



## Promising Indicators for Effectively Targeting the Poor in Myanmar

### Key Findings

- This note proposes promising indicators to effectively target the poor such as:
  - Households with walls made of hemp/hay/bamboo, etc.
  - Household with rudimentary electricity connection such as solar, battery, water mill or nothing.
  - Household located more than 2 hours away from the nearest township center.
  - Household whose primary source of income is agricultural wage work.
- Additionally, we propose some indicators for assets, land ownership and housing condition that can be combined with the key indicators for strengthening identification.
- Certain demographic groups such as households with young and school-aged children are also highly vulnerable to poverty.
- There exists some heterogeneity in poverty indicators across regions:
  - Dry, Delta, and Hill regions are found to be most similar in poverty indicators with associations weak in the Coastal region where housing and assets are more important.

### Recommended actions

- Adoption of some or all these indicators will increase the cost-effectiveness of safety net programs and help achieve their policy objective of supporting the poorest households.

## Introduction

The social protection system in Myanmar has remained at a rudimentary level for the past decade, with policies scattered and fragmented across various government departments, and serving only a fraction of the eligible population. The government allocated only 0.8 percent of its expenditure to social protection constraining its ability to expand to vulnerable groups leaving households to rely on informal forms of safety nets against idiosyncratic and covariate shocks, and life-course contingencies (Niño-Zarazúa & Tarp 2021). Only 13.8 percent of the population received any form of social protection according to the 2017 MLCS, leaving much of the poor, which is about one-third of the population, out of the scope of protection. After the military takeover in 2021, government provision of social protection faced a complete collapse with near zero allocation to the population (MAPSA 2022c). In the face of the double predicament of the COVID-19 pandemic and coup, any form of anti-poverty investment should effectively target the poor based on observable and verifiable characteristics.

In this research note, we explore some promising indicators which can be used by implementing agencies to effectively target the poor. We use data from the Myanmar Household Welfare Survey (MHWS) collected over the phone during July and August of 2022. The survey was conducted among 12,000 households in 310 townships of Myanmar. The MHWS is a nationally, urban/rural and state/region representative phone survey (MAPSA 2022a). The household survey questionnaire collected information on a wide variety of topics such as household composition, occupation, education, dwelling characteristics, assets, income, and agriculture.

## Promising Indicators for Effectively Targeting the Poor

Using the 2022 MHWS data, we have identified several indicators that are highly correlated with poverty, and are observable and verifiable. Results from IFPRI's MHWS data show that there exists a strong negative association between income and food insecurity (MAPSA 2022b) with poor households more likely to be hungry and have poor food consumption and diet diversity. The indicators below strongly correlate with poverty and, therefore, have strong potential for effectively selecting poor and food-insecure households for improved targeting of projects aimed to reduce poverty and food insecurity. The indicators are:

1. Households with walls made of rudimentary materials such as hemp/hay/bamboo, etc.
2. Household with rudimentary electricity connection such as solar, battery, water mill or nothing.
3. Household located more than 2 hours away from the nearest township center.
4. Household whose primary source of income is agricultural wage work.

Along with the above, we propose some additional indicators that are strongly associated with poverty:

5. Households with floor not made of improved materials, wood, tile, vinyl, etc.
6. Households without improved toilet facility (has open pit, hanging latrine or no facility).
7. Households without any fridge.
8. Households without any wardrobe.
9. Households without any agricultural land ownership.

Further to this, households belonging to certain demographic groups are also highly vulnerable to poverty:

10. Household has at least one child aged 0 to 5 years.
11. Household has at least two adolescent girls aged 12 to 20 years.
12. Household has at least two school aged children 5 to 14 years.

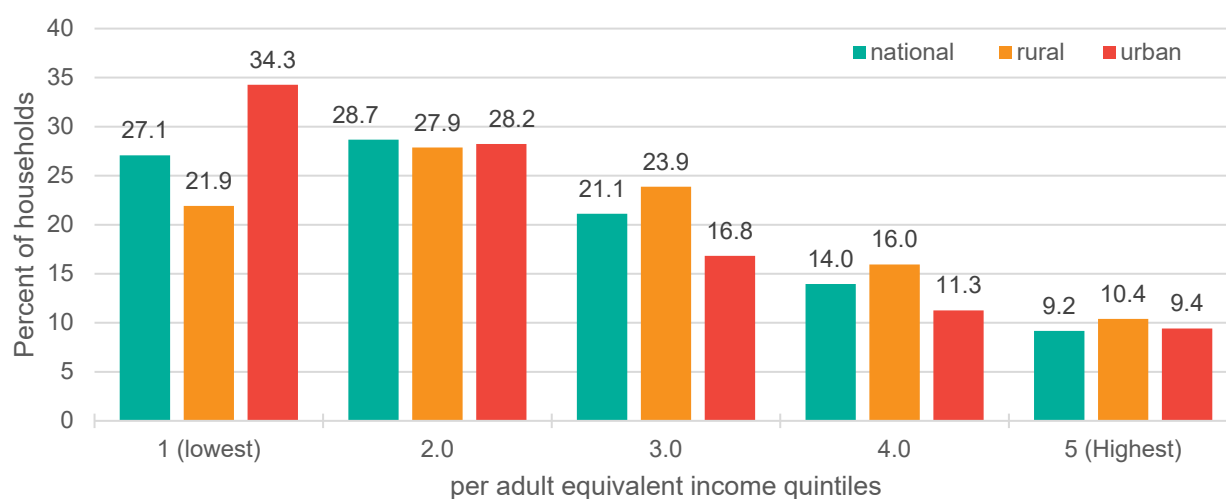
- 13. Household with school age children 5 to 14 years not going to school.
- 14. Households with highest education of adults' below primary level.

The indicators are discussed in more detail in the following sections. We, first, use descriptive statistics to look at the distribution of households for each poverty indicator across per adult equivalent income quintiles. Then, we explore the strength of the associations between the proposed indicators and income poverty and other outcome variables. We also run a multivariate linear regression to test the joint association of our proposed indicators against the outcome variables. Finally, we look at the errors of exclusion and inclusion for our proposed indicators and the effect of cash transfers on poverty as identified by our proposed indicators.

### ***Dwelling characteristics***

**Households with walls made of rudimentary materials (hemp/hay/bamboo):** Around 24 percent of households in Myanmar have walls made of hemp/hay/bamboo, etc. according to the 2022 MHWS (Appendix Table A.1), with the rate being higher in rural (29.2 percent) compared to urban areas (11.1 percent). Among these households, 27.1 percent belong to the poorest quintile and 55.6 percent are among the poorest 40 percent of all households in Myanmar with the rate being 21.9 and 49.8 percent respectively in rural and 34.3 and 62.5 percent respectively in urban areas (Figure 1).

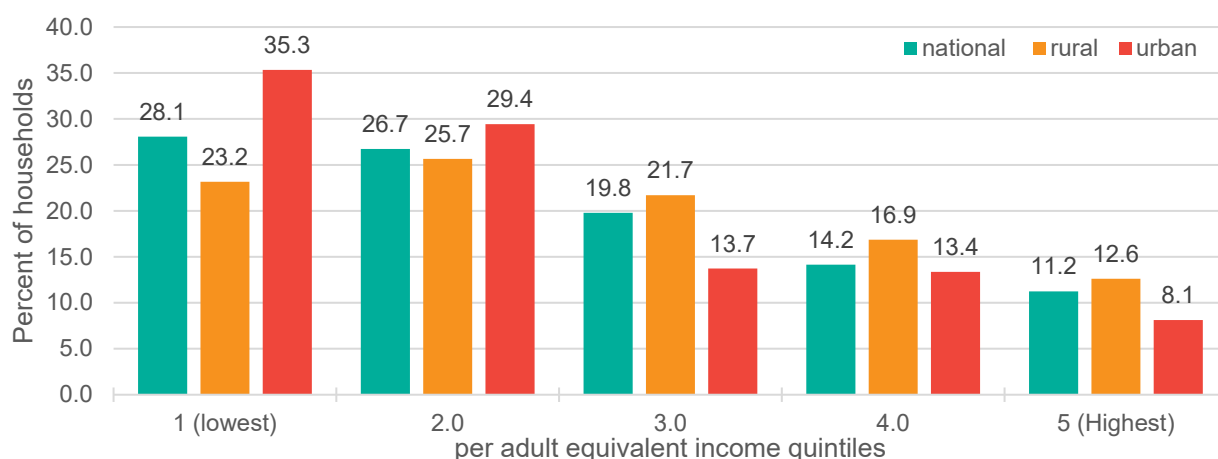
**Figure 1: Percentage of households with walls made of rudimentary materials by income group**



**Households with rudimentary electricity connection (solar home system/battery system/water mill/no electricity):** Around 31 percent of households in Myanmar has electricity connection that are rudimentary in nature such as a solar home system, rechargeable battery system, water mill or no electricity connection<sup>1</sup> according to the MHWS in 2022 (Appendix Table A.1), with the rate being much higher in rural (40.7 percent) compared to urban areas (5.9 percent). Among these households, 28.1 percent belong to the poorest quintile and 54.8 percent are among the poorest 40 percent of all households in Myanmar with the rate being 23.2 and 48.9 percent respectively in rural and 35.3 and 64.7 percent respectively in urban areas (Figure 2).

