magway	19.7	25.5	27.2	7.5***
Mandalay	15.2	19.2	18.0	2.8*
Mon	26.2	35.6	32.5	6.3**
Rakhine	34.4	34.0	37.0	2.6
Yangon	22.2	26.8	29.5	7.3***
Shan	13.1	21.7	19.2	6.0***
Ayeyawady	29.5	36.8	35.6	6.1***
Nay Pyi Taw	10.8	24.6	23.5	12.7***
No. of observations	*12100*	*12142*	*12128*	

Note: Asterisks refer to the level of statistical significance in the difference in means across Quarter 3 and Quarter 1: * p < 0.10, ** p < 0.05, *** p < 0.01.

We find similar trends for women of reproductive age (14-59 years) to that of adults. **29.2 percent of reproductive age women in Q3 did not consume minimum diet diversity, a statistically significant increase of 7.7 percentage points from Q1 (Appendix Table A.4).** The prevalence of low diet diversity is higher in rural areas (30.7 percent) than urban areas (25.4 percent) in Q3. **More than a third of all women in asset poor (37.8 percent) and income poor (32.0 percent) categories have inadequate diet quality with a large increase in asset-rich (8.4 percentage points) and income non-poor (7 percentage points) categories as well** (see Appendix Tables A.4).

Looking at individual food groups (see Appendix Table A.5), **we find a decrease in consumption of nearly all food groups for reproductive age women from Q1 to Q3**, particularly nutrient dense food groups such as Vitamin-A rich fruits and vegetables, meat and fish, and eggs. Spatially, states with conflict such as **Sagaing and Magway saw an *increase* in the prevalence of low diet diversity of reproductive age women with the highest *rates* prevailing in Kayin, Chin, and Ayeyawady in Q3** (see Appendix Table A.6).

In our survey, for households with children below the age of 5 years, the primary caregiver is asked questions regarding the food intake of the youngest child. In Q1, we ask only for children less than 2 years old, while in Q2 and Q3 we expanded our sample to include any children below age 5. Table 7 presents the estimates for the proportion of children, 6-23 and 24-59 months, not consuming minimum diet diversity i.e. not consuming 4 out of 7 food groups (FANTA, 2006).

We find that more than a third of all children aged 6-23 months have inadequate diet quality in Q3. While there are some indications of a modest decline (3.5 percentage points) in inadequate diet diversity among children 6-23 months, which is larger for girls, this change is not statistically significant (Table 7). Moreover, we do not see a change in inadequate diet diversity among children 24-59 months of age between Q2 and Q3 with **15.8 percent of children aged 24-59 months with inadequate diet quality in Q3.**

Table 7 Percentage of children with inadequate diet diversity

	6-23 months				24-59 months			
	Q1 (Dec-Feb 22)	Q2 (Apr-Jun 22)	Q3 (Jul-Aug 22)	Diff: Q3 – Q1	Q1 (Dec-Feb 22)	Q2 (Apr-Jun 22)	Q3 (Jul-Aug 22)	Diff: Q3 – Q2
	Means (%)			*% points*	*Means (%)*			*% points*
Overall	40.7	40.0	37.2	-3.5	-	16.7	15.8	-0.9
Boys	39.9	37.4	37.2	-2.7	-	15.9	16.5	0.5
Girls	41.5	42.6	37.1	-4.4	-	17.2	15.2	-2.0
No of observations	*684*	*601*	*739*		-	*1491*	*1651*	

Note: Asterisks refer to the level of statistical significance in the difference in means across Quarter 3 and Quarter 1: * p < 0.10, ** p < 0.05, *** p < 0.01.

We look at individual food groups to examine what is driving changes and **find big increases in the consumption of Vitamin A rich fruits and vegetables as well as meat and fish** for children aged 6-23 months over Q1 to Q3 (see Table 8). The effect is not the same for children 24-59 months between Q2 and Q3. For boys aged 6-23 months, the increase was due to higher consumption of Vitamin A rich fruits and vegetables and meat and fish, while for boys aged 24-29 months increased consumption of eggs were most important (Appendix Table A.7). On the other hand, for girls, the increase was due to consumption of Vitamin A rich fruits and vegetables for 6-23 month olds, and other fruits and vegetables for 24-59 month olds (Appendix Table A.8). **There was a large reduction in the consumption of milk and dairy products for both genders and age groups**.

