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Phone surveillance, from scratch

Novel sample design features of the nationally representative Myanmar Household Welfare Survey (MHWS)



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ABSTRACT

The first round of the Myanmar Household Welfare Survey (MHWS)—a nationwide phone panel consisting of 12,100 households—was implemented between December 2021 and February 2022. The objective of the survey was to collect data on a wide range of household and individual welfare indicators—including wealth, livelihoods, unemployment, food insecurity, diet quality, health shocks, and coping strategies—in a country exceptionally hard hit by conflict, severe economic collapse, and several damaging waves of COVID-19. The respondents interviewed in the MHWS were purposely selected from a large phone database aimed at being representative at the region/state level and urban/rural level in Myanmar.

In this paper, we discuss two key steps taken to ensure that the MHWS is nationally and subnationally representative at the state/region and urban/rural level. First, we used a quota-based sampling strategy by setting survey quotas for respondents' geography, education, farming status, gender, and rural/urban residence. This sampling strategy is used to address the well-known drawbacks of phone survey samples (e.g., the over-sampling of more educated respondents) and the survey's particular interest in over-sampling farm households and equally sampling men and women. Second, we constructed household, population, and individual level weighting factors to further ensure that the survey generates nationally and subnationally representative statistics.

To assess the effectiveness of these two strategies on achieving representativeness and consistency with previous surveys, we compare results from the MHWS to earlier nationally representative datasets, focusing on sample sizes of interviewed households for each state/region, and on education levels, farm/non-farm occupation, urban/rural residence, as well as respondents' housing characteristics, which are unlikely to change substantially over short periods of time. We show that the phone-based MHWS has broader geographical coverage than previous national surveys, reaching 310 of Myanmar's 330 townships. Moreover, our sampling approach was generally effective in reducing the education bias of phone surveys, except for a handful of states/regions. The MHWS is also unique in providing equal representation of male and female respondents. Additionally, the MHWS sampling and weighting strategies produce statistics on key indicators that closely mirror results from the two most recent national surveys in Myanmar. Overall, the results suggest that these strategies are successful in generating a subnationally representative phone survey that collected data on a rich array of household welfare indicators in exceptionally difficult political and economic circumstances.

1. INTRODUCTION

Myanmar is experiencing a wide range of shocks due to COVID-19, political instability, armed conflict, weather events, pests, and various related economic disruptions, all at a time when information is scarce due to the collapse of cooperative data collection efforts between the present military government and most bilateral and international agencies. Yet in this difficult environment, accurate and frequent monitoring and evaluation is crucial for targeting scarce resources for maximum impact and benefit to Myanmar's very vulnerable population. Considering these knowledge gaps, the Myanmar Agricultural Policy Support Activity (MAPSA) began implementing the Myanmar Household Welfare Survey (MHWS).

MHWS is a large-scale high frequency phone survey intended to be representative at the national level (except for Wa Special Administered Zone – SAZ), the urban/rural level, and the state/region level. The same respondents are intended to be interviewed in each round. Respondents dropping out of the sample will be replaced to achieve the same number of respondents in total and by quota. The MHWS, as its name suggests, is primarily designed to track household and individual welfare (assets, incomes, wealth, food security, diet diversity, food expenditures, coping strategies and access to services), farm and non-farm economic activities (including migration and remittances), and household demographic composition and migration status (see Appendix B for the Round 1 questionnaire of the MHWS). Moreover, the MHWS forms the basis for the Myanmar Agricultural Performance Survey (MAPS), which will be conducted as a high frequency survey of farm households timed to Myanmar's cropping calendar.

This paper discusses the sampling strategy for the first round of MHWS, conducted between December 17, 2021 and February 13, 2022. Herein, we describe considerations made in the sample design, challenges in implementing the first round of data collection in relation to the sample, and calculations of the weights to reduce bias resulting from the composition of the final sample, such as the inability to interview the target number of respondents with low education levels. We also report sample characteristics of the survey and compare MHWS sample characteristics to the 2017 Myanmar Living Conditions Survey (MLCS), implemented by the Myanmar Central Statistical Organization (CSO), UNDP, and The World Bank (CSO, UNDP & World Bank 2019a, 2019b), which was the last nationally representative socioeconomic survey conducted in Myanmar, as well as to the 2019 Inter-Censal Survey (ICS) (DOP, UNFPA 2020).

This paper should be used as a reference for understanding and analyzing MHWS in a nationally representative fashion. Yet, this paper may also serve as a guide for implementing nationally and subnationally representative phone surveys in other countries. Prior to COVID-19, the uptake of national phone surveys was limited despite their cost-effectiveness and ability to access hard-to-reach places (Dillon 2011, Demombynes et al. 2013, Dabalén et al. 2016). COVID-19 saw an explosion in the number of phone surveys through necessity rather than desire. However, several concerns remain.

The main concern is representativeness. Those without working mobile phones cannot answer to the survey. Urban residents and those living in well-connected and wealthier areas are more likely to own phones. Mobile phone owners are also typically better off than non-owners, which leads to systematic under-representation of the very poor. Non-response rates, too, are higher in phone surveys and may under-represent particular livelihoods, such as farmers who own phones but are less likely to answer them at certain times of the day (Gourlay et al. 2021). Moreover, many COVID-19 phone surveys were not nationally representative because – in a rush - they opportunistically drew on existing program-based surveys. Those that were nationally representative either drew their sample from pre-COVID in-person surveys (see Brubaker, Kilic and Wollburg 2021) or only set out to achieve representativeness at the national level, perhaps because subnational

representativeness would involve exorbitant costs due to screening out surplus non-representative participants.¹ However, in developing countries that are highly diverse in multiple dimensions (ethnicity, economic status, geography, and livelihoods), subnationally representative surveys are critically important for monitoring and evaluation, for program design and targeting, and for generating a more rigorous body of evidence for a wide range of policies and programs. Other issues of phone surveys relate to respondent's trust in the enumerator, accuracy of data collection and shorter survey duration (Lamanna et al. 2019; Gourlay et al. 2021).

While there are obvious challenges with achieving representativeness of phone surveys, there are also under-appreciated advantages of phone surveys in countries beset by remoteness, conflict, and pandemic conditions (Maffioli 2020). Indeed, while previous socioeconomic surveys in Myanmar failed to reach large parts of the country due to conflict (and thus were not truly representative), the present phone-based MHWS managed to survey the majority of Myanmar's townships, many of which have not been surveyed in recent times (e.g. northern Rakhine), and many of which are currently characterized by acute conflict and significant COVID-19 restrictions. These challenges are obviously not unique to Myanmar (Hoogeveen and Pape, 2020). In this paper, we show that the pre- and post-survey methods for minimizing some of the biases that affect phone surveys could be used as a template for implementing subnationally representative surveys from scratch in other countries characterized by complex governance and logistical challenges.

2. SAMPLE DESIGN OF THE MHWS

The aim of MHWS is to represent the population living in conventional households, similar to the usual target population of nationally representative datasets that collect data through face-to-face interviews. However, as data collection was conducted by phone rather than through face-to-face interactions, the sample design deviates from a traditional sample design based on a random selection of enumeration areas and households therein.

2.1 Original (pre-survey) MHWS sample design

The MHWS has a sample size of 12,100 households. The MHWS originally intended to interview 12,500 respondents, with a distribution proportional to the population size in each State and Region based on the population data of the 2014 Census (DoP, 2015). However, at state/region level, a deviation of the proportional allocation of the sample was decided for the two states with the lowest population size (i.e., Kayah and Chin State), in favor of a minimum sample size of 240 respondents to allow for more accurate estimates of state/region level indicators. It was decided to keep the target number of observations in the other states and regions, resulting in the final intended sample size of 12,790 respondents (Table 1; Figure 1). In doing so, the MHWS sample design and number of observations in each state and region was similar to the 2015-2016 Myanmar Demographic Health Survey (MDHS) and the 2017 Myanmar Living Conditions Survey (MLCS), both of which aimed to be representative of each state/region and of rural and urban areas of Myanmar as a whole.

¹ Specifically, if the population of mobile phone owners is biased heavily towards somewhat wealthier and more urban respondents, then random digit dialing would require a large number of phone calls to find the kinds of target households laid out in this study, thereby raising the cost of the survey quite substantially (we estimate a doubling of costs).

Figure 1: Number of people in conventional households by State/Region (in million), based on 2014 Census data

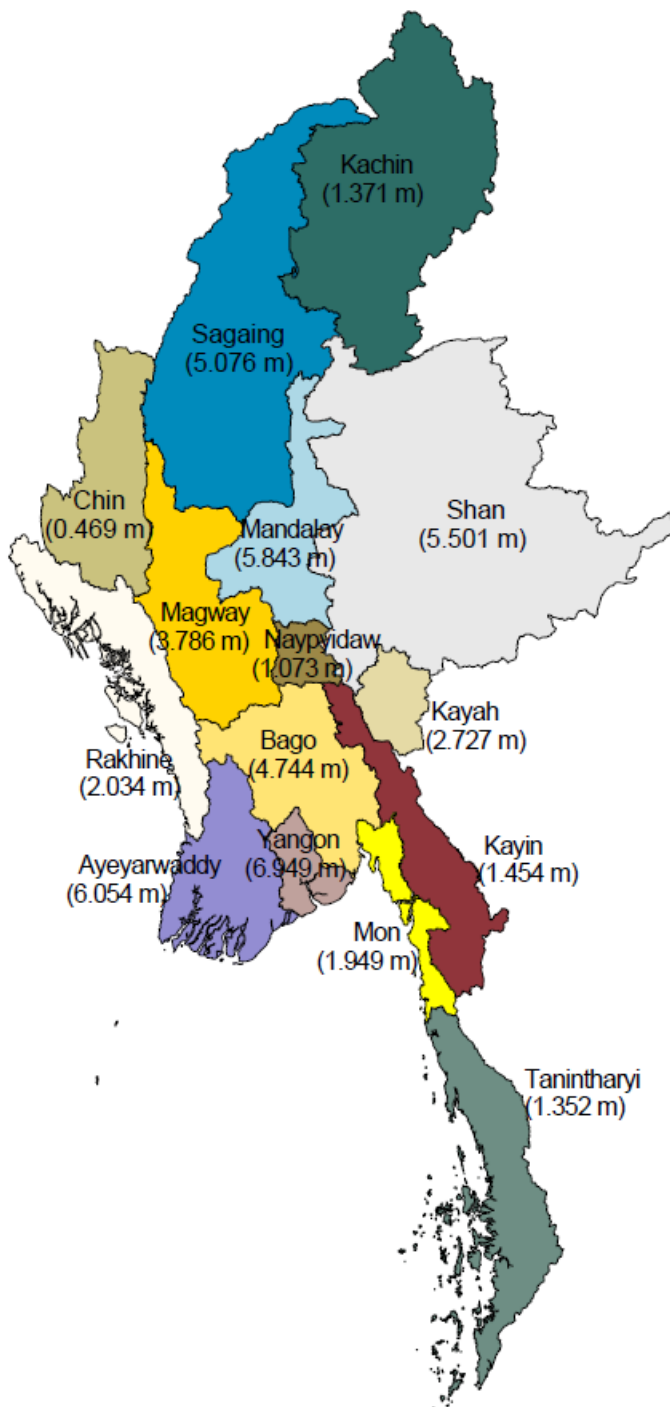


Table 1. Population and household estimates and target sample sizes by State/Region

State/Region	Persons in conventional households - 2014 ¹	Number of households- 2014 ¹	Target sample size in Myanmar Household Welfare Survey (MHWS)
Ayeyarwady	6,053,594	1,488,983	1,538
Bago	4,743,808	1,142,974	1,210
Chin	469,109	70,291	240
Kachin	1,370,748	269,365	408
Kayah	272,730 ^a	44,294 ^a	240
Kayin	1,454,264 ^a	228,868 ^a	374
Magway	3,786,538	919,777	974
Mandalay	5,843,424	1,323,191	1,533
Mon	1,949,821	422,612	511
Nay Pyi Taw	1,072,833	205,1606	288
Rakhine	2,034,148 ^a	459,722 ^a	522
Sagaing	5,076,326	824,766	1,324
Shan	5,500,933	1,169,569	1,448
Tanintharyi	1,352,283	201,259	350
Yangon	6,949,440	1,582,944	1,830
Total	47,929,999	10,877,832	12,790

Note: ^a This number likely only reflects the enumerated population of the Census survey rather than the total population. DoP (2015) note that an estimated 69,753 persons in Kayin State, 46,600 persons in Kachin State and 1,090,000 persons in Rakhine State were not counted during enumeration.

Source: ¹Census 2014 (DoP, 2015), and Authors.

The implementation of MHWS occurred in collaboration with Myanmar Survey Research (MSR), a private survey research company based in Myanmar. MSR owns a database of 280,274 phone numbers of adults who consented to be contacted for future participation in phone survey data collection, including geographical information of the township of residence of the respondent. MHWS respondents could be any household member aged 18-74 years old. The lower limit of 18 years old was purposively chosen as childhood legally ends at 18 years old in Myanmar.

The first step in selecting phone numbers for interview was the development of a master phone number database. This master database was constructed as a “long list” for final survey sample selection and contained four times the actual number of target interviews (to account for non-response). To create the master database, all phone numbers were stratified at the township level and then randomly within each strata such that the final amount of phone numbers in the master database were proportional to the population size in each township. Given that no public information at township level was available from the recent ICS data collected in late 2019-early 2020, the proportional distribution of the population by township is based on the information in the 2014 Census data. Phone numbers from telecommunication providers as well as phone numbers in townships of Wa SAZ – subject to sanctions by a number of donor governments – were excluded from the sample.

