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HRANT MATEVOSSIAN FOUNDATION

Community-Level Multidimensional Poverty in Armenia

Report on the findings of community-level
multidimensional poverty research in the
regions of Lori, Shirak, and Tavush

“**Community-Level Multidimensional Poverty in Armenia**” research has been conducted by the Caucasus Research Resource Center (CRRC)-Armenia Foundation, as part of the Community Poverty Reduction “Know How” program. The program is funded by the European Union and is undertaken by a consortium of four local organizations: the Caucasus Research Resource Center-Armenia Foundation (CRRC-Armenia, consortium lead), the Economic Development and Research Center (EDRC), the Eurasia Partnership Foundation (EPF), and The Matevosyan Foundation.

This report outlines the findings of a study regarding multidimensional poverty in the Armenian regions of Lori, Shirak, and Tavush. The contents of this report are based on original primary research, are the sole responsibility of the authors, and do not necessarily reflect the views of the European Union.

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Authors

Louis-Alassane Cassaignard-Viaud Srбуhi Michikyan
Hrachya Khlgatyan Ryan Matthews
Sara Melkonyan Arvin Avanesi
Hayk Smbatyan

Editors

Sona Balasanyan
Lilit Yezekyan
Hayk Smbatyan
Mariam Arakelyan

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About CRRC-Armenia

CRRC-Armenia is a regionally focused and nationally based independent research center. The organization’s core mandate is to address national and regional socio-economic and political challenges via high quality research and research capacity building. Established in 2003 as part of the CRRC network operating in Armenia, Azerbaijan and Georgia within The Eurasia Partnership Foundation, CRRC-Armenia was registered as a local foundation in 2013, inheriting CRRC institutional memory and the goal to strengthen social science research and public policy analysis in Armenia. CRRC-Armenia aims to be recognized nationally and internationally as a leading force in social science research and influence the policy-making agenda in the country through adhering to the highest international research standards and building a vibrant community of outstanding social scientists.

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Contact: crrc@crrc.am | crrc.am

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LIST OF ACRONYMS

OPHI	Oxford Poverty Human Development Initiative
AF	Alkire-Foster
MPI	Multidimensional Poverty Index
CVI	Covid Vulnerability Index
CRRC	Caucasus Research Resource Center
EDRC	Economic Development and Research Center
EPF	Eurasia Partnership Foundation
ILCS	Integrated Living Conditions Survey
WB	World Bank
HH	Household

1. INTRODUCTION

This report builds upon primary research conducted by the Caucasus Research Resource Center (CRRC)-Armenia Foundation. The study examines multidimensional poverty and COVID-19 vulnerability at the community-level in the three northern Armenian marzes of Lori, Shirak, and Tavush, known to be the most impoverished marzes in the country (Armstat and World Bank 2019). Specifically, this research was conducted through a household survey among 2406 respondents that measured the incidence and severity of multidimensional poverty impacting community residents. It is based on work developed by Sabina Alkire and James Foster at the Oxford Poverty and Human Development Initiative (OPHI) to create multidimensional poverty index. Santos and Alkire (2011).

The approach that this study adopts alters the conventional approach of measuring poverty solely through monetary means. In contrast, it explores poverty through 5 dimensions, (1) basic needs, (2) housing, (3) education, (4) labour, and (5) health, which allows a more comprehensive and locally context-specific understanding of poverty. Therefore, rather than focusing solely on monetary or consumption-based poverty measurements as is often done in poverty research, this multidimensional approach explored poverty in various forms such as poor housing conditions, lack of access to social services, issues in healthcare, labour-related deprivations, and more. Previous multidimensional poverty research using the Alkire-Foster method (AF) method has already been conducted in Armenia, differentiating between urban and rural communities. This study goes deeper to determine if deprivations follow different patterns in specific communities. In turn this allows to develop targeted mitigation strategies and support programs. This research informed the creation of a community-based Multidimensional Poverty Index (MPI) in addition to a COVID-19 Vulnerability Index (CVI), the results of which are outlined in this report.

This research was conducted as part of the initial research stage of the Community Poverty Reduction “Know How” project funded by the European Union and implemented by a consortium of four local Armenian organizations, The Caucasus Research Resource Center-Armenia Foundation (CRRC-Armenia), The Economic Development and Research Center (EDRC), The Eurasia Partnership Foundation (EPF), and The Matevosyan Foundation. The Community Poverty Reduction “Know How” program is a three-year intervention aiming to identify and mitigate the causes and effects of poverty within the three regions of Lori, Shirak, and Tavush, and analyse the subsequent experiences of the communities in these three regions in order to facilitate targeted models of poverty reduction that can be undertaken across the country. With the support of the European Union, the program aims to bring together various actors within civil society and government to work together towards mitigating poverty and vulnerability through best practices that will be identified and tested throughout the three-year program. The findings of this research will specifically inform subsequent capacity building activities and more for members of civil society currently conducting advocacy and poverty-related activities in the three regions.

This paper made a number of useful findings and contributions. The urban and rural divide observed in previous research conducted in Armenia was seen once again in our study. The labour and basic needs dimensions were less important in rural communities while the respondents living in rural communities experience more difficulties related to housing and health than urban respondents. However, Spitak consistently displayed deprivations rates unlike other urban communities. This was not the case in the results of the CVI suggesting that the differences are due to a specific subset of indicators. However, the CVI and MPI results were quite similar in other respects, evidencing a clear link between poverty and COVID-19 vulnerability. Finally, this study outlined a number of issues that need to be addressed in future research on poverty in Armenia. Specifically, a review of methodologies used to measure multidimensional poverty may be warranted to create a more accurate picture of poverty. Another contribution stems from the COVID-19 vulnerability index created in this study. It demonstrated the usefulness of such methodologies to study relevant issues such as climate change vulnerability, or vulnerabilities to displacement.

The report begins with a review of the Multidimensional Poverty Index (MPI) as well as the pathway from MPI approach to the construction of the COVID-19-Vulnerability Index (CVI). This is then followed by the methodological strategy that the current study adopts, as well as some details on the research design and methods. The next chapter analyses the results of this study, pinpointing some of the key findings, followed by a brief account on the policy gaps that the study results may potentially help address. The report concludes in a short chapter highlighting the main study takeaways.

2. MULTIDIMENSIONAL POVERTY AND ARMENIA

Poverty has traditionally been measured by income. The multidimensional poverty index is a measure of poverty which goes beyond this measure by accounting for the multiple dimensions that make up poverty. This can include housing conditions, health, education, and countless other variables.

A global MPI (sometimes referred to as *the MPI*) was originally developed, measuring three dimensions of poverty in 104 countries across the globe (Alkire and Santos 2010). However, an MPI measure can be much more limited in scope (country, regional, sub-regional). The MPI methodology can be adapted to a specific context taking into account local values, and patterns of poverty, which makes it a very adaptable and accurate tool if designed thoughtfully.

The MPI has characteristics that make it an interesting measure to go beyond more classical income-level measures. First, it measures both the incidence (how many people are poor?) and the intensity (how poor, are the poor). Second, the multidimensional allows for measuring more accurately what poverty consists of. The structure of the MPI allows to establish which dimension contributes to poverty in a given population or location. In turn, this allows for the accurate study of the drivers and effects of poverty.

MPI Research in Armenia

Multidimensional poverty research has already been conducted in Armenia on a national level by the Statistical Committee of the Republic of Armenia (ARMSTAT) in collaboration with the World Bank. The World Bank constructed a multidimensional poverty index for Armenia based on the AF method. Five dimensions were used by the World Bank in the construction of the MPI: basic needs, housing, education, labour, and health (Armstat and World Bank 2022).

Whereas the World Bank's MPI covered multidimensional poverty at the national level, disaggregating between urban, rural communities, and Yerevan. This current study explored multidimensional poverty at the community level in Lori, Shirak, and Tavush. Going beyond, a simple urban/rural disaggregation can help us uncover potential patterns of poverty at an even more localized level. In turn this allows for improved analysis and policy. Although the MPI computed by CRRC-Armenia and the World Bank cannot be compared in a statistical sense, our project can be thought of in some ways as a replication study. This research provides a wealth of information not only regarding poverty in these three marzes, but also regarding the implementation of further multidimensional poverty research and index development at the community level in Armenia.

From MPI to CVI

The AF method has been used to research other issues such as COVID-19 vulnerability. CRRC-Armenia developed a new index, using the AF method, with the purpose of identifying which communities are most vulnerable to the health and economic consequences of COVID-19. After reviewing previous studies with the same aim, we adapted a similar study developed by Statistics South Africa (Statistics South Africa 2020). This is the first pilot of a CVI in Armenia, and it is expected that the development of a nationwide community-level CVI could potentially support the prioritization of the most vulnerable communities for tailored COVID-19 related mitigation programming and outreach.

Although the pertinence of COVID-19 related indicators may appear redundant in early 2023 we argue the benefit is elsewhere. Indeed, this type of method, which is explained in detail in the following section, can be used to create multi-faceted and highly context-specific measurements to determine the vulnerability of populations to certain issues. For example, one could imagine the creation of a climate change vulnerability index, a displacement vulnerability index, or any other relevant issue. As such, the pioneering of innovative methods in Armenia is a step towards better indicators, which in turn can foster better policy, and better living conditions.

3. RESEARCH DESIGN

In this study, we attempt to create two indicators: an MPI to measure poverty, and a CVI to measure COVID-19 vulnerability. This section outlines the methodology and scope of the research presented in this report. First, we describe the methodology and case selection. Second, we outline the relevant decisions regarding the creation of this community level *Multidimensional Poverty Index* (MPI). Then we justify, the operationalisation underlying the *COVID-19 Vulnerability Index* (CVI).

3.1 Method

This study used the Alkire-Foster (AF) method (Alkire et al. 2015) to calculate the indices developed in this study. The purpose of developing an MPI using the AF method is to measure acute multidimensional poverty. The term “acute multidimensional poverty” refers to two characteristics: (1) people living in conditions in which they do not attain the minimum internationally agreed standards in indicators of basic functionings, and (2) people living in conditions in which they do not reach the agreed upon standards in several aspects at the same time¹. It is multidimensional in nature as it rests on a number of indicators (subsequently clustered in dimensions), which capture different facets of poverty. The CVI was developed using the same AF method used for the MPI. Its purpose is to measure COVID-19 vulnerability. Based on the definition used by Statistics South Africa, vulnerability in the context of this CVI refers to “the demographic and socio-economic elements that affect the resilience of individuals and communities and represent those more likely to be adversely when COVID-19 manifests itself” (Statistics South Africa 2020). We follow this same definition to guide our approach.

To determine who is multidimensionally poor follows a dual-cut off approach. First, a *deprivation cut-off*, is determined for all indicators used. This refers to the threshold beyond which someone is considered deprived in a given indicator. For example, a household was considered deprived if adult food consumption was below the food poverty line (23,763 Armenian drams per person). Second, the *poverty cut-off (K)* determines the ratio of (weighted) indicators above which someone is considered multidimensionally poor. For example, individuals who were deprived in more than a third of indicators are considered multidimensionally poor in the global MPI.

The AF method then measures acute multidimensional poverty by combining two pieces of information that are closely related to the two characteristics of acute poverty: the *incidence* (also known as the headcount ratio) of poverty and the *intensity*. The incidence (H) refers to the proportion of individuals identified as multidimensionally poor. The intensity (A) is the average proportion of weighted indicators in which individuals are deprived. Both the incidence (H) and the intensity (A) are multiplied to create the index: $MPI = H \times A$, which ranges from 0 to 1.

¹ The AF method employs the term “functionings”, which refer to the beings and doings that people value and have reason to value as understood in Amartya Sen’s *capability approach*.

Combining the two in a single metric is a unique feature of the AF method. Two countries may have the same incidence rate, yet the intensity of the poverty the specific deprivations experienced by the poor populations in each could be significantly different. While one country's poor population may be deprived in one-third of dimensions included in an MPI, another country's poor population could be deprived in two-thirds of indicators, despite both countries having the same incidence. Similarly, MPI can show immediate reductions in poverty as it captures not only people moving out of poverty (a reduction in incidence), but a change in the deprivation load of poor people. Thus, when a poor person becomes non-deprived in an indicator, MPI decreases, even if the incidence of poverty remains unchanged. This gives powerful tools for governments and organizations to monitor the full extent of changes in poverty among the population.

A multidimensional measure (of poverty) is conducted in seven steps:

1. Defining the data source
2. Choosing the unit of identification and the unit of analysis
3. Choosing the dimensions and indicators
4. Choosing the deprivation cut-off's
5. Choosing the indicator's and dimension's weights
6. Choosing the poverty cut-off
7. Computing the MPI.

An additional step consists of breaking down the data by dimension, indicators, and relevant subgroups. [Section 5.1](#) outlines these results. Ultimately, the results can be compared over time if one more time-period is available. As this is the first time such measures are created in Armenia, no time series analysis is possible. Note that, the methodology must remain the same for statistical comparisons. Therefore, the MPI computed by CRRC-Armenia and the World Bank cannot be directly compared. However, it is useful to show where differing methodologies produced (dis)similar numbers. Finally a robustness analysis was conducted, a posteriori, for both indices. This allows to confirm the quality of our research design (and its flaws). Beyond this report, this is an important contribution to building more robust measurements of poverty in Armenia and beyond.

Case, Data Source, and Unit of Analysis

Multidimensional poverty research has already been conducted in Armenia on a national level by ARMSTAT in collaboration with the World Bank. This research was based on data collected by the Armenia Integrated Living Conditions Survey (ILCS) from 2010 to 2015 that examined the education, labour market conditions, health behaviour, and living conditions of households and individuals. Using the data from the ILCS survey, the World Bank constructed a multidimensional poverty index for Armenia based on the AF method. Five dimensions were used by the World Bank in the construction of the MPI: basic needs, housing, education, labour, and health. These same dimensions were used to develop a new questionnaire which is the base of this study.