Table 8 Percentage of children consuming different food groups in the past 24 hours

|	6-23 months				24-59 months			
	Q1 (Dec 21- Feb 22)	Q2 (Apr- Jun 22)	Q3 (Jul- Aug 22)	Diff: Q3 – Q1	Q1 (Dec 21- Feb 22)	Q2 (Apr- Jun 22)	Q3 (Jul- Aug 22)	Diff: Q3 – Q2
	Means (%)			*% points*		*Means (%)*		*% points*
Grains	95.0	95.8	98.3	3.3***	-	99.0	99.7	0.7**
Legumes & Nuts	45.1	44.7	49.6	4.4	-	64.3	63.8	-0.5
Milk and dairy products	39.6	38.7	34.0	-5.6*	-	33.6	24.9	-8.8***
Meat & Fish	54.5	57.1	60.6	6.1**	-	77.8	78.9	1.1
Egg	50.2	46.5	46.3	-3.9*	-	54.8	58.4	3.6*
Vit-A rich fruits & vegetables	42.1	54.6	53.1	10.9***	-	72.5	73.6	1.1
Other fruits & vegetables	68.4	59.3	61.8	-6.6**	-	80.3	82.4	2.1

Note: Asterisks refer to the level of statistical significance in the difference in means across Quarter 3 and Quarter 1: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

4. Regression analysis

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 being in 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 3 and 4 respectively.

Figure 3 Linear probability model regressions of household and community level predictions of the proportional change in the risk of moderate to severe hunger
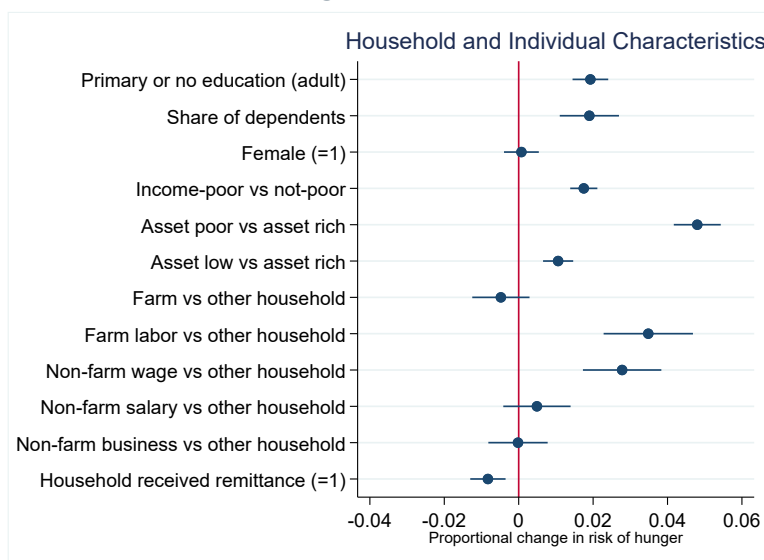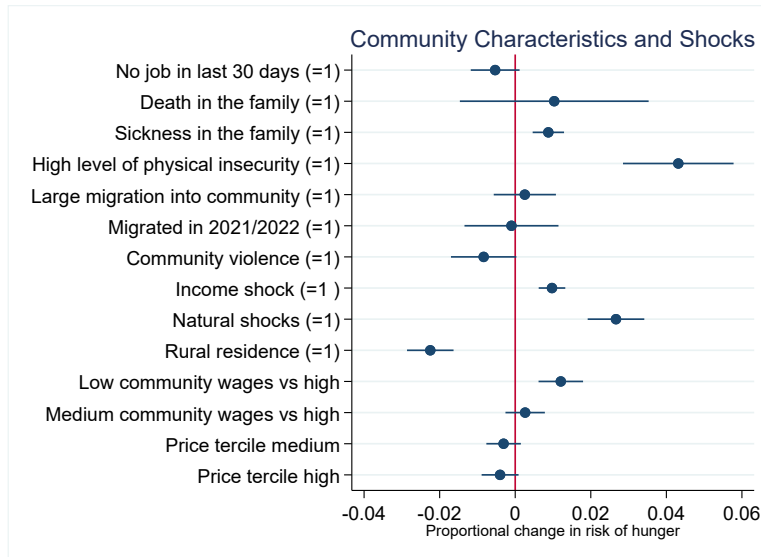
Community Characteristics and Shocks

Note: Additional controls not presented in the figures are age, survey months and state fixed effects.