<sup>1</sup> About 4 percent of all households in Myanmar have no electricity connection according to MHWS 2022 with the rate being 4.9 percent in rural and 1.4 percent in urban areas.

**Figure 2: Percentage of households with rudimentary electricity connection by income group**

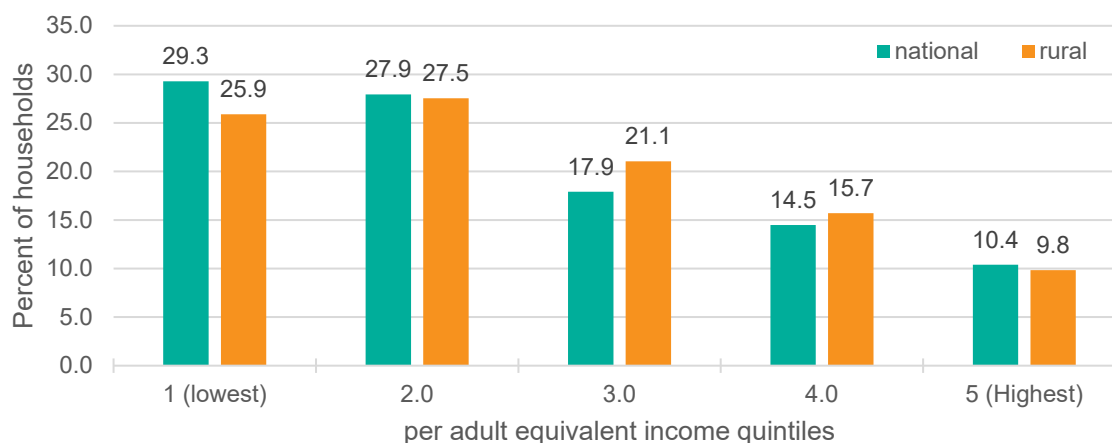


Two additional indicators hold promise in identifying the poor. (a) **households with floor not made of improved materials (wood, tiles, etc.):** Around 27.6 percent of households nationally belong to this category (see Appendix Table A.1). Among these households, 27 percent belong to the poorest quintile and 52.4 percent are among the poorest 40 percent of all households in Myanmar with the rate being 23.7 and 49.6 percent respectively in rural and 26.8 and 51.4 percent respectively in urban areas (Appendix Figure A.1). (b) **households without improved toilet facilities (has open pit, hanging latrine or no facility):** Around 6.6 percent of households nationally belong to this category (see Appendix A.1). Among these households, 31.1 percent belong to the poorest quintile and 58 percent are among the poorest 40 percent of all households in Myanmar with the rate being 27.7 and 55.9 percent respectively in rural and 27.0 and 46.2 percent respectively in urban areas (Appendix Figure A.2).

### **Location**

**Households located more than 2 hours away from the nearest township center:** Households located in remote areas are more likely to be outside the purview of development and hence deserve special attention. Being far away from township centers also prevents households/community food systems from engaging in markets. We find that travel time of 120 minutes to the nearest township center increase the likelihood of the household being in poverty. This indicator is more applicable to rural compared to urban areas. In Myanmar, around 7.4 percent of households are located in remote areas with travel time of more than 120 minutes to the nearest township center (see Appendix Table A.1). Among these households, 29.3 percent belong to the poorest quintile and 57.2 percent are among the poorest 40 percent of all households in Myanmar with the rate being 25.9 and 53.4 percent respectively in rural areas (Figure 3).

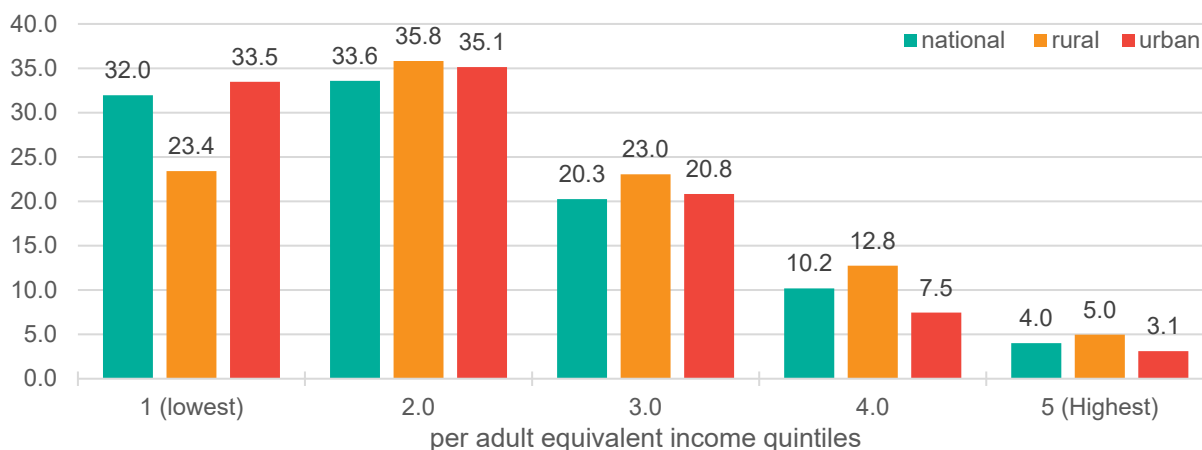
**Figure 3: Percentage of households located more than 2 hours away from the nearest township center by income group**



### Livelihood

**Primary income source of household is agricultural wage work:** Around 11.4 percent of households in Myanmar reported that their primary income source in the last month was from agricultural wage work (Appendix Table A.1), with the rate being higher in rural (15.1 percent) compared to urban areas (2 percent). Among these households, 32 percent belong to the poorest quintile and 65.6 percent are among the poorest 40 percent of all households in Myanmar with the rate being 23.4 and 59.2 percent respectively in rural and 33.5 and 68.6 percent respectively in urban areas (Figure 4).

**Figure 4: Percentage of households whose primary source of income is agricultural wage work by income group**



### Assets

We propose two assets indicators which can be used in addition to the indicators to identify the poor. These are (a) **Households with no refrigerator** - Around 73 percent of households in Myanmar do not have a refrigerator according to the MHWS in 2022 as shown in Appendix Table A.1, with the rate being higher in rural (82.7 percent) compared to urban areas (48.7 percent). Among these households, 22.7 percent belong to the poorest quintile and 47.2 percent are among the poorest 40 percent of all households in Myanmar with the rate being 20.1 and 43.6 percent respectively in rural and 25.2 and 51.1 percent respectively in urban areas (Appendix Figure A.3). (b) **Households with no wardrobe** - Around 44 percent of households in Myanmar do not have a wardrobe according to the MHWS in 2022, with the rate being higher in rural (49.4 percent) compared to urban areas (30.2

percent). Among these households, 26 percent belong to the poorest quintile and 50.6 percent are among the poorest 40 percent of all households in Myanmar with the rate being 22.4 and 48.3 percent respectively in rural and 27.7 and 51.6 percent respectively in urban areas (Appendix Figure A.4).

### ***Demographic characteristics***

Certain demographic groups in the population can be vulnerable to poverty and special attention is warranted to such groups when devising social protection or other poverty alleviation interventions. Some groups that are strongly correlated with poverty are described below.

**Household has at least one child aged 0 to 5 years:** Households with a high number of dependent members are vulnerable to poverty. In Myanmar, around 27.7 percent of households have at least one child aged 0 to 5 years as shown in Appendix Table A.1, with the rate being higher in rural (28.6 percent) compared to urban areas (25.3 percent). Among these households, 22.1 percent belong to the poorest quintile and 46.8 percent are among the poorest 40 percent of all households in Myanmar with the rate being 19.6 and 46.1 percent respectively in rural and 26.8 and 53.6 percent respectively in urban areas (Appendix Figure A.5).

**Household has at least two adolescent girls aged 12 to 20 years:** Adolescence is a time when more than 20 percent of adult height and 50 percent of adult weight is gained (Spear 2002) and has been identified as a second window of opportunity for catch-up growth, in which nutritional needs increase and lifelong dietary habits and preferences are formed (Das et al., 2017; Blum et al., 2019). This demographic group thus warrants a special focus. At the same time, we also find correlation between households belonging to this demographic group and poverty. In Myanmar, around 6 percent of households have at least two adolescent girls aged 12 to 20 years as shown in Appendix Table A.1, with the rate being higher in rural (6.5 percent) compared to urban areas (5.6 percent). Among these households, 28.6 percent belong to the poorest quintile and 56.1 percent are among the poorest 40 percent of all households in Myanmar with the rate being 25.3 and 52.4 percent respectively in rural and 34.9 and 62.4 percent respectively in urban areas (Appendix Figure A.6).

