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Poverty and Food Insecurity during COVID-19

Telephone survey evidence from mothers in rural and
urban Myanmar

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ABSTRACT

Myanmar had one of the lowest confirmed COVID-19 caseloads in the world in mid-2020 and was one of the few developing countries not projected to go into economic recession. However, macroeconomic projections are likely to be a poor guide to individual and household welfare in a fast-moving crisis that has involved disruption to an unusually wide range of sectors and livelihoods. To explore the impacts of COVID-19 disruptions on household poverty and coping strategies, as well as maternal food insecurity experiences, this study used a telephone survey conducted in June and July 2020 covering 2,017 mothers of nutritionally vulnerable young children in urban Yangon and rural villages of Myanmar's Dry Zone.

Stratifying results by location, livelihoods, and asset-levels, and using retrospective questions on pre-COVID-19 incomes and various COVID-19 impacts, we find that the vast majority of households have been adversely affected from loss of income and employment. Over three-quarters cite income/job losses as the main impact of COVID-19 – median incomes declined by one third and \$1.90/day income-based poverty rose by around 27 percentage points between January and June 2020. Falling into poverty was most strongly associated with loss of employment (including migrant employment), but also with recent childbirth. The poor commonly coped with income losses through taking loans/credit, while better-off households drew down on savings and reduced non-food expenditures. Self-reported food insecurity experiences were much more common in the urban sample than in the rural sample, even though income-based and asset-based poverty were more prevalent in rural areas. In urban areas, around one quarter of respondents were worried about food quantities and quality, and around 10 percent stated that there were times when they had run out of food or gone hungry. Respondents who stated that their household had lost income or experienced food supply problems due to COVID-19 were more likely to report a variety of different food insecurity experiences.

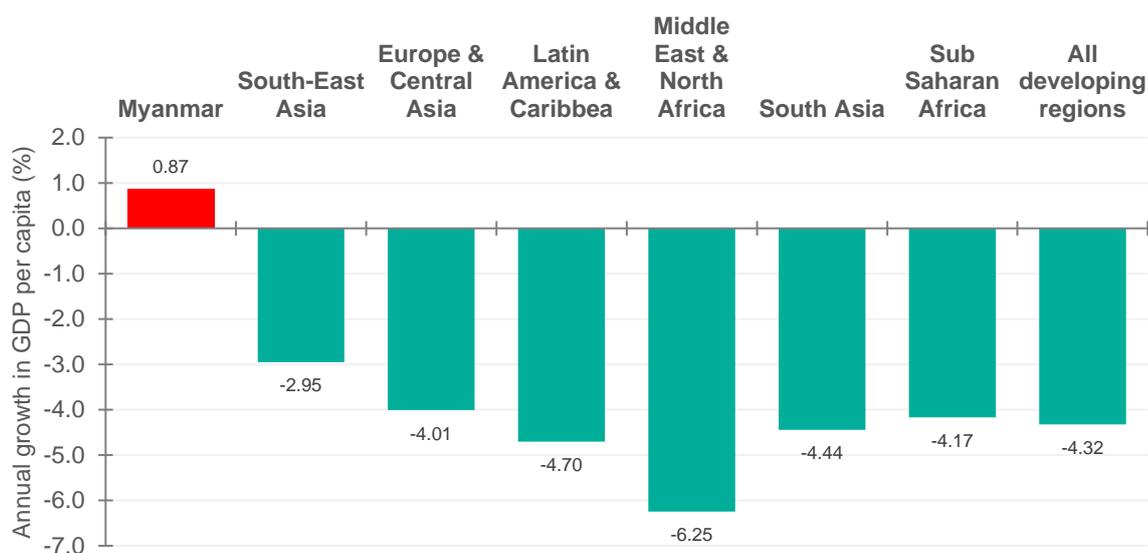
These results raise the concern that the welfare impacts of the COVID-19 crisis are much more serious and widespread than macroeconomic projections would suggest. Loss of employment and casual labor are major drivers of increasing poverty. Consequently, economic recovery strategies must emphasize job creation to revitalize damaged livelihoods. However, a strengthened social protection strategy should also be a critical component of economic recovery to prevent adversely affected households from falling into poverty traps and to avert the worst forms of food insecurity and malnutrition, particularly among households with pregnant women and young children. The recent second wave of COVID-19 infections in Myanmar from mid-August onwards makes the expansion of social protection even more imperative.

Keywords: COVID-19; macroeconomic crisis; poverty; food insecurity; malnutrition; social protection.

1. INTRODUCTION

The COVID-19 pandemic has triggered a global economic crisis from which few countries will be spared. In June 2020 the World Bank (2020b) provided economic growth forecasts for 128 low and middle income countries (LMICs) that factored in the various disruptions of COVID-19 to their economies. They estimated that 119 of these were forecast to have contractions in Gross Domestic Product (GDP) per capita, with an average contraction of 4.3 percent (Figure 1). Related poverty estimates from these projections – 71 million new poor at the \$1.90/day poverty line – were arguably relatively low (World Bank 2020c).¹

Figure 1. World Bank forecasts of per capita GDP growth in 2020 for Myanmar in comparison to other regions



Source: Authors' estimates from (World Bank, 2020b). The Myanmar financial year 2020 actually refers to the period October 2019 to September 2020, which partially explains its positive growth rate for the 12 months as a whole.

Macroeconomic projections, however, are unlikely to offer much insight into the real scale, scope, and speed of the crisis for vulnerable households and individuals, particularly in the context of sudden COVID-19 prevention measures that have shut down large parts of the economy virtually overnight. Case studies of COVID-19's impacts on various LMICs using social accounting matrices have shown that economies can shrink by 20 to 40 percent during lockdown periods (Arndt et al. 2020; Andam et al. 2020; Diao et al. 2020; Pradesha et al. 2020). Stringent lockdown measures imply that large numbers of households will receive little or no income for weeks or months at a time, while business closures and economic uncertainty results in delayed recovery and longer term unemployment. For asset-poor households with few sustainable coping strategies, there is a heightened risk of severe food insecurity, leading to increased risks of various forms of malnutrition, including severe acute malnutrition among young children (Headey et al. 2020; Headey and Ruel 2020).

The context of this study, Myanmar, is a particularly interesting case study for the objective of quantifying the economic costs of COVID-19 that are almost wholly unrelated to disease incidence. By mid-2020 Myanmar had one of the lowest headcounts of confirmed COVID-19 cases in the

¹ The World Bank poverty estimates used the June 2020 World Bank economic projections to shock income. These national economic projections appear to be based largely on national assessments. A global general equilibrium model linked to household surveys instead modelled the extent of COVID-19 cases and their likely disruptions and derived an estimate of 140 million extra poor at the \$1.90/day poverty line (Laborde et al. 2020).

world² and was one of the nine LMICs in the World Bank's (2020b) assessment not projected to go into recession in 2020 (Figure 1). Myanmar, nevertheless, implemented a strict intensive lockdown in April 2020 that affected many sectors. A *ex ante* model of the impact of these measures – as well as external shocks – on the Myanmar economy by the International Food Policy Research Institute (IFPRI) confirmed the World Bank's projection that Myanmar's economy would not shrink as a whole for 2020 (Diao et al., 2020). However, the model simulations also demonstrated how misleading annual macroeconomic projections can be from a welfare perspective: The April 2020 lockdown period in Myanmar was expected to shrink national economic output by roughly 40 percent and lead to 5 million people losing employment.

The present study adopts a more bottom-up approach to examine the impacts of the economic disruptions due to COVID-19 on both household and individual welfare in Myanmar, with a particular focus on nutritionally vulnerable households with young children or pregnant mothers. To do so, we implemented a survey in late June and early July of 2020 covering 2,017 mothers split between urban Yangon (Myanmar's largest city) and rural areas of the Dry Zone, a major population and agricultural production area in the center of Myanmar. The urban sample is novel in being comprised of women who were pregnant in January 2020 just prior to the COVID-19 economic crisis, such that the June survey sample comprises both pregnant mothers and mothers who very recently gave birth. The rural sample includes a sub-sample of mothers with young children who had previously been part of an evaluation of a maternal and child cash transfer program. While neither sample is representative of their respective regions, they do cover mothers of nutritionally vulnerable young children, as well as households that employ a wide spectrum of livelihood strategies.

We use this survey to assess the welfare impacts of COVID-19 through both quantitative income measures and more qualitative questions on economic, social, and health-related impacts of COVID-19, as well as coping strategies and food insecurity experiences. We show that despite relatively benign macroeconomic forecasts for 2020, the economic disruptions due to COVID-19 on both households and individual mothers has been severe in both scale and scope. We conclude the paper with a discussion of the implications of these findings for social protection and economic recovery in Myanmar.

2. DATA AND METHODS

The Rural-Urban Food Security Survey (RUFFS) was implemented as a telephone survey from the 23 June to 4 July 2020 with the goal of assessing the welfare impacts of the COVID-19 crisis on households with young children or pregnant mothers. The survey drew on two existing survey samples.

- The first covered a postponed study of an antenatal care intervention in urban and peri-urban Yangon, which included enrolling approximately 2,000 pregnant women who attended public antenatal clinics in Yangon in January 2020. We interviewed 1,011 women from this sample, with 69 percent still pregnant at the time of the survey.
- The second sample drew on an earlier evaluation of a maternal-child cash transfer program implemented between 2017 and 2019 in rural villages of three states/regions of Myanmar's Dry Zone (Field and Maffioli 2020). Almost all of these women (94 percent) still had a child under five years of age at the time of our survey.

² Myanmar had under 300 confirmed COVID-19 cases as of July 2020 in a population of over 50 million, mostly from repatriated individuals in quarantine.

The survey questionnaire covered basic background household characteristics, self-reported impacts of COVID-19, coping strategies, food insecurity experiences in the past month, as well as various nutrition-related indicators analyzed in complementary studies.³ Although only women respondents were interviewed, the survey also asked questions about household characteristics.