Whereas the World Bank's MPI covered multidimensional poverty at the national level, disaggregating between urban communities, rural communities, and Yerevan. This study explored, for the first time, multidimensional poverty at the community level in Lori, Shirak, and Tavush, three of the poorest marzes in Armenia (Armstat 2020). Having a limited geographical scope allows to conduct in-depth analysis, while retaining a meaningful scope for comparisons. In this study, the data was disaggregated between rural communities, marz centres (Vanadzor, Gyumri, Ijevan). Spitak was also included as it was the epicentre of a devastating earthquake in 1988 (Hadjian 1993) which may affect its deprivation levels. An additional category "urban Tavush" was retained as Tavush, unlike Lori and Shirak, has a number of urban communities beside Ijevan (notably Dilijan).

The indices are built based on data collected through a survey questionnaire developed by CRRC-Armenia. The fieldwork for the survey was conducted between July 29th and August 23rd 2021, for the entire questionnaire, the unit of identification is the household. This means that multidimensionally poor (or COVID-19-vulnerable) people were identified as such at the household level (unit of identification). However, the analysis is made at the individual level (unit of analysis). The AF method assumes externalities between individuals of the same household. This means that individuals in a given household are affected by each other (positively or negatively). The survey uses a representative stratified randomized cluster sample of 2,406 households throughout the three marzes of Lori, Shirak, and Tavush. The interviews were conducted face-to-face with household members through computer assisted personal interviewing (CAPI). A method CRRC-Armenia has a long experience in. More details regarding the sampling and fieldwork methods are provided in Annex A of this report.

MPI: Measuring Poverty

Dimensions and Indicators

Questions relating to the MPI were selected from the Integrated Living Conditions Survey (ILCS) (Armstat 2020). These questions were used by the World Bank to construct an Armenian national multidimensional poverty index, that also used the AF method.

Five dimensions were included in the MPI: basic needs, housing, education, labour, and health. A total of 24 indicators of poverty included under these dimensions, and each were selected based on the specific local contexts of Lori, Shirak, and Tavush. These five dimensions and their associated indicators were based on the indicators selected by the World Bank to create their national multidimensional poverty index for Armenia.

Deprivation Cut-offs

Each indicator had its own specified deprivation cut-offs to determine under what conditions a household would be considered deprived. Whether or not a particular household was deprived under a certain indicator was determined by the data gathered by the survey. For some of the indicators, the data that informed whether or not a household was deprived was determined through a single all-encompassing

question in the questionnaire. For other indicators, data from multiple questions or a series of subsequent questions were used. As the description of each cut-off is somewhat lengthy, it is not developed here, instead you can find a complete list of cut-offs in Annex B.

Weights

After determining the dimensions and indicators to be used in the MPI calculation, weights were defined for each one. The five dimensions of the MPI were equally weighted at 1/5 each. The weighting for each indicator was also equally weighted within each dimension. This weighting method is known as equal nested weights. [Table 1](#) displays the exact weights used for each indicator.

Table 1: MPI Operationalisation

Dimension (weights)	Indicators	Weights per Indicator
Basic Needs (1/5)	Extreme food poverty	1/20
	Life in Dignity	
	Humanitarian aid	
	Remittance dependency	
Housing (1/5)	Subjective Housing Conditions	1/45
	Adequate Housing	
	Overcrowding	
	Healthy Heating	
	Continuous Access to a Centralized Water System	
	Centralized Sanitation and Garbage Disposal	
	Hot Running Water	
	Quality of Public Services	
	Access to Transportation	
	Access to Education	
Education (1/5)	Secondary Education	1/20
	Compulsory Schooling	
	Quality of Education Services	
Labour (1/5)	Labour Market Participation	1/15
	Long-Term Employment	
	Decent jobs	
Health (1/5)	Affordability of Health Services	1/20
	Termination of Usual Activities	
	Access to Health Services	
	Quality of Health Services	

CVI: Measuring COVID-19 Vulnerability

Dimensions and Indicators

Using the survey data gathered for the creation of the MPI, the CVI measures vulnerability to COVID-19 at the household level in each of the eight communities. The CVI developed by Statistics South Africa was used as the basis for creating this CVI and replicated its approach. To minimize the need for new data, and the length of the questionnaire, the CVI is built on nine relevant MPI indicators and three additional indicators. These twelve indicators are divided into four dimensions: labour, household services, household composition, and health. Each dimension has its own set of indicators and associated questions for each indicator based on the context of vulnerability to COVID-19 in Armenia. All of these indicators were simultaneously used for the calculation of the MPI with the exception of three: internet access, multi-generational household, and age.

Deprivation Cut-offs

For all of the indicators simultaneously used in the CVI and the MPI, the vulnerability and deprivation cut-offs were the same in both indices. The vulnerability cut-offs for the three unique indicators (internet access, multi-generational household, and age) used specifically for the calculation of the CVI, cut-offs are provided in Annex C.

Weights

Similar to the weighting of the dimensions and indicators of the MPI, the weighting in the CVI was equally distributed across each of the four dimensions and indicators using once again equal nested weights. [Table 2](#) outlines the weights used for each indicator.

Table 2: CVI Operationalisation

Dimension (weight)	Indicator	Weights per Indicator
Labour (1/4)	Labour Market Participation	1/12
	Long-Term Unemployment	
	Decent Jobs	
Household Services (1/4)	Access to Internet	1/16
	Continuous Access to a Centralized Water System	
	Centralized Sanitation and Garbage Disposal	
	Healthy Heating	
Household Composition (1/4)	Overcrowding	1/8
	Multi-generational household	
Health (1/4)	Age	1/12
	Access to Health Services	
	Affordability of Health Services	

Poverty Cut-Off

We outlined earlier that the MPI combines two pieces of information, the incidence (H) and the intensity (A). To calculate the incidence, which is the proportion of individuals considered multi-dimensionally poor, we need to determine a poverty cut-off (K). Perhaps confusingly, this is different from the deprivation cut-offs discussed

earlier. The poverty cut-off refers to the proportion of indicators an individual is deprived in after which one is considered multidimensionally poor.

A unique cut-off was decided upon for both indices. If the deprivation score of a household exceeded .33 (or 1/3 of indicators), it was considered multidimensionally poor or COVID-19 vulnerable. This /means that a household deprived in more than 8 of the 24 MPI indicators was considered multidimensionally poor. This cut-off is the same than the one currently used by the OPHI to determine poverty in its global MPI (Alkire, Kanagaratnam, and Suppa 2022). The World Bank used a slightly lower cut-off (.25, or 1/4 of their indicators) in its own MPI in Armenia Armstat and World Bank (2022). The same cut-off was used to compute the CVI. Hence, a household deprived in more than 4 of the 12 CVI indicators was considered COVID-19 vulnerable. [Section 4](#) returns to the implications of these decisions and why a higher cut-off than the one used by the world bank was preferable.

3.2 Limitations

Methodology

There are a number of limitations associated with the AF method that were relevant to this survey and the calculation of the MPI. Furthermore, a number of methodological challenges were also encountered throughout the implementation of this study. These challenges should be considered and mitigated for any future MPI or CVI work conducted in Armenia.

The incidence of deprivation in some indicators was inherently decided by the demographic structure of the household. For example, households with no school-aged children are not considered deprived in a number of education-related indicators. Whether the household was in an urban or rural area also fundamentally determined deprivation on a couple of indicators, which did not consider urban households deprived.

Although the AF method measures intensity based on the average share off deprivations experienced by households, it does not consider the depth of poverty. In other words, the method does not consider how far away households may be from the deprivation cut-offs of each indicator.

Fieldwork Challenges

Several challenges were encountered during the fieldwork which affected the quality of the data. Respondents from communities along the border in Tavush were often distrustful of the interviews and sometimes exhibited rude behaviour towards them. This may have been due to the political situation and the particularly tense atmosphere in the border areas, borders which were negotiated at the time of the interviews (Avetisyan 2021). Some respondents were also offended by the topic of the survey believing that they were not poor and should not have been chosen for the interview.

Many respondents experienced difficulty answering some questions that required calculating the average monthly costs of specific products and services. These

questions had a high cognitive burden and resulted in high rates of “don’t know” responses.

There was difficulty in conducting interviews with male respondents in rural communities during the summer as many were either labour migrants working away from home or were engaged in agricultural activities throughout the entire day. This resulted in many male respondents being unavailable at home during the daytime.

4. ROBUSTNESS ANALYSIS

To ensure the quality of our data, a number of robustness tests are conducted following methods suggested by Alkire et al. (2015). We do not explicitly report the statistical reasoning behind these tests but do explain why they are relevant (see Alkire et al. (2015, 234) for details). For both indices we test the redundancy of our indicators, the sensitivity to change in the poverty cut-off using a dominance analysis and pairwise comparison. We conclude that both indices are adequately designed with room for improvement, specifically regarding indicators of the labour dimension. The results for the MPI are presented before presenting the robustness analysis of the CVI.

4.1 MPI

Redundancy

To ensure the validity of our MPI the quality of individual indicators must be assessed. Indicators should aim to capture relevant (and different) facets of poverty, and as such are the building blocks of any MPI (Alkire et al. 2015, 197).

To ensure that there is no overlap (e.g. two indicators capture the same facet of poverty²) we check for redundancy. To do so we calculate Cramer's V association coefficients for each pair of indicators. [Figure 1](#) displays the coefficients, if the correlation between two indicators is high³, one may be redundant. However, two indicators with a high collinearity may be retained for normative reasons (i.e. if they are important for policy reasons or differ over time) (Alkire et al. 2015, 229).

² This would be an issue as it would artificially increase the weight given to that facet of poverty in the MPI.

³ This problem is partially due to an issue during the fieldwork. Originally four indicators were planned to be used under the labour dimension, yet due to an oversight during the interviews, one indicator was removed from the MPI calculation. This was due to the survey question under the indicator incorrectly being asked at the household level rather than the intended individual level. As a result, this fourth indicator was removed from the calculation resulting in only three indicators under the labour dimension.

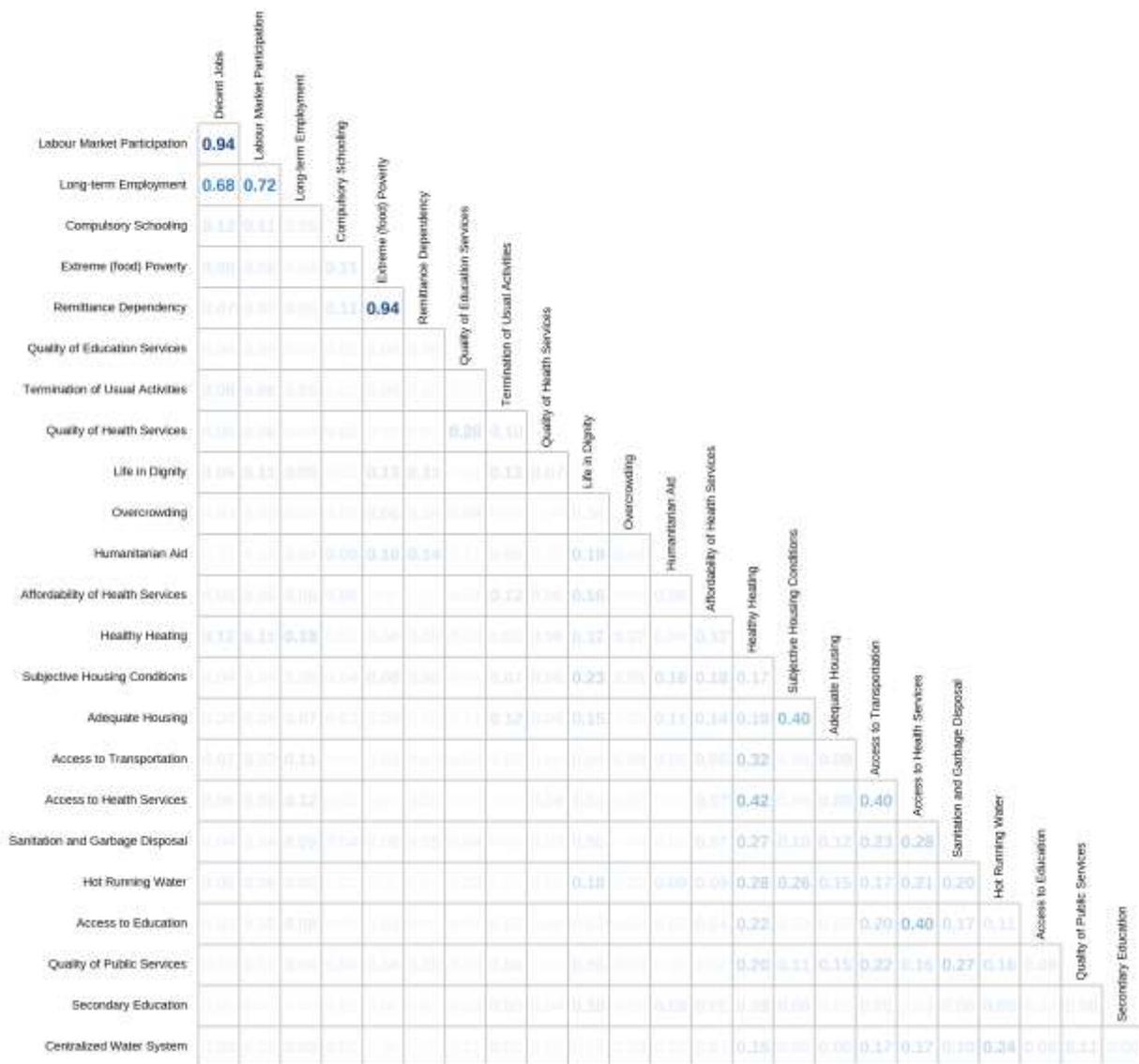


Figure 1: Cramer's V correlations

Figure 1, shows that the large majority of our indicators are uncorrelated. This means that an individual deprived under an indicator X is not likely to be deprived in a different indicator Y. However, some exceptions can be identified, in most cases, the correlation can be explained by the definitions of indicators or clearly measure different facets of poverty.