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 be in moderate to severe hunger as well as have low 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, households that are asset-poor and asset-low have a higher probability of being in hunger and having low FCS compared to asset-rich households. Asset-poor households are also likely to have inadequate diet diversity for adults and reproductive aged women as well as young children.

- **Farm households are less likely to have inadequate diet diversity while wage worker households are particularly vulnerable to hunger and low diet diversity.** Non-farm business activities also increase food consumption scores for adults.

- **Households in low-wage communities more likely to be hungry and low FCS** while adults in households in medium wage communities are less likely to have low diet diversity.

- **Remittance-receiving households have a lower likelihood of being hungry 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 being hungry and having inadequate diet diversity.** Similarly, not having a job in the 30 days prior to the survey has a negative effect for adults and reproductive aged women. Compared to the income shock, not having a job has a higher magnitude of predicted effect on the probability of low diet diversity. No significant association is found for young children.

- **High levels of physical insecurity are a significant 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 among reproductive age women and young children. Community violence also reduces the diet quality of children.

- **Recent migrant households are also likely to have low diet quality**. Households that recently migrated in 2021/22 are more likely to have low FCS and diet diversity scores for adults and reproductive aged women.

- **Adults in communities with higher food prices are more likely to have poor dietary diversity.**

- **Significant differences emerged in household food consumption and individual diet quality by survey month possibly driven by an increase in conflict.** Compared to December 2021, being surveyed in Q2 or Q3 decreases consumption and diet quality.

- **A low education level of adult members is also a significant risk factor for food insecurity and poor diet quality**.

Figure 4 Linear probability model regressions of household and community level predictions of the proportional change in the risk of inadequate diet diversity
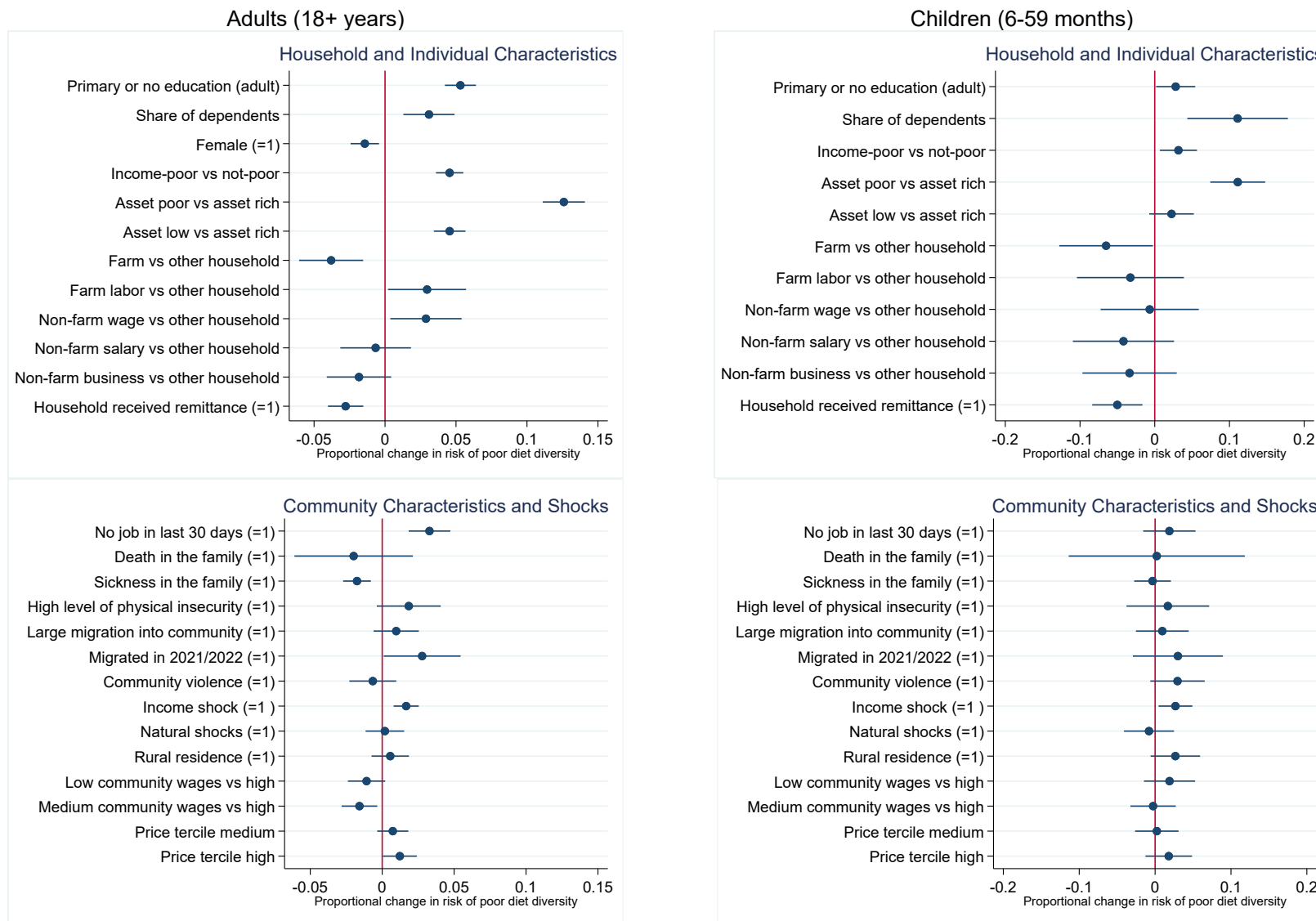
Note: Additional controls not presented in the figures are age, survey months and state fixed effects.