**Households with school age children 5 to 14 years not going to school:** Poor households with school age children 5 to 14 years is another demographic group that warrants attention since such households are often unable to send their children to school. This may happen because they are unable to bear school expenses or because of the perception of opportunity cost being higher of sending their children to school against lost income by employing the children to work. In Myanmar, around 16 percent of households have at least two school age children while 20.8 percent of households with school age children do not send their children to school as shown in Appendix Table A.1. The absentee rate is higher in urban (22.5 percent) compared to rural areas (20.2 percent). Among these households, 27.4 percent belong to the poorest quintile and 52.2 percent are among the poorest 40 percent of all households in Myanmar with the rate being 24.5 and 53 percent respectively in rural and 29 and 57.2 percent respectively in urban areas (Appendix Figure A.8).

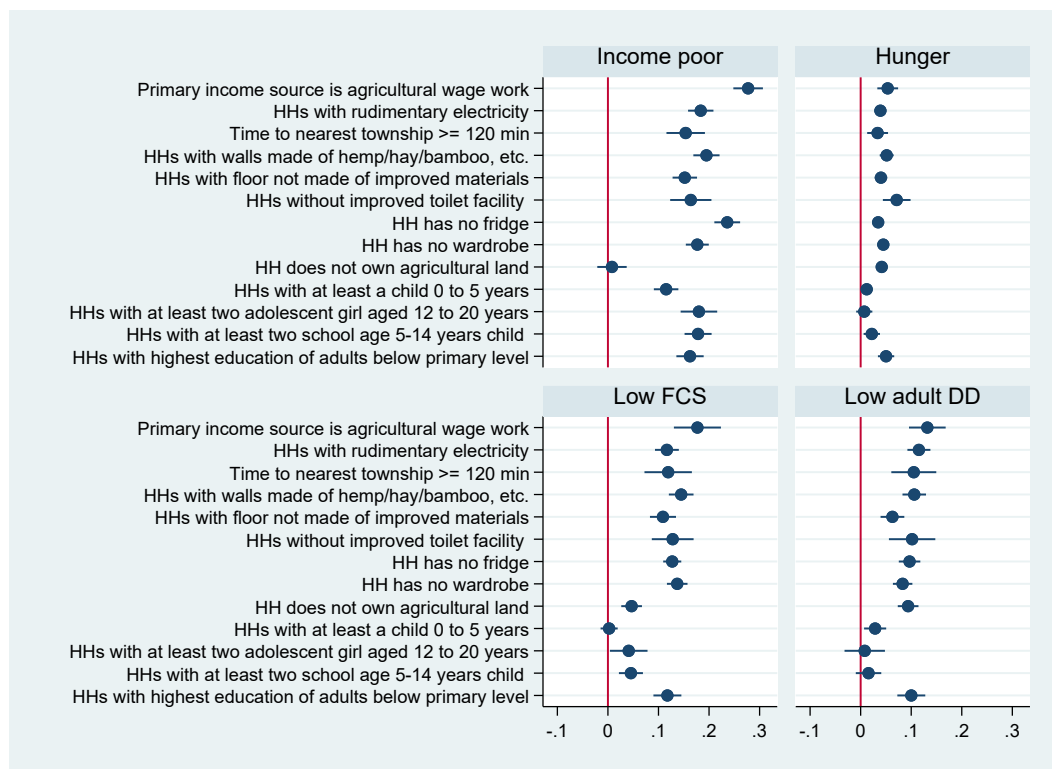
**Households with highest education of adults below primary level:** Higher levels of education have been found to be negatively correlated with poverty and food insecurity (MAPSA 2022b). In Myanmar, around 20.5 percent of households have adults whose highest level of education is below the primary level as shown in Appendix Table A.1, with the rate being higher in rural (24.5 percent) compared to urban areas (10.1 percent). Among these households, 27.2 percent belong to the poorest quintile and 52.7 percent are among the poorest 40 percent of all households in Myanmar with the rate being 23.4 and 49.3 percent respectively in rural and 21.7 and 54.6 percent respectively in urban areas (Appendix Figure A.9).

Some indicators are also applicable for certain sub-sections of the population. For example, for households whose primary source of income is from farming, land ownership of less than 2 acres and functionally landless households (i.e. cultivates less than 2 acres of land) (WBG 2014; LandLinks, n.d.) are indicators that are found to be highly correlated with poverty. These are explored in the Appendix.

## Regression analysis

We first explore the strength of the associations between the proposed variables and poverty. We present the result in Figure 5. We run a linear regression with poverty (poor =1) as the outcome variable against each of the variables we propose. The regressions are weighted to ensure representativeness and standard errors are clustered at the township level. We find that all our variables are strongly correlated with poverty at the one percent level of statistical significance (except for agricultural land ownership). We also test associations with other outcome indicators such as household hunger, food consumption score, and adult diet diversity. Most of our variables are also strongly associated with these outcome variables (except for some demographic characteristics like presence of children and adolescents in the household).

**Figure 5: Univariate association of selected indicators and outcome variables**

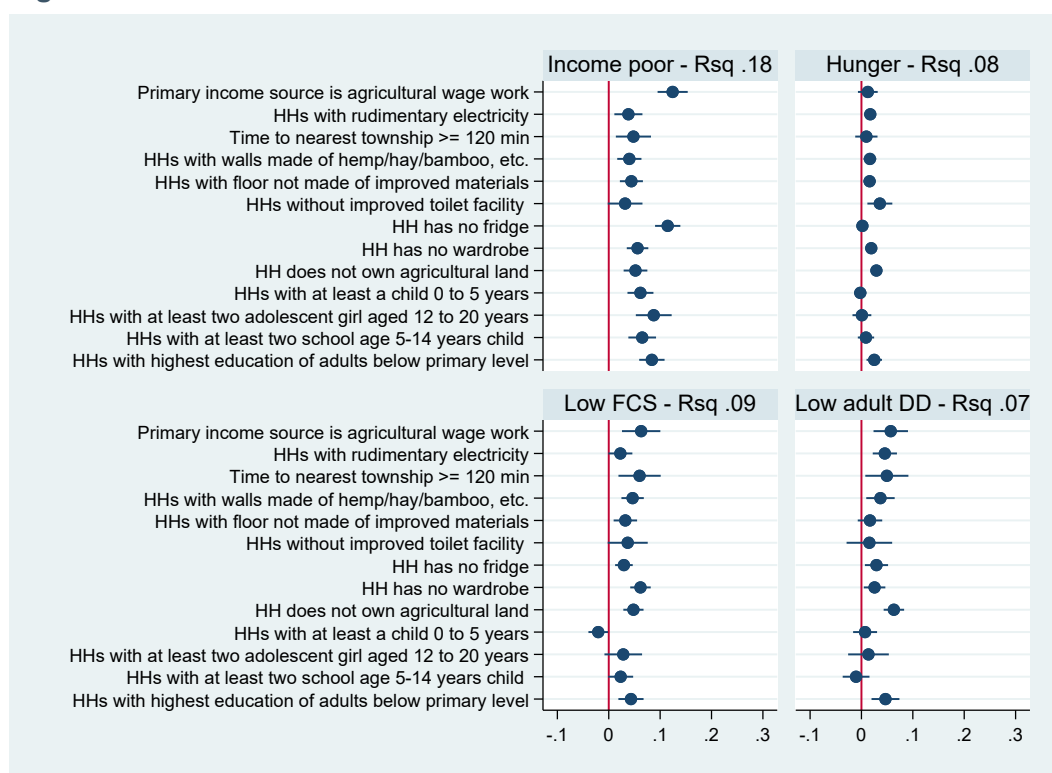


Although the indicators identified in this study associate well with poverty at the national level, there may be heterogeneity across different regions of Myanmar. In Appendix Figure A.12, we examine how well our proposed indicators associate with poverty in the Hills, Dry, Delta, and Coastal regions of Myanmar. We run similar univariate regression as explained above for our sample of households in each region. We find that the Dry and Delta region to be most similar with respect to indicators of poverty with the Hill region showing similarity in most of the proposed indicators. However, association appears to be weak in the Coastal region with housing and assets being more important as indicators possibly because of adverse effect of climatic shocks on housing and assets. Therefore, careful consideration is required when devising interventions based on poverty indicators.

We also run a multivariate linear regression to test the joint association of our proposed variables against poverty and other outcome variables. The full model includes some additional controls such as age of household head, household size, indicator for female headed household, information on household shocks, wages, and prices as well as survey month and state fixed effects. The regressions are weighted to ensure representativeness and standard errors are clustered at the township level. We find that our proposed indicators perform well in explaining poverty at one percent level of statistical significance and R-square value of 0.18 using the full model which is comparable to other studies. Our model also performs relatively well in explaining household hunger, food consumption and adult diet quality (see Figure 6, full results in Appendix Table A2).