Income variables

Gauging the economic impacts of COVID-19 in the absence of a baseline survey and in the context of a necessarily short phone survey is challenging. Our strategy involved a mix of qualitative questions about COVID-19's impacts on the household and on income losses and the causes of those losses, together with quantitative questions to recall household income in the past month (hereafter June) and in January prior to the COVID-19 economic crisis in Myanmar. Respondents were allowed to respond that they could not estimate monthly income, but just over three-quarters of the sample gave estimates for both January and June. Income estimates were then converted to income per adult equivalent and compared to an updated \$1.90/day poverty line, which was also adjusted for cost of living differences between the Dry Zone and Yangon using a spatial cost of living index from a previous national survey.

Clearly, there could be significant mismeasurement with these income estimates. First, there is a potential measurement bias insofar as the inability to estimate income for both January and June may be non-random. Indeed, in Appendix Table A2 we estimate regressions exploring the determinants of an inability to recall income and find that four measured factors are significant – having more than two adults in the household, being urban, being a non-salaried household, and being an “other livelihoods” household, which often report diverse sources of income. However, the predictive power of these factors is low ($R\text{-sq} = 0.03$), suggesting that any selection bias may not be that large in magnitude. Moreover, there was also no association between income-reporting and household asset ownership, suggesting no strong association between pre-COVID-19 poverty and the ability to report income. Second, respondents are more likely to report round numbers, which suggests that responses are rough approximations only. Third, there are the usual limitations of income measures for farming and informal sector occupations that may be highly seasonal, which is why expenditure-based poverty measures are generally preferred to income measures in such populations. Indeed, many of the households we classify as at least temporarily income-poor based on a single month's data may not be poor based on alternative measures of permanent income.

Given the limitations of these monthly income measures, we also closely analyzed more stylized or qualitative indicators of the economic effects of COVID-19. First, prior to any income questions, we asked households what the main effects of COVID-19 have been on their household and recorded whether they listed either income/job loss or food supply problems as responses. Other possible responses pertained to social problems (not being able to visit family/friends, more arguments), and health-related problems (sickness, fear of sickness, health service disruptions). Second, we reported more stylized indicators on income, including a simple dummy variable if income was lower in June than in January, whether the household stated they recorded zero income in June, and whether incomes in June were lower than they were at this time last year, which should address seasonality issues. (Moreover, Myanmar experienced low inflation in the 12 months prior to the survey.) Third, we ask respondents to list the main reasons their income was lower in June 2020 compared to June 2019 (if it was reported as lower). Finally, we looked at self-reported coping mechanisms, which can shed light on whether households reduced food or non-food expenditures, obtained credit, drew down on savings or assets, or resorted to other coping

³ The MCCT evaluation compared cash and cash and behavioral change communications to a control sample. A separate study is evaluating whether these interventions had any lasting impact on nutrition-related outcomes, while a separate study of the urban sample of mothers who were pregnant at the time of the survey or had recently given birth is also forthcoming.

mechanisms. These more qualitative indicators have their own limitations, but they do permit some corroboration of the quantitative estimates on incomes provided by the sub-sample able to recall both January and June incomes.

Food and nutrition insecurity indicators

We used Food Insecurity Experience Scale (FIES) indicators to assess food insecurity, which capture a progression of food insecurity experiences ranging from psychosocial questions (such as worrying about not having enough food to eat) to compromising on food quality, to reducing quantities or skipping meals, to experiences of hunger (FAO, 2017). We use a recall period of one month for all questions. These questions are obviously subjective and can be biased by cultural norms and other response biases (Headey and Ecker 2013), but they have been validated to a degree, and usefully distinguish between conceptually distinct food insecurity experiences.

Household assets and livelihoods

We used asset levels and occupation-based livelihood measures both to stratify income and food security results and as explanatory variables in our regression analysis. For assets, it is common to construct wealth indices using principal components analysis (PCA), but wealth quintiles are disadvantageous in only providing a ranking. Instead, we first used PCA to look at which assets had sizable and consistent loadings across the rural and urban samples. We then created an asset count variable as the sum of six assets: adequate living space (with no more than four people to a sleeping room), electricity, flush toilet, piped water, television, and fridge.⁴ We then examined how incomes and food security indicators varied with asset counts and identified non-linearities that led us to classify households into asset-poor (0 or 1 asset), asset-low (2 or 3 assets) and asset-rich (4 to 6 assets). Given that we found little evidence of households selling off assets in response to COVID-19 income losses, we consider asset levels an indicator of longer-term socioeconomic status not materially affected by COVID-19.

In addition to asset status, we classified households by income sources in a hierarchical manner to create livelihoods groups. Respondents could list multiple sources of income. However, if they listed a salaried occupation, they were given this classification irrespective of other occupations. The same strategy was followed hierarchically to classify wholesale/retail trade households, and then farming, skilled labor, and unskilled labor households, with a small number of other occupations (mostly dependent on transfers of some form) as a residual.

Demographics

Household characteristics included household composition, ownership of various assets and housing characteristics, and major sources of household income. We used six demographic indicators related to pregnancy status and birth in the past month (both more relevant to the urban sample), a dummy variable for a large households (7 or more), a dependency ratio defined as the number of members 14 years of age or younger in the household to the number older than 14 years, and dummy variables for the main income earner being a woman and the household head being a woman.

Analytical methods

Our analysis of these indicators involves two steps. First, we use stratified descriptive statistics to assess patterns of incomes, self-reported COVID-19 impacts, coping mechanisms, and food and

⁴ Note that we decided to drop car/motorcycle ownership because Yangon residents are not permitted to own motorcycles, which are – in contrast – quite common in rural areas and relatively cheap. Hence the PCA factor loadings for the combined car/motorcycle measure were quite different across rural and urban areas.

nutrition insecurity by location, livelihood, and socioeconomic status. For the sub-sample of households reporting complete income data, we follow the standard practice of reporting median incomes, after also trimming the data of extreme values. We also present kernel density plots of income distributions in January and June 2020. Second, we use linear probability model regressions to assess the predictors of movements into poverty from January to June and to explain inter-household variation in food insecurity experiences. These regressions use self-reported indicators of COVID-19 impacts, asset levels, livelihood type, and demographic controls. We use coefficient plots with 95 percent confidence intervals to examine patterns of results across different dependent and independent variables.

3. RESULTS

Descriptive statistics for key variables

Appendix Table A1 reports descriptive statistics for the main indicators used in the analysis. In total, 2,017 mothers were interviewed, 1,006 in rural areas and 1,011 in urban areas. The most common livelihoods were skilled labor (25 percent), unskilled labor (24 percent), farming (19 percent), and salaried households (20 percent). Trade/retail made up 10 percent and the residual other category just 1 percent of all livelihoods. Asset levels are low on average (2.28 assets out of 6), but quite dispersed. One-third of the sample has zero or just one asset (often just piped water or electricity), 45 percent of the sample has 2 to 3 assets (typically additionally owning a TV or having more living space), while 21 percent have 4 to 6 assets. Household income data for January and June was recorded for roughly three quarters of the sample (1,528 individuals), but the full sample reported whether income was unusually low for this time of year and also whether income/job losses or food supply problems were one of the main impacts of COVID-19. The sub-sample that reported lower than normal incomes (N=1,565) were also asked why incomes were lower, with responses including various household economic shocks, such as job/labor losses. The set of self-reported food insecurity questions were asked for all respondents, as well as were various indicators of demographic structure, including being pregnant (37 percent of the sample) and having given birth to a child in the past month (10 percent). As noted, almost all pregnant women and recent births were in the urban sample.

Economic status before the onset of the COVID-19 crisis

Table 1 reports asset counts and January daily income per adult equivalent to give a sense of pre-COVID-19 economic status.⁵ Asset counts were much higher in urban than in rural areas – 43 percent of rural households were asset-poor and another 43 percent asset-low. Far fewer urban households were asset poor (23 percent) and many more were asset-rich (30 percent). Asset-poverty was highest among farming and unskilled labor households (both 43.8 percent), but also was relatively high among skilled labor and even salaried and trade/retail households. Daily income per adult equivalent in January was low overall, but especially so in rural households and in farming and unskilled labor households. In international dollars, mean income in rural areas (\$4.13) was only slightly higher than the \$3.90/day poverty line advocated for lower middle income countries by the World Bank, although, as noted, this only refers to short term income, and there may be under-reporting because of recall problems and seasonality issues. Even so, income patterns across livelihoods are in line with expectations based on previous surveys conducted in Myanmar (CSO et al., 2019).

⁵ Given that very few households reported selling assets - and that most assets refer to housing characteristics – asset levels can be interpreted as longer term indicators of economic status. Also, selling assets was essentially only reported by farm households where agricultural assets, such as livestock, may have been sold (livestock is not included in the asset count indicator, however).

