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The Many Faces of Deprivation

A Multidimensional Approach to Poverty in Armenia

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Abstract

This note describes a new measure of multidimensional poverty developed for Armenia. In 2013, the National Statistical Service of the Republic of Armenia and the World Bank began work on a national measure of multidimensional poverty to supplement the consumption poverty indicator. This measure, which was identified through consultations with many stakeholders in Armenia, reflects deprivations specific to Armenia in the areas of education, health, labor, housing conditions, and basic needs. The approach offers insights into the complexity, depth, and persistence of poverty in the country; tailoring it specifically to the country context enhances its relevance for policy. This note uses the new measure to describe national trends and regional patterns.

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The Many Faces of Deprivation: A multidimensional approach to poverty in Armenia[1]

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Contents

Acronyms

CBN	Cost of Basic Needs
FAO	Food and Agriculture Organization
ECA	Europe and Central Asia region
ILCS	Integrated Living Conditions Survey
MPI	Multidimensional Poverty Index
NSSRA	National Statistical Service of the Republic of Armenia
UNDP	United Nations Development Program
WB	World Bank

1. Introduction

The most recent estimate of monetary poverty in Armenia found that nearly 30 percent of the population lives below the national poverty threshold. However, because the Armenian social protection system provides some, though limited, basic support, monetary measures provide only a partial picture of the negative effects of poverty on well-being and the lack of positive capabilities. A multidimensional approach is therefore necessary to capture the complexity, depth, and persistence of deprivations people experience that may not be reflected in their consumption or incomes. The World Bank (WB) and the National Statistical Service of the Republic of Armenia (NSSRA) have formulated a measure of multidimensional poverty tailored to the country that uses the methodology introduced by Alkire and Foster (2007) and elaborated in Alkire and Foster (2011 a and 2011 b). Monetary measures of welfare and poverty reflect the monetary value of goods and services consumed by individuals and households. Because welfare increases with the monetary value of the items consumed, those who consume less fall to the bottom of the welfare distribution. But monetary measures of welfare rarely capture household consumption of goods and services that are not bought and sold in the market.[2] There are important dimensions of well-being that are not acquired in the market, and even for those that could be acquired through market mechanisms, often such markets are either nonexistent or not accessible for the poor. Moreover, consumption poverty measures cannot account for the monetary value of such aspects of household well-being as employment, health, housing conditions, or the quality of basic services, such as water supply.

Researchers in several social sciences have identified a multitude of ways to measure well-being and welfare: asking individuals about their subjective well-being, evaluating welfare through monetary measures beyond just consumption and income, and constructing often overlapping indices to account for multiple dimensions of nonmonetary welfare. Even though the methodology differs, for all measures at least two criteria must be satisfied, especially if the goal is to design evidence-based policies. The first is objectivity, which can be achieved when it is possible to compare individual situations. The second is universality within a given data set, which can be achieved by accounting for all households in the target population. Since each measure has its own strengths and weaknesses, it is widely recommended that both monetary and nonmonetary measures of poverty be used to clarify the picture of a country's well-being and welfare (WB 2017).

Nonmonetary measures approximate the experience of poverty. They are chosen to capture quality of life and identify deprivations in specific dimensions of well-being. Based on the theory of capabilities introduced by Sen and Honderich (1985), the underlying welfare measurement reflects how individuals function and how much effective freedom they have to perform these functions. Limits on access to certain goods and services, such as health care, education, labor markets, sanitation, quality housing, and public and private services, and empowerment count directly in assessment of well-being and welfare to the extent that the capabilities of individuals are affected.

A multidimensional measure of welfare is composed of factors that constitute how people experience deprivations. It incorporates a range of indicators that capture the complexity, depth, and persistence of poverty. The approach focuses on deprivations in more than one dimension that overlap, and highlights gaps in the endowment of individuals and households that make it difficult to reduce poverty. Furthermore, the fact that the measure of multidimensional poverty is based on dimensions that link to the persistence of poverty, it helps to identify barriers to inclusive and sustainable poverty reduction, which can impact future generations. For instance, dimensions often found in a multidimensional measure are poor health, lack of education, inadequate living standards, lack of employment, poor quality of work, and the threat of violence. Among the many measures available, the most widely used is the Multidimensional Poverty Index (MPI). For example, the *Human Development Report* of the United Nations Development Program (UNDP

[2] More recent approaches to welfare measurement attempt to use indirect approaches to measure the monetary value of goods and services that are not exchanged in the market, such as health and education.