Exploring the joint association of our proposed variables with poverty by regions reveals heterogeneity across regions which further reinforces understanding of contextual differences when devising interventions (see Appendix Figure A13).

**Figure 6: Multivariate association of selected indicators and outcome variables**



### Errors of Exclusion and Inclusion

Since prediction by any model is never exact, it is expected that some poor will be incorrectly identified as nonpoor and some nonpoor will be incorrectly identified as poor. The first type of misidentification is termed as an ‘error of exclusion,’ and the second type, as an ‘error of inclusion.’ Any action to decrease the first type of error will normally increase the second type of error, and vice versa (Grosh 1994).

The population living below the poverty line is classified as poor. According to the latest poverty estimates from the MHWS, 60.6 percent of the people in Myanmar were poor in July-August 2022. Rural and urban headcount poverty rates were 64.6 percent and 50.5 percent, respectively.

Under the proposed indicators, the error of inclusion appears to be low. If we consider households with walls made of rudimentary materials (hemp/hay/bamboo), rudimentary electricity

connection, located more than 2 hours away from the nearest township, and primary source of income is agricultural wage work as selection criteria (core indicators), we find that nearly 53 percent of the income poor can be correctly identified with at least 3 of the 4 criteria—that is, they were correctly identified as poor by the proposed sets of indicators (see Table 1). When we add the asset criteria with the above, namely, no fridge or wardrobe ownership, we can identify 66 percent of the poor with any 3 of the 6 criteria and 78.4 percent with any 4 of the 6 criteria. Thus, implementers can use some combination of the proposed indicators from this report to adequately target the poor for interventions.

In rural areas, with our core indicators, we find that nearly 62 percent of the income poor can be correctly identified with at least 3 of the 4 criteria. When we add the asset criteria with the above namely, no fridge or wardrobe ownership, we can identify 67 percent of the poor with any 3 of the 6 criteria and 82.1 percent with any 4 of the 6 criteria (see Appendix Table A.5).

In urban areas, certain demographics face clusters of poverty for which our core indicators do fare as well as in rural areas. Including all 4 criteria identifies only 25 percent of the poor. Assets are important in this context – with assets we can identify 63 percent of the poor with any 3 and 67 percent of the poor with any 4 of the 6 criteria. Including demographic characteristics of households such as households with at least one child less than 5 years, with at least two adolescent girls, at least two school aged children and adults with low education, we can identify 65 percent of the poor with any 3, and 80 percent of the poor with any 5 of the 8 criteria (see Appendix Table A.5).

**Table 1: Percentage of poor households correctly identified by different combination of indicators**

No. of indicators	Core	Core + housing	Core + asset	Core + asset + land	Core + asset + housing
<i>Percentage of poor households</i>					
1	30.22	28.3	20.83	19.14	19.31
2	46.48	45.95	46.71	43.72	41.6
3	52.59	55.48	66.07	64.97	59.82
4	53.55	61.22	78.39	79.66	72.39
5	-	62.49	83.52	88.51	80.45
6	-	62.67	84.33	92.63	85.39
7	-	-	-	93.23	86.54
8	-	-	-	-	86.7

Core indicators = walls of rudimentary materials + rudimentary electricity connection +remote location +agricultural wage worker

Core + housing = Core + not improved flooring + not improved toilet facilities

Core + asset = Core + no fridge + no wardrobe

Core + asset + land = Core + asset + no agricultural land ownership

Core + asset + housing = Core + no fridge + no wardrobe + not improved flooring + not improved toilet facilities

## Effect of cash transfers

Cash transfer programs have gained immense popularity recently as an effective intervention to alleviate poverty. These interventions are fast and cost-effective, and research shows they can increase people’s consumption, assets, and food security. However, the efficacy of these transfers depend much on the how well the intervention was successful in effectively targeting the poor. In addition, the success of the intervention depends heavily on the amount of transfer given to the poor.

In this section, we use our proposed indicators in identifying the poor and explore how different cash transfer amounts targeted to the poor, who were identified by our proposed indicators, impact the overall rate of poverty in Myanmar. We categorize a households as poor if that household meets at least 2 of the proposed criteria. We try different monthly transfer amounts ranging from USD\$30 (which is roughly a dollar a day) to USD\$300 (which is roughly \$10 a day). We convert the US dollar

amount to Myanmar Kyat at USD\$ 1 = 2,081.99 Kyat using the exchange rate extracted on 20 December 2022 from oanda.com.

**Table 2: Effect of different monthly transfer amount on rate of poverty**

		Core	Core + housing	Core + asset	Core + asset + land	Core + asset + housing
Poverty rate (%)		60.6	60.6	60.6	60.6	60.6
Monthly transfer amount (USD)	30	58.9	57.9	55.4	53.9	55.1
	50	57.3	55.6	51.3	48.8	50.7
	100	53.2	49.8	41.2	36.6	39.9
	200	47.4	41.6	26.6	20.0	24.6
	300	46.1	39.6	22.5	15.5	20.2

Core indicators = walls of rudimentary materials + rudimentary electricity connection + remote location + agricultural wage worker

Core + housing = Core + not improved flooring + not improved toilet facilities

Core + asset = Core + no fridge + no wardrobe

Core + asset + land = Core + asset + no agricultural land ownership

Core + asset + housing = Core + no fridge + no wardrobe + not improved flooring + not improved toilet facilities

Note: We categorize a households as poor if that household meets at least 2 of the proposed criteria

We find that inclusion of assets, such as fridge, wardrobe, or land ownership, as selection criteria along with our core indicators works well in targeting the poor with the fastest rate of reduction in poverty as we increase the monthly transfer amount from USD\$30 to USD\$300. The stickiness of poverty reduction, even with very large amounts of transfer, reflect the high depth of poverty in the Myanmar population.

We can explore this further using the poverty gap index which quantifies the depth of poverty in the population. The poverty gap index measures the extent to which individuals fall below the poverty line (the poverty gap) as a proportion of the poverty line. The sum of these poverty gaps gives the minimum cost of eliminating poverty, if transfers were perfectly targeted. Using the poverty line and income estimated from the MHWS, we find that Myanmar has a depth of poverty of around 32 percent which is high compared to other countries in the region (for example, the poverty gap index for Bangladesh is 2.3% at the national level (BBS, 2019)).

Under the assumption of a perfectly targeted program, the amount of funds required to lift all poor people up to the poverty line, from their existing income, is equivalent to USD 434 million per month. However, as discussed before, we cannot perfectly identify all poor people and have to rely on observable and verifiable indicators such as those proposed in this study for identification. The difficulty in reducing poverty is visible by the fact that using a monthly transfer of USD 30 to poor people identified by our core indicators, we would need about 61 million USD to reduce overall poverty to 58.9 percent. On the other hand, if we incorporate core indicators as well as assets and housing indicators to identify the poor and using a monthly transfer of USD 30, we would need 194 million USD to reduce poverty to 55.1 percent while with a monthly transfer of USD 300 we would need USD 157 trillion to reduce poverty to 20.2 percent.

## Conclusion

In this study, we have assessed the targeting effectiveness of some observable and verifiable indicators which can be used to select poor households as participants in safety net programs in Myanmar. The purpose of the assessment is to strengthen the empirical basis upon which policymakers can make informed policy choices to refine the targeting mechanism of the safety net program so that the program can effectively serve the neediest families.

In some ways, our proposed indicators are similar to that of multidimensional poverty indices like the Poverty Probability Index by Innovations for Poverty Action or the Multidimensional Poverty Index by Oxford Poverty & Human Development Initiative. For example, the PPI uses a set of 10 indicators to score poverty, some of which (broadly) overlap with ours. However, as is the case with indicators that are standardized for use across countries and contexts, they tend to be broad indicators of poverty while the set of indicators we propose are focused on the Myanmar context and generated from a recently collected (August 2022) large nationally representative household survey. Therefore, the indicators we propose are context-specific and precise to identifying the poor in Myanmar. A particular strength of our survey is that we could also comment on some differences between urban and rural and different regions such as Hills, Coastal, Dry Zone and Delta. With a rapidly changing situation in the aftermath of COVID and political unrest, it is important to assess poverty with updated data.