Extreme food poverty and remittance dependency indicators are highly correlated, subjective housing conditions and adequate housing are also highly correlated. It is expected that objective and subjective housing conditions are linked and correlated. However, we argue that these are distinct concepts that are worth keeping separate.

Thus, we are confident that these indicators capture different phenomena and hence, should be retained in the data.

Other indicators are related but the collinearity can be traced back to the definition and cut-offs chosen for these indicators. A good example is access to education and access to health services. A person is considered deprived in these indicators if they are more than 30 minutes away from education or health facilities respectively. It is then obvious that a household located far from one is likely to be equally far from the other, as these services tend to be located in urban areas.

More problematic is the correlation between the three indicators making up the labour dimension. Indeed, there is a lesser argument to be made that these indicators capture different facets of poverty. Thus, we performed an additional statistical test to measure redundancy as suggested by Alkire et al. (2015, 230). We only test those variables that displayed a correlation higher than 30% and that do not obviously measure different concepts. Thus, only the variables of the labour dimension are included. Note that the calculations below are run on censored headcount ratios (i.e. the population surveyed considered poor). For all three indicators, we obtain a score of a 100%. This means that of those deprived in decent jobs, a 100% were also deprived in long-term unemployment **and** labour-market participation (note, that the relation is not the same in the other direction).

This is problematic as this makes the labour dimension quite unidimensional⁴. Furthermore, households deprived in one indicators of the labour dimension were more likely to be considered poor in the whole dimension and hence multidimensionally poor. However, because the problematic indicators are within the same dimensions, they do not artificially increase the weight of these indicators in the overall MPI, taken together their weight is still 1/5 (or 0.2).

The implications for this analysis are to be noted but do not jeopardize the MPI in itself. However, it does mean that the labour dimension, as we capture it, is relatively unidimensional. In a next iteration the indicators for the labour dimension should be revised.

Table 3: Redundancy Measure R0 (for method see Alkire et al. (2015, 230–31))

	Labour Market participation	Long-term unemployment
Long-term unemployment	100%	
Decent jobs	100%	100%

⁴ This problem is partially due to an issue during the fieldwork. Originally four indicators were planned to be used under the labour dimension, yet due to an oversight during the interviews, one indicator was removed from the MPI calculation. This was due to the survey question under the indicator incorrectly being asked at the household level rather than the intended individual level. As a result, this fourth indicator was removed from the calculation resulting in only three indicators under the labour dimension.

Dominance Analysis

We analyse the sensitivity of deprivation scores to changes of the cut-off value (K) at the marz level and differentiating between rural and urban communities. We start by plotting the distribution of deprivation scores across communities to check for skewness and disparities across communities. Figure 2 shows that deprivation scores are close to a normal distribution across all communities. The distribution is slightly more skewed in urban communities (with the exception of Spitak) where a higher share of household have low deprivation scores (0-0.1).

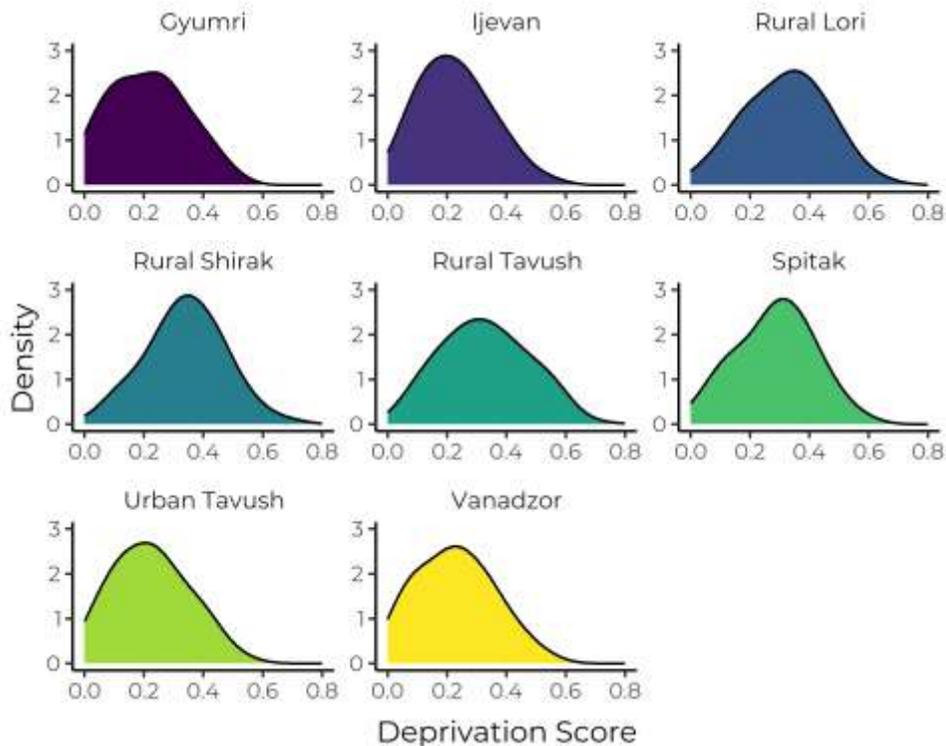


Figure 2: 'Intensity of poverty', distribution by community

When analysing the cumulative distribution of deprivation scores, the y-axis can be read as the proportion of household considered poor and the x-axis shows the deprivation score. In other words, any point on the curves displayed in Figure 3 gives the proportion of household considered poor for a given deprivation cut off in each community.

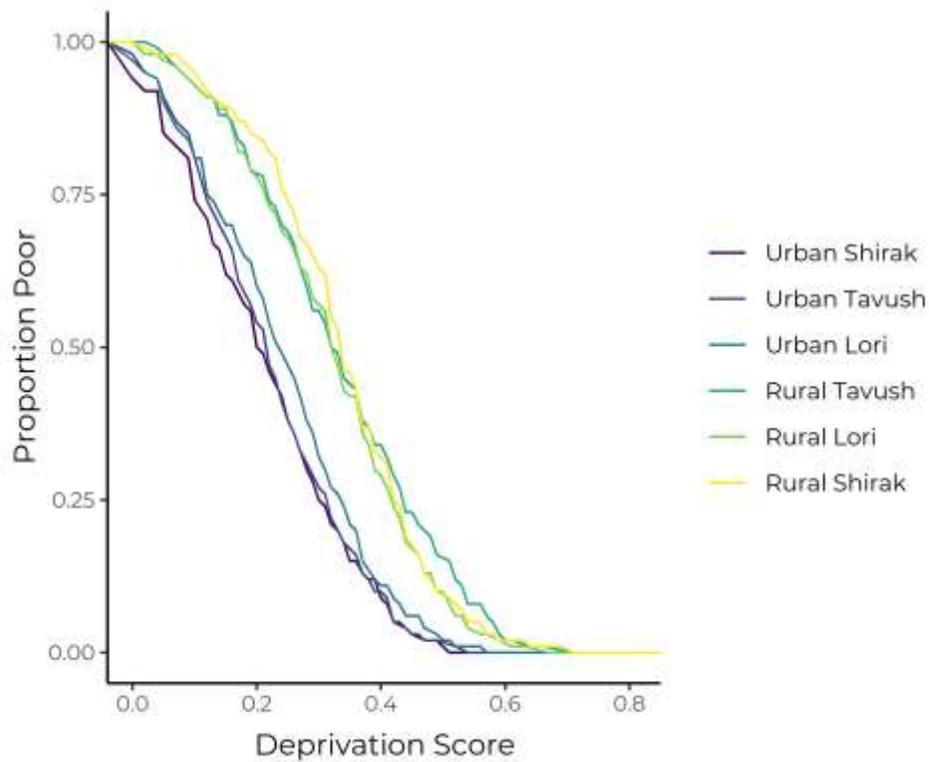


Figure 3: CDFS, CCDFS

We observe a distinct difference between rural and urban communities, a finding consistent with the MPI calculated by Armstat and the World Bank (Armstat and World Bank 2022). While the difference within these two groups is unclear and varies depending on the cut off chosen, an interesting distinction appears when disaggregating the data further. [Figure 4](#) shows that the incidence in Spitak, despite being an urban community, appears to fall between urban and rural communities, and closer to the latter.

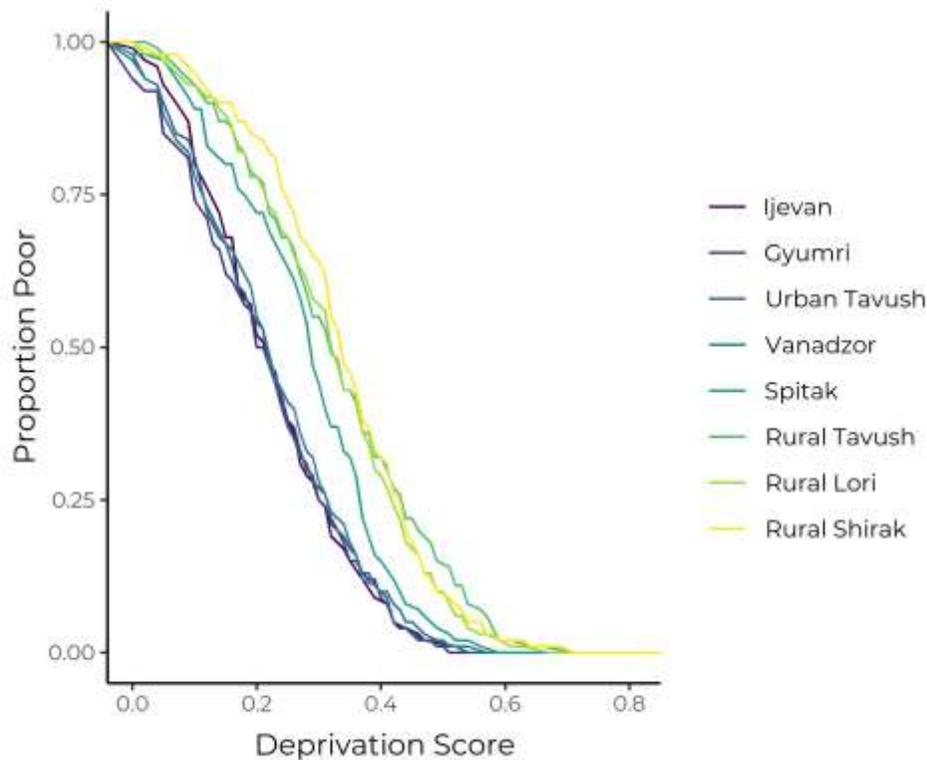


Figure 4: Dominance Analysis

Pairwise Comparisons

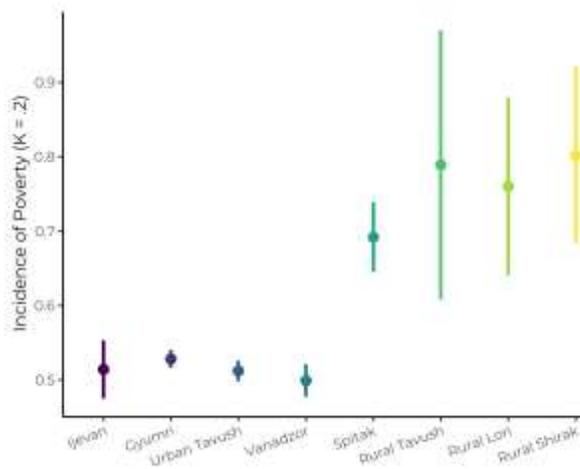
This analysis is not so robust that it allows to rank between communities reliably. To get a clearer understanding of the ranking of communities we make pairwise comparisons. Pairwise comparisons consist in calculating the mean deprivation score for each community and their associated confidence interval, for a given poverty cut-off.

We computed pairwise comparisons for several cut-offs, we only present three cut-offs: .2, .33 (our chosen MPI) and .4. The reasoning for choosing these cut-off's specifically is the following. First, those are values around the MPI we have chosen and hence it is interesting to observe if significant differences appear between these cut-offs. Second, in our dominance analysis we can consistently distinguish between three groups: urban communities, Spitak and rural communities. Therefore, the pairwise comparisons will allow us to know which of these communities can indeed be ranked with a certain level of confidence. Finally, when choosing cut-off's outside the range {0.2 : 0.4} the scores become statistically indistinguishable from 0 or 1. Hence, they are not useful for the analysis, or policy.

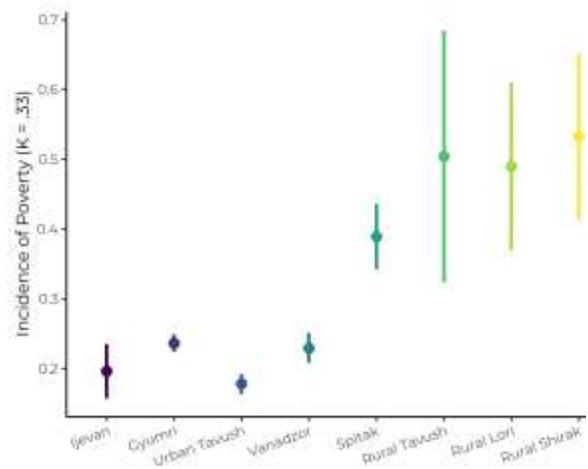
Figure 5 provides a visual representation of the robustness of our results to changes in the poverty cut-offs. It shows that the incidence of multidimensional poverty in urban communities generally cannot be distinguished from one another regardless of which of the three cut-offs is chosen. Spitak and rural communities are grouped as a second distinct group in which communities cannot be distinguished from one

another. Although Spidak could have been thought to fall somewhere between urban and rural communities based on [Figure 4](#). Computing the confidence intervals shows that it cannot be distinguished from rural communities.