Table 1. Household assets and income in January 2020 prior to the COVID-19 crisis

	Asset count (0-6), avg.	Asset-poor (0-1 assets), %	Asset-low (2-3 assets), %	Asset-high (4-6 assets), %	Daily income ^a (Kyat), Jan.	Daily income ^a (PPP\$), Jan.
Rural (Dry Zone)	1.89	43.4	43.8	12.7	1,829	\$4.13
Urban (Yangon)	2.69	22.8	47.0	30.2	2,860	\$6.46
Farming	1.85	43.8	45.3	10.9	1,787	\$4.04
Unskilled labor	1.83	43.8	45.5	10.8	1,819	\$4.11
Skilled labor	2.46	30.7	43.6	25.7	2,535	\$5.73
Salaried occupation	2.67	23.1	46.4	30.5	2,936	\$6.63
Trade/retail	2.69	20.7	48.0	31.3	2,494	\$5.64
Other livelihoods	3.00	18.2	45.5	36.4	4,542	\$10.26
Full sample	2.28	33.2	45.4	21.4	2,341	\$5.29

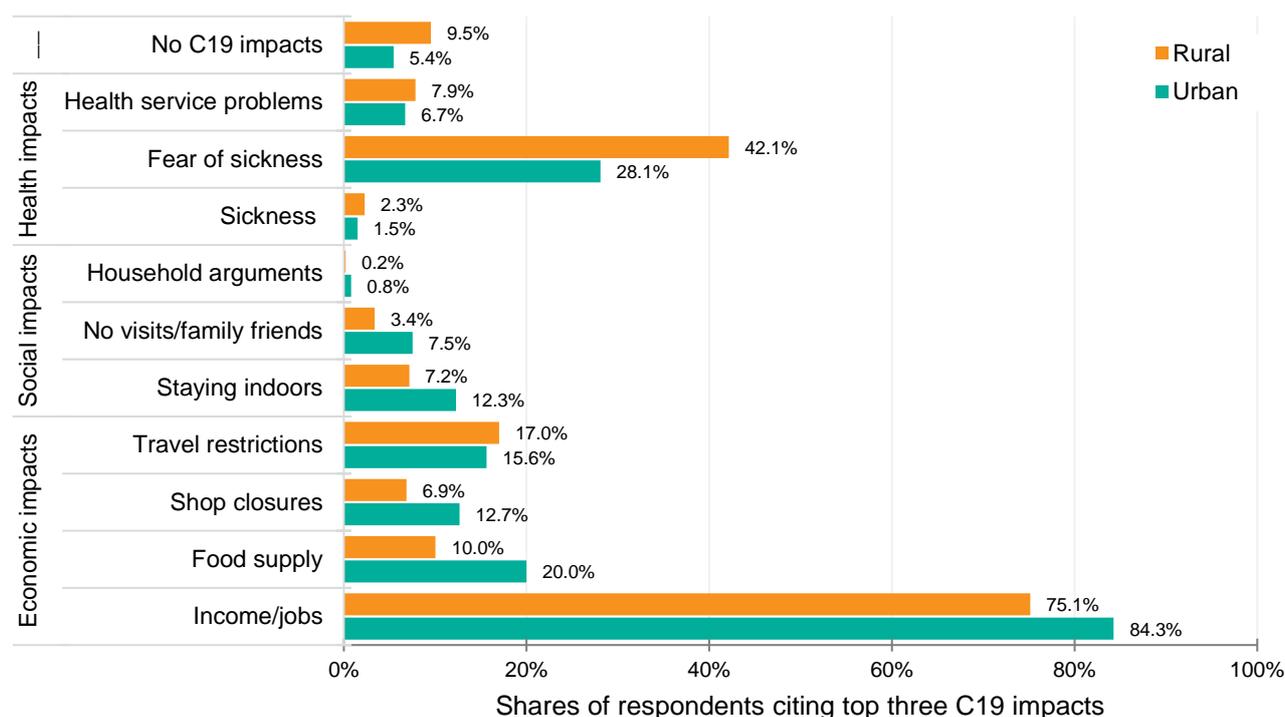
Source: Authors' estimates from RUFSS data. Data are reported for the income-reporting sub-sample, although asset scores are similar to the full sample.

Notes: ^a. Daily income is expressed in adult equivalent terms. Observations: 1,528.

Self-reported economic, social, and health impacts of COVID-19

Figure 2 reports responses to a question asking for the three largest impacts of COVID-19 on the respondent's household, stratified by rural and urban samples. Responses can broadly be categorized as economic, social, and health-related. By far the most frequently reported impact of the shock is loss of income or jobs, with somewhat higher rates in urban areas compared to rural (84 percent and 75 percent, respectively). Interestingly, around 20 percent of urban respondents mention food supply problems (referring to food availability) and 12.7 percent mention shop closures, whereas these impacts are cited about half as frequently in rural areas. Travel restrictions are cited by about one in six households. The other major impact is fear of sickness, which is more widely cited in rural areas, perhaps because of poorer access to health services in villages. Other problems are rarely cited. Very few households cite no COVID-19 impacts.

Figure 2. Respondent assessments of three largest impacts of COVID-19 on their household



Source: Authors' estimates from RUFSS data.

Note: Observations: 2,017.

Table 2. Self-reported economic impacts of COVID-19 by household livelihood, percent of households

	Income/jobs	Food supply	Shop closures	Travel restrictions
Farming	69.1	12.4	4.5	15.6
Unskilled labor	86.7	17.6	10.4	15.1
Skilled labor	85.0	15.0	9.4	18.3
Salary	74.4	14.7	8.4	17.2
Trade/retail	79.9	14.4	21.1	14.4
Other livelihood	79.2	16.7	12.5	12.5
Asset-poor	81.3	15.8	7.8	17.5
Asset-low	81.7	14.3	8.8	15.4
Asset-rich	72.9	15.3	15.1	16.3

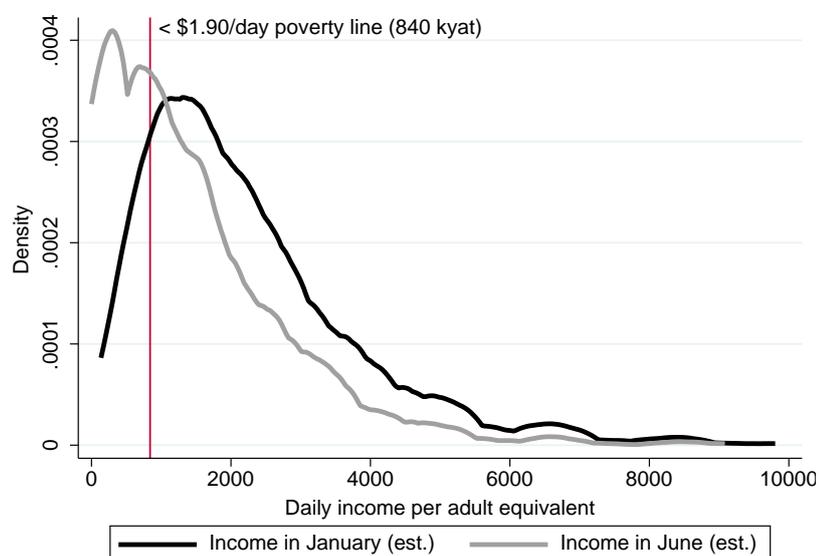
Source: Authors' estimates from RUFSS data.

When stratified by livelihoods, the vast majority of households in each livelihood category report as the most significant impact declines in income or jobs because of COVID-19 (Table 2). Although farming households somewhat less frequently report this impact (69 percent), both skilled and unskilled households more frequently cite income/job losses (85 percent and 87 percent, respectively). Likewise, farming households are less likely to feel affected by food supply issues or shop closures. Unsurprisingly, trade/retail households feel most affected by shop closures. Travel restrictions show less variation across livelihoods. Variation by asset classes indicates that the asset-poor and asset-low classes are more likely to report income/job loss impacts than the asset-rich, although it is striking that 72.9 percent of the asset-rich still report these problems.

Incomes and poverty status before and after the onset of the COVID-19 crisis

Next we turn to trends in income for the sub-sample of 1,528 households in which the respondent felt confident enough to estimate household monthly income for both January and June 2020. Figure 3 shows kernel density distributions of estimated incomes – converted to daily income per adult equivalent – for January and June. The data suggest a severe decline in reported income for the vast majority of households. Perhaps most worrying, large numbers of households report little or no income in June.

Figure 3. Distributions of estimated daily income per adult equivalent in January and June 2020



Source: Authors' estimates from RUFSS data. Note: Observations: 1,528.

The income data reported in Figure 3 are clearly susceptible to error, so Table 3 reports both the estimated percentage change in median household income from January to June 2020 as well as more qualitative measures. Median reported income fell by 34.6 percent, with somewhat higher losses reported by skilled and unskilled labor households, farming households, and trade/retail households, and lower losses reported by salaried households. The next column shows that just over two-thirds of households reported lower income in June than in January, though only about half of salaried households reported income losses. In the full sample 17.7 percent of households reported earning no income in June. Unsurprisingly given seasonality issues, this was higher in rural areas (22.8 percent) than urban (12.6 percent), but still relatively high for livelihoods unlikely to have highly seasonal income flows, e.g., skilled labor and trade/retail. Column (4) uses data from a question specifically designed to net out seasonality by asking if income was lower in June 2020 compared to June 2019. Three-quarters of households responded in the affirmative, with particularly high affirmative responses from skilled and unskilled labor households.

Table 3. Estimates of income effects of COVID-19 on different households types in Myanmar

	(1) Percentage change in estimated median income from January to June 2020	(2) Income in June lower than January, percent of households	(3) Household reports zero income in June, percent of households	(4) June 2020 income lower than June 2019 income, percent of households
Rural (Dry Zone)	-37.6	68.0	22.8	76.5
Urban (Yangon)	-31.1	64.0	12.6	78.3
Farming	-37.3	70.4	28.1	75.3
Unskilled labor	-36.4	71.9	17.3	84.1
Skilled labor	-39.7	70.6	15.7	80.8
Salaried	-24.8	51.6	12.7	65.7
Trade/retail	-34.0	66.7	17.3	82.7
Other livelihoods	-11.5	54.5	18.2	81.8
Asset-poor	-33.3	69.8	21.3	77.3
Asset-low	-34.6	64.0	17.7	78.7
Asset-high	-35.6	64.5	12.2	74.6
Full sample	-34.4	66.0	17.7	77.4

Source: Authors' estimates from RUFSS data. Data are reported for the income-reporting sub-sample.
Note: Observations: 1,528.

Table 4 reports income-based poverty at the \$1.90/day poverty line (updated to 2020) in January and June, as well as changes in poverty. Despite the caveats surrounding income estimates in this setting (Section 2), the results in column (1) give some confidence that the income estimates are imparting plausible information on income. Incomes in January 2020 are highly correlated with asset levels and livelihoods. In addition, 85 percent of households that were poor in January were also poor in June.