The intention of randomly sampling within each township was to minimize the risk of oversampling respondents who live predominantly in well-connected and wealthier townships only. Without a deliberate attempt to achieve such a spatial spread, a random selection of phone numbers risks reaching respondents who are clustered in urban and suburban areas, in areas with better infrastructure and with higher levels of asset ownership, in certain geographical areas in a state, and in townships that are not under control of ethnic armed organizations (which are often either less connected or use phone numbers of neighboring countries). While we did not insist on having an exact proportional balance of interviews at township level in the final sample, the survey company did strive to achieve such balance to the extent possible.

Another concern we tried to attenuate is that poorer people, farmers, or women may be less likely to answer a phone and could therefore be under-represented when randomly selecting phone survey respondents (Gourlay et al. 2021). We therefore set minimum survey targets for gender of the respondent (female), location of the respondent's residence (rural), respondent's education (lower-educated) and household livelihood (farming) to be met at each state/region level. The target ratios were set to reflect the ratios reported from the official census as well as our own estimates of these ratios from the 2017 MLCS in each state/region (Table 2).

Table 2. Respondent characteristic targets for each state and region, in percentage of respondents

State/ Region	Gender (female)	Location (rural)	Education level (low)	Livelihood (farming)
Ayeyarwady	50	86	54	47
Bago	50	78	52	46
Chin	50	79	50	66
Kachin	50	64	42	43
Kayah	50	75	47	60
Kayin	50	78	57	45
Magway	50	85	56	52
Mandalay	50	65	49	41
Mon	50	72	52	33
Nay Pyi Taw	50	68	43	30
Rakhine	50	83	58	46
Sagaing	50	83	54	63
Shan	50	76	60	73
Tanintharyi	50	76	50	40
Yangon	50	30	31	13

Source: Authors.

The following minimum targets were specified at State/Region level:

1. Gender (female): Half of all respondents should be female.²
2. Location (rural): Respondents with rural residence, proportional to the population in conventional households based on the 2014 Myanmar Census Report.
3. Education (lower-educated): Respondents who completed at most primary school level. This includes those with no or a maximum of primary school attainment (grades 1-5). The target was calculated based on the percentage of adults in conventional households aged 25 years and over by highest level of education completed based on the 2014 census data. This percentage was then adjusted downward first to correct for the age range of our respondents (18 to 74 years old) and thereafter to account for shifting age cohorts between the time of census data collection (2014) and the start of our survey (2021).³

² In contrast to the other characteristics, this quota is not based on population-level statistics. Myanmar in fact has more women than men in the adult population. The overall sex ratio is 87.8 (men to women); 46.8 percent male and 53.2 percent female, but the gap increases with age.

³ As we intended to interview people from 18 until 74 years old in 2021, the education ratio of the census of 2014 was adjusted to reflect the improved education situation over time. The following steps were made: We used the census data from 2014 to calculate a new average education for the population group targeted, excluding people older than 74 and including people from 18-24, considering their share in the population. As we have data for five-year intervals in the census, we predicted (using similar population shares of different age groups five years later), what the average low education level would be in 2019. Using the same rate in decline of 2014-2019 for the next three years, we get to an expected lower education share in December 2021 (as the census was done in March 2014, a five-year and three-year interval was taken to approach the situation in December 2021). We then adjusted the initial low education ratio with the number found at the national level to the same extent in each state.

4. Household livelihood (farming): Respondents living in a household where crops were harvested in the past 12 months. The share of farmer households was calculated based on the same question in the MLCS 2017 plus an additional 5 percent buffer. This oversampling of households with farm livelihoods was because they are a key group of interest with planned follow-up surveys specifically directed to farm households.

In practice, the approach adopted to achieve these quotas was as follows. After explaining the purpose of the study and obtaining informed consent, the respondent first answered survey screening questions related to the quota (age, gender, location, education level and household livelihood). Based on this information, it was assessed whether the interview quota for respondents with these characteristics were already met, and if so, the respondent was explained that s/he would not be interviewed at this time but may be contacted again in the future.

There was no instruction to the interviewers that the owner of the phone number him or herself should respond to the interview questions. In some cases, another person answered the call and agreed to be interviewed, while in other cases, the person who answered the call handed over the phone to another household member to be interviewed. Additionally, enumerators were clearly instructed that any household member between 18 and 74 years old was eligible to be interviewed (i.e., they did not need to target the household head for the interview). If the respondent's age was too low or high to be interviewed, s/he was asked to hand over to another household member.

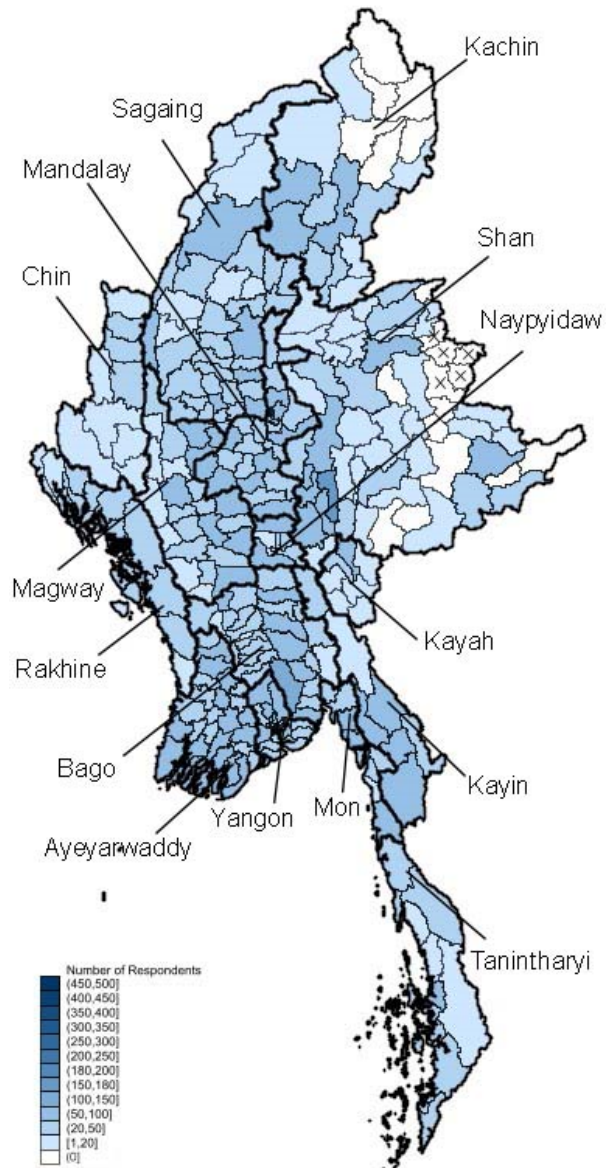
2.2 Characteristics of the final MHWS sample

The final sample does not fully achieve the attempted sample targets and sizes (Table 3), though some sample deviations were expected given that a large share of the population was directly or indirectly affected by conflict, including disruptions to telecommunication services, frequent power outages, economic distress, and displacement during the period of data collection. In states and regions where targets could not be achieved after reaching out to all phone numbers in the master dataset, the survey company attempted to reach respondents from the respective townships in their panel database who were not selected in the master dataset. Even so, attempted targets could not always be met.

The most severe problems of falling short of pre-determined targets were related to two issues. First, target gaps occurred in areas highly affected by conflict, the most extreme cases being Kayah, Chin and Shan State. Second, it proved difficult to reach the quota of respondents with low levels of education in Kayah and Chin, as well as Tanintharyi and Shan, and to a lesser extent Mandalay and Mon.

Out of a total of 330 townships nationwide, 20 townships do not appear in our sample (Figure 2, Table A.1). Most of these non-surveyed townships have very small populations (1.6 percent of the total population of Myanmar), and therefore do not substantially undermine representativeness (further discussion follows).

Figure 2: Interviews conducted in the first round of MHWS, by township



Note: Stars indicate townships in Wa SAZ which were avoided for interviewing.

Table 3. Overview of target and achieved number of respondents, in total and by selected target gaps

State/ Region	Total households surveyed			Rural location criterion			Low level education criterion			Farming household criterion		
	Target sample size	Actual sample size	Gap from target (%)	Target sample size	Actual sample size	Gap from target (%)	Target sample size	Actual sample size	Gap from target (%)	Target sample size	Actual sample size	Gap from target (%)
Ayeyarwady	1,538	1,538	0.0%	1,323	1,322	-0.1%	831	822	-1.1%	721	726	0.7%
Bago	1,210	1,169	-3.4%	944	921	-2.4%	629	571	-9.2%	558	577	3.4%
Chin	240	159	-33.8%	190	108	-43.2%	120	29	-75.8%	158	96	-39.2%
Kachin	408	385	-5.6%	261	229	-12.3%	171	149	-12.9%	175	157	-10.3%
Kayah	240	132	-45.0%	180	71	-60.6%	113	26	-77.0%	144	81	-43.8%
Kayin	374	354	-5.3%	292	276	-5.5%	213	194	-8.9%	170	175	2.9%
Magway	974	963	-1.1%	828	822	-0.7%	545	531	-2.6%	502	505	0.6%
Mandalay	1,533	1,483	-3.3%	996	1,024	2.8%	751	662	-11.9%	624	633	1.4%
Mon	511	480	-6.1%	368	324	-12.0%	266	225	-15.4%	168	169	0.6%
Nay Pyi Taw	288	289	0.3%	196	206	5.1%	124	123	-0.8%	87	89	2.3%
Rakhine	522	526	0.8%	433	441	1.8%	303	296	-2.3%	241	245	1.7%
Sagaing	1,324	1,312	-0.9%	1,099	1,084	-1.4%	715	708	-1.0%	831	835	0.5%
Shan	1,448	1,156	-20.2%	1,100	851	-22.6%	869	597	-31.3%	1,058	811	-23.3%
Tanintharyi	350	328	-6.3%	266	231	-13.2%	175	133	-24.0%	140	125	-10.7%
Yangon	1,830	1,826	-0.2%	549	581	5.8%	567	554	-2.3%	232	241	3.9%
Total	12,790	12,100	-5.4%	9,025	8,491	-5.9%	6,392	5,620	-12.1%	5,809	5,465	-5.9%

Source: Authors.

3. THE CONSTRUCTION OF HOUSEHOLD, POPULATION, AND INDIVIDUAL LEVEL MHWS SAMPLING WEIGHTS

Because of the sample design, it is necessary to use sampling weights to improve the representativeness of estimates of national and regional level statistics for the following four reasons. First, the suggested survey respondent targets included oversampling of respondents in States with a low population size, particularly Chin and Kayah State, and of farm households. Respondents in these States were oversampled to improve the robustness of cross state comparisons, whereas farm households were oversampled due to programmatic interest. Yet their weights must be reduced such that they are not overrepresented in national statistics. Second, quota targets were not always met due to difficulties in reaching respondents, as explained above. Third, to improve subnational representativeness there was an opportunity to use the number of households in each State and Region and by urban and rural location that were made public in the report from the 2019 ICS data. Finally, in a number of cases, respondents' indication of rural or urban location deviated from the officially assigned designation of their village tract or ward and we adjusted this accordingly.

For sample estimates to be representative of the population and subpopulations we developed household-level, population-level, and adult-level weights, with the household-level weights being the basis of the other two. Four main steps are followed in calculating the household-level sampling weights:

1. Apply an expansion factor: We weight households for their probability of occurring in the sample, based on the 2019 ICS information of the number of households in each urban or rural location of each state and region. This step takes care of representativeness at state/region level and the share of households in rural (urban) locations in each of these States and Regions. Note that townships in Wa SAZ (Shan State) are dropped entirely from the sample.⁴
2. Adjust for oversampling of farm households: In rural areas of each state and region we proportionally adjust the household weight of farm and non-farm households to have the same percentage of farm households as found based on MLCS estimates. No further correction for livelihoods was made at the urban level given the low number of farmers in that category.
3. Weight for education level of the respondent: We proportionally re-weight households based on the level of education of their respondent (i.e., to adjust for oversampling of more educated respondents).
4. Apply the maximum entropy approach to further adjust for wealth (based on land owned and housing type) and household composition (women-adult-only households).

Step (1) is a conventional adjustment to ensure representativeness, while Step (2) is a correction specific to a programmatic interest in oversampling farm households for MAPS.

Step (3) is an adjustment for the aforementioned problem of phone surveys generally oversampling more educated populations, and warrants more elaboration. Although we anticipated this well-known problem by setting a target in our sample design, it proved difficult to find a sufficient number of low-education respondents in several states/regions. Analysis of the 2017 MLCS data, as well as data from the 2014 Census and 2019 ICS reports, reveals sizeable differences in educational attainment between urban and rural populations and different generations (with MLCS suggesting that household heads and their spouses typically have lower education levels compared

⁴ The number of households in these townships are also dropped from the number of households estimated in Shan State. As we did not have this information based on ICS, we relied on the population estimates in the 2014 Census report.

to younger household members). Yet, we noted that in our sample the respondents are more likely to be household heads or spouses compared to the general distribution of adults.