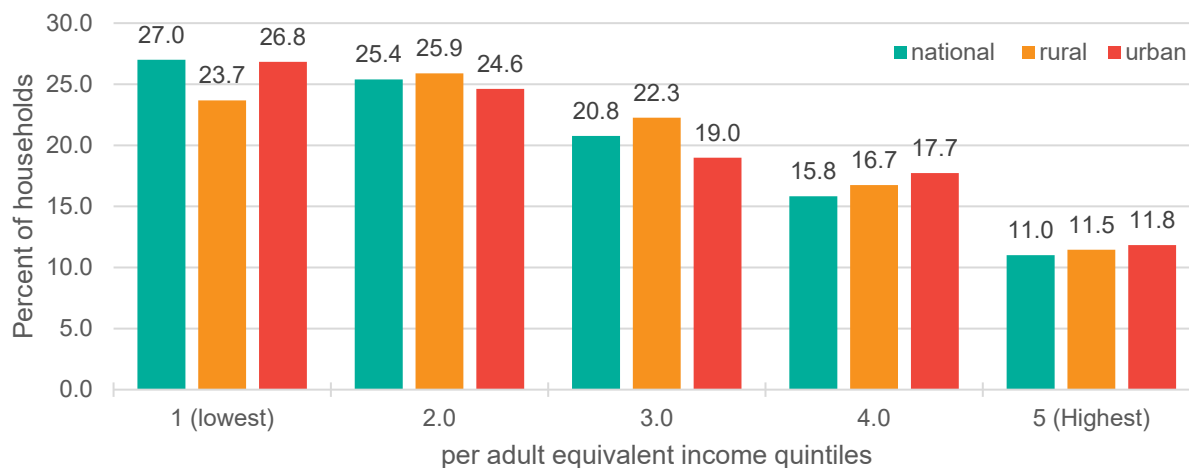
We have identified a number of indicators that hold considerable promise to improve the targeting performance of safety net programs in Myanmar. With our core indicators more than 50 percent of the poor can be correctly identified while adding asset and housing characteristics will further improve targeting efficiency. We have also identified some demographic groups that are particularly vulnerable to poverty. Adoption of some or all of these indicators will increase the cost-effectiveness of safety net programs, and help achieve its policy objective of uplifting the poorest.

## References

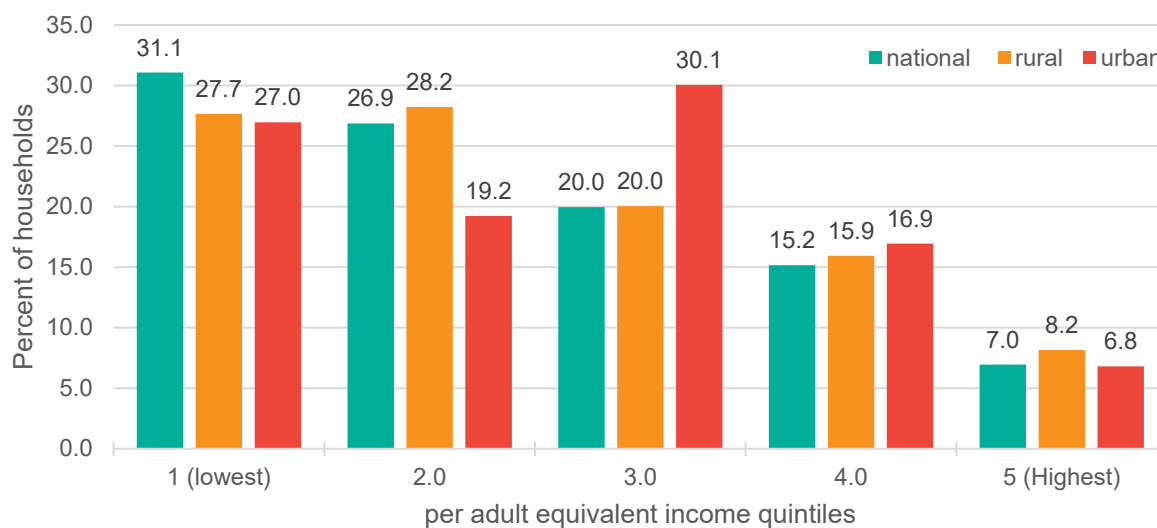
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## Appendix

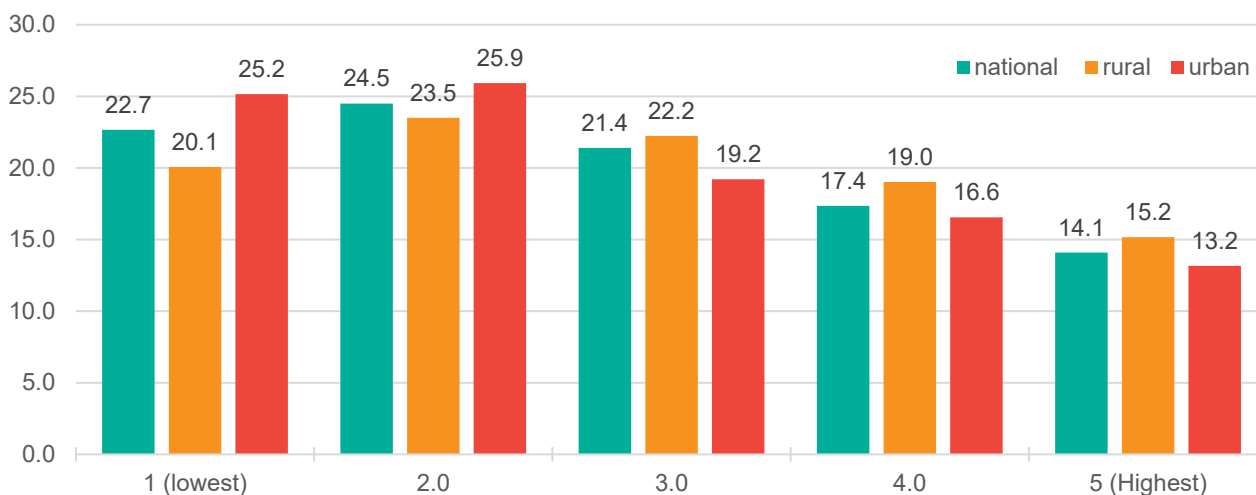
**Figure A.1: Percentage of households with floor not made of improved materials by income group**



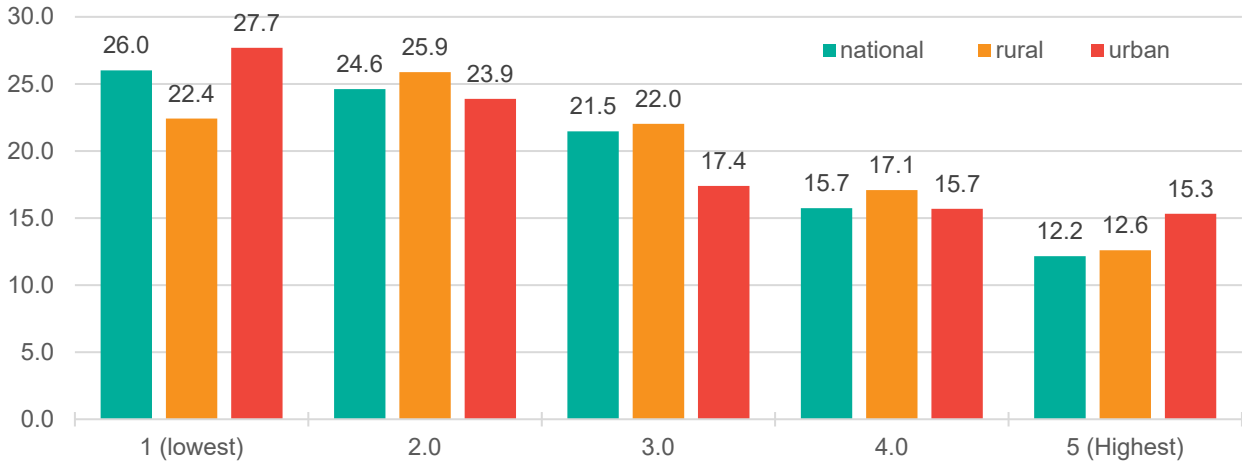
**Figure A.2: Percentage of households without improved toilet facilities by income group**



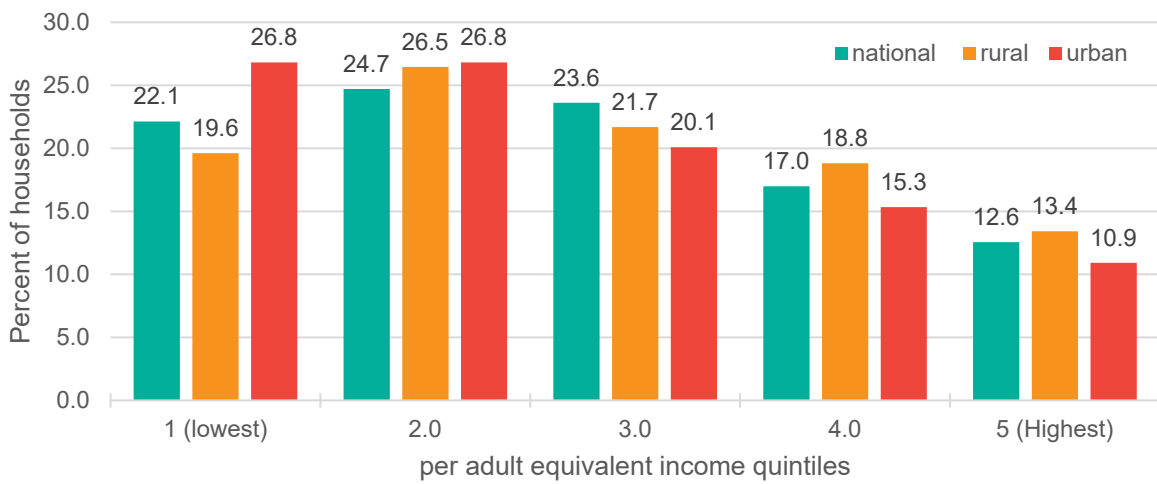
**Figure A.3: Percentage of households with no refrigerator by income group**