5. Concluding remarks

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

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

Second, among households and adults specifically, there are strong indications of deteriorating dietary quality, 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 Bago, Nay Pyi Taw, and Sagaing over the survey period while the highest rates are found in Rakhine, Kayin, Ayeyawady, and Chin in the latest round of survey. However, among adults, poor dietary diversity has increased across a whole range of socioeconomic strata and geographical areas.

Third, more than a third of all children aged 6-23 months and 15.8 percent of children aged 6-59 months have an inadequate diet quality in the latest survey, although there are no significant trends across survey rounds.

Fourth, regression analysis reveals low income and asset ownership to be important risk factors for food security and diet quality, along with conflict, physical insecurity, and internal migration in the past year. 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 2022b). 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.

To avert a full-blown 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.

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.

References

Arimond, M., Wiesmann, D., Becquey, E., Carriquiry, A., Daniels, M.C., Deitchler, M., Fanou-Fogny, N. et al. (2010). 'Simple Food Group Diversity Indicators Predict Micronutrient Adequacy of Women's Diets in 5 Diverse, Resource-Poor Settings.' *The Journal of Nutrition* 140 (11): 2059S-2069S. https://doi.org/10.3945/jn.110.123414.

Ballard, T., Coates, J., Swindale, A., and Deitchler, M. (2011). *Household Hunger Scale: Indicator Definition and Measurement Guide*. Washington, DC: Food and Nutrition Technical Assistance II Project, FHI 360.

FANTA, 2006. *Developing and validating simple indicators of dietary quality and energy intake of infants and young children in developing countries: Summary of findings from analysis of 10 data sets*. Working Group on Infant and Young Child Feeding Indicators, Food and Nutrition Technical Assistance (FANTA) Project/Academy for Educational Development (AED), Washington, DC.

Food and Agriculture Organization (FAO) and FHI 360. (2016). *Minimum Dietary Diversity for Women: A Guide for Measurement*. Rome: FAO.

MAPSA. 2022a. *Phone surveillance, from scratch. Novel sample design features of the nationally representative Myanmar Household Welfare Survey (MHWS)*. MAPSA Discussion Paper 16.

MAPSA. 2022b. *The precarious situation of agricultural wage laborers in Myanmar*. MAPSA Research Note 85.

MAPSA. 2022c. *Vulnerability and Welfare: Findings from the second round of the Myanmar Household Welfare Survey (April – June 2022)*. MAPSA Working Paper 25.

Robertson, B., P. Young, J. Kristensen, K. Mar Cho, H. Myo Thwe, M. Pannchi, and T. Chin Sung (2018). *Strategic Review of Food and Nutrition Security in Myanmar: In support of Sustainable Development Goal (SDG) 2 - Roadmap to 2030*. Yangon, Myanmar: Myanmar Institute for Integrated Development (MIID).

World Health Organization (WHO). (2007). *Indicators for assessing infant and young child feeding practices: conclusions of a consensus meeting held*. Washington DC: World Health Organization.