Hence to reduce this residual education bias, we adjust weights for educational attainment at the state/region level, urban/rural level, by farm household status, and we consider the status of the person in the household (i.e., whether the respondent is considered the household head or spouse as compared to any other household member). Weighting factors for step (3) were thus calculated based on the share of adults with low education aged 13-69 years old in 2017 (i.e., who would be 18-74 years old in 2022), by relation to the household head (head and spouse, versus other household members), by urban/rural location, and household livelihood within each State or Region.⁵ Analyses of MLCS data show no significant difference between the share of men and women who have low educational attainment, so weighting based on gender of the respondent does not seem warranted.

The three weighting steps described above result in 180 different weighting factors; i.e. twelve categories (urban/rural, farm/non-farm, head/non-head, farm/non-farm) in each of the 15 states or regions.⁶

Step (4) is a further adjustment to correct for remaining bias in characteristics that are orthogonal to characteristics already stratified and weighted for. For this, we rely on the maximum entropy approach (Wittenberg, 2010; Hainmueller, 2021). This method is increasingly being used to calibrate survey data to various population totals, including to calibrate survey weights of several of the World Bank's high frequency phone surveys initiated during the COVID-19 pandemic (The World Bank, 2021).

Calibration of the survey weights should only be based on characteristics that are time-invariant or slowly changing over time. The most recent nationally representative dataset (partially) available to these authors was the 2017 MLCS data, collected five years prior to the current MHWS. In a country that was transforming extremely rapidly prior to 2020 (including for example a massive surge in mobile phone ownership), and then was set back by major and extreme shocks (i.e. a pandemic and conflict), many characteristics have likely changed. Moreover, a phone survey is typically short in nature and thus also limited in terms of available indicators to match between datasets. While the 2018 Intercensal Survey (ICS) data was collected right before the onset of the pandemic, we can only access its reports but not the raw data itself.

The maximum entropy procedure is applied using the basis weights calculated in step a and included constraints to maintain the total number of households in each State or Region and by Urban and Rural location (based on 2020 estimate). Two additional sets of constraints were added related to wealth: (i) agricultural land owned (in five categories), based on the distribution of the 2017 MLCS data; and (ii) and housing type (apartment, bungalow/house, semi-pucca house, or other) among urban households, based on the reported 2020 ICS information. Finally, we set constraints for household composition. More specifically, it adjusts for households where all adults are women (women-adult-only households, WAH) in rural and urban areas separately, based on the 2017 MLCS data. Overall, we want our estimates of household and individual characteristics to relate closely to the population at large. We therefore develop population weights in addition to household weights. These weights are calculated as the household weights multiplied by the number of household members reported by each respondent. We also calculate individual weights because several MHWS modules are directed at individual-level information of the respondent rather than at

⁵ Technically the MLCS data are representative at the urban and rural level, as well as at the State or Region level, but not at the urban or rural level within each State or Region. Nevertheless, using MLCS as a basis for these numbers is still expected to deliver relatively accurate numbers.

⁶ Given that that all respondents in urban Chin State are head or spouse, only 179 household different weighting factors appear in the dataset.

household-level information (e.g., diet diversity). Thus, it is relevant to also develop weights that can approximate individual-level data to be representative for the adult population (aged 18-74 years old). Adult weights are therefore also calculated as household weights multiplied by the number of adults in the household.

4. SAMPLE PERFORMANCE—COMPARISON WITH OTHER SURVEYS

To assess how effective the sample is in reflecting the spatial and socio-economic diversity of the country, we assess its geographical spread and compare key demographic indicators with the most recent available large-scale and representative dataset (the 2017 MLCS) or the most recent ICS (referred to as 2019, though most data was collected early 2020).

4.1 Geographical coverage relative to other national surveys

As noted above, respondents were reached in 310 of the 330 townships in Myanmar (or 324 when excluding townships in Wa SAZs we did not intend to survey) (Figure 2). The list of non-surveyed townships consists mainly of townships with very low population sizes (see Appendix Figure A3) or townships that are highly inaccessible—even by phone. An overview of these townships is shown in Appendix Table A.1. In total the population of these townships consists of about 1.6 percent of the total 2019 population in conventional households of Myanmar, but about half of the non-enumerated population is from Wa SAZ (Shan State). The remaining six non-enumerated townships in Shan State have long been affected by conflict (Kim, 2014), complicating efforts to collect phone numbers from residents of these areas as well as effectively connecting to these numbers. The six townships missed in Kachin State are extremely remote and mountainous, and therefore very thinly populated; only 10 respondents were expected to be interviewed in these six townships combined, and proportional to its size, nobody was expected to be interviewed in one of these townships in Kachin State. Similarly, nobody was expected to be interviewed in one township in Yangon Region given the small number of people residing in this township (an island, with a population of under 2000 residents in 2014).

The MHWS geographical spread of 310 townships (96%) is better than face-to-face national-level survey efforts of similar sample sizes, such as the 2015-16 DHS (12,500 households in 250 out of then 413 townships) (see Figure 4 and Appendix Figure A.1) (DoP, 2020) and the 2017 MLCS (13,824 households in 296 townships; see Figure A.2). This is in part due to the complex two-stage survey design setup of face-to-face surveys, which cluster typically 12 to 30 survey households within enumeration areas to reduce on transport and other logistical costs. These cost savings are necessary for face-to-face surveys but not for phone survey interviews. Moreover, face-to-face survey efforts can be hampered by inaccessibility, insecurity, and travel restrictions. The 2019 ICS, which intended to reach all townships in Myanmar, excluded eight townships in Shan State from the sample frame due to expected inaccessibility (this includes the six townships in Wa SAZ that we also excluded, one in Kokang SAZ that we also did not reach, and one other township that we did reach in MHWS). Out of the remaining ICS enumeration areas, only 92 percent were enumerated due to operational difficulties. These figures clearly demonstrate the extreme challenges of implementing face-to-face surveys in Myanmar, and points to a significant advantage of phone-based surveys.

Especially notable in the MHWS is its success in reaching respondents in all 17 townships of Rakhine State. In the past decade, especially, Rakhine State has suffered from extreme insecurity due to the Rohingya crisis as well as conflict between the Arakan Army and the Myanmar military, resulting in survey enumeration efforts in the state being severely hampered. It is estimated that

during the 2014 Census about 31 percent of the population of Rakhine State could not be enumerated (DoP, 2015).⁷ In 2017 the MLCS team was unable to collect data in two townships of Rakhine State, while the 2019-2020 ICS was unable to reach about 74 percent of the selected enumeration areas in Rakhine State.

4.2 Comparing key demographic indicators between the MHWS and the 2017 MLCS

COVID-19 saw an explosion in socioeconomic phone surveys, many of which aimed for national representativeness. However, a recent review on individual level representativeness of phone survey data questioned whether “national” phone surveys were truly representative: “phone survey respondents are most often household heads or their spouses, and on average, are older, better educated and more likely to own a non-farm enterprise vis-a-vis the general adult population” (Brubaker et al. 2021). That review, however, focused on country examples in which respondents were drawn from pre-COVID face-to-face household survey datasets, and, in three of the four phone surveys analyzed, enumerators implicitly or explicitly targeted household heads as the main respondent. Others have used a random digit dialing approach and find that there is substantial coverage bias towards men, urban, more educated and younger residents (L’Engle et al. 2018; Lau et al. 2019).

In our study, concerns pertaining to representativeness at the individual and household level were moderated by our sample design. Particularly relevant at the individual level are the aforementioned gender and education quotas, mandating that half of all respondents should be female and setting targets for respondents with low educational attainment.

Table 4 compares weighted estimates from our sample with to the 2017 MLCS survey data in relation to the education level of adults and farm livelihoods of households. Given that our weights are calculated based on MLCS survey data, a close approximation of weighted estimates is expected, and indeed is mostly confirmed, although our sample data for rural Chin State clearly under-samples low-education households. Appendix table A.2 also compares the unweighted (sample) and weighted (household or individual-level) key characteristics and shows that these estimates change after applying household and individual weights. Whereas the changes in estimates after weighting are substantial and sizeable, it is still limited, largely thanks to the sampling targets.

⁷ It is estimated that a total of 1,206,353 were not enumerated in parts of Rakhine, Kachin State and Kayin State during the Census 2014, or about 2.3 percent of its total population (DoP, 2015).

Table 4. Comparing MHWS and MLCS weighted estimates of low-education adults and households who farm

	Percentage of adults with low education level						Percentage of households who farm					
	Full sample		Urban Sample		Rural Sample		Full sample		Urban Sample		Rural Sample	
	MLCS 2017	MHWS 2022	MLCS 2017	MHWS 2022	MLCS 2017	MHWS 2022	MLCS 2017	MHWS 2022	MLCS 2017	MHWS 2022	MLCS 2017	MHWS 2022
Ayeyarwady	64	66	39	37	68	71	42	44	2	10	48	49
Bago	62	65	42	44	68	69	41	41	10	9	49	47
Chin	56	59	40	10	60	69	61	64	15	17	73	77
Kachin	53	55	43	48	58	59	38	38	20	12	48	49
Kayah	54	57	36	32	60	63	55	59	20	37	66	65
Kayin	66	68	38	33	75	76	40	41	13	10	48	48
Magway	61	62	35	32	66	66	47	47	5	11	53	52
Mandalay	53	55	39	41	60	62	36	37	5	5	50	50
Mon	60	60	42	36	67	69	28	28	14	11	33	33
Nay Pyi Taw	56	58	38	37	63	65	25	26	3	4	35	35
Rakhine	67	68	42	40	71	74	41	42	5	9	46	48
Sagaing	60	61	40	37	64	66	58	59	13	17	67	68
Shan	71	72	53	55	76	78	68	63	33	22	79	80
Tanintharyi	63	67	48	53	68	72	35	36	12	13	42	43
Yangon	37	38	30	29	56	58	8	9	1	2	24	24
National	58	59	37	37	67	68	39	39	8	8	52	52

Notes: Authors' estimates from 2017 MLCS and 2022 MHWS using survey weights described in MLCS documentation and in this note (for MHWS).

Table 5 shows comparisons of gender, relation to household head, education level and age of the adult population between the MLCS and MHWS before and after weighting to further explore issues of representativeness at the individual level. We assume that using the information captured in the household roster in a well-conducted national phone survey, such as the MLCS, allows to confidently estimate key characteristics of all individuals living in conventional households (provided also that the correct weights are applied). We find that the suggested weighting based on the household weights and number of adults of the MHWS achieves a reasonable approximation of basic respondent characteristics as compared to characteristics of adults in the MLCS national household survey data. Our dataset does not suffer the same shortcomings as noted by Gourlay et al. (2021) and Brubaker et al. (2021), where respondents are disproportionately male and household heads. Moreover, differences between the MLCS and MHWS further reduce after weighting rather than aggravate as in Brubaker et al. (2021).

Table 5. Comparisons of demographic variables across the MLCS and MHWS (sample and weighted), national and by urban and rural locations

	National (%)			Urban (%)			Rural (%)		
	MLCS	MHWS: no weights	MHWS: with weights	MLCS	MHWS: no weights	MHWS: with weights	MLCS	MHWS: no weights	MHWS: with weights
female	54	50	54	55	50	54	54	50	53
head	34	40	35	32	36	29	34	42	38
spouse	25	25	24	23	23	22	26	26	25
child	34	30	35	36	34	40	34	28	33
other	7	5	6	9	7	9	5	4	5
low education	58	46	59	38	27	37	67	55	68
junior: 18-24y	17	16	17	17	20	21	17	15	16
middle: 25-49y	53	62	60	53	64	62	54	61	60
senior: 50-74y	30	22	22	30	16	16	29	24	25

Notes: Authors' estimates from 2017 MLCS and 2022 MHWS. Demographic variables from the MLCS dataset are based on the information from all household members included in the household roster.

Notable from Table 5 are the deviations of representation of age groups in the sample. The share of youth in our sample is a good approximation of the share of youth in the general population, contrary to findings from other phone survey studies who either find an overrepresentation (Henderson and Rosenbaum 2020) or underrepresentation of youth (Brubaker et al. 2021). However, we find a higher share of middle-aged people (25-49 years old) and a lower share of older people (age category 50-74 years old). This bias is particularly present among urban respondents and to a lesser extent among rural respondents. Note that even though older people are less represented among the survey respondents, the households they reside in are under-represented only to a minor extent – if any. Weighted estimates from MHWS show that 23% of households have household members aged 65 or older, which is a relatively good approximation of the weighted estimate using the MLCS data which shows that 25% of households have household members in that age category.⁸

⁸ MHWS asked for the number of household members in three age categories only, the eldest being 65 years and over. We thus have to rely on population in this age range for comparison between MHWS and MLCS, rather than 50-74 years old as in table 5.

4.3 Comparing key socioeconomic indicators between the MHWS and the 2019 Inter-Censal Survey

Officially, 85 percent of households had at least one mobile phone in the 2019 ICS (DOP, UNFPA 2020). In our phone survey, non-response on the part of households without any mobile phone is expected to lead to underrepresentation of poor households. We explore concerns related to the representativeness of the MHWS in terms of household characteristics, particularly whether there is any evidence of MHWS having a lower (or higher) share of poor households. We use the 2019 ICS as the main comparison dataset given that this is the most recent national-level survey effort (December 2019 – February 2020) conducting in-person interviews at a large scale, and we compare housing characteristics, which one would assume do not change rapidly even in the face of severe shocks.