2010) uses this approach and several countries, such as Mexico, the Philippines, and Bhutan, have made the MPI part of their national development strategies.

The national measure of multidimensional poverty for Armenia uses the Alkire-Foster approach. It was formulated in consultation with domestic stakeholders on what indicators would reflect the experience of poverty or deprivation. This tailored measure is not intended to be used in international comparisons; it is simply representative of the country and its specific development challenges. For every multidimensional measure, the dimensions, weights, and a method for aggregation must be selected. That is why from September 2014 through August 2015 stakeholders were consulted to facilitate the identification of deprivations that reflect how Armenian households experience poverty. For example, higher gas and electricity prices required many households to allocate a larger share of their resources to heating. For the same reason, there has also been a jump in the share of households using wood or coal to heat their homes, intensifying the health risks of indoor air pollution. Where these circumstances help shape the experience of poverty, one of the deprivations measured relates to the lack of a healthy source of heating.

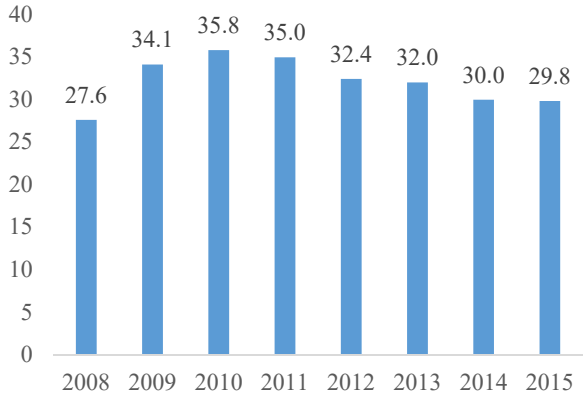
The national measure of multidimensional poverty for Armenia looks closely at overlapping deprivations related to basic needs, housing, education, health, and labor markets, and several findings have emerged: The 2015 national household survey found that between 2010 and 2015 (NSSRA 2016), the share of the population living in households that were multidimensionally poor dropped from 41.2 to 29.1 percent as access to physical infrastructure and labor markets improved. However, regional patterns illustrate that in rural areas, limited access to decent housing and infrastructure and high levels of informal employment in agriculture continue to shape the experience of poverty. In urban areas, such as the capital city Yerevan, labor market problems, particularly low labor force participation and high unemployment, contributed the most to poverty. Multidimensional poverty does overlap with monetary poverty as measured by the national consumption poverty line (29.8 percent in 2015): in 2015, 12.8 percent of the population was both multidimensionally and consumption poor.

2. Armenia's National Poverty Measurement Methodology

The measure of national poverty uses a monetary approach. The NSSRA draws its poverty statistics from its annual national Integrated Living Conditions Survey (ILCS). Poverty is estimated based on consumption expenditures using a poverty line obtained using the Cost of Basic Needs (CBN) approach. Application of the approach can vary with data availability; Armenia adopted its current specification in 2009. The CBN approach determines three different poverty lines: (1) the food poverty line, based on the minimum required number of calories; (2) a lower poverty line; and (3) the upper poverty line. Poverty lines are reported in Armenian drams (AMD) per adult equivalent per month.

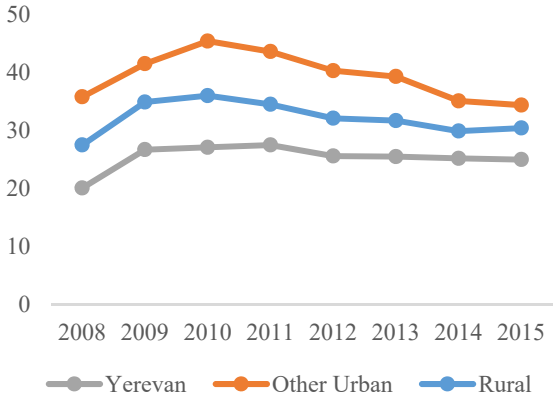
In 2015, the monetary poverty rate was estimated to be 29.8 percent. Compared to 2004–08, when poverty in Armenia was substantially reduced, the 2015 rate was higher, poverty reduction was slower, prosperity was not as well shared, and inequality was rising. As growth resumed after the 2009 recession, at first the share of those living below the national poverty line declined, but the slowing of the economy in 2013–15 has meant that poverty has barely budged. The poor and those in the bottom 40 percent are more likely to (1) live in urban areas outside the capital; (2) have larger households with more children; (3) have less education; (4) be out of the labor force or unemployed; (5) live in households headed by women; and (6) be more dependent on income from agriculture.