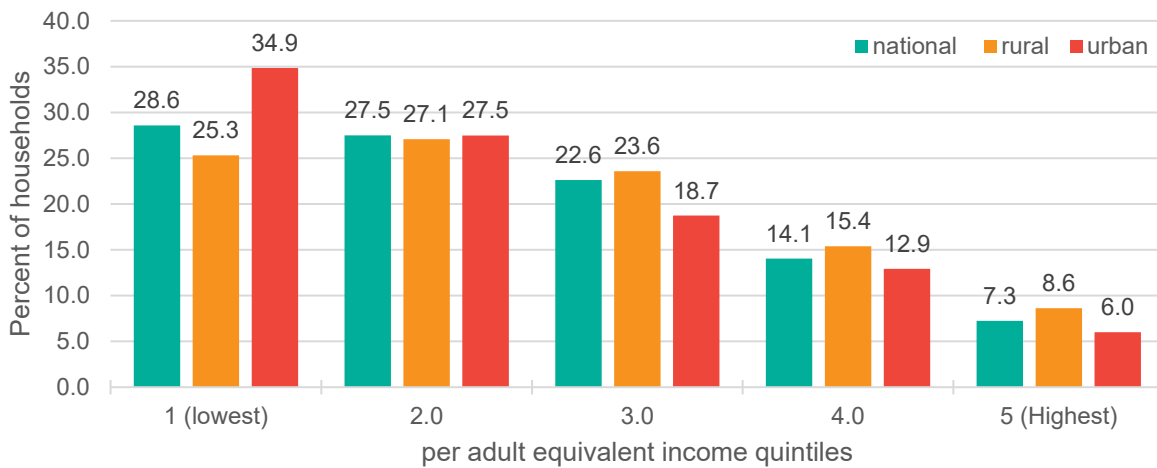
**Figure A.4: Percentage of households with no wardrobe by income group**



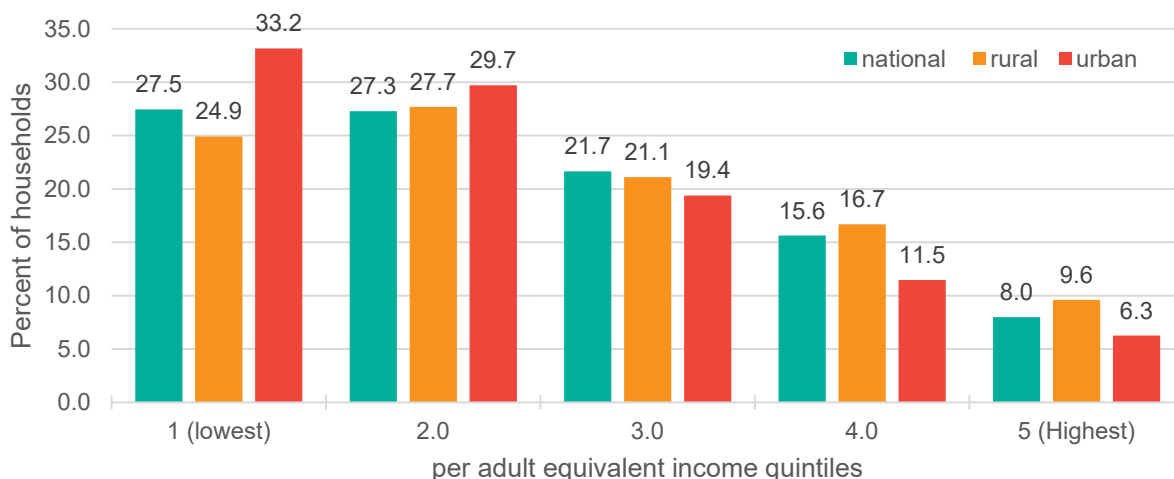
**Figure A.5: Percentage of households with at least one child aged 0 to 5 years by income group**



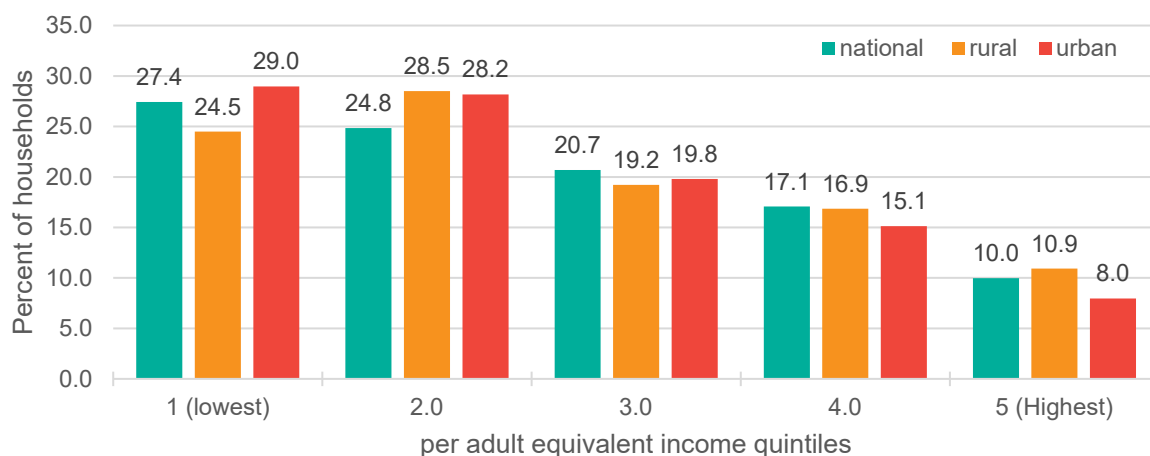
**Figure A.6: Percentage of households with at least two adolescent girls 12 to 20 years by income group**



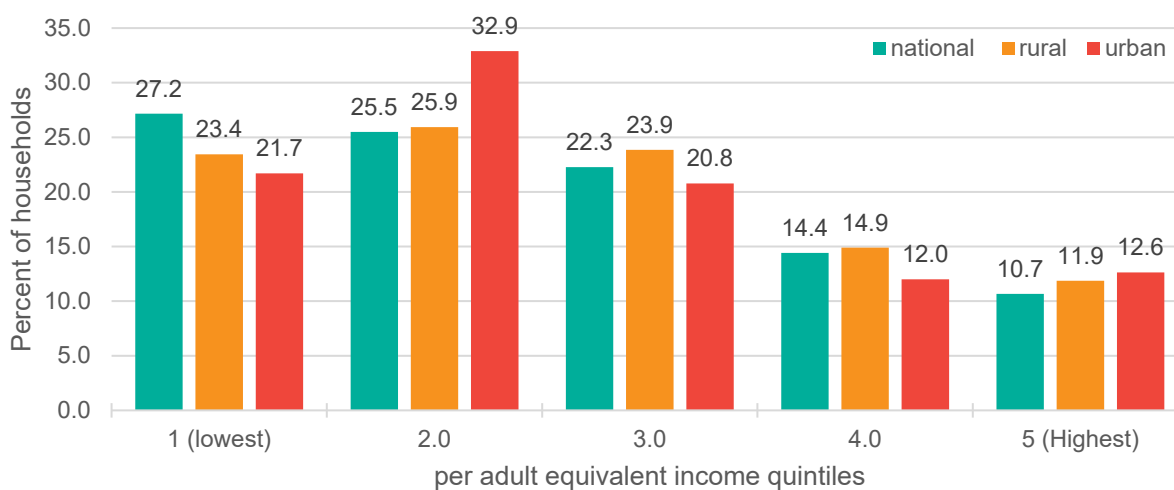
**Figure A.7: Percentage of households with at least two school aged children 5 to 14 years by income group**