Appendix Tables

Table A.1 Prevalence of hunger by state

	Q1		Q2		Q3	
	Little to no	Moderate to severe	Little to no	Moderate to severe	Little to no	Moderate to severe
	Means (percentages)					
Kachin	96.6	3.4	97.1	2.9	98.7	1.3
Kayah	95.4	4.6	89.0	11.0	90.2	9.8
Kayin	94.0	6.0	94.9	5.1	90.5	9.5
Chin	93.7	6.3	90.2	9.8	90.1	9.9
Sagaing	98.6	1.4	97.6	2.4	97.0	3.0
Tanintharyi	94.4	5.6	90.0	10.0	87.4	12.6
Bago	97.2	2.8	95.2	4.8	95.8	4.2
Magway	93.8	6.2	95.8	4.2	96.8	3.2
Mandalay	96.2	3.8	97.3	2.7	97.0	3.0
Mon	94.5	5.5	94.5	5.5	93.9	6.1
Rakhine	93.9	6.1	96.1	3.9	93.7	6.3
Yangon	96.1	3.9	96.8	3.2	97.5	2.5
Shan	96.4	3.6	96.5	3.5	98.0	2.0
Ayeyawady	93.4	6.6	95.3	4.7	94.8	5.2
Nay Pyi Taw	93.0	7.0	96.0	4.0	96.9	3.1

Table A.2 Percentage of adult men consuming different food groups in the past 24 hours

	Q1 (Dec-Feb 22)	Q2 (Apr-Jun 22)	Q3 (Jul-Aug 22)	Diff: Q3 – Q1
	Means (%)			*% points*
Cereals, grains, roots & tubers	99.3	98.8	99.6	0.4**
Beans	55.0	53.3	53.2	-1.8
Nuts or seeds	43.4	37.9	36.4	-6.9***
Milk and dairy products	15.8	16.7	13.1	-2.7***
Egg	50.0	47.7	49.1	-0.9
Meat and Fish	89.2	83.5	83.7	-5.5***
Other fruits	38.8	52.3	50.3	11.5***
Vitamin A rich fruits & vegetables	47.3	26.7	27.3	-20.1***
Dark green vegetables	85.1	85.5	82.1	-3.0***
Other vegetables	82.0	73.9	78.4	-3.7***

Note: Asterisks refer to the level of statistical significance in the difference in means across Quarter 3 and Quarter 1: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

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

	Q1 (Dec-Feb 22)	Q2 (Apr-Jun 22)	Q3 (Jul-Aug 22)	Diff: Q3 – Q1
	Means (%)			*% points*
Cereals, grains, roots & tubers	99.4	99.0	99.6	0.2
Beans	52.6	52.1	52.3	-0.3
Nuts or seeds	44.3	37.8	35.8	-8.5***
Milk and dairy products	16.9	16.4	14.3	-2.6***
Egg	55.0	46.6	47.7	-7.3***
Meat and Fish	88.5	78.3	80.1	-8.4***
Other fruits	42.4	51.8	50.1	7.6***
Vitamin A rich fruits & vegetables	51.0	25.2	26.7	-24.3***
Dark green vegetables	83.5	82.9	79.7	-3.8***
Other vegetables	82.0	71.5	76.4	-5.6***

Note: Asterisks refer to the level of statistical significance in the difference in means across Quarter 3 and Quarter 1: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.4 Percentage of reproductive age women (15-49 years) with inadequate diet diversity

	Q1 (Dec-Feb 22)	Q2 (Apr-Jun 22)	Q3 (Jul-Aug 22)	Diff: Q3 – Q1
	Means (%)			% points
National	21.5	29.6	29.2	7.7***
Rural	22.6	31.6	30.7	8.1***
Urban	18.8	25.0	25.4	6.6***
Asset-poor (0-3 asset)	30.1	42.0	37.8	7.7***
Asset-low (4-6 assets)	20.0	26.1	26.6	6.5***
Asset-rich (7-10 assets)	12.3	17.4	20.8	8.4***
Income poor	24.4	34.0	32.0	7.7***
Income not poor	17.0	22.0	24.0	7.0***
No. of observations	4955	5119	5177	

Note: Asterisks refer to the level of statistical significance in the difference in means across Quarter 3 and Quarter 1: * p < 0.10, ** p < 0.05, *** p < 0.01.