Income-based poverty had risen dramatically by June, by 22 percentage points in urban areas and 31 percentage points in rural areas. The steep rise in income-based poverty for farm households (35 points) could well be exaggerated by seasonality issues (June is not a harvest month), but all other livelihoods show large increases in income-based poverty also. This is particularly the case for unskilled and skilled labor households. However, even trade and salary-based households saw an increase in poverty. Such households would be unlikely to experience even short-term poverty in a normal crisis without stringent restrictions on trade, movement, and other economic activities.

Table 4. Estimates of income-based poverty at the updated \$1.90/day poverty line in January and June 2020 by location, livelihood, and asset levels

	(1) Income poor in January, percent of households	(2) Income poor in June, percent of households	(3) Percentage point change in poverty headcount between January and June 2020
Rural (Dry Zone)	18.5	50.3	31.9
Urban (Yangon)	5.8	27.7	21.9
Farming	20.2	55.1	34.8
Unskilled labor	16.5	45.5	29.0
Skilled labor	8.7	38.2	29.4
Salaried	3.7	21.3	17.6
Trade/retail	16.0	40.0	24.0
Other livelihoods	18.2	27.3	9.1
Asset-poor	20.5	49.5	29.0
Asset-low	9.9	35.6	25.6
Asset-high	4.0	30.3	26.3
Full sample	12.2	39.1	26.9

Source: Authors' estimates from RUFSS data using the \$1.90/day poverty line updated to 2019 prices, corresponding to 840 kyat per day. Data are reported for the income-reporting sub-sample. Note: Observations: 1,528.

Table 5 reports respondents' explanations as to why their incomes in June 2020 were lower than they were in June 2019. Respondents could list multiple responses. By far the most commonly cited explanation was losing a job or casual employment. Notably, while 81 percent of unskilled labor households cited this problem, 77 percent of skilled labor households also did so, suggesting they too have little job or income security.

Table 5. Respondents' explanations for lower than normal incomes in June 2020, percent

	Lost job or daily labor	Lower salary or wage	Movement restricted	Markets disrupted	Pregnant, gave birth, childcare	Yields or climate	Other reasons
Rural (Dry Zone)	67.8	7.7	30.9	30.7	1.7	6.5	2.3
Urban (Yangon)	67.8	22.9	25.3	20.9	18.5	0.4	1.8
Farming	56.4	10.3	26.6	38.7	4.3	13.1	2.5
Unskilled labor	81.3	10.9	25.5	14.8	10.2	1.0	2.2
Skilled labor	76.6	14.4	36.8	16.6	8.5	0.0	2.2
Salaried	63.6	35.7	19.1	11.4	21.7	2.6	1.8
Trade/retail	39.9	4.0	30.1	77.5	5.8	2.9	0.0
Other livelihoods	76.5	23.5	23.5	0.0	11.8	0.0	11.8
Asset-poor	73.2	12.1	27.4	17.6	8.9	4.0	3.0
Asset-low	67.3	15.2	27.7	27.4	11.3	3.5	1.5
Asset-high	60.4	21.2	29.9	35.5	10.0	2.2	1.6
Full sample	54.4	15.4	28.1	25.8	10.2	3.4	2.0

Source: Data are reported for sub-sample of RUFSS respondents/households who say that their income is lower than normal this time of year. Note: Observations: 1,565.

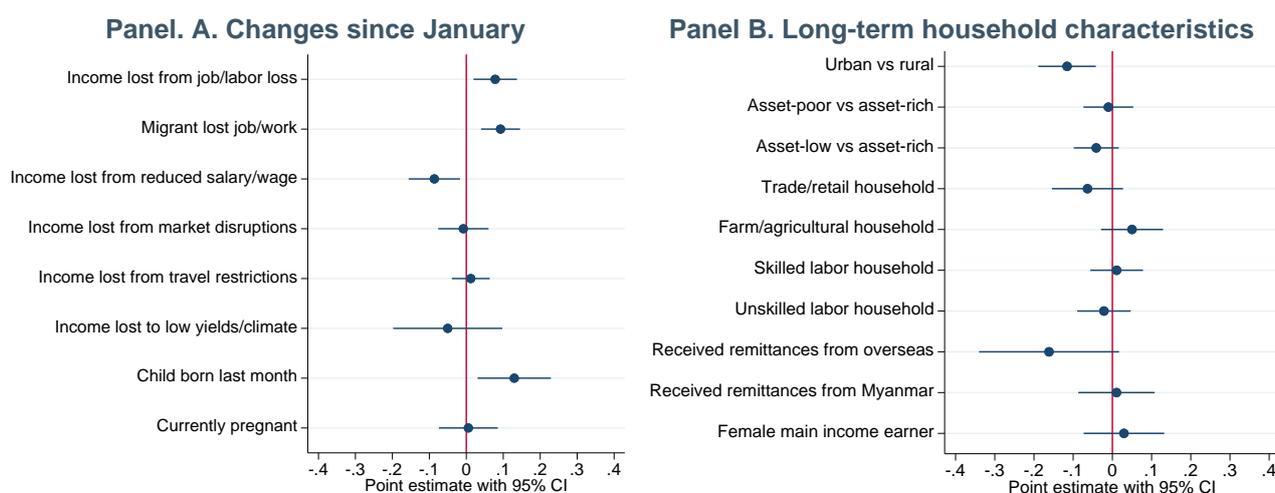
Reductions in salaries/wages was most commonly cited by salaried households (36 percent) and was more common in urban than rural areas (23 percent versus 8 percent). Movement or travel restrictions were widely cited in rural and urban areas, but most commonly among skilled laborer (37 percent), some of whom work in transport, and among trade/retail households (30 percent). Market disruptions – including shop closures, lower prices, fewer customers, and other disruptions – were cited as a source of lost income mostly commonly among trade/retail households (77 percent) and farm households (39 percent). Unsurprisingly, pregnancy, childbirth, or childcare was cited as a source of income loss among 18.5 percent of the urban sample, almost

all of whom were pregnant or had very recently given birth – women who recently gave birth (24.5 percent) were more likely than pregnant women (15.6 percent) to cite this factor. Low yields or climatic factors were cited by 13 percent of farmers. Other reasons – including loss of remittances, health shocks and loss of transfers – were rarely cited.

Overall, the results in Table 5 show that different kinds of households have been affected by the economic crisis in different ways, although job losses and reduced casual labor opportunities stand out as the most common explanation for lower than normal incomes. Loss of income from pregnancy and childbirth is also notable given the vulnerability of pregnant mothers and young children to nutritional insults.

Figure 4 uses a multivariate linear probability models to predict risk factors for becoming poor between January and June at the \$1.90/day poverty line. We separately report the variables that represent changes since January (Panel A) and those that represent longer-term household characteristics (Panel B). Panel A shows that job/labor loss from either a present household member or a migrant increases the risk of a household becoming poor by around 10 percentage points. Interestingly, income losses from reduced salaries/wages has an unexpected income sign, perhaps because this indicator is negatively correlated with job/labor loss. In other words, it is likely much better to keep a job at a reduced salary/wage than lose it altogether. Other explanations of declining income do not significantly explain movement into poverty.

Figure 4. Linear probability model estimates of predictors of becoming poor (\$1.90/day poverty line) between January and June 2020, with 95% confidence intervals



Source: Authors' estimates from RUFSS data using linear probability model regressions with 95% confidence intervals.

Strikingly, the recent birth of a child significantly raises the risk of becoming income-poor, but pregnancy does not, suggesting most pregnant mothers continue to work, while mothers of newborns often do not return to work right away. Level effects shown in Panel B suggest that that urban households are less likely to move into poverty than rural households. Finally, although only 33 households reported still having a migrant in June, these households were significantly less likely to have become poor between January and June, although the estimated coefficient is only significant at the 8 percent level and is imprecisely estimated.

Figures A1 and A2 in the Appendix separately test the predictors of movement into poverty by rural and urban sub-samples. The results are quite robust, with the obvious exception that recent childbirths are not significant in the rural sample, where they are rare. Also, in rural areas households that reported that they were affected by COVID-19 travel restrictions are somewhat more likely to fall into income-based poverty, perhaps because of the rural population's dependence on trade and migrant labor.

Coping mechanisms and governmental and non-governmental assistance

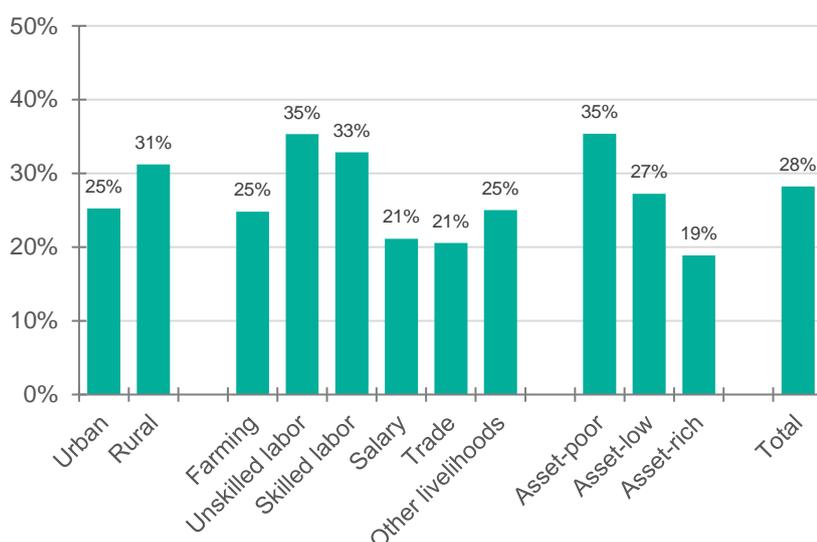
Table 6 examines coping mechanisms for the sub-sample of households that reported lower than normal income for June. By far the most common coping mechanism was taking loans, albeit more so in rural areas (51 percent) compared to urban (41 percent), and particularly among poorer households. Conversely, richer households used savings much more frequently (44 percent) compared to poorer households. Asset-rich households were also more likely to reduce non-food expenditure, but there was no strong wealth gradient for the reduction of food spending, although urban households were more likely to reduce food spending (16.6 percent) than urban households (10.9 percent). Selling of assets was rare except among farming households who may have sold agricultural assets, particularly livestock. Very few households reported no use of coping strategies, consistent with the notion that incomes losses were significant for the vast majority of households and required adaptive measures.