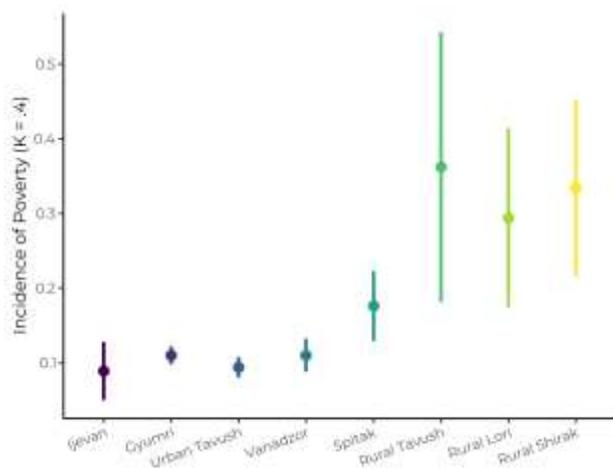
Importantly, it is impossible to rank with certainty between rural communities (and Spidak), or between urban communities. In fact, if one were to rank them based on the mean for each cut-off displayed below, one would obtain entirely different rankings between the urban communities. Thus, readers should refrain from ranking communities unless the confidence intervals between two communities do not overlap.



(a) $K = .2$



(b) $K = .33$



(c) $K = .4$

Figure 5: Incidence of poverty: mean and 95% confidence interval for three cut-offs K

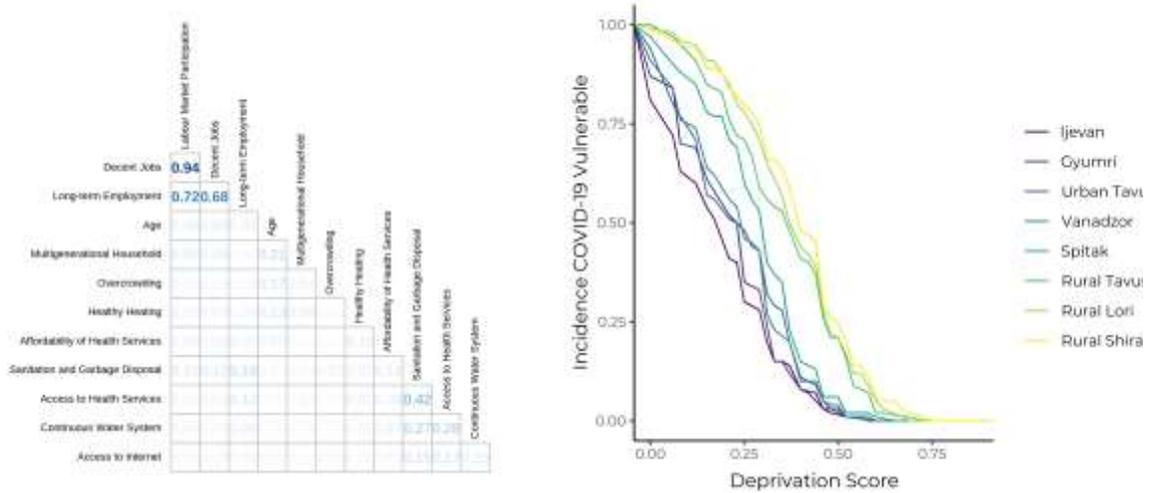
4.2 CVI

Redundancy and Dominance Analysis

Figure 6 (a) unsurprisingly shows the same correlation in the labour dimension as in the MPI, we do not go into the issues this represents once again as they are the same as for the MPI. The only other variables which show a noticeable correlation (.42, *access to health services* and *garbage and sanitation disposal*) clearly measure different concepts and can be left as such. Their correlation is unimportant for the

quality of our MPI. As no new problematic correlation could be identified, it is not necessary to compute any additional redundancy measures.

Similarly, the dominance analysis shows much the same results as in the MPI and CVI (Figure 6 (b)). Therefore, we do not repeat the analysis, the same results and caveats apply. Please refer yourself to the MPI analysis for details.



(a) Cramer's V correlation matrix

(b) Dominance Analysis

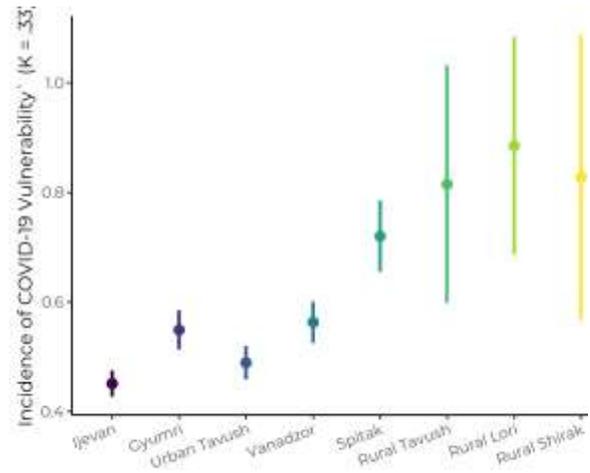
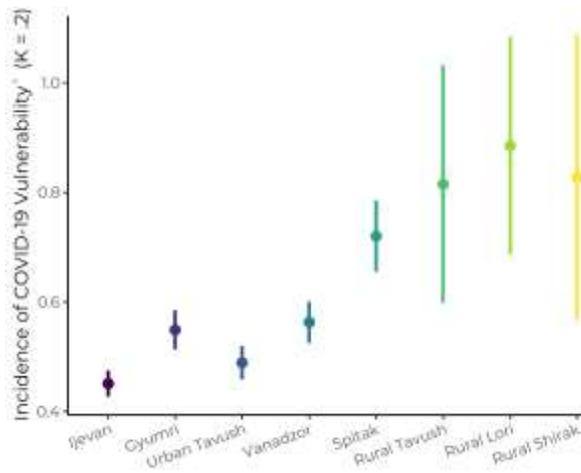
Figure 6: CVI robustness analysis

Pairwise Comparisons

We also use pairwise comparisons to test further the methodology of our CVI. We use the same three cut-offs as for the MPI. Unlike the rest of the robustness analysis, the pairwise comparisons tell a slightly different story for the CVI than the MPI. The incidence of COVID-19 vulnerability at a .2 cut-off becomes indistinguishable from 0 for Urban communities. As in the MPI, cut-offs higher than .4 become statistically indistinguishable from 1. Hence, these cut-offs are not useful for computing the CVI.

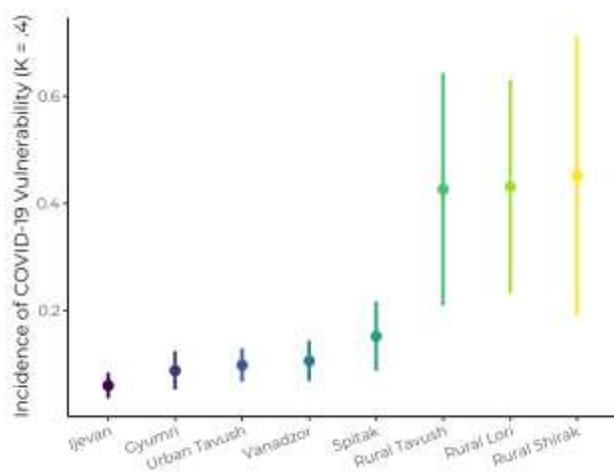
The difference between, the remaining two cut-offs is less telling than for the MPI. The rankings remain stable between the two cut-offs. These rankings offer little new insights, they retain a distinct structure in which urban communities are less vulnerable than rural communities. However, the gap between urban communities and Spitak appears less marked than in the MPI.

Arguably, using a more stringent cut-off (.4) may be preferable as it allows to capture of a smaller proportion of each community than the .33 cut-off. The reason this is preferable is not statistical but policy related. The larger the vulnerable population captured the more difficult it becomes to develop targeted policies to address this vulnerability. This demonstrates the usefulness of running a robustness analysis before computing an MPI. This is an important lesson learned to be retained for future indices calculated using the AF method.



(a) $K = .2$

(b) $K = .33$



(c) $K = .4$

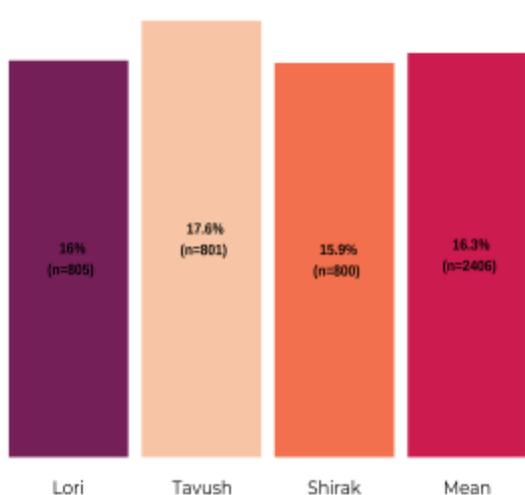
Figure 7: Incidence of COVID-19 Vulnerability: mean and 95% confidence interval for three cut-offs K

5. RESULTS

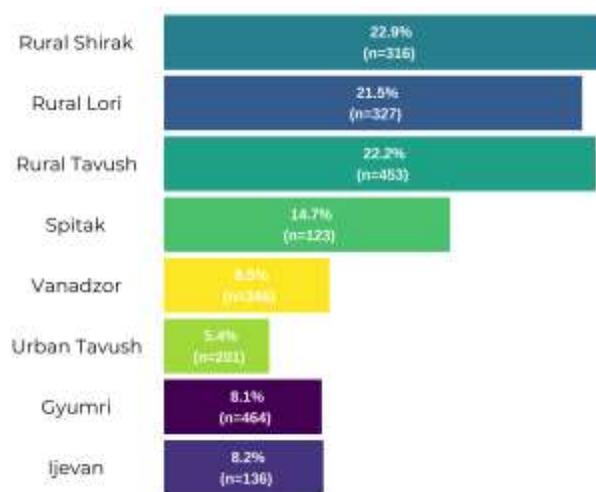
For both indices, the results present the MPI score, the contribution of each dimension and indicator to the final MPI score. In addition, eight indicators are presented as illustration, one for each MPI dimension, and the three indicators specific to the CVI. For each indicator, the measure presented is known as the censored headcount ratio. In simpler terms it is the proportion of multidimensionally poor people deprived in a given indicator. Importantly, this means that the deprivation of the non-poor, are ignored (a process known as censoring). For all figures, the results are broken down at the marz and community level. We first present the MPI results before presenting CVI results.

5.1 MPI Results

There was no significant difference in the deprivation rates between each of the three marzes [Figure 8 \(a\)](#). Tavush had the highest rate at 17.6%, yet this was only slightly higher than Lori at 16% and Shirak at 15.9%. The overall total for all three marzes was 16.3%. These numbers reflected the World Bank’s 2021 national MPI results in urban communities (16.1% (Armstat and World Bank 2022)). While there was no significance in the MPI results between the three marzes, at the community level, the overall deprivation rates were noticeably higher among the rural communities [Figure 8 \(b\)](#). Rural Shirak, rural Tavush, and rural Lori all had deprivation rates at 22.9%, 22.2%, and 21.5%, respectively, whereas the urban communities had deprivation rates between 5.4% (urban Tavush) and 8.5% (Vanadzor). Spitak was the only urban exception with a rate directly between the rural and other urban communities at 14.7%. These higher rates in rural communities closely reflected the World Bank’s 2021 national MPI result of 23.5% in rural communities (Armstat and World Bank 2022).



(a) By Marz



(b) By Community

Figure 8: Marz Level MPI Score

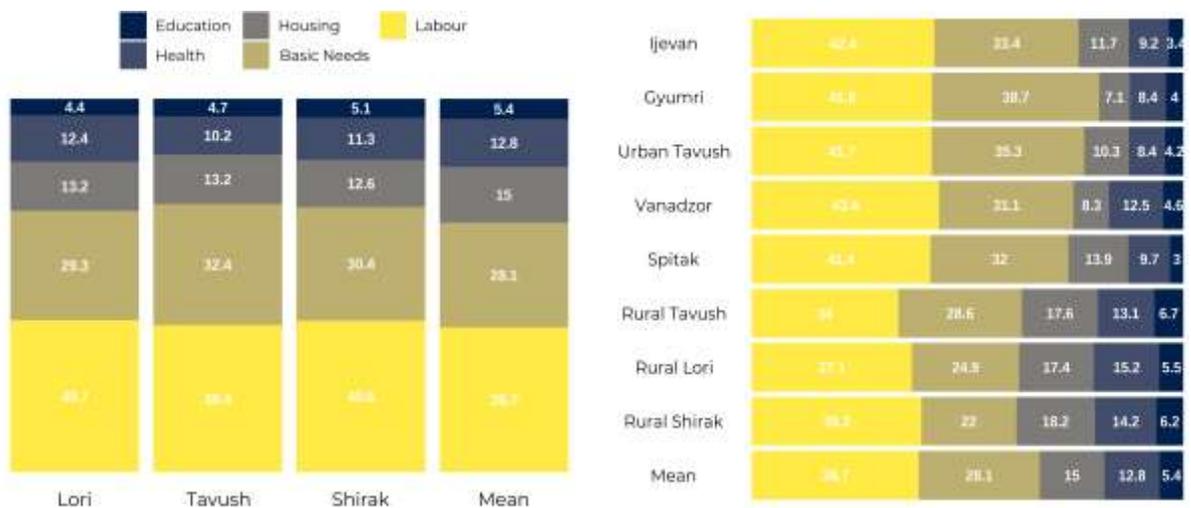
Contribution

An interesting feature of the AF method is the ability to distinguish the contribution of each dimension and indicator to the MPI. By contribution we mean which indicators or dimensions are causing the MPI score.

Figure 9 shows that the lion's share of the MPI score in Northern marzes can be explained by the labour and basic needs category. Regardless of the level of disaggregation, education and health are the dimensions with the smallest contributions to the MPI. However, readers ought to be careful with their interpretations keeping in mind the issues outlined earlier with some of our indicators.