Table 6 compares weighted estimates from MHWS to ICS data on housing characteristics at national and urban and rural levels. Some differences across the two surveys could be explained by subtle differences in phrasing of survey questions, but this caveat aside, the set of indicators in Table 6 are broadly comparable. The MHWS estimates approximate those for ICS in most characteristics, and certainly shows no signs of a bias towards better-off households. In terms of number of rooms, our survey reports a higher prevalence of households with one room, which is likely an indicator of poverty. In rural areas, in particular, we report larger shares of households with one room (26 percent versus 15 percent) and fewer who have more rooms.

Table 6: Percentage of households with certain housing characteristics comparing MHWS (weighted) and ICS survey findings

	National (%)		Urban (%)		Rural (%)	
	MHWS	ICS	MHWS	ICS	MHWS	ICS
Type of house						
Wood/bamboo house	66	67	48	47	74	75
Semi-pucca house	14	13	18	18	12	11
Bungalow	12	11	16	16	10	8
Apartment	5	6	17	17	1	1
Hut (2-3y)	2	3	1	1	2	4
Hut (1y)	1	1	1	0	1	1
Number of rooms						
1 room	25	17	23	20	26	15
2 rooms	36	34	33	30	37	35
3 rooms	24	29	26	25	23	30
4 rooms	10	13	11	13	9	13
5 rooms	3	5	4	7	2	4
>5 rooms	2	1	3	4	2	2
Tenure status of dwelling						
Owned/free	91	93	76	78	96	99
Rented	9	7	23	19	3	2
Squatter	0.3	n/a	1	n/a	0.1	n/a
Camp, shelter	0.2	n/a	0.2	n/a	0.3	n/a

Source: DoP and UNFPA (2020), and the authors' estimates from MHWS.

5. CONCLUSION

In this paper, we described a relatively novel approach to implementing a nationally and subnationally representative phone survey from scratch, rather than from a pre-existing survey. The ingredients in this approach were:

1. A large and geographically dispersed database of phone numbers, in this case independently generated by the collaborating survey firm;
2. A target-based sampling strategy designed to reduce common phone survey biases (such as geographical bias, over-sampling of more educated and urban respondents) and to achieve gender parity as well as an over-sampling of sub-samples of interest (in this case, farm households); and
3. A multi-step construction of survey weights at the household, population and individual (adult) level designed to further ensure national and subnational representativeness.
4. A further correction of weights related to wealth and household composition.

In our case, these steps have proven to be relatively cost-effective and to ensure a sufficiently high degree of precision compared to other available methods. For example, random digit dialing in step (1) – instead of a phone database with geographical location already known – would require a very large number of phone numbers to be called to achieve the quotas outlined in step (2). Indeed, we roughly estimate that random digit dialing is around twice as expensive as the approach used here. That target system has proven relatively effective in reducing bias towards respondents from more geographically accessible locations, and well educated and urban-based respondents, further leading to systematic under-sampling of the poor. Indeed, in most developing countries it is unlikely that even the construction of survey weights in step (3) would be sufficient to satisfactorily reduce these biases, or at best unlikely to generate sufficiently accurate statistics (i.e., accuracy would be reduced by a smaller number of less educated and rural respondents relative to their true population size). Finally, while the quotas set in step (2) clearly reduce bias, they were difficult to achieve in practice in several remote and conflict-affected states/regions, and therefore not sufficient to eliminate phone survey biases, so the construction of survey weights in step (3) and step (4) is also necessary.

Overall, the approach outlined in this study appears to be remarkably successful in generating a new nationally and subnationally representative phone survey with excellent geographical coverage of a country severely affected by conflict, economic turmoil, travel restrictions, extreme ethnic diversity, and remoteness. Indeed, MHWS covers more townships than any previous nationally representative survey, including many townships currently affected by conflict. Weighted statistics for key variables that are roughly time-invariant also closely match other recent nationally representative surveys, including key demographic indicators, but also indicators of housing quality that are often used in measures of household wealth or asset-based poverty status. Older people, however, seem to be underrepresented in our sample – both prior to and after weighting - compared to the age distribution of adults in the regular population, perhaps because of lower phone ownership among this demographic.

Given that the survey was also designed and implemented in a very short period of time (the space of a few months) and for much lower cost than in-person surveys (approximately one quarter of the cost of an in-person survey), it is clear that phone surveys have major advantages in countries like Myanmar, where mobile phone ownership is high (85 percent), but where much of the country is adversely affected by conflict, remoteness and the unusual logistical challenges of the COVID-19 pandemic.

Although the approach outlined in this survey has attractive sample properties and allows for the construction of a high frequency panel, phone surveys are short-duration interviews with a limited number of questions relative to in-person interviews. There is also some evidence that responses in phone surveys can be systematically different to those of in-person surveys (Lamanna et al. 2019), and that response fatigue may be at least as problematic in shorter phone surveys as it is in longer

in-person surveys (Abay et al 2021). That said, more research is needed to assess whether these are widespread problems or particular to the studied populations and survey modules.

Bearing these caveats in mind, collecting nationally and subnationally representative high-frequency data on key welfare indicators—such as incomes, poverty, food security, diet quality and exposure to disease, conflict and other shocks—is critically important in fragile states such as Myanmar, where reliable data and rigorous research are increasingly scarce, yet also vitally important for targeting more resources to a growing population of vulnerable people.

Moreover, the cost-effectiveness of phone surveys for welfare monitoring suggests that they should be much more widely used for high frequency surveillance systems capable of monitoring poverty dynamics, food systems and food security, and coping strategies and resilience (Barrett and Headey 2014; Headey and Barrett 2015). Phone-based welfare surveillance systems have obvious advantages in conflict-affected states but monitoring individual and household welfare on a more frequent basis is important in almost any lower and middle income country context. Agricultural economies are volatile at the best of times – Myanmar’s farm sector, for example, perennially faces very volatile weather but also highly unpredictable trading partners (Boughton et al. 2021) – but even urban economies in less developed countries are clearly highly vulnerable to the threats of further pandemics (GPMB 2019) and are affected by more frequent severe weather events induced by climate change (Seneviratne, et al. 2021). High frequency phone surveys can gauge many of the key impacts of these shocks and identify vulnerable households, the effectiveness of their coping mechanisms as well as external interventions, and potentially identify key trends—especially in agriculture—to inform early warning systems. The contribution of this study is to identify a method for implementing high-frequency phone surveys that are nationally and subnationally representative, to provide a spatial granularity and statistical precision critical for effectively targeting resources in times of crisis.

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APPENDIX A. ADDITIONAL INFORMATION ON GEOGRAPHICAL SCOPE OF THE MHWS

Table A.1 Characteristics of townships not enumerated in MHWS

State	Township	Population size ^a	Number of households ^a	Sample target ^b	Comment
Shan (North)	Pangsang	88,732	16,457	26	Wa SAZ
Shan (North)	Narphan	114,724	16,474	29	Wa SAZ
Shan (North)	Pangwaun	96,940	13,969	24	Wa SAZ
Shan (North)	Mongmao	69,364	10,445	18	Wa SAZ
Shan (North)	Hopang	59,438	11,216	15	Wa SAZ
Shan (North)	Matman	19,050	3,318	5	Wa SAZ
Shan (North)	Konkyan	59,565	9,665	15	Kokang SAZ
Shan (South)	Langkho	38,344	9,548	10	
Shan (South)	Mongpan	23,503	5,421	6	
Shan (North)	Mongyai	56,768	13,328	15	
Shan (East)	Mongping	65,886	13,299	17	
Shan (East)	Monghpyak	28,235	6,155	8	
Shan (East)	Mongyawng	75,413	17,196	20	
Kachin	Injangyang	1,420	285	0	Low population
Kachin	Tsawlaw	6,499	1,073	2	Low population
Kachin	Sumprabum	2,405	479	1	Low population
Kachin	Machanbaw	8,353	1,719	2	Low population
Kachin	Khaunglanhpu	11,635	1,711	3	Low population
Yangon	Cocokyun	1,172	351	0	Low population
Total not enumerated		834,471	153,321	218	
Target^c		51,144,607	11,162,510	12,790	
Share of total target^c		1.63%	1.37%	1.70%	

Notes: ^a Numbers based on Census 2014, population in conventional households only. ^b These are sample targets proportional to population size. SAZ=Special Administered Zone. ^c Total number of persons in conventional households and households based on ICS 2019

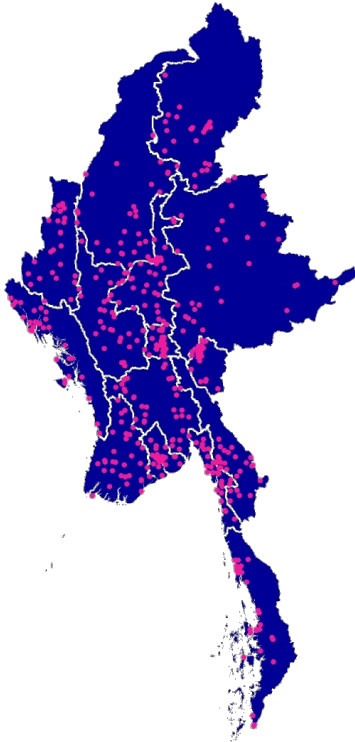
Source: DoP (2015), Authors

Table A.2 Comparing MHWS unweighted and weighted estimates of low-education adults and households who farm

	Percentage of adults with low education level						Percentage of households who farm					
	Full sample		Urban Sample		Rural Sample		Full sample		Urban Sample		Rural Sample	
	No weights	Weights	No weights	Weights	No weights	Weights	No weights	Weights	No weights	Weights	No weights	Weights
Ayeyarwady	53	66	32	37	57	71	47	44	15	10	52	49
Bago	49	65	36	44	52	69	49	41	17	9	58	47
Chin	18	59	2	10	26	69	60	64	27	17	76	77
Kachin	39	55	28	48	46	59	41	38	17	12	57	49
Kayah	20	57	18	32	21	63	61	59	43	37	77	65
Kayin	55	68	29	33	62	76	49	41	17	10	59	48
Magway	55	62	28	32	60	66	52	47	19	11	58	52
Mandalay	45	55	32	41	50	62	43	37	6	5	59	50
Mon	47	60	35	36	53	69	35	28	16	11	44	33
Nay Pyi Taw	43	58	25	37	50	65	31	26	7	4	40	35
Rakhine	56	68	32	40	61	74	47	42	13	9	53	48
Sagaing	54	61	28	37	60	66	64	59	29	17	71	68
Shan	52	72	27	55	61	78	70	63	28	22	85	80
Tanintharyi	41	67	21	53	49	72	38	36	18	13	47	43
Yangon	30	38	22	29	49	58	13	9	3	2	35	24
National	46	59	27	37	55	68	45	39	13	8	59	52

Source: Authors' estimates from 2022 MHWS

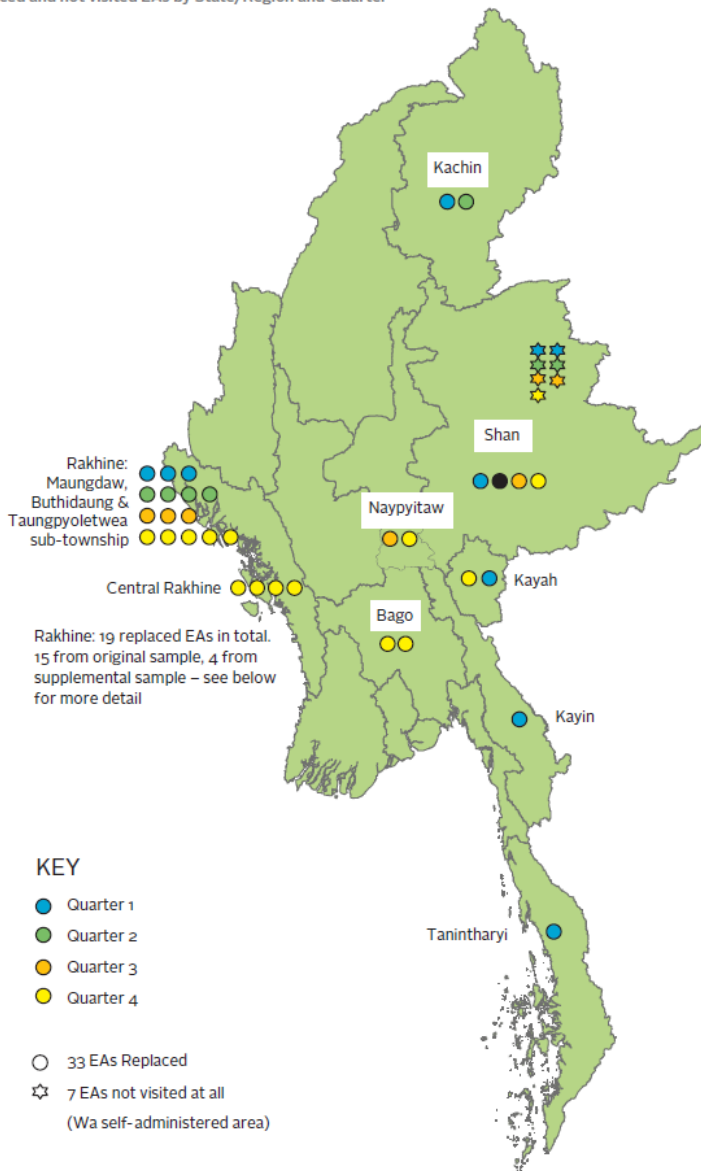
Figure A.1 Clusters where data were collected in the Myanmar DHS survey (2015)