Table 6. Coping mechanisms among households who reported lower income compared to this time last year, percent reporting

	Took loans	Reduced savings	Reduced non-food spending	Reduced food spending	Sold assets	Other coping strategies	No coping strategies
Rural (Dry Zone)	51.1	28.0	33.3	10.9	7.9	1.0	2.2
Urban (Yangon)	41.3	31.5	29.6	16.6	6.4	3.8	4.2
Farming	48.2	30.9	29.4	12.1	11.0	1.8	2.5
Unskilled labor	54.0	21.7	30.9	16.1	5.1	2.4	2.2
Skilled labor	47.6	30.0	33.2	14.6	5.6	2.2	2.9
Salaried	36.8	34.6	32.0	12.9	8.5	2.6	4.8
Trade/retail	38.2	38.7	32.4	11.0	6.9	2.9	4.6
Other livelihoods	17.6	35.3	17.6	11.8	11.8	11.8	5.9
Asset-poor	52.6	21.0	28.4	15.1	8.5	2.8	2.5
Asset-low	47.8	29.8	30.9	13.0	6.4	2.5	2.4
Asset-high	31.8	44.2	37.7	13.4	6.5	1.6	6.2
Full sample	46.1	29.8	31.4	13.8	7.2	2.4	3.2

Source: Authors' estimates from RUFSS data. Data are reported for the sub-sample that states income is lower at this time of year than in the previous year. Note: Observations: 1,565.

Figure 5. Share of respondents reporting having received cash or food assistance in the past month



Source: Authors' estimates from RUFSS data.

We also asked respondents if they had received any form of assistance from government or non-government actors (Figure 5). In the full sample, 28 percent of respondents stated they had received some form of assistance, with by far the most common form of assistance coming from government. Assistance was more prevalent for rural households than urban households, and among both skilled and unskilled labor households. Assistance was also progressive, although one arguably might have expected it to be more progressive. Some 35 percent of asset-poor households received assistance, but so too did 19 percent of asset-rich households, with similar levels for salary and trade households, which in general are relatively well off. It is also of concern that two-thirds of the asset poor received no form of assistance.

Food insecurity experiences

Table 7 reports food insecurity experience scale (FIES) indicators. FIES indicators are ordered by intensity from the more psychosocial “food worries” indicator at one extreme (questions 1 and 2) to various indicators designed to capture sacrifices in food quality or quantity (3 to 5) to more serious markers of extreme food insecurity that involve running out of food or experiencing severe hunger (6 to 8).

Table 7. Food insecurity experience indicators and inadequate maternal dietary diversity by location, livelihood, and asset status, percent of respondents

	Food insecurity experience scale (FIES) Indicators							8. Whole day without food
	1. Food worries	2. Not enough healthy food	3. Fewer food types	4. Skipped meals	5. Ate less quantity	6. Ran out of food	7. Went hungry	
Rural (Dry Zone)	15.8	19.9	9.6	2.7	10.7	3.6	2.6	0.4
Urban (Yangon)	26.1	27.7	21.9	10.6	23.2	11.4	9.2	1.9
Farming	10.6	17.7	10.0	2.9	10.8	3.2	3.2	0.0
Unskilled labor	29.8	30.6	22.4	9.4	24.7	12.7	9.2	0.0
Skilled labor	23.2	27.2	16.9	7.1	18.1	8.1	7.3	0.0
Salaried	18.7	21.6	13.5	6.9	14.5	5.7	4.4	1.1
Trade/retail	18.7	17.2	12.0	5.7	12.0	4.8	2.9	0.0
Other livelihoods	16.7	4.2	16.7	4.2	20.8	12.5	4.2	0.0
Asset-poor	26.2	29.2	18.0	7.1	20.5	9.1	6.3	0.9
Asset-low	21.9	24.7	17.5	7.0	17.5	8.1	6.6	1.4
Asset-high	10.6	13.2	8.5	5.2	10.4	3.5	3.8	0.9
Full sample	21.0	23.8	15.8	6.6	17.0	7.5	5.9	1.1

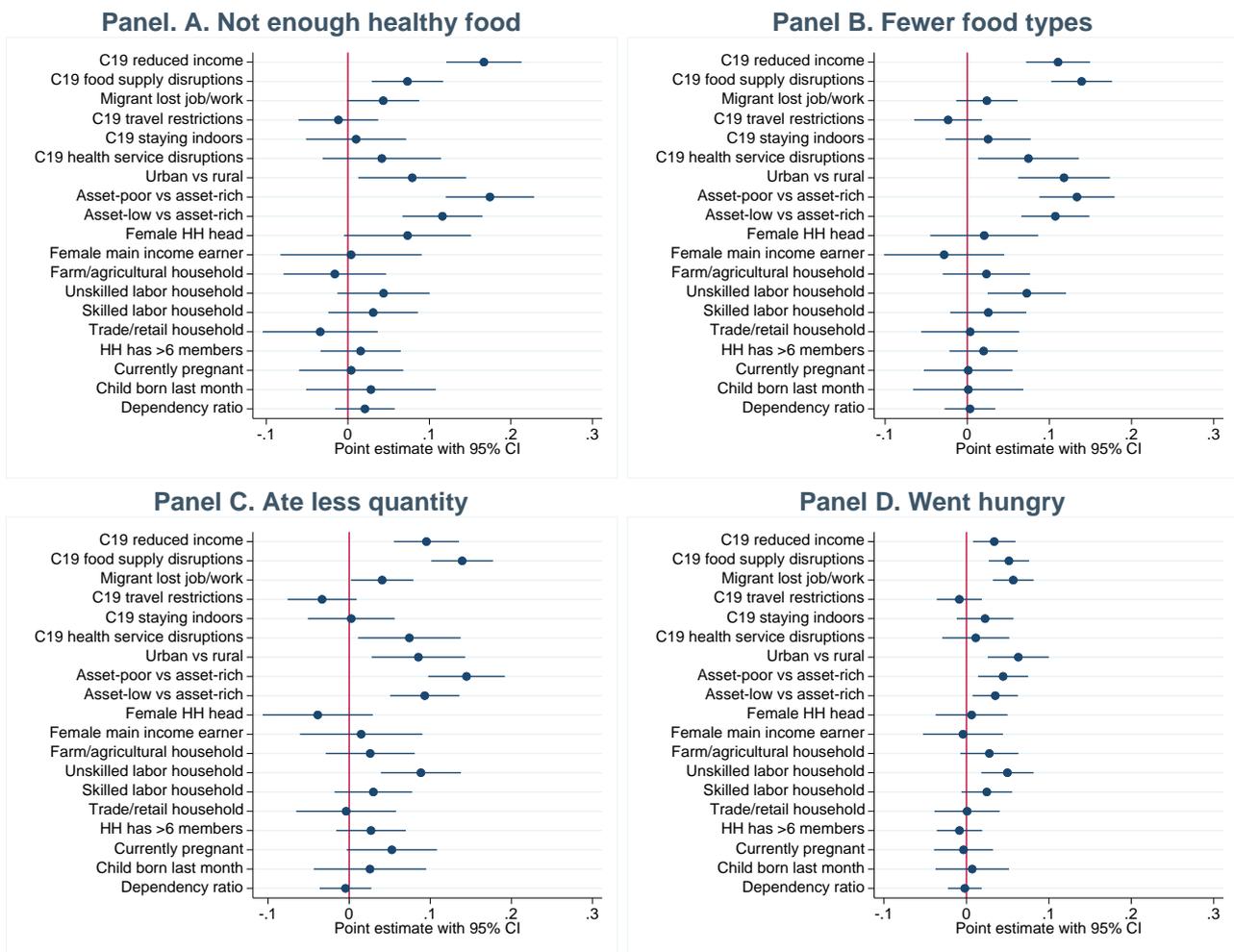
Source: Authors' estimates from RUFSS data. Data are reported for the income-reporting sub-sample. Note: Observations: 2,017.

Consistent with this ordering of severity, general anxiety about food or not eating enough healthy food is more common than markers of dietary sacrifices, which are also more common than hunger-related experiences. Just over 20 percent of respondents said they were worried about accessing sufficient food or sufficient healthy food (“food worries”), with these anxieties much more prevalent among the urban sample (26.1 percent) than the rural sample (15.8 percent), and among unskilled labor in particular (29.8 percent). Similarly, 22 percent of urban respondents reported consuming “fewer food types”, in contrast to just 10 percent of rural respondents. Relatively few respondents reported that they “skipped meals” (6.6 percent), but 23 percent of urban respondents reported state they “ate less quantity” compared to 10.7 percent in rural areas; notably, though, around one quarter of respondents from unskilled laborer households stated there had been times when they ate less quantity. At lower prevalence levels, these differences across rural and urban areas and labor and non-labor households held true for “ran out of food” and “went hungry”; for example, 9 percent of respondents from urban households and unskilled labor

households said there were times when they had gone hungry. Very few households (1.1 percent) stated they had gone a whole day without food.

In Figure 6 we look at predictors of four of the FIES indicators: two indicators that reflect sacrifices in dietary quality, “not enough healthy foods” and “fewer food types”, and two indicators that reflect sacrifices in food quantities and presumably even caloric intake, “ate less quantity” and “went hungry”. The four regression models use the full sample of households with a similar set of explanatory variables to the results reported above on movements into poverty. However, because we wished to exploit the full sample, we used qualitative responses on what the main impacts of COVID-19 were on the household, with the expectation that reduced income and food supply disruptions are more likely to predict food insecurity experiences.