At the marz level, the contributions are remarkably similar. The divide between urban and rural communities is however noticeable. Figure 9 (b) shows that the labour and basic needs dimensions are marginally less important in rural communities. On the other hand, the respondents living in rural communities experience more difficulties related to housing and health.

In the marzes surveyed the lack of money, most likely due to precarious employment situation, leads to immense difficulties of the poor in fulfilling their most basic needs (health, food, clothes).



(a) By Marz

(b) By Community

Figure 9: Contribution by Dimensions, values below 3% are not displayed

When breaking the data down further, the picture largely remains the same. The three indicators contributing the most come from the labour dimension Figure 10. The three indicators contributing the least are overcrowding, access to centralised sanitation and garbage disposal, and compulsory schooling. This is particularly the case in urban communities, although the levels remain under 3 percent in all communities. It is noteworthy, that two indicators from the housing dimensions are the smallest contributors.

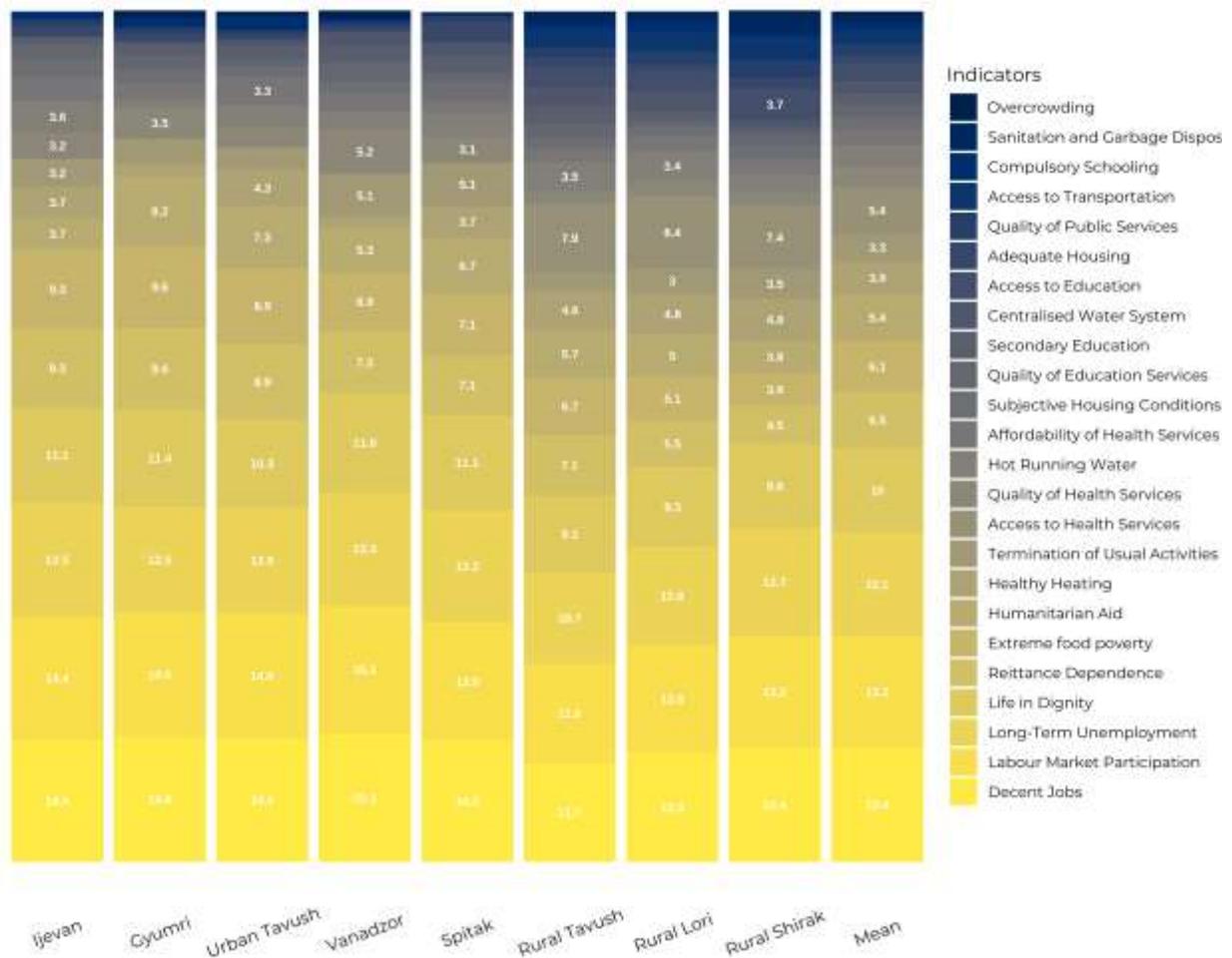
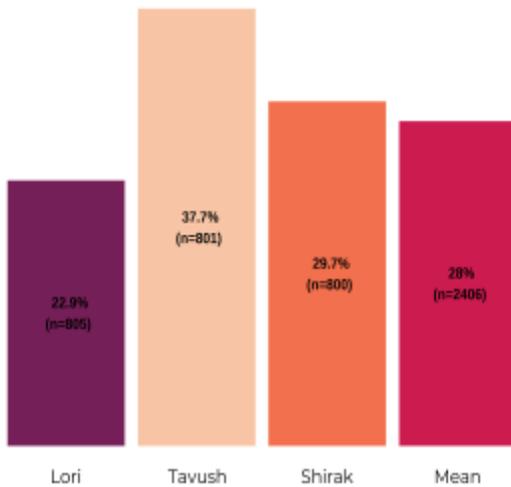


Figure 10: Contribution by Indicator, by community, values below 3% are not displayed

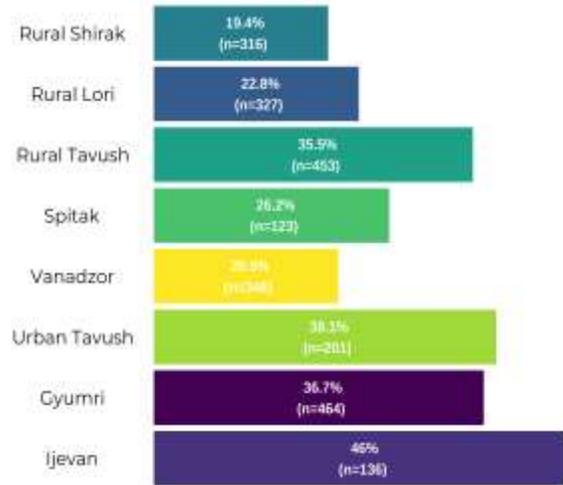
Results by Indicators

Basic Needs: Extreme Food Poverty

The extreme (food) poverty indicator referred to whether adult food consumption was more or less than the national food poverty line. A household was considered deprived if adult food consumption was below the food poverty line (23,763 Armenian drams per person and per month). In the three marzes, 28% of individuals who were considered multidimensionally poor experienced extreme food poverty [Figure 11](#). Tavush had the highest percentage of individuals at 37.7%, whereas Lori and Shirak were 22.3% and 29.7%, respectively. Reflecting the overall high level in Tavush at the marz-level, Ijevan (the capital of Tavush), rural Tavush, and urban Tavush had the highest rates of extreme food poverty in addition to Gyumri [Figure 11 \(b\)](#). These four communities ranged from 34.5% in urban Tavush to 47% in Ijevan. Rates were lowest in rural Shirak (17.3%), Vanadzor (20.8%), and rural Lori (24.4%).



(a) By Marz

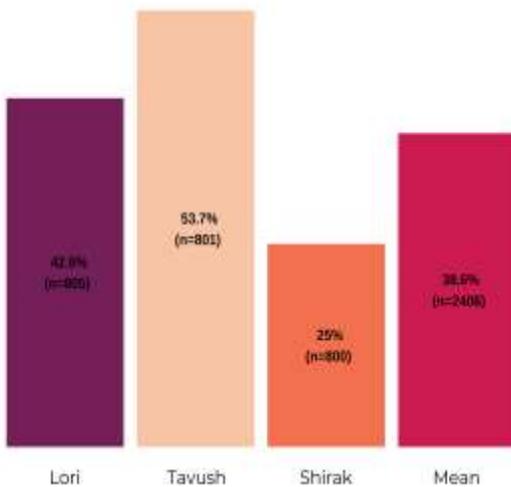


(b) By community

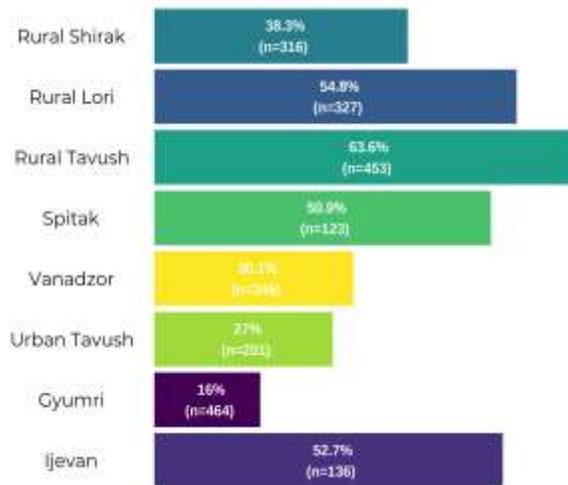
Figure 11: Censored Headcount ratio - Extreme (food) poverty

Housing: Hot Running Water

The hot running water indicator identified households that did not have access to functioning hot running water. The overall deprivation rate of households across the three marzes did not have access to functioning hot water was 38.6% [Figure 12 \(a\)](#) . Tavush had the highest deprivation rate at 53.7% followed by Lori at 42.9% and Shirak at 25%. Deprivation rates regarding hot water access varied widely across the eight communities [Figure 12 \(b\)](#). Rural Tavush had the highest rate at 63.6% followed by rural Lori (54.8%), Ijevan (52.7%), and Spitak (50.9%). Gyumri had the lowest rate at 16% followed by urban Tavush (27%), Vanadzor (30.1%), and rural Shirak (38.3%).



(a) By Marz

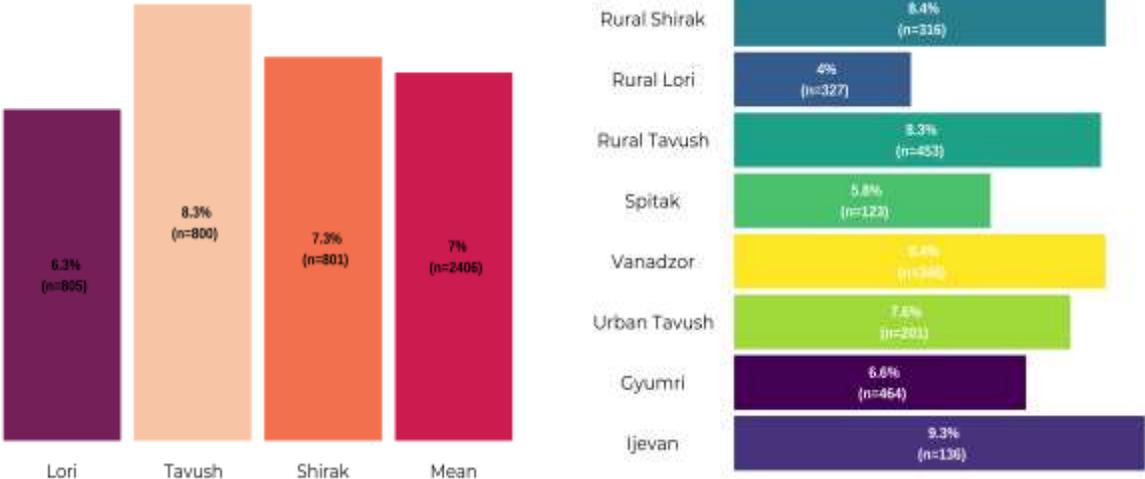


(b) By community

Figure 12: Censored Headcount ratio - Hot Running Water

Education: Quality of Education Services

This indicator identified households that were not satisfied with education services. The overall deprivation rate across each of the three marzes was only 7%, and there was no significant difference in this rate between each marz (6.3% in Lori, 8.3% in Tavush, and 7.2% in Shirak) Figure 13 (a). At the community level, Ijevan had the highest deprivation rate under this indicator at 9.3% followed by rural Shirak (8.4%) and Vanadzor (8.4%) Figure 13 (b). Rural Lori had the lowest at 4% followed by Spitak at 5.8%.



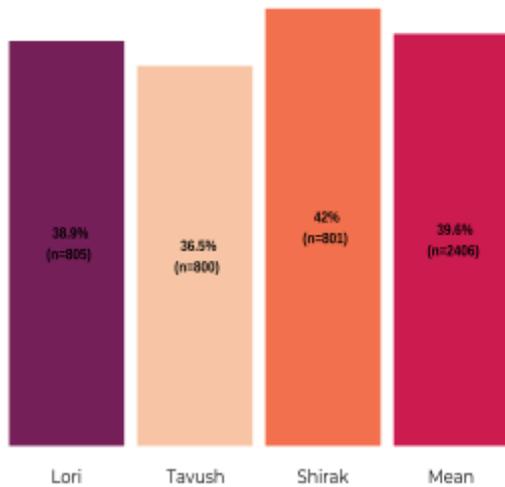
(a) By Marz

(b) By community

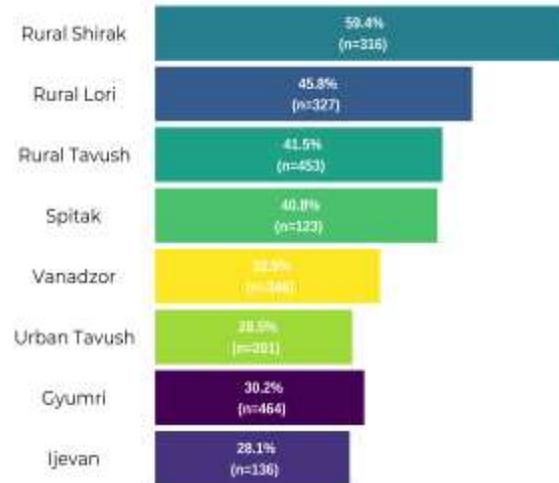
Figure 13: Censored Headcount ratio - Quality of Education Services

Labour: Long-Term Unemployment

Under the long-term unemployment indicator, a household was considered deprived if any working-age member had been unemployed for one year or more and was actively looking for a job. Households that had no members of working age were not considered deprived. Under this indicator, the deprivation rate was 39.6% overall across the three marzes Figure 14 (a). Shirak had the highest rate at 42% followed closely by Lori at 38.9% and Tavush at 36.5%. All three of the rural communities and Spitak had the highest deprivation rates among the eight communities Figure 14 (b). Rural Shirak had the highest at 59.4% followed by rural Lori (45.8%), rural Tavush (41.5%), and Spitak (40.8%). Ijevan and urban Tavush had the lowest rates at 28.1% and 28.5%, respectively.