Source: Myanmar DHS ppts for web [accessed online on February 16, 2022]

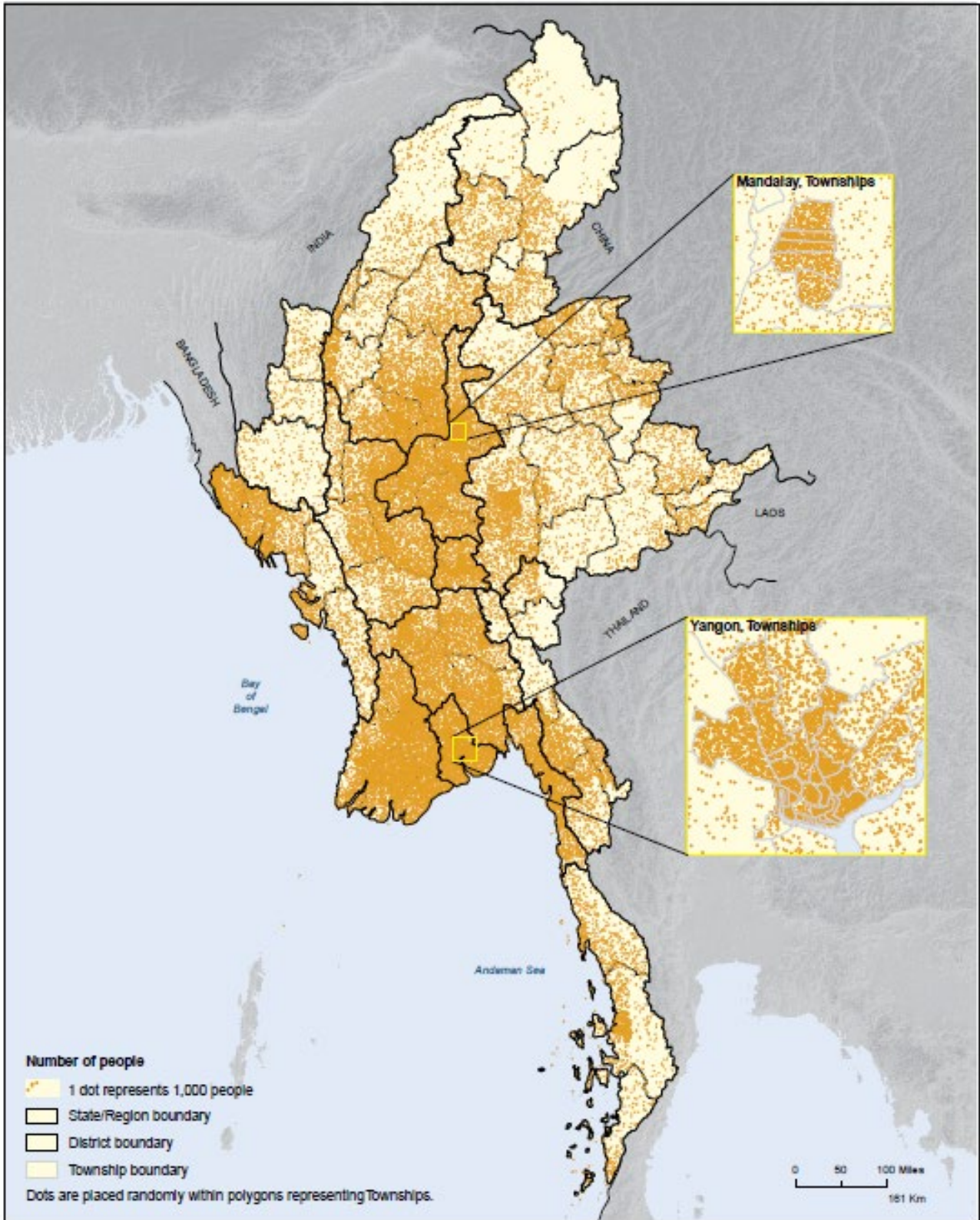
Figure A.2 Map of replaced and not enumerated enumeration areas in the MLCS (2017)

Replaced and not visited EAs by State/Region and Quarter



Source: CSO, UNDP and WB (2019b)

Figure A.3 Population density (Census data)



Source: DoP (2017)

APPENDIX B. MYANMAR HOUSEHOLD WELFARE SURVEY ROUND 1 QUESTIONNAIRE

Module A: Call information

Outcomes and time code (HH:MM) should be recorded for each attempted call. Follow-ups attempts should be made at different times of day than previous attempts. Enumerator's name and code should be recorded for each attempt.

A.01 Phone number	(Number)
A.02 Enumerator name and code	(Name and code)
A.03 1 st attempt: Is the respondent able to talk?	1 = Yes 2 = Did not answer 3 = Wrong number 4 = Declined to participate 9999 = Other (<i>specify</i>) _____
A.04 1 st attempt: Time of day	(HH:MM) If A.03 == 1 >> Module B
A.05 2 nd attempt: Is the respondent able to talk?	1 = Yes 2 = Did not answer 3 = Wrong number 4 = Declined to participate 9999 = Other (<i>specify</i>) _____
A.06 2 nd attempt: Time of day	(HH:MM) If A.05 == 1 >> Module B
A.07 3 rd attempt: Is the respondent able to talk?	1 = Yes 2 = Did not answer 3 = Wrong number 4 = Declined to participate 9999 = Other (<i>specify</i>) _____
A.08 3 rd attempt: Time of day	(HH:MM) If A.07 == 1 >> Module B
A.09 4 th attempt: Is the respondent able to talk?	1 = Yes 2 = Did not answer 3 = Wrong number 4 = Declined to participate 9999 = Other (<i>specify</i>) _____
A.10 4 th attempt: Time of day	(HH:MM) If A.09 == 1 >> Module B
A.11 5 th attempt: Is the respondent able to talk?	1 = Yes 2 = Did not answer 3 = Wrong number 4 = Declined to participate 9999 = Other (<i>specify</i>) _____
A.12 5 th attempt: Time of day	(HH:MM) If A.11 == 1 >> Module B

Module B: Introduction, consent, and respondent information

My name is _____ and I work for survey firm, the International Food Policy Research Institute (IFPRI), and Michigan State University. We are calling you to ask your participation in a telephone survey interview. Our survey is intended for persons who are at least 18 years and at most 74 years old.

B.01 Are you between 18 years and 74 years old?	1 = Yes 2 = No >> Stop interview <i>Interviewer: thank the respondent for his/her time, and explain we are only allowed to interview people of at least 18 years old about their households. If any, please ask to speak to another household member between 18 and 74 years of age who is available, or with whom to reschedule an interview. CAPI: please stop interview or restart with new respondent</i>
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As a token of appreciation, upon completion of the interview, we will send 4,000-kyat phone credit. Together with the responses of 12,750 people from all different States and Regions of Myanmar, they can help us to assess the socio-economic situation of the households in the country. Your responses will be kept completely confidential and will be combined with responses from others all over the country. Your name and any other private information will not be disclosed to and shared with anyone outside of the primary research team.

Your participation is voluntary. You can stop participating at any time. During the interview, you may also refuse to answer any questions at any time without fear of losing any rights to which you are entitled. The interview will take approximately 25 minutes. There is no risk in your participation and we do not intend to ask any controversial questions.

If you have any questions about your rights as a research participant, please contact Olivette Burton, IFPRI IRB Coordinator, at ifpri-irb@cgiar.org. For any questions regarding this research, please contact the Myanmar Survey Office in Yangon at +95 xxxxxxxx.

B.02 Do you agree to participate in this interview?	1 = Yes 2 = No >> Stop interview
B.03 What is your name?	<open ended – response in Burmese> Note: respondent may also choose not to disclose his/her name
B.04 Are you male or female? (Note: enumerator can fill out without asking if respondent's gender is clear based on name)	1 = Male 2 = Female
B.05 How old are you? (in years)	if age <18 years or age >75 years <i>Interviewer: thank the respondent for his/her time, and explain we are only allowed to interview people of at least 18 years old about their households. If any, please ask to speak to another household member between 18 and 74 years of age who is available, or with whom to reschedule an interview. CAPI: please stop interview or restart with new respondent</i>
B.06 Which State/Region do you live in?	< preload list of S/R; for Shan State, split between Shan North, East, South>
B.07 Do you live in a village tract (rural) or ward (urban)?	1 = village tract (rural) 2 = ward (urban)
B.08 What is the highest level of education that you have completed?	None 0 Standard 1-10 1-10 THS – Technical high school (After Std 8) 11 Teachers Certificate (After Std 10) 12 TVET Diploma (GTI, GTC etc.) 13 Undergraduate/Community College Diploma 14 Bachelor Graduate 15 Postgraduate Diploma 16 Master's Degree 17 Ph D 18 Monastic/ Religious 20
B.09 Did any member of your household harvest any crops in the past 12 months? (from own farming activities, not as worker)	1 = yes 2 = no

Module C: Household composition

Now we would like to know about your household. This includes all people, including children, who live or have lived in the same dwelling and recognize one adult male or female household member as the head of the household. When they are together, they share food from a common source, and contribute to and/or share in a common resource pool.

For household head or any other household member, if s/he is migrating, then we do not count the person as a household member.

C.01 How many children between 0 and 4 years of age live in this household?	
C.02 How many children between 5 and 14 year old live in this household?	
C.03 How many female adults live in your household aged 15-64? Please include yourself if applicable.	
C.04 How many male adults live in your household aged 15-64? Please include yourself if applicable.	
C.05 How many female adults live in your household aged 65 years or older? Please include yourself if applicable.	
C.06 How many male adults live in your household aged 65 years or older? Please include yourself if applicable.	
C.07 What is your relationship to the household head?	1 = head 2 = spouse 3 = son/daughter 4 = son-in-law / daughter-in-law 5 = grandchild / great grand child 6 = parent / parent-in-law 7 = brother or sister 8 = grand-parent 9 = adopted, foster or stepchild 10 = other relative 11 = domestic worker 12 = not related
C.08 What is your marital status? CAPI: do not ask if spouse of household head	1 = single 2 = married 3 = widowed 4 = divorced/separated

Module D: Recent migration

D.01 Which township do you live in currently?	<preload list of townships per S/R; Shan State by North, East and South> (CAPI knows S/R from screening questions)
D.02 What is the name of your current village tract or ward? Note: should be village tract, not village name	<open ended – response in Burmese>
D.03 Can you tell us the name of one of the neighbouring village tracts or wards? Note: should be village tract, not village name	<open ended – response in Burmese>
D.04 How long have you lived in this village tract/ ward?	_____ in years 7777 = since birth >>> to next module. CAPI: If >2 years >>> to next module.
D.05 Can you tell us the month and year in which you moved to this current village tract/ward?	D.05a _____ month D.05b _____ 1= 2020 / 2= 2021
D.06 In which State/Region was your previous (most recent) residence?	< preload list of S/R; Shan State by North, East and South > + option for 'abroad (specify country)' if abroad >>> D.08
D.07 In which township was your previous (most recent) residence?	< preload list of townships per S/R; Shan State by North, East and South >
D.08 Was your previous (most recent) residence in a rural area or urban area?	1 = rural 2 = urban
D.09 Please tell me the main reasons for your last relocation to the current village tract/ ward? Enumerator: do not read out options. Multiselect, but max. 3 options can be selected	1 = Employment of respondent: insufficient work or income in previous location 2 = Employment of respondent: job opportunity in current location 3 = Employment of other household members: insufficient work or income in previous location 4 = Employment of other household members: job opportunity in current location 5 = Employment: other, related to employment 6 = Education opportunities 7 = Marriage 8 = To give support to family 9 = To get support from family 10 = Avoid conflict / improve physical security 11 = Reduce risk of contracting COVID-19 9999 = other (specify) 9997 = prefer not to say
D.10 For how long do you plan to stay in your current village tract/ward?	1 = One month or less 2 = 1-6 months 3 = More than 6 months 4 = Permanently 9998 = Don't know

Module E: Household and agricultural assets

E.01 What type of dwelling do you currently live in? Single-select	1= wooden house 2 = bamboo house (lifespan of house is > 3 years) 3 = semi-pucca house (mix brick-wood) 4 = bungalow/ brick house 5 = apartment/ condominium 6 = hut (2-3 years) 7 = hut (1 year) 9999 = other (specify)
E.02 Is the dwelling owned, rented, or provided free by a company or individual? Single-select	1 = owned 2 = rented 3 = provided free (from relative, individual, company or government) 4 = squatter 5 = IDP camp / temporary shelter 9999 = other (specify)
E.03 Does your dwelling have a floor made from wood, carpet, tile, vinyl or other improved material?	1= yes 2 = no
E.04 How many rooms do the members of your household occupy, including bedrooms and living rooms? (EXCLUDE TOILETS, KITCHENS, BALCONIES, CORRIDORS AND ROOMS USED ONLY FOR BUSINESS)	
E.05 What is your current main source of drinking water? Single-select	1= piped into dwelling/ yard 2= public tap/standpipe 3= tube well or borehole 4= protected well or spring or pond 5= rainwater 6= bottled water / sachets 7= unprotected well or spring or pond 8= tanker truck or cart with small tank 9= surface water 9999= Other(specify)
E.06 What kind of toilet facility do members of your household usually use? Single-select	1= flush toilet 2 = pit latrine with concrete floor/slab (improved) 3 = pit latrine with open pit (dirt floor) 4 = other toilet (bucket toilet, hanging toilet/latrine) 5 = no facility / bush/ field 9999 = other (specify)
E.07 What is the main source of electricity? Single-select	1 = Government/national grid 2 = Border country grid 3 = Through a transformer/generator purchased by the community 4 = Mini-grid/micro-grid solar (community-based) 5 = Household owned transformer or generator 6 = Solar home system 7 = Rechargeable battery system 8 = Water mill 9 = no electricity 9999= Other (specify)
Do you or any household member currently own any working item as follows:	
E.08 a rice cooker?	1= yes 2 = no
E.09 a fridge?	1= yes 2 = no
E.10 a TV?	1= yes 2 = no
E.11 a wardrobe?	1= yes 2 = no
E.12 a car, motorcycle, scooter/moped, tuk-tuk (mechanized rickshaw), or motorized boat	1= yes 2 = no
E.13 a working computer, laptop, I-pad, kindle or similar device?	1= yes 2 = no
E.14 How many working mobile phones are owned in total by members of your household?	___ phones