Figure 6. Linear probability model estimates of predictors of food insecurity experiences and inadequate maternal dietary diversity, with 95% confidence intervals



Source: Authors’ estimates from RUFSS data using linear probability regressions with 95% confidence intervals.
 Note: Observations: 2,017.

In general, the results are broadly robust across differences FIES indicators. Respondents who report that COVID-19 reduced their incomes or caused them food supply disruptions are significantly more likely to reported food insecurity experiences, and the predicted effects are typically quite large. A household’s migrant worker losing a job or experiencing less work also tends to predict food insecurity, including experiences of hunger. In all four regressions, urban households are more likely to experience food insecurity even after controlling for other covariates, perhaps reflecting the fact that they cannot rely on accessing food from their farms, unlike most rural households. Perhaps for the same reason, and their overall increased vulnerability to the

adverse economic impacts of COVID-19, unskilled labor households are also more likely to experience food insecurity of various forms. Compared to asset-rich households, asset-poor and asset-low households are much more likely to report food insecurity. Finally, the results in Panel C suggest that women who are currently pregnant are somewhat more likely to report eating reduced quantities of food, although this is not apparent for other FIES indicators. Mothers who are more likely to report food insecurity were found to come from households that have lost income/jobs or experienced food supply disruptions due to COVID-19, are urban, dependent on unskilled labor, and have few assets.

Figures A3 and A4 in the Appendix split these tests by urban and rural sub-samples, respectively. The urban results are highly robust with only a few differences, but there are a few differences in rural areas. First, households that have migrants who lost jobs/work are not significantly more likely to report food insecurity. Second, asset levels typically no longer explain food insecurity after controlling for other covariates, although unskilled labor households are still more likely to be food insecure. Third, health service disruptions also seem to predict food insecurity, perhaps because they add to a general sense of anxiety and insecurity.

4. DISCUSSION

Despite Myanmar having one of the lowest confirmed COVID-19 case counts in the world in mid-2020 and an economy not projected to experience a significant longer term contraction, we find that both rural and urban household and maternal welfare has been hard hit by the COVID-19 crisis. Incomes declined by around one-third from January to June and income-based poverty has increased by over 20 percentage points in rural and urban areas. We also find that loss of employment has been a major channel of impact – two-thirds of households who report lower than normal incomes cite losses of employment or casual labor opportunities.

Our results also shed light on coping mechanisms and food insecurity experiences that are not so amenable to simulation-based evidence. Poorer households are largely using loans to cope with income losses, which helps to smooth consumption, but will prolong economic insecurity through indebtedness. Strikingly, despite being less poor, urban respondents clearly felt more food-insecure than rural respondents. Moreover, households that reported COVID-19-related income losses were more likely to report food insecurity experiences, suggesting that food insecurity may have increased significantly since the start of 2020.

Greater food and nutrition insecurity in urban areas could be due to greater disruption to economic activities in urban areas, but may also stem from the fact that farm households may have diversified access to food supplies through their own production and stocks, as well as those of their neighbors. It is also possible that farming households have been less affected economically because the agricultural sector is expected to experience significantly less economic harm than other sectors (Diao et al. 2020). But it is also the case that some dietary and nutrition indicators were quite poor even prior to COVID-19 – the 2015 Demographic Health Survey, for example, showed that child dietary diversity in Yangon was much lower than in the rural Dry Zone (MOHS and ICF International 2017).

This study has several limitations. First, telephone interviews have limitations in terms of length and, therefore, the number and scope of indicators collected. One study also found systematically different responses between in-person and phone-based interviews for dietary diversity indicators in Kenya (Lamanna et al. 2019). Second, as noted above, there is likely significant measurement error and some response bias for both January and June income measures. More generally, incomes are not an ideal basis for poverty measurement, especially for farm households. Third, the food insecurity indicators reported are subjective in nature. Though these indicators were

developed through an extensive multi-country project and sensibly ask about experiences, no previous study that we are aware of tested their validity in Myanmar. Previous studies have also argued that these indicators can behave erratically and may be more poorly correlated with more objective measures of food or nutrition insecurity (Headey and Ecker 2013). We also have no pre-COVID baseline for food insecurity. Instead, we rely on regression analysis to link self-reported impacts of COVID-19 to food insecurity experiences.

Despite these limitations, both quantitative and qualitative measures consistently suggest that the economic impacts of COVID-19 have been severe and widespread. Moreover, the 34 percent average decline in household income reported in this study is consistent with the income losses projected by Diao et al. (2020) and Diao and Mahrt (2020) using ex ante simulation models. Diao et al. (2020), for example, projected income losses of 17 to 32 percent in rural Myanmar, depending on the timeframe, livelihood, and economic recovery scenario. This suggests that our results for two specific regions may broadly hold in other regions of Myanmar. Both our results and those of Diao et al. (2020) also suggest that loss of employment is one of the main channels of impact of COVID-19 at household level.

These results have significant policy implications for social protection in Myanmar, as well as for economic recovery strategies. Prior to COVID-19, World Bank statistics indicated that Myanmar had very low population coverage for social protection and labor programs – just 13.8 percent of the population directly or indirectly benefiting from these programs in 2017 (Figure 7). Since COVID-19 the Government of Myanmar (GoM) and its development partners have commendably tried to implement emergency measures to provide rice and oil to poor and vulnerable households and began to scale-up conditional cash/food for work programs (GoM 2020), as well as additional cash payments for pregnant women and mothers of young children.

Figure 7. Percentage of population participating in social protection and labor programs, including both direct and indirect beneficiaries, Myanmar and neighboring countries



Source: Authors' estimates from *The Atlas Of Social Protection Indicators Of Resilience And Equity (ASPIRE)* database (World-Bank, 2020a).

In our sample less than one-third of respondents received some kind of cash or food assistance in June, with higher coverage for the asset-poor (35 percent). It is likely that most of this assistance was in the form of one-off food or cash transfers, although there has recently been some expansion of cash/food for work programs, while low interest rate loans have also been extended to farmers. Even so, it is almost certainly the case that the share of Myanmar's population with access to regular food/cash transfers is relatively small compared to the scope and scale of

income losses being experienced. Moreover, while there were signs of economic recovery from June onwards, this recovery has been stalled and reversed by a rapid increase in COVID-19 cases since mid-August and the imposition of much more stringent COVID-19 prevention measures. Hence, it is likely that incomes now (October 2020) are falling again and poverty and food insecurity are increasing. The high probability of a protracted period of rising COVID-19 cases and prevention measures will also further slow economic recovery.

With a delayed and protracted recovery, it is essential that GoM and its development partners expand social protection measures, including for nutritionally vulnerable households. Currently, GoM provides Maternal and Child Cash Transfers (MCCT) to households with pregnant women or children under the age of two years in five states/regions with high rates of malnutrition and plans to scale up to the remaining nine states/regions by 2024, with a plan to cover 2.25 million beneficiaries. Ideally, the scale-up of this program should be greatly accelerated, but the fiscal impacts of the COVID-19 crisis – as well as the fact that social protection rights are not yet enshrined in law – mean that it may be financially challenging to do so. Recently GoM extended one-off cash transfers to women not currently covered by regular MCCTs. However, it is not yet clear whether these cash payments will be repeated, whether there is scope to deliver nutritional messaging via remote platforms in addition to cash transfers, and whether the program has achieved the desired uptake given that prospective beneficiaries had to enroll in the program by phone.

While efforts to extend at least some coverage to prospective beneficiaries not covered by regular MCCTs is commendable, there are three strong rationales to find the political and financial means to scale up the existing MCCT program.

- First, the pilot program – on which the current MCCT program was based – showed that cash transfers (10,000 to 15,000 Kyats (about USD 6 to 10) per month) plus social behavioral change communications (SBCC) led to a 4 to 10 percentage point reduction in child stunting, as well as improvements in maternal dietary and nutrition knowledge and practices, food consumption, child dietary intake, health seeking behavior, antenatal iron tablet consumption, and hand washing practices (Field and Maffioli, 2020). While not yet published, the same evaluation team has evidence to suggest that cash plus SBCC treatments have also been effective in maintaining adequate maternal dietary diversity during COVID-19, even though recipients no longer receive cash or participate in SBCC activities.
- Second, the results from the urban component of our sample – none of whom are expected to have received any MCCTs – show that giving birth to a child reduces income and increases the likelihood of income-based poverty at what is clearly a critically important time for maternal and child nutrition. MCCTs could clearly help prevent the adverse economic consequences of childbirth.
- Third, a recent multi-country Demographic Health Survey study suggests that macroeconomic shocks increase the risk of wasting in young children (Headey and Ruel 2020). While wasting is somewhat localized in Myanmar, there are several regions with large populations of wasted children. The econometric model used in the multi-country study predicts that almost 110,000 children in Myanmar are at increased risk of wasting if no preventative actions are taken (Headey et al. 2020). Hence, although a significant fiscal outlay is involved in scaling up nutrition-sensitive social protection for mothers of young children through MCCTs, there is compelling evidence to suggest that this action will prevent severe acute malnutrition and save lives in the short to medium term, as well as secure better schooling, cognitive, and economic outcomes in the longer term (Hoddinott et al., 2013).

Finally, economic recovery must clearly entail efforts to maximize job creation, but social protection could play a role here too in the form of expanded food/cash for work programs that could also help address Myanmar's significant infrastructure deficiencies. Currently, however, very little is known about the targeting or impacts of recently expanded cash/food for work programs in this vein, because of the immense challenges of quickly scaling up these activities. In a protracted crisis and an even more protracted recovery, it is essential to more closely monitor and evaluate these programs to ensure that they are providing well targeted, effective, and safe protection for vulnerable households against the adverse impacts of an unprecedented economic crisis on their livelihoods, food security, nutrition, and welfare.