Table A.5 Percentage of reproductive age women (15-49) consuming different food groups in the past 24 hours

	Q1 (Dec-Feb 22)	Q2 (Apr-Jun 22)	Q3 (Jul-Aug 22)	Diff: Q3 – Q1
	Means (%)			% points
Cereals, grains, roots & tubers	99.3	99.0	99.5	0.2
Beans	51.7	50.9	51.3	-0.4
Nuts or seeds	42.6	37.3	35.3	-7.4***
Milk and dairy products	16.3	16.8	13.9	-2.4***
Egg	53.6	45.6	47.0	-6.6***
Meat and Fish	87.8	77.8	79.6	-8.2***
Other fruits	41.0	51.2	49.4	8.4***
Vitamin A rich fruits & vegetables	49.7	24.4	26.4	-23.2***
Dark green vegetables	83.3	82.4	79.5	-3.8***
Other vegetables	80.9	71.1	76.3	-4.6***

Note: Asterisks refer to the level of statistical significance in the difference in means across Quarter 3 and Quarter 1: * p < 0.10, ** p < 0.05, *** p < 0.01.

Table A.6 Percentage of reproductive age women (15-49) with inadequate diet diversity by state/region

	Q1 (Dec-Feb 22)	Q2 (Apr-Jun 22)	Q3 (Jul-Aug 22)	Diff: Q3 – Q1
	Means (%)			% points
Kachin	15.8	24.5	23.3	7.6
Kayah	39.3	50.2	24.9	-14.4
Kayin	25.0	33.6	36.9	12.0
Chin	22.1	53.5	34.4	11.6
Sagaing	9.6	23.8	22.5	13.1***
Tanintharyi	32.7	31.7	36.0	3.1
Bago	25.3	27.0	36.5	11.4***
Magway	19.2	28.6	32.6	13.3***
Mandalay	15.1	23.5	18.1	2.7**
Mon	25.9	38.4	36.7	10.7**
Rakhine	38.6	37.7	37.5	-0.8
Yangon	23.1	29.4	30.3	7.1***
Shan	13.3	23.7	19.1	5.9***
Ayeyawady	30.1	38.6	37.5	6.9**
Nay Pyi Taw	10.4	28.7	25.5	15.7***

Note: Asterisks refer to the level of statistical significance in the difference in means across Quarter 3 and Quarter 1: * p < 0.10, ** p < 0.05, *** p < 0.01.

Table A.7 Percentage of boys consuming different food groups in the past 24 hours

	6-23 months				24-59 months			
	Q1 (Dec-Feb 22)	Q2 (Apr-Jun 22)	Q3 (Jul-Aug 22)	Diff: Q3 – Q1	Q1 (Dec-Feb 22)	Q2 (Apr-Jun 22)	Q3 (Jul-Aug 22)	Diff: Q3 – Q2
	Means (%)			% points		Means (%)		% points
Grains	95.9	96.3	98.8	3.0**	-	99.4	99.9	0.5
Legumes & Nuts	43.4	46.2	46.6	3.2	-	64.0	62.9	-1.2
Milk and dairy products	41.2	39.8	33.4	-7.8*	-	32.8	25.1	-7.7***
Meat and Fish	57.3	55.2	58.9	1.6	-	74.8	79.9	5.1**
Egg	49.0	52.5	46.5	-2.5	-	55.6	61.3	5.7**
Vit-A rich fruits & vegetables	42.3	54.4	51.9	9.6**	-	71.7	72.0	0.4
Other fruits & vegetables	69.0	61.2	58.2	-10.9**	-	80.7	80.7	0.0

Note: Asterisks refer to the level of statistical significance in the difference in means across Quarter 3 and Quarter 1: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.8 Percentage of girls consuming different food groups in the past 24 hours

	6-23 months				24-59 months			
	Q1 (Dec-Feb 22)	Q2 (Apr-Jun 22)	Q3 (Jul-Aug 22)	Diff: Q3 – Q1	Q1 (Dec-Feb 22)	Q2 (Apr-Jun 22)	Q3 (Jul-Aug 22)	Diff: Q3 – Q2
	Means (%)			% points		Means (%)		% points
Grains	94.2	95.3	97.9	3.7**	-	98.7	99.4	0.7
Legumes & Nuts	46.8	43.2	52.5	5.6	-	65.6	65.7	0.1
Milk and dairy products	37.9	37.7	34.7	-3.2	-	34.5	24.9	-9.6***
Meat and Fish	51.7	58.9	62.3	10.6*	-	81.8	78.1	-3.6
Egg	51.4	40.7	46.1	-5.3	-	53.7	54.6	1.0
Vit-A rich fruits & vegetables	41.9	54.8	54.2	12.3***	-	73.9	75.4	1.5
Other fruits & vegetables	67.7	57.4	65.3	-2.4	-	80.7	84.8	4.1*

Note: Asterisks refer to the level of statistical significance in the difference in means across Quarter 3 and Quarter 1: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

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