E.15 Do you or any other household members own any agricultural land? (crop land/ fish pond/ livestock rearing land)	1= yes 2 = no >> Module F
E.16 What is the total acreage of agricultural land owned by any of your household members? (crop land/ fish pond/ livestock rearing land) If option for different units, please make sure it is clear (for example, length and width: are the dimension answered in feet?)	_____ (in acres) 9998 = don't know

Module F: Respondent's and other income earner's income sources/employment

F.01 In the last 30 days, did you do any of the following activities for income or profit for at least half a day in the last 30 days? enumerator reads list and selects all that apply <i>Note: also include activities that did not yet give any profit, but are expected to do so in the future</i> CAPI: multi-select, Yes/no mode	1 = wage employment (specify – in F.02) 2 = salaried employment (specify – in F.03) 3 = work on the own or household crop farm (seasonal and perennial crops) 4 = work on own or household livestock business 5 = work on own or household fishing or aquaculture business 6 = work in own or a household non-farm enterprise (including any small business activities) 7 = no employment 9999 = other (specify) CAPI: 7 is only possible if responded no to all other options. If 7 (no employment) >>>> to F.05
F.02 Please specify in which agricultural/non-agricultural sector (wage employment) CAPI: multi-select	1 = crop farming (seasonal and perennial crops) 2 = livestock raising 3 = fishing or aquaculture 4 = non-agricultural activities
F.03 Please specify in which agricultural/non-agricultural sector (salaried employment) CAPI: multi-select	1 = crop farming (seasonal and perennial crops) 2 = livestock raising 3 = fishing or aquaculture 4 = non-agricultural activities
F.04 --- if yes to any in F.01 What was your main occupation in the past 30 days?	<list from F.01; including details of F.02 / F.03 > >>> to F.06
F.05 --- If F.01==7 (no employment), why did you not work in the past 30 days? multi-select, max. 3 options	1 = not interested / no need to work / no time to work 2 = slack season 3 = could not find anyone to hire me 4 = ill, too old 5 = need to take care of children or other family members 6 = not able to go to work due to movement restrictions 7 = not safe to go to work due to violence / conflict 8 = not safe to go to work due to health reasons 9999 = other (specify)
F.06 Are you the main income earner in your household?	1 = yes (only one) 2 = yes, jointly with another person 3 = no

Module G: Household livelihoods and livelihood challenges

Now I want to ask you questions about the main income generating activities that you or any other household members were involved in during the past 3 months, and the challenges you encountered in these activities.

<p>G.01 What were the income generating activities that your household members were engaged in or received income from during the past three months? (Enumerator, check all that apply – no limit)</p>	<p>1 = wage work– crop farming 2 = wage work– livestock 3 = wage work – fishing/aquaculture 4 = wage work – non-agriculture 5 = salaried work– crop farming 6 = salaried work– livestock 7 = salaried work – fishing/aquaculture 8 = salaried work– non-agriculture 9 = work on the own or household crop farm (seasonal and perennial crops) 10 = own or household livestock business 11 = own or household fishing or aquaculture business 12 = own or a household non-farm enterprise (including any small business activities) 13 = renting out of land / properties ... 14 = gifts, donations, pensions, assistance 15 = remittances 16 = no employment and income >> Module J</p>
<p>G.02 In the past three months, what was the most important source of income in your household?</p>	<p>CAPI: preload options selected in G.01, allow only one of those to be selected.</p>
<p>G.03 In the past three months, how many household members have engaged in income-generating activities, including helping in household farming activities or business activities?</p>	<p>___ individuals CAPI: # should not exceed total number of hh members >4 years of age</p>
<p>G.04 CAPI: loop for each income-generating activity selected in G.01 (1 to 13, not for 14 or 15). In the <u>past month</u>, how much income did you and any other household members receive in total from activity from G.01? (in MMK or Lakh)</p>	<p>_____ in MMK _____ in Lakh 9997 = prefer not to say 9998 = Don't know CAPI: if 0, 9998 or 9997 no need to select MMK or Lakh</p>
<p>G.05 When considering your total household income of the past three months (including remittances and other transfers): How would you compare your total household income now to that income one year ago?</p>	<p>0=No change 1=Small decrease in income (1-20% reduction) 2 = High decrease in income (>20% reduction) 3 = Small increase in income (1-20% higher) 4 = High increase in income (>20% higher) 9997 = prefer not to say 9998=Do not know</p>

WAGE/SALARY EMPLOYMENT

CAPI: include these questions if G.02 includes values <9

<p>G.06 In the last three months, what is the most important challenge you experienced for earning wage incomes or salary? Multiselect Enumerator selects what is applicable from list (no need to read out the list).</p>	<p>1= Reduced working hours / less work 2= Low/reduced wages 3= Not safe to travel to work location 4= Not able to reach work location 5= Not safe at work location 6= Unable to work due to health problems of worker or other household members 9999 = other (specify)</p>
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CROP FARMING

CAPI: include these questions if G.02_9==1

<p>G.07 How many acres did you cultivate in paddy in the 2021 monsoon season? CAPI: allow decimals</p>	<p>9998 = don't know write 0 if they did not cultivate paddy last year If 0 >> G.10</p>
<p>G.08 How much paddy did you harvest or expect to harvest in the 2021 monsoon season? CAPI: build in a check that says max. 200 baskets/acre</p>	<p>_____ baskets _____ pone _____ Rakhine basket _____ other unit (specify) 9998 = don't know</p>
<p>G.09 How does your paddy harvest in this last monsoon compare to production in the 2020 monsoon?</p>	<p>1 = Much lower (>20% lower) 2 = Somewhat lower (1-20% lower) 3 = About the same 4 = Somewhat higher (1-20% higher) 5 = much higher (>20% higher) 9998 = Don't know</p>
<p>G.10 How many acres did you cultivate in maize in this year's (2021) monsoon season? CAPI: allow decimals</p>	<p>9998 = don't know write 0 if they did not cultivate maize last year If 0 >> G.13</p>
<p>G.11 How much maize did you harvest or expect to harvest this year's 2021 monsoon season? CAPI: build in a check that says max. 200 baskets/acre</p>	<p>_____ Viss _____ pone _____ other unit (specify) 9998 = don't know</p>
<p>G.12 How does your maize harvest in this last monsoon compare to production in the 2020 monsoon?</p>	<p>1 = Much lower (>20% lower) 2 = Somewhat lower (1-20% lower) 3 = About the same 4 = Somewhat higher (1-20% higher) 5 = much higher (>20% higher) 9998 = Don't know</p>
<p>G.13 In the last three months, what is the most important challenge you experienced for your crop production? Enumerator selects what is applicable from list (no need to read out the list).</p>	<p>1 = unable to acquire enough inputs or mechanization services (availability) 2 = high prices of inputs or mechanization services 3 = high prices of fuel 4 = disruption to banking services, access to cash, or loan 5 = I cannot reach my own farm 6 = water / irrigation supply problems 7 = weather problems 8 = pest and disease problems 9 = difficulties hiring workers 0 = no difficulties 9999 = other (specify)</p>
<p>G.14 In the last three months, what is the most important challenge you experienced when trying to sell your crops? Enumerator selects what is applicable from list (no need to read out the list).</p>	<p>1 = low prices for crops 2 = high price of fuel / high transportation cost 3 = payment problems 4 = markets are closed 5 = not many traders 6 = buyers or traders cannot reach the farm or I cannot reach them 9999 = other (specify) 0 = no difficulties 9996 = not applicable</p>

LIVESTOCK

CAPI: include these questions if G.02_10==1

<p>G.15 In the last three months, what is the most important challenge you experienced when raising your livestock? Enumerator selects what is applicable from list (no need to read out the list).</p>	<p>1 = unable to acquire enough inputs (availability of feed, animals, medicine, etc.) 2 = high prices of inputs (animal feed, animals, medicine, etc) 3 = disruption to banking services, access to cash or loans 4 = I cannot reach my livestock 5 = electricity / energy supply problems 6 = water / irrigation supply problems 7 = difficulties hiring workers 8 = sickness or death of animals 0 = no difficulties 9999 = other (specify)</p>
<p>G.16 In the last three months, what is the most important challenge you experienced when trying to sell your animals? Enumerator selects what is applicable from list (no need to read out the list).</p>	<p>1 = low prices for livestock or livestock products 2 = high price of fuel / high transportation cost 3 = payment problems 4 = markets are closed 5 = not many traders 6 = buyers or traders cannot reach the farm or I cannot reach them 0 = no difficulties 9999 = other (specify)</p>

FISHING/AQUACULTURE

CAPI: include these questions if G.02_11==1

<p>G.17 In the last three months, which was the main challenge you had for doing your fishing or aquaculture activities? Enumerator selects what is applicable from list (no need to read out the list).</p>	<p>1 = unable to acquire enough inputs (availability of feed, fingerlings, medicine, etc) 2 = high prices of inputs (fish feed, fingerlings / young fish, medicine etc) 3 = disruption to banking services, access to cash or loans 4 = I cannot reach my fish pond / fishing location 5 = high price of fuel 6 = electricity / energy supply problems 7 = water / irrigation supply problems 8 = difficulties hiring workers 0 = no difficulties 9999 = other (specify) 9996 = not applicable</p>
<p>G.18 In the last three months, which was the main challenge you had for selling your fish or aquaculture products? Enumerator selects what is applicable from list (no need to read out the list).</p>	<p>1 = low prices for fish or fish products 2 = high price of fuel / high transportation cost 3 = payment problems 4 = markets are closed 5 = not many traders 6 = buyers or traders cannot reach me or I cannot reach them 0 = no difficulties 9999 = other (specify) 9996 = not applicable</p>

Module H. Non-farm businesses

CAPI: include these questions if G.02_12==1

<p>H.01 In the past three months, what kind of non-farm businesses was your household engaged in? multi-select – enumerator reads all options and select yes/no</p>	<p>1 = food or agriculture related business >> Specify in H.02 2 = other non-agriculture, non-food business</p>
<p>H.02 Which kind of food / crop related businesses? multi-select – no need to read all options, select all that applies</p>	<p>1 = mobile food vendor (unprepared crop, fish, meat): grocery vendor, street vendor (mobile) 2 = fixed food vendor (unprepared crop, fish, meat): market stall vendor, dry goods shop, general store, supermarket, street vendor (fixed place) 3 = Food (crop, fish, meat) trader, broker, wholesaler (does not sell / sells little) directly to consumers 4 = Rice miller 5 = other food processing (oil milling, fish paste, bean sprout etc.) 6 = transport of agricultural and food products (also mixed with other products) (long distance) 7 = selling prepared food/drinks (mobile or fixed): teashop, restaurant, snack or drinks stall ... 8 = food delivery business (short distance) 9 = Agricultural input supplier 10 = Agricultural machinery dealer and repairer 11 = Agricultural service provider 9999 = other (specify)</p>
<p>H.03 In the last three months which was the main challenge you had for doing business activities? Enumerator selects what is applicable from list (no need to read out the list).</p>	<p>1 = unable to acquire enough raw materials / supplies (availability) 2 = high prices of raw materials or supplies 3 = high prices of fuel / high transport costs 4 = disruption to banking services, access to cash or loans 5 = customers cannot reach my business or I cannot reach customers 6 = electricity / energy supply problems 7 = fewer / no customers interested in buying products 8 = difficulties hiring workers 0 = no difficulties 9999 = other (specify)</p>

CAPI: stop module here, except for those with H.02_1==1 or H.02_2==1 or H.02_3==1