**Figure A.8: Percentage of households with school age children not going to school by income group**



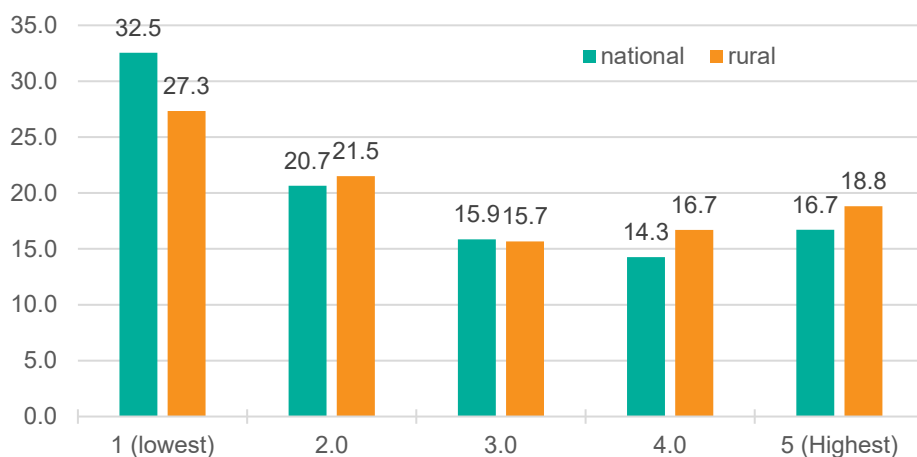
**Figure A.9: Percentage of households with highest education of adults below primary level by income group**



**For households whose primary source of income is from farming:**

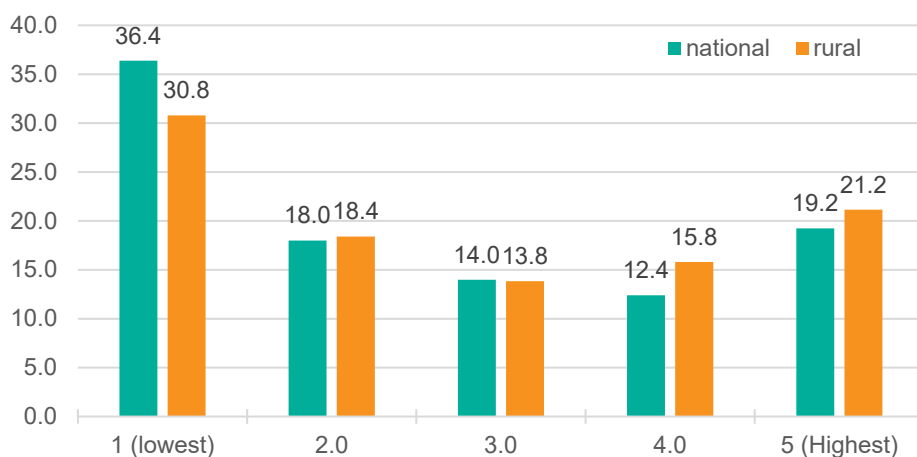
**Households with land ownership of less than 2 acres:** For households whose primary source of income is from farming, land ownership is an important determinant of income. We use the definition of functionally landless in Myanmar which is land ownership of less than 2 acres to define this indicator (WBG 2014; LandLinks, n.d.). In Myanmar, around 35.2 percent of households, who report their primary source of income is from farming, owns less than 2 acres of land according to the MHWS 2022 as shown in Appendix Table A1. Among these households, 32.5 percent belong to the poorest quintile and 53.2 percent are among the poorest 40 percent of all households in Myanmar with the rate being 27.3 and 48.8 percent respectively in rural areas (Appendix Figure A.10).

**Figure A.10: Percentage of households with agricultural land ownership of less than 2 acres by income group**



**Households with cultivated land of less than 2 acres:** Around 28.4 percent of households who report their primary source of income is from farming, cultivated less than 2 acres of land in the 2022 monsoon season according to the MHWS. Among these households, 36.4 percent belong to the poorest quintile and 54.4 percent are among the poorest 40 percent of all households in Myanmar with the rate being 30.8 and 49.2 percent respectively in rural areas (Appendix Figure A.11).

**Figure A.11: Percentage of households who are functionally landless (cultivates less than 2 acres of land) by income groups**



**Table A.1: Summary statistics of indicators by location**

	National	Rural	Urban
	<i>Percent of households</i>		
HHs with at least a child 0 to 5 years	27.7	28.6	25.3
HHs with at least two children 0 to 5 years	3.6	3.7	3.3
HHs with at least two adolescents aged 12 to 20 years	17.4	18.0	15.9
HHs with at least two adolescent girls aged 12 to 20 years	6.2	6.5	5.6
HHs with at least two school age 5-14 years child	15.9	16.7	13.9
HHs with school age children 5-14 years not going to school	20.8	20.2	22.5
HHs with highest education of adults below primary level	20.5	24.5	10.1
HHs with walls made of hemp/hay/bamboo, etc.	24.1	29.2	11.1
HHs with floor not made of improved materials	27.6	31.3	18.1
HHs without improved toilet facility	6.6	8.0	3.1
Time to nearest township >= 120 min	7.4	9.1	2.8
HHs with no electricity	3.9	4.9	1.4
HHs with rudimentary electricity connection	30.9	40.7	5.9
HH has no fridge	73.2	82.7	48.7
HH has no wardrobe	44.0	49.4	30.2
Primary income source is agricultural wage work	11.4	15.1	2.0
Mean income ( <i>kyat</i> )	416,395.70	393,165.50	475,924.10
No of households	12,128	8,494	3,634

**Table A.2: Multivariate association of selected indicators and poverty, National**

Labels	(1) Poor (=1)	(2) Poor (=1)	(3) Poor (=1)	(4) Poor (=1)	(5) Poor (=1)	(6) Poor (=1)
Primary income source is agricultural wage work	0.203*** (0.015)	0.192*** (0.015)	0.172*** (0.015)	0.165*** (0.015)	0.157*** (0.015)	0.124*** (0.015)
Rudimentary electricity connection-solar, battery, water mill, nothing	0.115*** (0.013)	0.110*** (0.013)	0.062*** (0.013)	0.060*** (0.014)	0.052*** (0.013)	0.038*** (0.014)
Time to nearest township >= 120 min	0.086*** (0.017)	0.084*** (0.017)	0.074*** (0.017)	0.073*** (0.017)	0.070*** (0.016)	0.048*** (0.017)
Walls made of hemp/bamboo/straw, etc.	0.122*** (0.013)	0.089*** (0.013)	0.083*** (0.013)	0.061*** (0.013)	0.049*** (0.013)	0.040*** (0.012)
HH with floor not made of improved materials	-	0.068*** (0.012)	-	0.051*** (0.012)	0.047*** (0.011)	0.044*** (0.011)
HH without improved toilet facility	-	0.062*** (0.019)	-	0.047*** (0.018)	0.042** (0.018)	0.032* (0.017)
HH has no fridge	-	-	0.135*** (0.013)	0.133*** (0.013)	0.129*** (0.013)	0.115*** (0.012)
HH has no wardrobe	-	-	0.075*** (0.012)	0.068*** (0.012)	0.055*** (0.011)	0.056*** (0.011)
No land ownership	-	-	0.002 (0.012)	0.001 (0.012)	0.000 (0.011)	0.052*** (0.012)
HHs with at least one child 0 to 5 years	-	-	-	-	0.084*** (0.011)	0.062*** (0.013)
HHs with at least two adolescent girl aged 12 to 20 years	-	-	-	-	0.152*** (0.018)	0.088*** (0.018)
HHs with at least two school age 5-14 years child	-	-	-	-	0.124*** (0.012)	0.065*** (0.014)
HHs with highest education of adults below primary level	-	-	-	-	0.067*** (0.013)	0.084*** (0.013)
Other controls	No	No	No	No	No	Yes
State fixed effects	No	No	No	No	No	Yes
Observations	12,092	12,092	12,092	12,092	12,092	11,561
R-squared	0.064	0.068	0.084	0.087	0.113	0.177

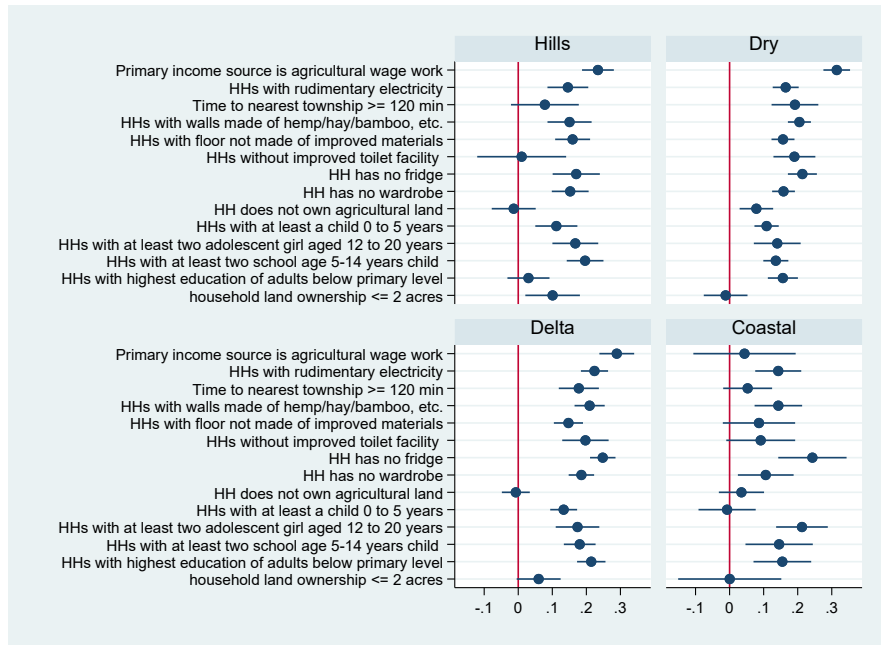
**Table A.3: Multivariate association of selected indicators and poverty, Rural**