Figure 1. Poverty Rates, 2008–15, Percent of Population



Source: ILCS data. *Note*: All calculations are based on the upper poverty line (2009 methodology).

Figure 2. Poverty Rates by Location, Percent of Population



Source: ILCS data. *Note*: All calculations are based on the upper poverty line (2009 methodology).

Between 2008 and 2009, poverty in Yerevan shot up from 20.1 to 26.7 percent of the population, but then eased slightly, to 25.0 percent in 2015. In 2015 living conditions in Armenia, notably access to economic opportunities, differ substantially by location, from 25.0 percent in Yerevan to 30.4 percent in rural areas and 34.4 percent in other urban areas. Regional disparities are linked to structural differences related to employment patterns and economic activity. Households in rural areas have benefited from increasing agricultural sales but except in Yerevan urban households continue to suffer from weak domestic labor markets and limited job creation.

Although the most recent decline in poverty allowed a significant number of households to escape economic poverty, patterns of economic mobility demonstrate that a large number of households are still vulnerable to economic shocks and at risk of falling back into poverty. In these circumstances, nonmonetary measures of poverty are useful for monitoring well-being. For example, the measure of multidimensional poverty looks into the endowment of households and describes their capacity to participate in society beyond simply generating income.

3. Multidimensional Poverty: A New Indicator

The NSSRA and the WB collaborated closely in formulating the new measure, consulting national line ministries, international organizations, and civil society to identify dimensions and indicators that describe functioning, well-being, and endowments.[3] These consultations allowed the team to customize the components of the measure of multidimensional poverty in order to raise its policy relevance as a robust indicator of well-being in Armenia.

The national measure indicates whether people face deprivations related to education, health, labor, housing, and basic needs (details below). It also counts the typical number of household deprivations and examines overlaps of deprivations. The multidimensional poverty index (MPI) then aggregates this information into a single measure that combines deprivation incidence and intensity. *Incidence* shows the

[3] A summary of the national consultations is available upon request.

number of people who are multidimensionally poor, suffering deprivations in more than 25 percent of weighted indicators. *Intensity* relates to the depth of poverty for the sub-group characterized as deprived.

The MPI is constructed based on the Alkire-Foster methodology, which requires a series of normative choices and technical decisions: (1) Focus groups of policy makers and representatives of civil society anchor the selection of achievements and deprivations, which describe multiple dimensions of nonmonetary poverty. (2) The technical team selects a source of household survey data, which often narrows the set of deprivations to be assessed as factors in multidimensional poverty. (3) Once a comprehensive list of deprivations has been selected, the analyst introduces a deprivation cut-off, which determines if a household is deprived in a specific area. (4) The binary variables are aggregated into a measure that reflects the overlap of all deprivations for each household. Aggregation requires that weights be selected for each deprivation, and calculation of the multidimensional poverty rate requires a decision about the poverty cut-off.

Defining Achievements and Deprivations

The first step in constructing the measure of multidimensional poverty is to select dimensions that reflect achievements or deprivations. These indicators complement the national monetary poverty measure with information that better captures nonmonetary aspects of well-being. The primary dimensions of the measure are basic needs, housing, education, labor, and health. For example, while *health* and *education* can be partly accounted for in household purchases, it is difficult to price the value of public services. Thus, a consumption-based poverty measure would not fully account for deprivations in these areas. Furthermore, both health and education have an intrinsic value that might not be reflected in the cost of the goods consumed. Similarly, *labor*—having a job—has an intrinsic value beyond the salary earned; it gives a sense of accomplishment and belonging to the community and society. Finally, having adequate and affordable *housing* is both important for the standard of living and related to human dignity. Overlap of these dimensions enables individuals to reach their capabilities. The relationship between an individual and his or her capabilities is the value the multidimensional poverty measure adds to monetary measures.