<p>Now we would like to ask you some information about prices of a few food and non-food items in your community. We will cover different types or categories of food and non-food, and for each type, we ask to name the price of one product that you know. If you know the prices of multiple products or varieties in a category, then please mention the price of the cheapest variety.</p>	
<p>H.04 What is the current price of 1 Pyi of the cheapest long grain rice available for sale? Please specify the variety.</p>	<p>1 = Emata _____ kyat 2 = Ngasein _____ kyat 3 = Manathukha _____ kyat 9999= Other _____ kyat 9998 = Don't know</p>
<p>H.05 What is the current price of 1 Pyi of the cheapest short grain / aromatic rice available for sale? Please specify the variety.</p>	<p>1 = Pawsan _____ kyat 2 = Nga Kywe _____ kyat 3 = Meedone _____ kyat 9999= Other _____ kyat 9998 = Don't know</p>
<p>H.06 What is the current price of 1 Viss/ 10 kyatthar of the cheapest potatoes available?</p>	<p>_____kyat 9998 = Don't know</p>
<p>H.07 What is the current price of 1 Viss/10 kyatthar of the cheapest pulses available? Please specify the variety (cheapest one only) (Note: unprocessed, not processed into paste or other)</p>	<p>1 = Lentils ___ kyat (1 viss/10 kyatthar) (1 can/1 pyi) 2 = Lablab ___ kyat (1 viss/10 kyatthar) (1 can/1 pyi) 3= butter beans ___kyat (1 viss/10 kyatthar) (1 can/1 pyi) 4=soybeans ___Kyat (1 viss/10 kyatthar) (1 can/1 pyi) 5=chickpeas ___Kyat (1 viss/10 kyatthar) (1 can/1 pyi) 6=green peas (Pe Pyot) ___Kyat(1 viss/10 kyatthar) (1 can/1 pyi) 9999=Other ___ Kyat (1 viss/10 kyatthar) (1 can/1 pyi)</p>

	9998 = Don't know
H.08 What is the current price of one hand of bananas? Please specify the variety (cheapest only).	1= Cavendish Banana (Thi hmwe) ___Kyat 2= Burro Banana (Phi Kyam) ___Kyat 3= Lady's Finger Bananas (Nga Pyaw Chin) ___Kyat 4= Red banana (Shwe Nga Pyaw) ___Kyat 5=Pisang awak banana (Rakhine bananas) ___Kyat 9999= Other ___kyat 9998 = Don't know
H.09 What is the current price of 1 Viss/10 kyatthar of the cheapest type of onions?	___ Kyat (1 viss/10 kyatthar) 9998= Don't know
H.10 What is the current price of one bunch of the cheapest common type of green leafy vegetables? Please specify variety (cheapest only)	1 = Water leaf (Water spinach) ___ Kyat 2 = Roselle leaf ___ Kyat 3 = Mustard green ___ Kyat 4= Spinach leaf ___ Kyat 5= Bottle gourd leaf ___ Kyat 9999= Other ___ Kyat 9998= Don't know
H.11 What is the current price of 1 Viss/10 kyatthar of chicken meat without bones?	___ kyat (1 viss/ 10 kyatthar) 9998 = Don't know
H.12 What is the current price of 1 Viss/ 10 kyatthar of dried/smoked fish, shrimp, prawns? Please specify variety (cheapest only)	1= Dried Ngayant ___Kyat (1 viss/10 kyatthar) 2= Dried Ngakhu/ Ngagyee ___Kyat (1 viss/10 kyatthar) 3= Dried Catfish ___Kyat (1 viss/10 kyatthar) 4= Dried Spiny eel ___Kyat(1 viss/10 kyatthar) 5 =Dried small shrimp ___Kyat(1 viss/10 kyatthar) 6= Dired medium shrimp ___Kyat(1 viss/10 kyatthar) 7= Dried sea fish ___kyat(1 viss/10 kyatthar) 9999= Other ___kayt (1 viss/10 kyatthar) 9998 = Don't know
H.13 What is the current price of 1 viss/10 kyatthar of fresh fish? Please specify variety (cheapest only)	1= Ngamyitchin ___Kyat (1 viss/10 kyatthar) 2= Ngagyin ___Kyat (1 viss/10 kyatthar) 3= Ngayant ___Kyat (1 viss/10 kyatthar) 4= Ngakhu/ Ngagyee ___Kyat (1 viss/10 kyatthar) 5= Ngapyayma ___Kyat (1 viss/10 kyatthar) 6= Ngaton ___Kyat (1 viss/10 kyatthar) 7 = Ngamyinn ___Kyat (1 viss/10 kyatthar) 8= Ngathalauk ___Kyat (1 viss/10 kyatthar) 9= Tilapia ___Kyat (1 viss/10 kyatthar) 10= Catfish ___Kyat (1 viss/10 kyatthar) 11=Spiny eel (naghmwe htoe) ___Kyat (1 viss/10 kyatthar) 9998 = Don't know
H.14 What is the current price of 1 viss / 10 kyatthar of the cheapest type of cooking oil? Please specify variety (cheapest only)	1= Palm oil ___Kyat (1 viss/10 kyatthar) 2=Vegetable oil ___Kyat (1 viss/10 kyatthar) 3=Groundnut oil ___Kyat (1 viss/10 kyatthar) 4=Sesame oil ___Kyat (1 viss/10 kyatthar) 9999=Other ___kyat (1 viss/10 kyatthar) 9998 = Don't know
H.15 What is the current price of one gallon of petrol?	___ Kyat 9998 = Don't know

Module I: Remittances and other transfers

We also want to ask you about any remittances or transfers from relatives, friends, government, or non-government, etc.

<p>I.01 How many people have sent remittances to you or any other household member, either in cash or in kind, from another location in Myanmar in the past 3 months?</p>	<p>9998 = don't know If 0>>> I.03</p>
<p>I.02 What was the total value of these remittances in the past three months?</p>	<p>9998 = don't know</p>
<p>I.03 How many people have sent you or any other household member remittances from abroad, either in cash or in kind, in the past 3 months?</p>	<p>9998 = don't know If 0>>> I.05</p>
<p>I.04 What is the total value of these remittances in the past three months?</p>	<p>9998 = don't know</p>
<p>I.05 In the last three months, which was the main challenge you had for receiving remittances? Enumerator selects what is applicable from list (no need to read out the list). CAPI, only ask if G.02_15==1</p>	<p>0 = No difficulties 1 = Migrant(s) faced lower income/less work 2 = Migrant(s) had trouble sending money/goods due to financial system disruptions 3 = It is very expensive to transfer money / paying fees to withdraw remittance 4 = Migrants(s) faced their own economic difficulties and had less to send. 5 = Migrants(s) had health problems. 6 = Migrants(s) faced security problems 9999= Other (specify)</p>
<p>I.06 In the last three months, did you or any other household member receive any of the following transfers: enumerator reads all options and notes yes/no</p>	<p>1 = Unemployment benefits 2 = Pensions 3 = senior citizen pension</p>
<p>I.07 What was the total value of these pensions or benefits in the past three months? (in MMK or Lakh) CAPI: skip this option if answered No to all options in I.07</p>	<p>_____ in MMK _____ in Lakh 9998 = don't know 9997 = prefer not to say</p>
<p>I.08 In the past three months, has anyone provided any food products, non-food products or cash for free to support your household? – other than the unemployment benefits or pensions or remittances mentioned above?</p>	<p>1 =Yes 2 = No >> Next module (J)</p>
<p>I.09 From each of the following sources that I will mention, please estimate the total value of food, non-food and cash your household received (in MMK) in the past three months: 0 = nothing received 9998 = don't know 9997 = prefer not to say</p>	<p>1 = local relief organization / ngo 2 = monastery, church or other religious group 3 = international relief organization 4= SAC 5 = other/local governing entities 6 = family, friend of other individual 7= Community-based Savings and Credit Organization 9999 = other (specify)</p>

Module J: Livelihood disruptions and shocks

J.01 In the past 3 months was your household negatively affected by any natural or climatic shocks?	1= yes 2 = no >> skip to J.03
J.02 If so, which shocks? multi-select <i>Note: Can be more than one shock</i>	1 = drought 2 = excessive rain, hail, flood 3 = irregular rain fall or temperature 4 = lightning 5 = landslide 6 = earthquake 9999 = other (specify)
J.03 In the past 3 months, was your household affected by death/sickness in the household? multi-select	1= death 2 = sickness 3 = no
J.04 In this year 2021, how many people in your household had any COVID-like symptoms: persistent cough, sore throat, high fever, body aches, shortness of breath, loss of smell?	9997 = prefer not to answer 9998 = Don't know If 0, 9997 or 9998 >>> J.06
J.05 How many people from your household passed away in 2021 due to COVID?	9997 = prefer not to answer
J.06 How many people from your household passed away in 2021 due to non-COVID causes)	9997 = prefer not to answer
J.07 In the past 3 months, was your household negatively affected by violence, theft, or any intra-household conflict? multi-select	1= violence 2 = theft 3 = intra-household conflict 4= None 9997 = prefer not to answer
J.08 How would you describe the overall level of physical security in your area, on a scale of 1 (very low security) to 4 (very high security)? TRAIN ENUMERATOR TO MAKE SURE RESPONDENT DOES NOT START GIVING TOO MUCH INFORMATION, JUST SCALE 1-4 BUT NO EXTRA INFO FOR THEIR SAFETY.	1 = very insecure 2 = somewhat insecure 3 = secure 4 = very secure 9997 = prefer not to answer
J.09 How would you describe the social relationships and trust in your area, from 1 = very low trust in each other to 4 = very high trust?	1 = very low trust 2 = low trust 3 = high trust 4 = very high trust 9997 = prefer not to answer
J.10 Did any of the following occur in your community in the past three months? (enumerator reads every option and checks all that applies) CAPI: make yes/no style so that enumerator reads every option and respondent can answer yes or no	1 = Large influx of migrants 2 = Large departure of residents 3 = increase in crime 4 = violence 9999= other (specify)
J.11 In the past month, if an adult from your community was hired to do any unskilled construction work, how much would a man be paid for a full day of work?	<i>In MMK</i> 9996 = not applicable 9998 = don't know
J.12 and a woman?	<i>In MMK</i> 9996 = not applicable 9998 = don't know
J.13 In the past month, if an adult from your community was hired to do any unskilled agricultural wage work, how much would a man be paid for a full day of work?	<i>In MMK</i> 9996 = not applicable 9998 = don't know
J.14 and a woman?	<i>In MMK</i> 9996 = not applicable 9998 = don't know

Module K: Coping and indebtedness

In the past 30 days, did anyone in your household take any of the following actions to cope with lack of food or money?
Enumerator: does not need to read out loud all the options. But can select the response based on the information received by respondent or any light probing.

<p>K.01 sell any asset?</p>	<p>1 = Yes 2 = No - because it wasn't necessary >> K.03 3 = No - because already sold assets in the last 12 months and could not continue to do it 4 = Not applicable > K.03 9997 = prefer not to say >> K.03</p>
<p>K.02 which assets? multi-select</p>	<p>1 = Gold, jewelry, US dollars 2 = Household assets (furniture, TV, radio, fridge, etc.) 3 = Agricultural parcels (incl. fish pond, livestock rearing parcels) 4 = Residential parcels, house/dwelling 5 = Means of transport (car, motorbike, bicycle, rickshaw, boats, etc) 6 = Non-ag productive assets (sewing machine, wheelbarrow, etc.) 7 = Agricultural productive assets (power tiller, tractor, draught animals) 8 = livestock 9 = fishery assets (nets, pumps, other equipment, etc) 9999 = Other (specify)</p>
<p>K.03 mortgage any asset? (should include also those loans gotten by going with pawn shop – in Burmese only one word for Mortgage and pawn)</p>	<p>1 = Yes 2 = No - because it wasn't necessary >> K.05 3 = No - because already mortgaged assets in the last 12 months and could not continue to do it 4 = Not applicable > K.05 9997 = prefer not to say>> K.05</p>
<p>K.04 which assets?</p>	<p>1 = Gold, jewelry, US dollars 2 = Household assets (furniture, TV, radio, fridge, etc.) 3 = Agricultural parcels (incl. fish pond, livestock rearing parcels) 4 = Residential parcels, house/dwelling 5 = Means of transport (car, motorbike, bicycle, rickshaw, boats, etc) 6 = Non-ag productive assets (sewing machine, wheelbarrow, etc.) 7 = Agricultural productive assets (power tiller, tractor, draught animals) 8 = livestock 9 = fishery assets (nets, pumps, other equipment, etc) 9999 = Other (specify)</p>
<p>K.05 Sold or consumed seed stocks that were to be held/saved for the next planting season? CAPI: enable if B.09==1</p>	<p>1 = Yes 2 = No - because it wasn't necessary 3 = No - because we already sold or consumed seed stocks in the last 12 months and could not continue to do it 4 = Not applicable 9997 = prefer not to say</p>
<p>K.06 Reduced expenditures on agricultural inputs: seeds, fertilizers, agro-chemicals, mechanization, labor CAPI: enable if B.09==1</p>	<p>1 = Yes 2 = No - because it wasn't necessary 3 = No - because already reduced these expenditures and could not continue to do it 4 = Not applicable 9997 = prefer not to say</p>
<p>K.07 Spend savings?</p>	<p>1 = Yes 2 = No - because it wasn't necessary 3 = No - because already spent my savings in the past 12 months and could not continue to do it 4 = Not applicable 9997 = prefer not to say 9998 = don't know</p>
<p>K.08 Reduced expenses on health (including drugs)?</p>	<p>1 = Yes 2 = No - because it wasn't necessary</p>