(a) By Marz

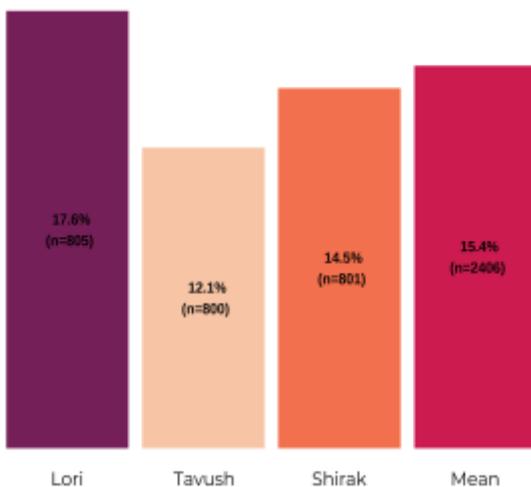


(b) By community

Figure 14: Censored Headcount ratio - Long-Term Unemployment

Health - Quality of Health Services

This indicator measured households that were not satisfied with health services. Under this indicator, the overall deprivation rate was 15.4% across the three marzes [Figure 15 \(a\)](#). Lori had the highest rate at 17.6% followed by Shirak at 14.5% and Tavush at 12.1%. At the community level, Vanadzor had the highest rate of deprivation at 22.6% followed by Gyumri at 17.2% [Figure 15 \(b\)](#). Rural Tavush had the lowest rate at 10% followed closely by rural Shirak at 10.5%.



(a) By Marz



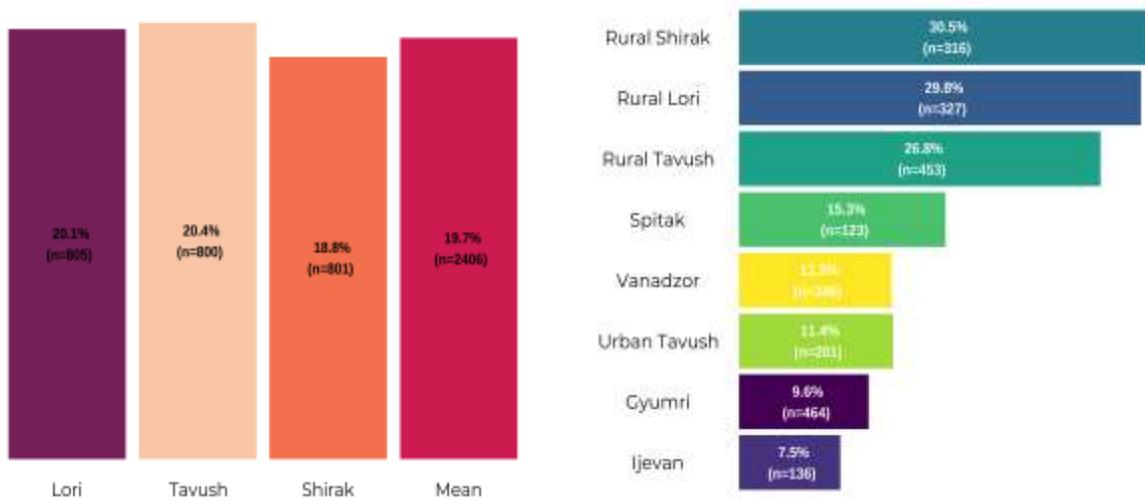
(b) By community

Figure 15: Censored Headcount ratio - Quality of Health Services

5.2 CVI Results

This chapter begins with an overview of the overall CVI results followed by the results of the three indicators of internet access, multigenerational household, and age. We detail the CVI score in all marzes and break down the contribution of each dimension and indicator to this score.

The three marzes exhibited similar rates of COVID-19 vulnerability [Figure 16 \(a\)](#). Tavush had the highest rate at 20.4% followed by Lori at 20.1% and Shirak at 18.8%. The overall CVI total across each of the three marzes was 19.7%. There were stark differences in COVID-19 vulnerability rates at the community level [Figure 16 \(b\)](#). Rural communities were significantly more vulnerable than urban. Rural Shirak, rural Lori, and rural Tavush had rates at 30.5%, 29.8%, and 26.8%, respectively, whereas urban communities had much lower rates between 7.5% (Ijevan) and 15.3% (Spitak).



(a) By Marz

(b) By community

Figure 16: CVI score

Contributions

Household composition contributed the least to COVID-19 vulnerability, at the marz level, with no large differences at the community level. The other three dimensions contributed evenly to the CVI scores with a little under a third each [Figure 17 \(a\)](#). At the community level, only Gyumri, and Ijevan were less affected by the household services dimensions [Figure 17 \(b\)](#). The other communities roughly followed the pattern observed at the marz level.

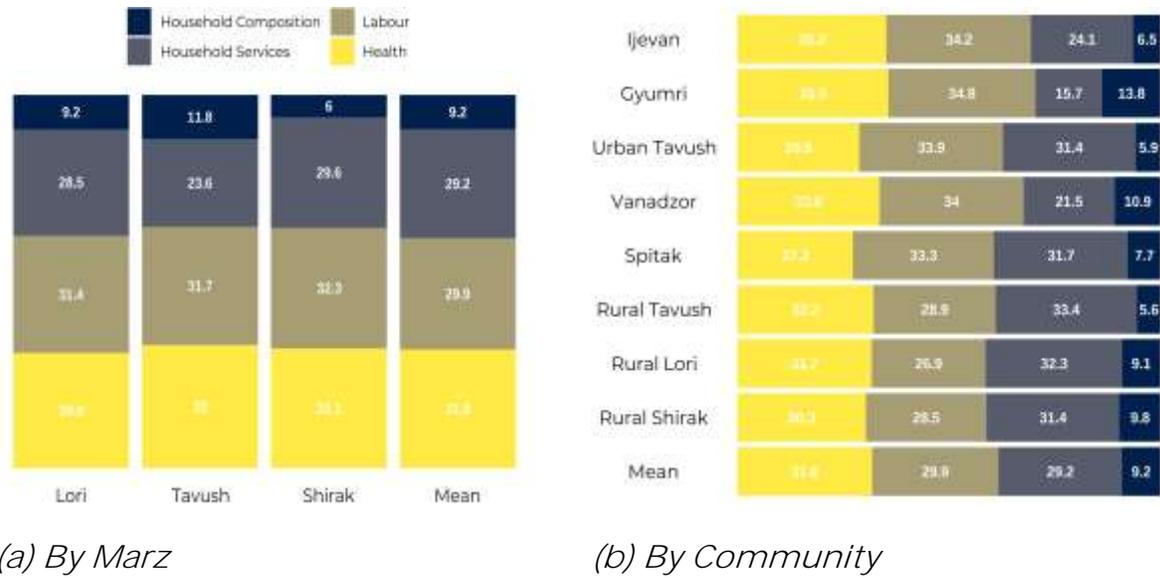


Figure 17: Contribution by Dimensions, values below 3% are not displayed

The contribution of indicators allows us to make some interesting observations. The rural, urban divide reappears on some indicators. For instance, communities in rural Tavush and Shirak were the only ones in which more than 3 percent of respondents lacked a centralized water system, with rural Lori closely behind Figure 18. It is also interesting to note that Spitak's CVI scores are broadly in line with other urban communities unlike MPI scores.

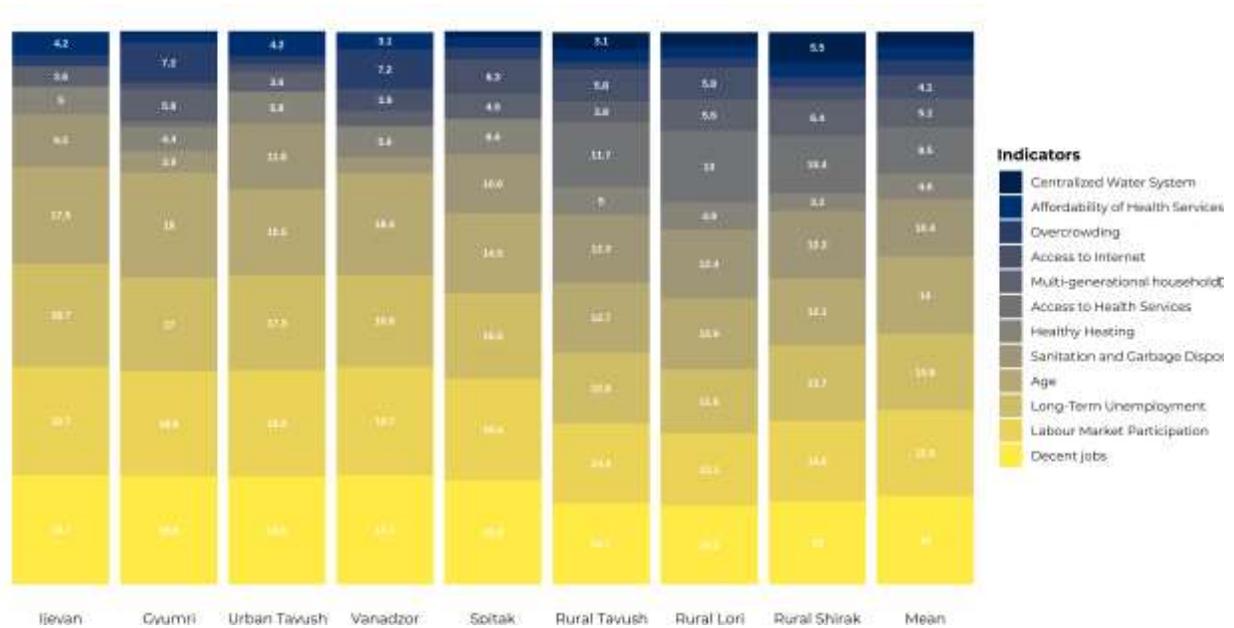
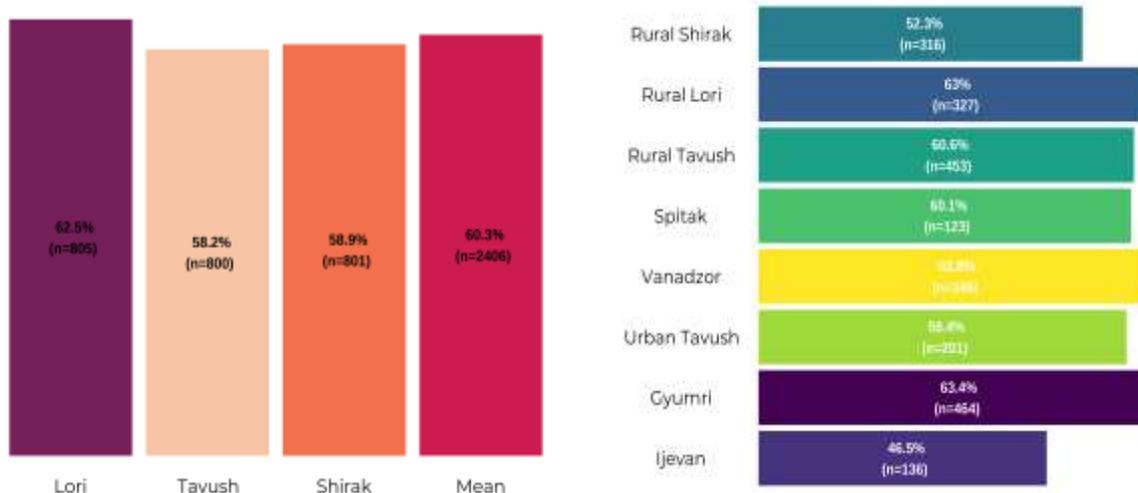


Figure 18: Contribution by Indicator, by community, values below 3% are not displayed

Results by Indicators

Age

Households were considered vulnerable if any household member was 60 years old or older. There was not a significant difference in the vulnerability rates between marzes under this indicator [Figure 19 \(a\)](#). Lori had the highest rate at 62.5% followed closely by Shirak (58.9%) and Tavush (58.2%). The overall rate across the three marzes was 60.3%. There was also not much difference in the vulnerability rates between communities [Figure 19 \(b\)](#). Almost all were between 60.1% (Spitak) and 63.4% (Gyumri) with the exceptions of Ijevan at 46.5% and rural Shirak at 52.3%.