Labels	(1) Poor (=1)	(2) Poor (=1)	(3) Poor (=1)	(4) Poor (=1)	(5) Poor (=1)	(6) Poor (=1)
Primary income source is agricultural wage work	0.186*** (0.016)	0.176*** (0.016)	0.158*** (0.016)	0.152*** (0.016)	0.145*** (0.016)	0.125*** (0.016)
Rudimentary electricity connection-solar, battery, water mill, nothing	0.088*** (0.014)	0.085*** (0.014)	0.054*** (0.014)	0.053*** (0.015)	0.048*** (0.014)	0.045*** (0.015)
Time to nearest township >= 120 min	0.084*** (0.018)	0.082*** (0.018)	0.075*** (0.018)	0.074*** (0.018)	0.072*** (0.018)	0.053*** (0.019)
Walls made of hemp/bamboo/straw, etc.	0.099*** (0.013)	0.067*** (0.014)	0.066*** (0.014)	0.044*** (0.014)	0.036** (0.014)	0.035*** (0.013)
HH with floor not made of improved materials	-	0.064*** (0.013)		0.049*** (0.013)	0.045*** (0.013)	0.047*** (0.014)
HH without improved toilet facility	-	0.063*** (0.019)		0.049** (0.019)	0.045** (0.019)	0.038** (0.019)
HH has no fridge	-	-	0.102*** (0.019)	0.099*** (0.019)	0.102*** (0.019)	0.092*** (0.019)
HH has no wardrobe	-	-	0.079*** (0.013)	0.072*** (0.014)	0.058*** (0.014)	0.053*** (0.013)
No land ownership	-	-	0.023* (0.014)	0.022 (0.014)	0.017 (0.014)	0.051*** (0.013)
HHs with at least one child 0 to 5 years	-	-	-	-	0.058*** (0.014)	0.044*** (0.015)
HHs with at least two adolescent girl aged 12 to 20 years	-	-	-	-	0.136*** (0.020)	0.078*** (0.020)
HHs with at least two school age 5-14 years child	-	-	-	-	0.093*** (0.014)	0.038** (0.015)
HHs with highest education of adults below primary level	-	-	-	-	0.069***	0.086***
Other controls	No	No	No	No	No	Yes
State fixed effects	No	No	No	No	No	Yes
Observations	8,471	8,471	8,471	8,471	8,471	8,308
R-squared	0.054	0.058	0.068	0.071	0.089	0.148

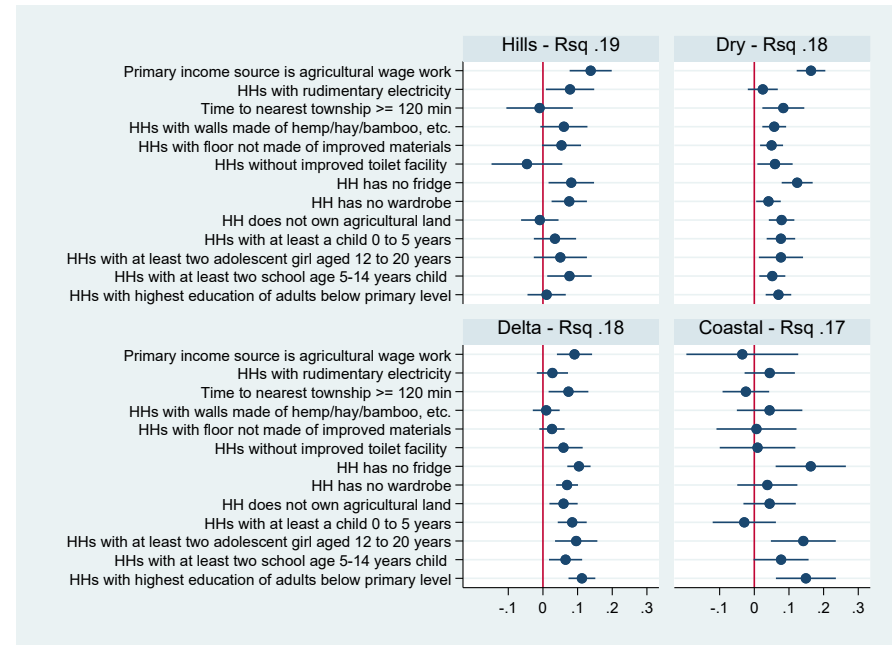
**Table A.4: Multivariate association of selected indicators and poverty, Urban**

Labels	(1) Poor (=1)	(2) Poor (=1)	(3) Poor (=1)	(4) Poor (=1)	(5) Poor (=1)	(6) Poor (=1)
Primary income source is agricultural wage work	0.352*** (0.054)	0.342*** (0.055)	0.290*** (0.053)	0.283*** (0.053)	0.270*** (0.053)	0.218*** (0.043)
Rudimentary electricity connection-solar, battery, water mill, nothing	0.156*** (0.041)	0.144*** (0.040)	0.087** (0.039)	0.080** (0.039)	0.049 (0.036)	0.016 (0.037)
Time to nearest township >= 120 min	0.081 (0.052)	0.077 (0.052)	0.065 (0.051)	0.061 (0.051)	0.056 (0.049)	-0.001 (0.042)
Walls made of hemp/bamboo/straw, etc.	0.199*** (0.031)	0.173*** (0.033)	0.141*** (0.033)	0.122*** (0.035)	0.102*** (0.033)	0.068** (0.031)
HH with floor not made of improved materials	-	0.069*** (0.025)	-	0.055** (0.024)	0.049** (0.023)	0.039* (0.022)
HH without improved toilet facility	-	0.052 (0.063)	-	0.033 (0.059)	0.027 (0.054)	0.004 (0.047)
HH has no fridge	-	-	0.148*** (0.020)	0.147*** (0.020)	0.138*** (0.019)	0.140*** (0.017)
HH has no wardrobe	-	-	0.051** (0.024)	0.047** (0.024)	0.044** (0.022)	0.068*** (0.023)
No land ownership	-	-	0.008 (0.031)	0.008 (0.030)	0.015 (0.029)	0.056** (0.027)
HHs with at least one child 0 to 5 years	-	-	-	-	0.150*** (0.019)	0.106*** (0.020)
HHs with at least two adolescent girl aged 12 to 20 years	-	-	-	-	0.193*** (0.035)	0.114*** (0.035)
HHs with at least two school age 5-14 years child	-	-	-	-	0.211*** (0.023)	0.152*** (0.025)
HHs with highest education of adults below primary level	-	-	-	-	0.031	0.074**
Other controls	No	No	No	No	No	Yes
State fixed effects	No	No	No	No	No	Yes
Observations	3,621	3,621	3,621	3,621	3,621	3,253
R-squared	0.040	0.043	0.066	0.068	0.124	0.226

**Figure A.12: Univariate association of selected indicators and poverty by region**



**Figure A.13: Multivariate association of selected indicators and poverty by region**



**Table A.5: Percentage of poor households correctly identified by different combination of indicators, by rural/urban**

No. of indicators	Core		Core + housing		Core + asset		Core + asset + land		Core + asset + housing	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
<i>Percentage of household</i>										
1	33.75	19.5	30.24	22.41	18.05	29.25	14.91	31.93	16.01	29.31
2	53.75	24.43	50.49	32.16	44.7	52.79	38.2	60.41	38.83	50
3	61.7	24.97	62.11	35.37	66.99	63.25	59.41	81.75	58.98	62.37
4	62.98	-	69.41	36.38	82.14	67	75.99	90.73	73.76	68.26
5	-	-	71.1	-	88.85	67.36	86.61	94.24	83.63	70.82
6	-	-	71.34	-	89.93	-	91.99	94.54	89.93	71.65
7	-	-	-	-	-	-	92.79	-	91.46	-
8	-	-	-	-	-	-	-	-	91.68	-

Core indicators = walls of rudimentary materials + rudimentary electricity connection + remote location + agricultural wage worker

Core + housing = Core + not improved flooring + not improved toilet facilities

Core + asset = Core + no fridge + no wardrobe

Core + asset + land = Core + asset + no agricultural land ownership

Core + asset + housing = Core + no fridge + no wardrobe + not improved flooring + not improved toilet facilities

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