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APPENDIX

Appendix Table A1. Summary statistics for the main indicators used in the study

Short name	Definition	Observations	Mean	Std. dev.	Min	Max
Urban	Urban sample, 0/1	2,017	0.50	0.50	0.00	1.00
Livelihood indicators						
Farming household	Derives income from farming, 0/1	2,017	0.19	0.39	0.00	1.00
Unskilled labor household	Derives income from casual labor, 0/1	2,017	0.24	0.43	0.00	1.00
Skilled labor household	Income from manufacturing, craft, transport, 0/1	2,017	0.25	0.43	0.00	1.00
Trade/retail household	Income from wholesale/retail trade, 0/1	2,017	0.10	0.30	0.00	1.00
Salary household	Income from salaried job, 0/1	2,017	0.20	0.40	0.00	1.00
Other occupation household	Other occupations: rent, transfers, pensions, 0/1	2,017	0.01	0.11	0.00	1.00
Household asset/wealth indicators						
Asset count	Count of six high-scoring assets	2,017	2.28	1.51	0.00	6.00
Asset-poor	Owens 0-1 assets out of six, 0/1	2,017	0.34	0.47	0.00	1.00
Asset-low	Owens 2-3 assets out of six, 0/1	2,017	0.45	0.50	0.00	1.00
Asset-rich	Owens 4-6 assets out of six, 0/1	2,017	0.21	0.41	0.00	1.00
Household income indicators						
Income per capita, January	Income per adult equivalent, January, Kyat	1,528	2503	2155	160	29375
Income per capita, June	Income per adult equivalent, June, Kyat	1,528	1518	1599	0	19094
Percentage change in income per capita	% change in income, January to June	1,528	-34	52	-100	400
\$1.90/day poor in January	January income less than \$1.90 day, 0/1	1,528	0.12	0.33	0.00	1.00
\$1.90/day poor in June	June income less than \$1.90 day, 0/1	1,528	0.39	0.49	0.00	1.00
Became poor	Became \$1.90/day poor between January and June, 0/1	1,528	0.28	0.45	0.00	1.00
Income fell	Income fell from January to June, 0/1	1,528	0.66	0.47	0.00	1.00
Zero income in June	Reported zero income in June, 0/1	1,528	0.19	0.40	0.00	1.00
Self-reported COVID-19 effects						
COVID-19 affected income	Stated COVID-19 reduced income, 0/1	2,017	0.80	0.40	0.00	1.00
COVID-19 affected food supply	Stated COVID-19 caused food supply problems, 0/1	2,017	0.15	0.36	0.00	1.00
Lost job	Income lower: lost job/labor, 0/1	1,565	0.68	0.47	0.00	1.00
Lower salary or wage	Income lower: salary/wage fell, 0/1	1,565	0.15	0.36	0.00	1.00
Movement restricted	Income lower: movement restrictions, 0/1	1,565	0.28	0.45	0.00	1.00
Markets disrupted	Income lower: market disruptions, 0/1	1,565	0.26	0.44	0.00	1.00
Pregnant, birth, childcare	Income lower: pregnancy, birth, childcare, 0/1	1,565	0.10	0.30	0.00	1.00
Yield or climate	Income lower: low yields, climate shocks, 0/1	1,565	0.03	0.18	0.00	1.00
Other reasons	Income lower: other reasons, 0/1	1,565	0.02	0.14	0.00	1.00
Food insecurity experience scale (FIES), 1 month recall						
Food worries	Worried about not having enough food to eat, 0/1	2,017	0.21	0.41	0.00	1.00

Short name	Definition	Observations	Mean	Std. dev.	Min	Max
Not enough healthy food	Worried not able to eat healthy & nutritious food, 0/1	2,017	0.24	0.43	0.00	1.00
Fewer food types	Were times ate only few kinds of foods, 0/1	2,017	0.16	0.36	0.00	1.00
Skipped meals	Were times had to skip a meal, 0/1	2,017	0.07	0.25	0.00	1.00
Ate less quantity	Were times ate less quantity of food, 0/1	2,017	0.17	0.38	0.00	1.00
Ran out of food	Were times ran out of food, 0/1	2,017	0.07	0.26	0.00	1.00
Went hungry	Were times went hungry, 0/1	2,017	0.06	0.24	0.00	1.00
Whole day without food	Were times went whole day without food, 0/1	2,017	0.01	0.11	0.00	1.00
Maternal dietary diversity indicators in last 24 hours						
Green leafy vegetables	Mother ate dark green leafy vegetables, 0/1	2,017	0.84	0.37	0.00	1.00
Vitamin A-rich fruits or vegetables	Mother ate vitamin A-rich fruits/vegetables, 0/1	2,017	0.68	0.47	0.00	1.00
Other vegetables	Mother ate other vegetables, 0/1	2,017	0.63	0.48	0.00	1.00
Rice or other staples	Mother ate rice or other staples, 0/1	2,017	0.99	0.11	0.00	1.00
Beans/pulses	Mother ate beans/pulses, 0/1	2,017	0.56	0.50	0.00	1.00
Nuts/seeds	Mother ate nuts/seeds, 0/1	2,017	0.38	0.49	0.00	1.00
Dairy	Mother ate dairy, 0/1	2,017	0.20	0.40	0.00	1.00
Eggs	Mother ate eggs, 0/1	2,017	0.56	0.50	0.00	1.00
Other fruit	Mother ate other fruit, 0/1	2,017	0.18	0.39	0.00	1.00
Fish/seafood	Mother ate fish/seafood, 0/1	2,017	0.86	0.35	0.00	1.00
Demographic indicators						
Female household head	Female is household head, 0/1	2,017	0.07	0.25	0.00	1.00
Female main income earner	Female is main income earner, 0/1	2,017	0.05	0.22	0.00	1.00
Large household	Household with seven or more members, 0/1	2,017	0.16	0.37	0.00	1.00
Mother is pregnant	Mother is currently pregnant, 0/1	2,017	0.37	0.48	0.00	1.00
Birth in past month	Mother gave birth in past month, 0/1	2,017	0.10	0.31	0.00	1.00
Dependency ratio	Ratio of children aged 0 to 14 years to adults	2,016	0.59	0.56	0.00	9.00

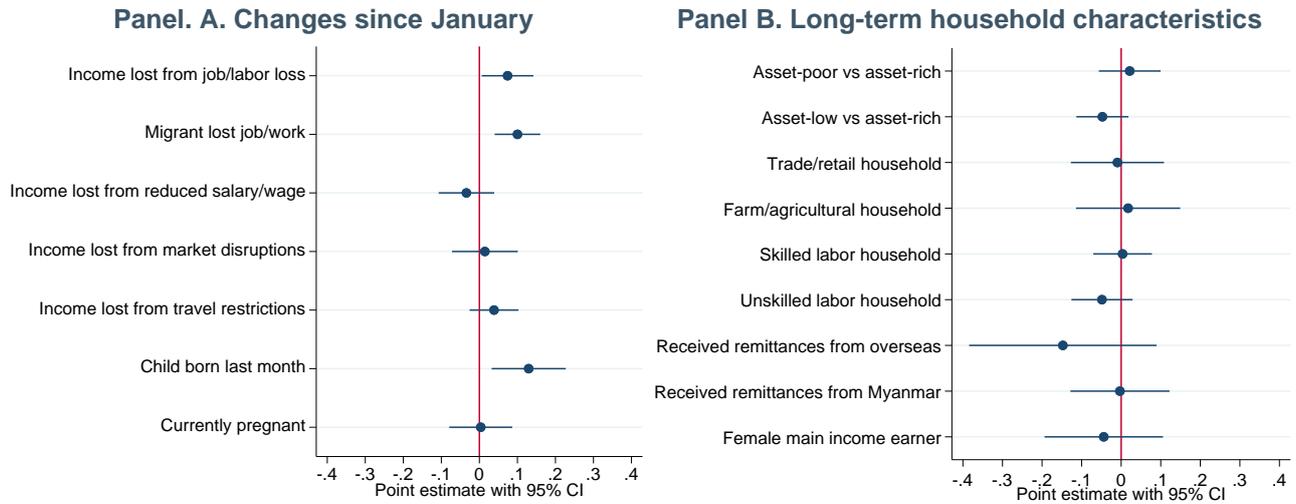
Source: Authors' estimates from RUFSS data.

Appendix Table A2. Predictors of whether a respondent was able to report income for both January and June, based on a linear probability model

	Coefficient	P>t
Household has multiple adults versus 1 or 2	-0.089***	0.000
Rural vs. urban	0.094***	0.000
Salaried vs. farm household	0.091***	0.003
Trade vs. farm household	-0.031	0.358
Other occupation vs. farm household	-0.118***	0.002
Non-farm labor vs. farm household	-0.005	0.830
Female is main income earner	-0.017	0.669
Few assets vs. low assets	0.006	0.773
Many assets vs. low assets	0.026	0.329
Adjusted R-squared	0.033	

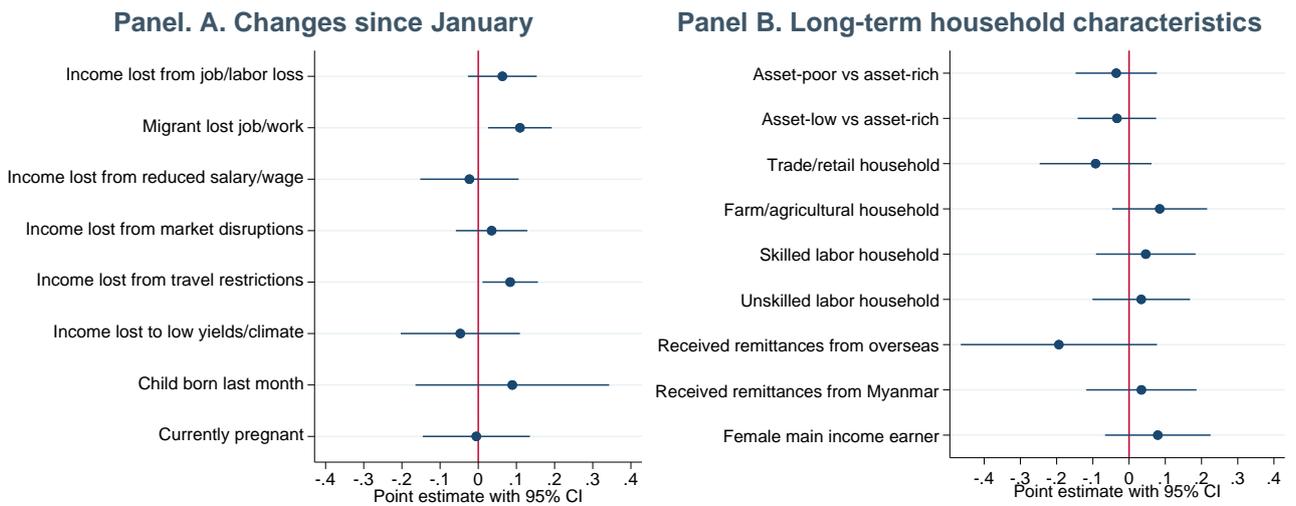
Source: Authors' estimates from RUFSS data. *, **, *** indicate significant at the 10%, 5% and 1% level respectively. Note: Observations: 2,017.