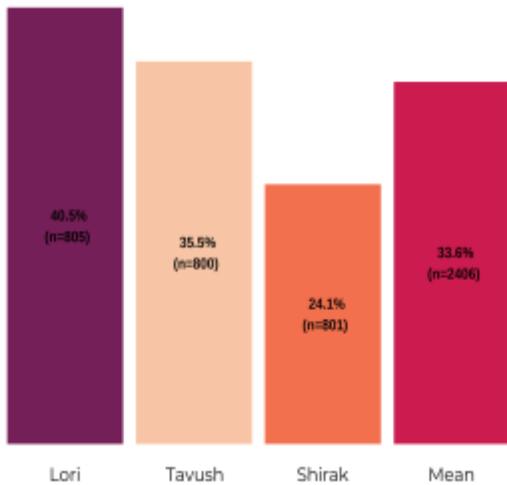
(a) By Marz

(b) By community

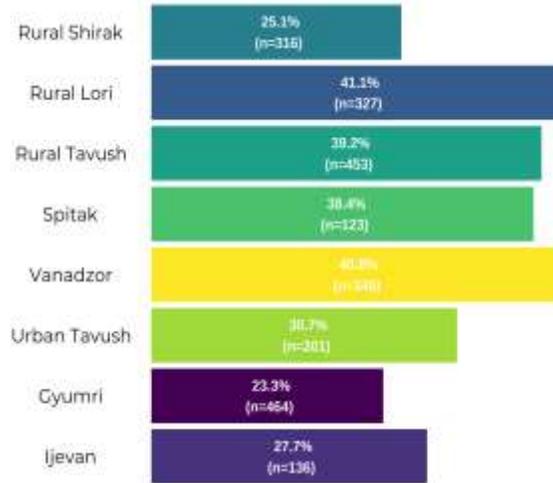
Figure 19: Censored Headcount ratio - Age

Access to Internet

Households with no internet connection from an internet service provider were considered deprived. Mobile phone service providers were not considered household internet service providers. Across the three marzes, the rate of vulnerability was 33.6% [Figure 20 \(a\)](#). Lori had the highest rate at 40.5% followed by Tavush at 35.5% and Shirak at 24.1%. At the community level, rural Lori had the highest rate of vulnerability under the internet access indicator at 41.1% followed by Vanadzor (40.8%) and rural Tavush (39.2%) [Figure 20 \(b\)](#). Gyumri had the lowest rate at 23.3% followed by rural Shirak (25.1%) and Ijevan (27.7%).



(a) By Marz

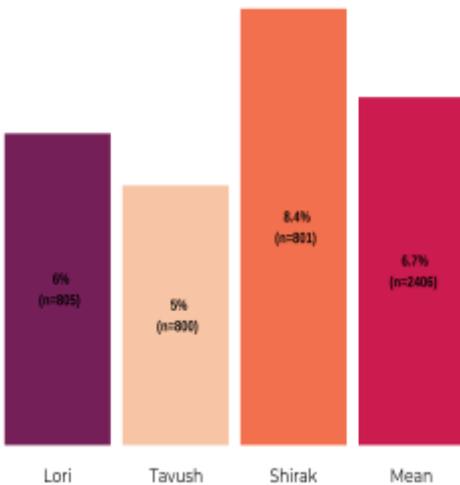


(b) By community

Figure 20: Censored Headcount ratio - Access to Internet

Multi-generational Household

Households were considered multigenerational and vulnerable if they contained both children (0-15 years old) and elderly (aged 65+) members. Overall, the rate of vulnerability across the three marzes was 6.7% Figure 21 (a). The rate was highest in Shirak at 8.4% followed by Lori at 6% and Tavush at 5%. At the community level, rural Shirak and rural Lori had the highest rates at 10.3% and 8.8%, respectively, followed by Spitak (7.6%) and Gyumri (7.1%) Figure 21 (b). Vanadzor and Ijevan had the lowest rates at 3.1% and 4.1%, respectively.



(a) By Marz



(b) By community

Figure 21: Censored Headcount ratio - Multi-Generational Household

6. RECOMMENDATIONS

Before diving into the policy gaps this report identifies, a word of caution. The purpose of this report is not to provide a causal story of poverty in the three marzes surveyed. We are not claiming that improved education is less important than improved housing or labour conditions. More precise research is required to do so. This section merely strives to outline where efforts may be concentrated next to combat poverty in the most effective way.

While this may be unsurprising, our results show that poverty manifests itself differently in rural and urban communities. If more research is required to pinpoint more precisely these differences, we can emphasize with a degree of certainty the need for differentiated approaches between rural and urban cities.

This said, we present the gaps in policy, or rather directions in which more strategic policy interventions might be required, solely based on the main results that our evidence highlighted.

6.1 Aim at Poverty: Possible Policies

Each community was significantly deprived under the life in dignity indicator by about two thirds or more with an overall deprivation of 69.3% across the three marzes. This indicator primarily focused on the ability of households to pay for basic living expenses, and among several issues, the survey results revealed notable problems in the stable access of households to healthy nutrition. Policies should be developed to address this issue.

Basic Needs

The difficulties of inhabitants to cover basic needs were widespread. Between 60.6 percent and 68.3 percent of respondents expressed difficulty paying their monthly expenses, some having difficulties accessing properly fitting shoes. More than 80% of inhabitants in each community could not afford a week-long vacation including stays with relatives or friends. Innovative policies may be developed to address the most urgent manifestation of poverty. Research and policy should also understand better which deprivations are only symptoms and which deprivations actively prohibit the population to leave poverty.

Despite these issues the majority of the population was not registered in the poverty benefit system. It is important to understand the reasons behind this disconnect and how to effectively address it. An objective that is already addressed by another EU funded project “Strong CSOs and Local Partnerships for Accountable Communities and Inclusive Social Protection in Armenia” (EU for Armenia 2022).

Housing

Healthy heating and quality water access are two of the most integral housing-related issues that should be prioritized across each of the three marzes. Healthy heating had particularly high rates of deprivation. It is important to understand better if these

deprivations are caused by economic barriers and/or faulty public services. Significant issues were also reported regarding public services, such as garbage removal.

Education

The indicators under the dimension of education had some of the lowest rates of deprivation among all indicators in the MPI. However, readers should be cautious to underestimate the importance of addressing this issue as it is likely to have profound impacts on other aspects of poverty.

Health

The same situation can be extended to the health dimension in which deprivation rates were relatively low. However, when asked about main household issues, “inability to solve healthcare problems” was the top response for five of the eight communities ranging from roughly one third to one half of respondents in each. Notably, this was also overwhelmingly the largest issue for respondents over 65 years old. For households in Ijevan, rural Shirak, and Spitak, the top household issue was “housing problems” (38.1%, 31.4%, and 42.3%, respectively). Rural Shirak and rural Lori had the highest rates of households responding not having enough money even for everyday food (15% and 14.1%, respectively). This points to the important difference between prevalence and effect of an indicator.

Labour

Labour is a predominant issue across each of the three marzes with significant rates of deprivation in each community. This study does not allow to uncover the causes of such deprivation rates. However, considering the large proportion of the population affected by this issue, this issue deserves special attention when combating poverty. This is especially true as employment is very likely affecting other dimensions of poverty.

6.2 Improving our Aim: Better Poverty Research

This analysis has evidenced significant weaknesses in methodology of this MPI. As it is heavily based on the ILCS methodology, it sheds doubt as to the relevance of some of these indicators to examine multidimensional poverty in Armenia. Thus, a thorough review of the indicators, their definition, and their cut-offs should be conducted to improve their reliability and validity.

Several of these issues have become apparent through a robustness analysis. This displays the importance of running this sort of analysis on a regular basis to improve the methodologies used. While changing the methodology affects the comparability of results over time and with international poverty research, it appears important to improve our understanding of poverty in Armenia. In turn, this will allow for better policy and better recommendations.

This study has also evidenced the need for community-level poverty research. Although the urban rural divide largely holds true, it fails to capture important disparities in the experience of poverty in Armenia. This approach overlooks intra-household issues and deprivations experienced between household members. For

example, there may be significant issues regarding gender inequality within a household, but this is not incorporated into the MPI calculation. This is somewhat mitigated by the assumption that deprivation have externalities (positive or negative) but should be kept in mind when interpreting results. Therefore, complementary research is required to identify imbalances in gender, age, and other metrics.

Finally, it is important to note that MPI measures are useful but are not a silver bullet. Further research is needed to uncover the causal stories underlying poverty, a task that MPI measures are not fit to achieve on their own. As we noted the low prevalence of an issue does not mean it does not have far reaching consequences.

7. CONCLUSION

This study aimed at creating two indices studying multidimensional poverty and COVID-19 vulnerability in three northern Armenian marzes: Lori, Shirak, and Tavush. The data obtained in a survey conducted among 2406 households was used to create a multidimensional poverty index (MPI) and a COVID-19 Vulnerability Index (CVI) using the AF method. The MPI included five dimensions of multidimensional poverty: (1) basic needs, (2) housing, (3) education, (4) labour, and (5) health. These five dimensions were comprised of a total of 24 indicators informing the deprivation rates of each. The CVI included four dimensions: (1) labour, (2) household services, (3) household composition, and (4) health. These four dimensions were comprised of a total of 12 indicators.

Unlike previous MPIs developed in Armenia, this study was conducted at the community level in order to develop a more nuanced look at the unique manifestations of poverty. Looking forward, it is important to acknowledge the value of developing sub-national vulnerability indices for Armenia. By segmenting MPI data by community, this research was able to identify the unique deprivations experienced by each specific community. While all communities suffered from common deprivations in labour market access or stable nutrition, several dissimilar patterns were uncovered. The urban and rural divide observed in previous research conducted in Armenia was seen once again in our study. The labour and basic needs dimensions were less important in rural communities while the respondents living in rural communities experience more difficulties related to housing and health than urban respondents. An additional finding was made in which Spitak suffered from deprivation rates akin to rural communities rather than urban communities. The results of the CVI indices displayed remarkably similar results. However, Spitak did not stand out from other communities, suggesting that the differences are due to a specific subset of indicators. This goes to show once more the usefulness of studies going beyond mere urban/rural disaggregation.

Finally, this study outlined a number of issues that need to be addressed in future research on poverty in Armenia. Specifically, a review of the methodologies used to measure multidimensional poverty may be warranted to create a more accurate picture of poverty in Armenia. Another contribution stems from the COVID-19

vulnerability index created in this study. It demonstrated the usefulness of such methodologies to study relevant issues such as climate change vulnerability, or vulnerabilities to displacement.

The data gathered from this research and any future multidimensional poverty research has the potential to inform poverty mitigation policies and programming that can be tailored to the unique deprivations faced by individual communities. The unique context of each community can be analysed to target the relevant issues identified. As the initial informative research stage of the Community Poverty Reduction Know-How project, the findings of this research will be used to inform subsequent collaborative efforts between local CSOs, LSGs, and other community members to combat multidimensional poverty and vulnerability in Lori, Shirak, and Tavush. With multidimensional poverty research as an informational base, this research and future community-level multidimensional poverty research can serve as a foundation for any efforts aiming to decrease poverty in Armenia.

BIBLIOGRAPHY

Alkire, Sabina, and James Foster. 2011. "Counting and Multidimensional Poverty Measurement." *Journal of Public Economics* 95 (7): 476–87. <https://doi.org/10.1016/j.jpubeco.2010.11.006>.

Alkire, Sabina, James E. (James Eric) Foster, Suman Seth, Maria Emma Santos, José Manuel Roche, and Paola Ballón. 2015. *Multidimensional Poverty Measurement and Analysis*. First. Book, Whole. New York, NY: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199689491.001.0001>.

Alkire, Sabina, Usha Kanagaratnam, and Nicolai Suppa. 2022. "A Methodological Note on the Global Multidimensional Poverty Index (MPI) 2022 Changes over Time Results for 84 Countries." Oxford. https://www.ophi.org.uk/wp-content/uploads/OPHI_MPI_MN_54_2022.pdf.

Alkire, Sabina, and Maria Emma Santos. 2010. "Multidimensional Poverty Index," 8.

Armstat. 2020. "Household's Integrated Living Conditions Survey Anonymised Microdata Database (by Households)." <https://armstat.am/en/?nid=205>.

Armstat, and World Bank. 2019. "SOCIAL SNAPSHOT AND POVERTY IN ARMENIA - Statistical and Analytical Report." Yerevan. https://armstat.am/file/article/poverty_2019_english_2.pdf.

———. 2022. "SOCIAL SNAPSHOT AND POVERTY IN ARMENIA - Statistical and Analytical Report." Yerevan. https://armstat.am/file/article/poverty_2019_english_2.pdf.

Avetisyan, Ani. 2021. "Russian Troops Deployed to Armenia's Tavush Province." *OC Media*, August. <https://oc-media.org/russian-troops-deployed-to-armenias-tavush-province/>.

EU for Armenia. 2022. "Strong CSOs and Local Partnerships for Accountable Communities and Inclusive Social Protection in Armenia." <https://eu4armenia.eu/projects/eu-project-page/>.

Hadjian, A. H. 1993. "The Spitak, Armenia Earthquake of 7 December 1988 Why so Much Destruction." *Soil Dynamics and Earthquake Engineering* 12 (1): 1–24. [https://doi.org/10.1016/0267-7261\(93\)90053-T](https://doi.org/10.1016/0267-7261(93)90053-T).

Santos, Maria Emma, and Sabina Alkire. 2011. "Training Material for Producing National Human Development Reports: The Multidimensional Poverty Index (MPI)."

Statistics South Africa. 2020. "Mapping Vulnerability to COVID." <https://www.statssa.gov.za/?p=13875>.

ANNEX A: FIELDWORK

Public opinion data was obtained through a representative CAPI survey of three marzes (regions) in Armenia – Lori, Shirak, and Tavush, which was designed to obtain the most accurate information possible about multidimensional poverty and its causes in Armenia.