	<p>3 = No - because already reduced these expenditures in the past 12 months and could not continue to do it</p> <p>4 = Not applicable (= no medical expenditures)</p> <p>9997 = prefer not to say</p>
K.09 Reduced other non-food expenditures?	<p>1 = Yes</p> <p>2 = No - because it wasn't necessary</p> <p>3 = No - because already reduced these expenditures in the past 12 months and could not continue to do it</p> <p>4 = Not applicable</p> <p>9997 = prefer not to say</p>
K.10 Reduced food expenditures?	<p>1 = Yes</p> <p>2 = No - because it wasn't necessary</p> <p>3 = No - because already reduced these expenditures in the past 12 months and could not continue to do it</p> <p>4 = Not applicable</p> <p>9997 = prefer not to say</p>
K.11 purchase food on credit or borrow food?	<p>1 = Yes</p> <p>2 = No - because it wasn't necessary</p> <p>3 = No - because already did it in the past 12 months and you cannot continue to do it</p> <p>4 = Not applicable</p> <p>9997 = prefer not to say</p>
K.12 borrow money? (not from pawn shop)	<p>1 = Yes</p> <p>2 = No - because it wasn't necessary</p> <p>3 = No - because already borrowed money in the past 12 months and you cannot continue to do it</p> <p>4 = Not applicable</p> <p>9997 = prefer not to say</p>
K.13 have to migrate with the entire household?	<p>1 = Yes</p> <p>2 = No – because it wasn't necessary</p> <p>3 = No – because we already moved in the past 12 months and you cannot continue to do it</p> <p>4 = not applicable</p> <p>9997 = prefer not to say</p>
K.14 children need to work as well?	<p>1 = Yes</p> <p>2 = no – we did not let the children work</p> <p>3 = no – children were already working even before these last 30 days</p> <p>4 = not applicable</p> <p>9997 = prefer not to say</p>
K.15 any type of activity that you have never done before and which has high risk while working? Some examples may be logging, risky migration, smuggling, selling wildlife products, artisanal mining.	<p>1 = Yes</p> <p>2 = No – because it wasn't necessary</p> <p>3 = No – we already did this in the past 12 months</p> <p>4 = not applicable</p> <p>9997 = prefer not to say</p>
K.16 Currently, do you owe any money to loan or credit providers, including banks, MFIs, moneylenders, shops, traders, suppliers, relatives or friends?	<p>1= Yes</p> <p>2 = No</p> <p>9998= Don't know</p> <p>9997 = prefer not to say</p>
K.17 For all the loans/credit you currently have, how difficult will it be to pay off these debts?	<p>1= Not difficult</p> <p>2=Somewhat difficult</p> <p>3=Very difficult</p> <p>9997 = prefer not to say</p> <p>9998= Don't know</p>

Module L: Diets and feeding practices

Now we would like to ask you about food intake of you, your youngest child, and your household.

L.01 How many infants (<2 years old) live in this household?	CAPI: If 0 >>> go to diet roster below
L.02 Are you knowledgeable about his/her food intake yesterday- or is main caretaker present and can help answer these questions about the child?	1 = Yes, I am knowledgeable (=respondent) 2 = Yes, caretaker can help answer these questions 3 = No >>> go to diet roster below
L.03 What is the birthdate of your child under the age of two? Enumerator: if respondent answers 2 or more for L.01 then prompt them to answer for the oldest child to this and all subsequent questions for under-2 children <i>Enumerator: If respondent does not know the exact birthdate, please provide a reasonable approximation.</i>	L.03a __day (9998 = don't know) L.03b __month L.03c __year
L.04 What is the gender of this child?	1 = Female 2 = Male
L.05 Is this child eating any solid, semi-solid or soft foods (not liquid only) foods as yet?	1 = Yes 2 = No >>>Go to diet roster
L.06 Yesterday, during the day and night, how many times did your youngest child eat any solid, semi-solid or soft foods?	9998 = Don't know

READ TO THE RESPONDENT: Now I would like to ask some questions about the food consumption of your youngest child (<2 years old, if any) and your own food consumption from the time you woke up yesterday morning till the same time this morning (24 hours), and how many days it was eaten in your household over the last 7 days.

Think back carefully about all the meals and snacks you have eaten, but do **not** consider small amounts used for garnishing, milk just in tea/coffee, or quantities lower than half a Chinese spoon. Please don't forget to include anything consumed away from home.

L1 Was yesterday a special day? Fasting/festival/visitors/other celebration, etc. 0 = No
1 = Yes

Diet roster

#	QUESTION	For your selected child under 2 years, did your child eat these foods in last 24h? 1=Yes 2=No CAPI: skip this column if L.01==0 or L.02==3 or L.05==2	For your own consumption, did you eat these foods in the last 24h? 1=Yes 2=No <i>enumerator: capture diet of respondent</i>	In your household, over the last 7 days, how many days did members of your household eat? (Number of days)
		A	B	C
L2	dark green leafy vegetables (for example Spinach, water spinach, roselle leaves, horseradish leaves, mustard leaves, radish leaves, broccoli, kale, pumpkin leaves, chayote leaves, gourd leaves, moringa leaves, acacia leaves, tamarind leaves, kai lan leaves)			__ days
L3	orange-colored vegetables or roots, such as pumpkin, sweet potatoes, carrots, or squash			__ days
L4	other vegetables, such as tomatoes, white cabbage, eggplant, lady finger, radish, cucumber, gourd, cauliflower, chayote, long beans, bean sprouts, bamboo shoots, onion, lettuce or mushrooms			__ days

L5	Rice			__ days
L6	bread/rotis, sweet potato, potato, noodles (including instant)			__ days
L7	Beans (such as butter beans, lima beans, lablab beans, mung beans), peas (such as chickpea, pigeon pea, green pea) or lentils (Include all: fresh or dried, fried, fermented, pastes and tofu)			__ days
L8	nuts or seeds, such as groundnut, sesame, cashew, sunflower seeds, pumpkin seeds, jackfruit seeds, watermelon seeds (including fried, fermented or pastes)			__ days
L9	milk and other dairy products (cheese, milk (powder/liquid), infant formula, etc.)? Do <u>not</u> include soymilks, sweetened condensed milk, or sweetened yogurt/probiotic drinks (Yakult/Betagen/Dutch Mill, Lactasoy).			__ days
L10	Fish, canned fish, dried fish, prawn, dried prawn or other seafood (including dried, canned or pastes)			__ days
L11	Poultry, pork, mutton, beef or other meat or organs (liver, kidney, heart, other organs). Also include dried or canned products.			__ days
L12	Eggs (chicken, duck, quail)			__ days
L13	orange or dark yellow colored fruits, such as ripe mango, ripe papaya, ripe orange marian plum, passion fruit, muskmelon, or ripe, deep yellow-fleshed or orange-fleshed bananas			__ days
L14	Other fruits (incl. regular banana, pineapple, water melon, avocado etc.)			__ days
L15	Sugar food consumption (sweets, chocolates, cake, fruit jam) & Sugary drinks (carbonated soft drink, energy drink, sweetened tea, sweetened coffee, ovaltine, milo, soymilks, sweetened condensed milk, sweetened yogurt/probiotic drinks)			__ days
L16	Oils or fats (vegetable oils, butter, ghee, animal fats)			__ days

Module M: Food expenditures / consumption

M.01	Who is the main person responsible for food purchases in the household? (Multi-select)	1 = Respondent 2 = Spouse of respondent >> <i>Enumerator: prompt to consult spouse if available</i> 3 = Other household member >> <i>Enumerator: prompt to consult other hh member if available</i> 9998 = Don't know
M.02	During the past 7 days, could you tell me how much in total you and any other household members have spent on food purchased from markets, food delivery sellers, general stores, supermarkets, etc. but eaten at home? Do not include restaurants or prepared food vendors. (in MMK)	9998 = don't know
M.03	During the past 7 days, how much did you and your household members spend in total on prepared food from restaurants/ street vendors or others, eaten at home or eaten outside the home? (in MMK)	9998 = don't know
M.04	During the past 7 days, did you or any household member consume anything from your own farm or home garden?	1 = Yes 2 = No >> M.06
M.05	During the past 7 days, could you tell me the total value of food you and any other household members consumed from your own farming or home garden? For example if you purchased those same foods in the market, how much would you pay for them? (in MMK)	9998 = don't know
M.06	During the past 7 days, did you or any other household member consume any food obtained for free or as part of wage income, either consumed at home or outside the home? <i>Enumerator: examples are food received at work, monastery, schools/colleges, donations, food assistance, help from relatives, etc.</i>	1 = Yes 2 = No >> Module N
M.07	During the past 7 days, could you tell me the total value of food you and any other household members consumed that were received for free or part of wage income? (in MMK)	9998 = don't know

Module N. Household Hunger Scale

Now I would like to ask you some questions about food during the last 4 weeks.

In the last 4 weeks, was there a time when:

N.01	In the past 4 weeks, was there ever no food to eat of any kind in your house because of lack of resources to get food?	1=Yes 2=No >> N.03 9998=Don't Know >> N.03 9997=Don't want to answer >> N.03
N.02	How often did this happen in the past four weeks?	1 = Rarely (1–2 times) 2 = Sometimes (3–10 times) 3 = Often (more than 10 times)
N.03	In the past 4 weeks, did you or any household member go to sleep at night hungry because there was not enough food?	1=Yes 2=No >> N.05 9998=Don't Know >> N.05 9997=Don't want to answer >> N.05
N.04	How often did this happen in the past four weeks?	1 = Rarely (1–2 times) 2 = Sometimes (3–10 times) 3 = Often (more than 10 times)
N.05	In the past 4 weeks, did you or any household member go a whole day and night without eating anything at all because there was not enough food?	1=Yes 2=No >> Module O 9998=Don't Know >> Module O 9997=Don't want to answer >> Module O
N.06	How often did this happen in the past four weeks?	1 = Rarely (1–2 times) 2 = Sometimes (3–10 times) 3 = Often (more than 10 times)

Module O: Access to essential services

<p>O.01 In the past 4 weeks, did you or other household members have significant difficulties or have to spend a lot of efforts or money to obtain cash from banks or other financial institutions? Multi-select</p>	<p>0 = No problems 1 = ATM not working 2 = Bank closed or no cash 3 = Only limited amount can be withdrawn 4 = Had to pay agent fees to obtain cash 5 = Had to take time off work 6 = Other problems 9996 = not applicable (did not want to take out cash) 9997=Don't want to answer 9998=Don't Know</p>
<p>O.02 In the last 4 weeks, did you or any other household member need medical services?</p>	<p>1 = yes 2 = no >> O.04</p>
<p>O.03 If yes, were you able to access these services?</p>	<p>1 = yes, any time I wanted to use medical services 2 = most of the time 3 = only a few times 4 = no, never in the last 4 weeks</p>
<p>O.04 In the past 4 weeks did your school-age children (5-14 years) attend school regularly? CAPI: only if children in the household 5-14 years old, else skip</p>	<p>1 = yes, all my children 2 = only some of my children 3 = None of our children attended school 9998 = Don't know</p>
<p>O.05 In the last 4 weeks, did you or any member of your household use the internet (including Facebook and other apps), and if so how frequently?</p>	<p>1 = yes, any time we wanted to use the internet >> module P 2 = most of the time 3 = only a few times 4 = no, never in the last 4 weeks</p>
<p>O.06 What was the reason for not using the internet or not using it as much as you had wanted to?</p>	<p>1 = no money for data / no working mobile phone 2 = internet services disruptions in the area 3 = electricity access/service problems 4 = no interest or not knowledgeable to use internet 5 = Other reasons</p>

Module P: Closing

Thank you very much for your participation in this survey. We will be transferring credit to your phone shortly to thank you for your time today. We would like to contact you again after a few months for another short interview. Before we stop the phone call, I would like to note down a few things on how to best contact you in the future.

P.01 Is this number the best number to reach you or your household	1 = yes >> P.03 2 = no
P.02 If not, what number should we try to call in the future?	>>> P.04
P.03 If we cannot reach you on this phone number, which other number can we call to reach you?	0 = no other option
P.04 What is the best day of the week to contact you next time for an interview?	1 = Any day 2 = Monday 3 = Tuesday 4 = Wednesday 5 = Thursday 6 = Friday 7 = Saturday 8 = Sunday
P.05 What is the best time to contact you next time for an interview?	1 = any time 2 = morning 3 = afternoon 4 = evening
P.06 In the next 1 – 2 months, we would like to call you or any knowledgeable household member to ask questions regarding your farming activities. Are you the best person to call for these questions, or should we reach out to another household member? CAPI: enable if B.09==1	1 = Yes, I am the one to call >>> end 2 = No, please call another household member
P.07 If so, can you kindly share any phone number to reach this household member? CAPI: enable if B.09==1	0 = same as this one >>> end
P.08 In the next 1 – 2 months, we would like to call you or any knowledgeable household member to ask questions regarding your rice milling activities. Are you the best person to call for these questions, or should we reach out to another household member? CAPI: enable if H.02==4	1 = Yes, I am the one to call >>> end 2 = No, please call another household member
P.09 If so, can you kindly share any phone number to reach this household member? CAPI: enable if H.02==4	0 = same as this one >>> end
P.10 In the next 1 – 2 months, we would like to call you or any knowledgeable household member to ask questions regarding food prices in your community. Are you the best person to call for these questions, or should we reach out to another household member? CAPI: enable if H.02==1 or H.02==2	1 = Yes, I am the one to call >>> end 2 = No, please call another household member
P.11 If so, can you kindly share any phone number to reach this household member? CAPI: enable if H.02==1 or H.02==2	0 = same as this one >>> end

CAPI – automates end time of survey

Module Q: Interviewer notes

Q.01 Who responded to this interview?	1 = respondent only (as recorded with info from section B) >> Q.03 2 = respondent (as in section B) and other household members jointly 3 = respondent was changed during the interview or for some sections of the interview, different from the person recorded in section B
Q.02 Which modules were answered by a different respondent or jointly with another person? Multi-select	< list all modules here >
Q.03 Please note any important issues or information about this interview here	<open ended>

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