Appendix Figure A1. Linear probability model estimates of the predictors of becoming poor at the \$1.90/day poverty status between January and June 2020 in the urban and peri-urban Yangon sub-sample, with 95% confidence intervals



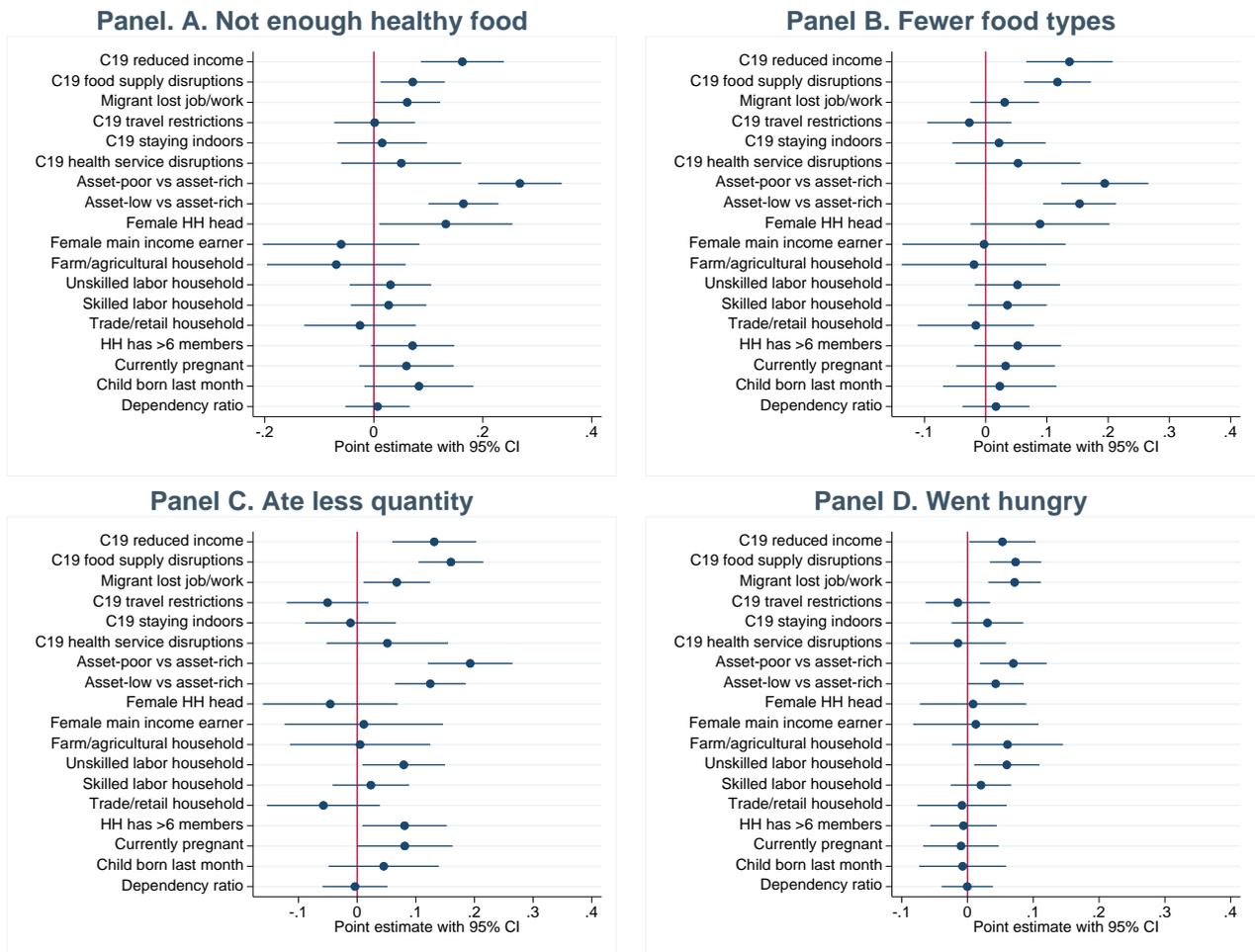
Source: Authors' estimates from RUFSS data using linear probability model regressions with 95% confidence intervals.

Appendix Figure A2. Linear probability model estimates of the predictors of becoming poor at the \$1.90/day poverty status between January and June 2020 in the rural Dry Zone sub-sample, with 95% confidence intervals



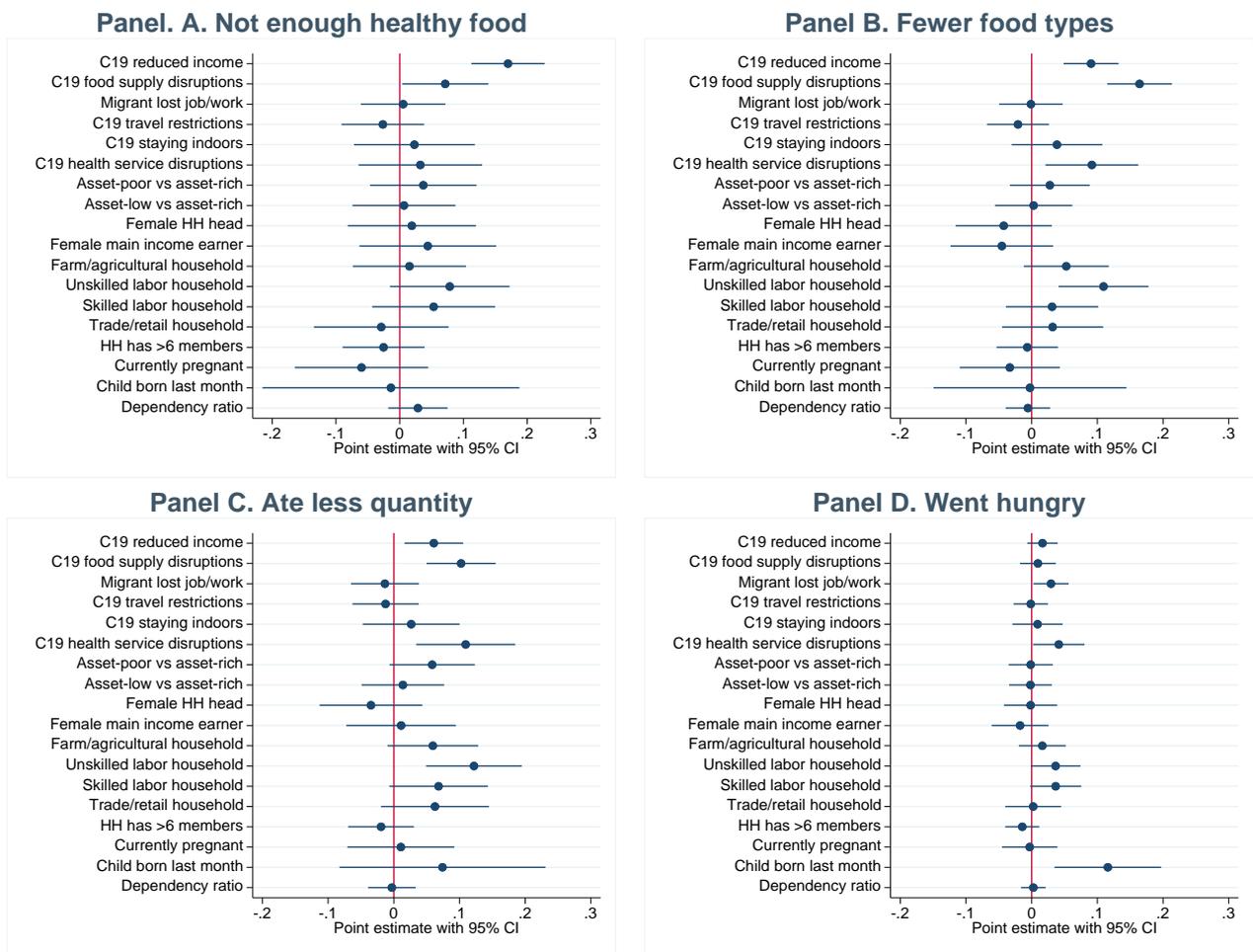
Source: Authors' estimates from RUFSS data using linear probability model regressions with 95% confidence intervals.

Appendix Figure A3. Linear probability model estimates of the predictors of food insecurity experiences in the urban and peri-urban Yangon sub-sample, with 95% confidence intervals



Source: Authors' estimates from RUFSS data using linear probability regressions with 95% confidence intervals.
 Note: Observations: 1,010.

Appendix Figure A4. Linear probability model estimates of the predictors of food insecurity experiences in the rural Dry Zone sub-sample, with 95% confidence intervals



Source: Authors' estimates from RUFSS data using linear probability regressions with 95% confidence intervals.
 Note: Observations: 1,006.

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