Technical Overview of the Survey

Poll Quick Facts	Data	Remarks
Name of fieldwork firm	CRRC Armenia Foundation	
Fieldwork Dates	29 July 2021 – 23 August 2021	
Sampling Frame Data	List of electoral precincts of RA	
Sample size	n = 2,406	
Target population	Residents of the Republic of Armenia	
Total target population	426,930 (people aged 18+)	
Survey type	Regional	
Sampling Method	Stratified randomized cluster sample	
Margin of error	+/- 2%	95% confidence interval
Interview method (mode)	CAPI	
Response Rate	34%	
Interview language(s)	Armenian	
Weight factors	Individual and household level weights calculated	

I. Sampling

A representative sample of 2,406 residents in Shirak, Lori and Tavush marzes was achieved through household visits. During the first stage of selection,

electoral precincts (primary sampling units - PSUs) were sampled randomly in each substratum with a probability proportional to the number of registered voters. During the second stage, households (secondary sampling units) were sampled within the sampled precincts, using the [‘random walk’ procedure](#). During the third stage, respondents (final sampling units) were sampled, based on the last birthday. The distributions of respondents across the given demographic groups versus the distributions⁵ of citizens of specific regions across those groups is presented in the tables below.

Gender distribution (predicted vs. actual sample)

Gender	Survey distribution	Predicted distribution
Male	33%	44%
Female	67%	56%

Age distribution (predicted vs. actual sample)

Age	Survey distribution	Predicted distribution
18-35	25%	34%
36-55	29%	32%
56+	46%	33%

Settlement type (predicted vs. actual sample)

Settlement type	Survey distribution	Predicted distribution

⁵ De facto population distributions across demographic groups are based on data from Statistical Committee of RA as of January 2021 and are calculated using scientifically grounded methodology. However there have been no official statistics regarding de facto population of Armenia since 2011 census of population.

Urban	57%	55%
Rural	43%	45%

Marz distribution (predicted vs. actual sample)

Marz	Survey distribution	Predicted distribution
Shirak	33%	-
Lori	33%	-
Tavush	33%	-

II. Weighting

The data was weighted to ensure representation of the population of three marzes and HH distribution to correct for distortions in demographics due to non-responses. The dataset contains two sets of weights:

- Individual weight (pcoef): Post stratification weights by marz, settlement type (urban/rural), gender and age (18-35, 36-55, 56-64) were applied based on the latest data provided by the Statistical Committee of the Republic of Armenia (as of January 2021).
- HH weight (hhweight): The weight was calculated by marz, settlement type (urban/rural) and household size to correct for the number of HHs in 3 marzes. The last wave (2018) of the Integrated Living Conditions Survey provided by the Statistical Committee of the Republic of Armenia was used as a reference for the correction.

Questionnaire

The draft questionnaire in Armenian and English was developed by the CRRC-Armenia team and used about 90% Of MPI questions from Integrated Living Conditions Survey (ILCS) questionnaire. The questionnaire in Armenian was reviewed by CRRC-Armenia and the client. Simultaneously, all the changes were transferred into the English version of the questionnaire. No back-translation occurred within the framing of this project.

III. Pretest

The questionnaire was pre-tested on July 5-12 by five trained interviewers. In total, 28 respondents were interviewed. The average length of the interviews was 33 minutes.

Issues related with questions and concepts of the questionnaire

- The respondents were frustrated with the roster questions regarding HH members and with the fact that they had to give this information more than once.
- The respondents were also annoyed with the questions about other HH members.
- There were difficulties regarding questions on the disability category.
- Many respondents refused to participate in the survey when they heard the wording “poverty measurement”, as they don’t consider themselves “poor”.

IV. Fieldwork

The fieldwork was conducted from July 29 to August 23, 2021. The fieldwork personnel consisted of 34 individuals. The majority of the enumerators were new and this was their first collaboration with CRRC-Armenia. While in Shirak and Lori part of enumerators are experienced and have worked with CRRC-Armenia for several years, in Tavush all of them were new. The one-day field training was organized for all the regions fieldwork at “The Loft” co-working space. During the training, interviewers practiced the questionnaire, sampling instructions and discussed possible problems or challenges that might arise during the fieldwork.

Survey Management

The Fieldwork Coordinator was responsible for the overall management and quality control of the fieldwork in three regions. Overall managerial and technical oversight was exercised by the Fieldwork Coordinator and the Program Officer for Data Initiative from CRRC-Armenia. The interviewers were in daily contact with the coordinator to be given updates about the fieldwork process and appropriate instructions as necessary. The data was monitored on daily basis. The interviewers were instructed immediately on issues rising throughout the data collection process.

Based on daily monitoring and preliminary analysis of the database, several changes were made to the questionnaire, as a result of discussion with the Data Initiative team and Research Director. Modifications in the answers for 3 questions (D16, G18, C7) were made in order to decrease number of “Other” options, frequently mentioned by the respondents.

During frames of the data cleaning process back-check calls were made to correct the discrepancies in the dataset.

Organization of the fieldwork

The overall planning and logistics of the fieldwork were stipulated in the fieldwork plan. The data collection, however, did not strictly follow the initial Sampling Plan. The enumerators were based in each region and the data collection was organized locally, with prior agreement and instructions from the Fieldwork Coordinator. The logistics was organized locally, using public transportation whenever available or using private drivers otherwise. The drivers have worked with CRRC previously.

V. Environment

The general interviewing climate in Armenia was not favorable with high refusal rates. Refusal rate was especially high in border communities of Tavush. Because of ongoing border negotiations between Armenia and Azerbaijan, people were distrustful towards the interviewers and surveys in general.

VI. Actual Response Rate

Only 34% of the successful HH visits ended with an interview.

Interview attempts

Total number of HH visits	Number of unsuccessful HH visits*	Refusal	Interrupted surveys	Agreement	Respondent reachout rate**	Response rate***

7816	2532	2574	0	2695	68%	34%
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* Including the following instances: HH is closed; HH is in self-isolation; adults are not at home; the respondent has language barriers; HH is unavailable.

** Percent of successful HH visits from the total number of HH visit attempts.

*** Percent of agreements from the total number of HH visit attempts.

VII. Data Processing

Initial Interview data was captured in CAPI mode through SurveyCTO software. The software automated all skip patterns and prevented moving on without completing a question, hence there were no skip errors or missing fields. The software allows for a direct download of SPSS database, therefore eliminating data entry errors. Frequencies and crosstabs were used to identify outliers, duplicates, and data that were inconsistent with instrument's logic. One coder coded all the open-ended questions and responses for "Other" options. She translated the verbatim responses into English and coded them.

VIII. Lessons for Future Surveys

In addition to the issues identified in the pre-test, interviewers noted the following problematic areas:

- Respondents from border communities in Tavush were distrustful and sometimes even rude towards the interviewers, determined by tense atmosphere related to negotiable areas/enclaves.
- The respondents had difficulties with calculating average costs on specific products and services for one month. These questions had a high cognitive load and some of them had rather high rates of (up to 17%) "Don't know" answers.
- There were difficulties with conducting interviews with male respondents, as in rural communities during summer they are either on labor migration or engaged in agricultural activities all day long and not available at home during daytime.

ANNEX B. MPI DEPRIVATION CUT-OFFS

Basic Needs

Extreme (Food) Poverty	A household was considered deprived if adult food consumption was below the food poverty line (23763 Armenian drams).
Life in Dignity	The household was considered deprived if respondents stated that there was not enough money for everyday meals or clothes. Data from eight survey questions were used to determine deprivation under this indicator including one question that explored a series of issues related to worrying about food or going hungry due to a lack of money or other resources. If a household was determined to be deprived based on the criteria of all eight of the questions, they were considered deprived under the indicator.
Humanitarian Aid	The household was considered deprived if it had received such aid during the preceding 12 months. Under the humanitarian aid indicator, respondents were asked if their families were registered in the System of Family Poverty Benefits. Respondents were also asked if their families received other humanitarian benefits in the preceding 12 months other than those provided by the System of Family Poverty Benefits
Remittance Dependency	The remittance dependency indicator referred to households that had consumption levels lower than the food poverty line after discounting for any remittances received; such households were

considered deprived. Households that did not receive remittances but consumed less than the food poverty line were also considered deprived. Respondents were asked if any members of their household had been temporary absent up to 12 months in the preceding year.

Housing

Subjective Housing Conditions

Households were considered deprived if they described their housing conditions as “bad” or “very bad”.

Adequate Housing

Households were considered deprived if they expressed complaints about at least a third of the following issues regarding their housing and immediate environment: floor area, noise from neighbors or outside, lighting, heating, humidity, leaking roof, dilapidated walls and floors, dilapidated window frames and doors, heavy traffic, industrial pollution, elevator functionality, water quality, garbage removal, and services for common areas and yards.

Overcrowding

The household was considered to be overcrowded if any of the following conditions were not met:

- One room for the household;
- One room per couple in the household;
- One room for each single person aged 18 or more;
- One room per pair of single people of the same gender between 12 and 17 years of age;
- One room for each single person between 12 and 17 not included in the previous category;
- One room per pair of children under 12.

Households that had any individuals living in overcrowded conditions were considered to be

	deprived. The rooms did not include bathrooms, toilets, or kitchens.
Healthy Heating	Households that were heated with oil and diesel, wood, or any source other than central heating, electricity, natural gas, or liquefied gas were considered deprived. During the survey, respondents were asked about the primary methods used to heat their homes.
Continuous Access to a Centralized Water System	Households that did not have access to centralized water for every day of the month and each hour of the day were considered deprived.
Centralized Sanitation and Garbage Disposal	The indicator referred to households that did not have access to a centralized sanitation compound or disposal of household garbage using either a rubbish evacuation system or dust-cart collection. Households that used other means of garbage disposal or did not have a functioning centralized sanitation compound were considered deprived.
Hot Running Water	The hot running water indicator identified households that did not have access to functioning hot running water.
Quality of Public Services	The indicator measured how satisfied households were with nine different public services: water supply, sanitation, garbage collection, telephone, electricity supply, post, banking, irrigation, and public transportation. Households that were not satisfied with more than a third of the public services they rated were considered deprived.
Access to Transportation	The indicator identified households that described the roads within their settlements or to regional towns or markets as poor. Households in urban areas were not asked this question and were not considered deprived.

Education

Secondary Education	The secondary education indicator identified households in which no member aged 15 or older had completed secondary education.
Compulsory Schooling	The compulsory schooling indicator identified households that had at least one child of compulsory schooling age (6–17 years) who had not been attending school. Households with no children of that age were not considered deprived.
Quality of Education Services	The indicator identified households that were not satisfied with education services.
Access to Education	If any child spent more than 30 minutes walking or riding a bicycle to attend kindergarten, primary, or secondary school, the household was considered deprived. Households in which any child spent over an hour using other means of transportation in commuting to school were also considered deprived. Urban households were not asked this question and were not considered deprived.

Labor

Labor Market Participation	The labor market participation indicator refers to households in which more than half of working age (15-75) individuals were not in the labor force. Households that did not have any person of working age were not considered deprived.
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Long-term Unemployment	The household was considered deprived if any working-age member had been unemployed for one year or more and was actively looking for a job. Households that had no members of working age were not considered deprived.
Decent jobs	Households were considered deprived if all employed members were either self-employed or contributed to a family business. Households that were deprived in the previous two labor indicators were also automatically considered deprived under this indicator. Households with no members of working age were not considered deprived.

Health

Affordability of Health Services	The indicator identified households that lacked funds to pay for required health services (excluding dental work) in a healthcare facility, such as tests, examinations, and procedures prescribed by a doctor. Households were deprived if any members were not able to afford such services in the preceding 30 days; those with no member who recently sought medical attention were not considered deprived. Respondents were asked whether or not they sought medical assistance during the preceding 30 days, and if the response was no, they were asked to state the main reason for not seeking medical assistance.
Termination of Usual Activities	The indicator referred to households with at least one member who terminated their usual activities due to illness, injury, or bad health.
Access to Health Services	The indicator referred to households in rural areas that had no access to health care facilities, emergency ambulance services, or pharmacies in their neighborhoods. Households that could not reach the closest of these within 30 minutes or less by any available means of transportation

were considered deprived. Urban households were not considered deprived.

Quality of Health Services

The indicator measured households that were not satisfied with health services.

ANNEX C. CVI DEPRIVATION CUT-OFFS

Access to Internet	Households with no internet connection from an internet service provider were considered deprived. Mobile phone service providers were not considered household internet service providers.
Multigenerational Household	Households were considered multigenerational and vulnerable if they contained both children (0-15 years old) and elderly (aged 65+) members.
Age	Households were considered vulnerable if any household member was 60 years old or older.

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Households were considered deprived if all employed members were either self-employed or contributed to a family business. Households that were deprived in the previous two labor indicators were also automatically considered deprived under this indicator. Households with no members of working age were not considered deprived.

Household Services

Healthy Heating

Households that were heated with oil and diesel, wood, or any source other than central heating, electricity, natural gas, or liquefied gas were considered deprived.

During the survey, respondents were asked about the primary methods used to heat their homes.

Continuous Access to a Centralized Water System

Households that did not have access to centralized water for every day of the month and each hour of the day were considered deprived.

Centralized Sanitation and Garbage Disposal

The indicator referred to households that did not have access to a centralized sanitation compound or disposal of household garbage using either a rubbish evacuation system or dust-cart collection. Households that used other means of garbage disposal or did not have a functioning centralized sanitation compound were considered deprived.

Household Composition

Overcrowding

The household was considered to be overcrowded if any of the following conditions were not met:

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- One room per couple in the household;
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- One room per pair of children under 12.

Households that had any individuals living in overcrowded conditions were considered to be deprived. The rooms did not include bathrooms, toilets, or kitchens.

Health

Access to Health Services

The indicator referred to households in rural areas that had no access to health care facilities, emergency ambulance services, or pharmacies in their neighborhoods. Households that could not reach the closest of these within 30 minutes or less by any available means of transportation were considered deprived. Urban

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The indicator identified households that lacked funds to pay for required health services (excluding dental work) in a healthcare facility, such as tests, examinations, and procedures prescribed by a doctor. Households were deprived if any members were not able to afford such services in the preceding 30 days; those with no member who recently sought medical attention were not considered deprived.

Respondents were asked whether or not they sought medical assistance during the preceding 30 days, and if the response was no, they were asked to state the main reason for not seeking medical assistance.