The selection of indicators and dimensions was facilitated by the roundtables with stakeholders. The decision to use the national ILCS survey to calculate the measure also had important implications for selecting deprivations: Because ILCS surveys go back to 2001, they could be used to construct a nationally representative time series that could be clearly linked to the estimation of consumption poverty. However, use of the ILCS data limited the selection of deprivations to the data available. With this in mind, the dimensions and indicators selected reflect subjective evaluations and focus on access, affordability, and the quality of public services and goods (see Tables 1 to 5).

A. Basic needs goals: End extreme poverty and allow each household to lead an independent life in dignity.

Even though Armenia has seen a substantial drop in the number of households living below the upper national poverty line, more than 2 percent of the population still lives in extreme poverty, which means that daily consumption does not go far beyond the basic nutritional inputs defined by the Food and Agriculture Organization (FAO).

The interpretation of deprivations in this dimension goes beyond financial means to describe the ability of every single individual and household to participate in and contribute to society. The indicator on "living life in dignity" evaluates welfare status at a subjective level and thus combines an absolute measure with the perception of being poor. A household is deprived if it does not have enough funds to buy very basic items like food or clothing that are crucial to personal dignity and functioning in society.

A primary purpose of any poverty alleviation strategy is to ensure that individuals who are marginally above the poverty threshold (often labelled as vulnerable) do not have to depend too much on external sources to sustain their living standards. Otherwise, any progress on poverty reduction can be swiftly lost because of

external shocks beyond the control of individual households or even national governments. Households that depend on humanitarian aid are considered vulnerable and might even fall below the extreme poverty line if the aid stops. When considering the policy implications in this case, it is important to bear in mind that being deprived in this indicator does not suggest that humanitarian aid is itself risky but rather that it is crucial to be aware of how many depend on humanitarian aid to sustain a life above the poverty line.

Remittances are equivalent to 20 percent of GDP and are important to Armenia's economic development and poverty reduction. Nevertheless, besides the positive effect on household incomes, high dependence on remittances is also a source of vulnerability because without these private transfers, households risk falling below even the extreme poverty line. In addition, the remittances received from seasonal migration exemplify migrant subsistence activity. Even though migration gives households access to a larger labor market and additional employment opportunities, it can also be an indication that domestic labor markets are not offering adequate opportunities. Moreover, a purely monetary interpretation of remittances neglects the fact that households suffer from the geographical separation, which matters considerably for a nation that both historically and recently has been drawn into complicated regional conflicts.

Table 1. Dimensions of Basic Needs

Deprivation measured as:	**Dimensions of achievement**
Extreme poverty: lack of access to minimum food needed (according to national poverty measurement methodology and FAO recommendations).	Eradicate extreme food poverty in Armenia.
Life in dignity: lack of funds to buy necessary food or clothing.	Sustain a life in dignity (subjectively) with sufficient funds to buy basic commodities
Humanitarian aid: being dependent on outside assistance to ensure basic living functions.	Sustain an independent life with sufficient funds to buy basic commodities
Remittance-dependent: needing remittances to ensure basic functioning of living or being in extreme (food) poverty.	Reduce vulnerability to fall into extreme poverty in response to external shocks that cause remittances to drop.

Note: For each indicator and dimension, a household is classified as deprived if the underlying index takes the value 1; the household is not deprived if the index takes the value 0.

B. Housing goal: Promote decent housing and living conditions while enhancing access to and the quality of utilities.

Decent housing and living conditions are a fundamental component of the capabilities approach because they relate to living in dignity and with proper sanitary conditions. Earning a living income has a substantially less meaningful impact on welfare for a person living in a house that does not have access to hot water or sewage and waste disposal. Moreover, some housing conditions, such as having adequate flooring or walls, are crucial for comfortable living in a country where winter is harsh. By accounting for these deprivations in the housing dimension, the measure of multidimensional poverty attempts to capture humane living conditions that can significantly enhance the quality of everyday life for individuals.

Table 2. Dimensions of Decent Housing and Living Conditions

Deprivation measured as:	Dimensions of achievement
Satisfaction with housing conditions: housing conditions are evaluated as poor or very poor.	Enable households to live in dignity in a decent environment.
Adequate housing: lack of access to adequate housing: housing requires major repairs; is in a dump or slum or is old; flooring and walls are substandard.	Enable households to live in dignity in a decent environment.
Overcrowding: available housing floor space is less than 20 square meters per household adult equivalent.	Enable households to live in dignity in a decent environment without severe overcrowding.
Healthy heating: household uses wood, carbon, or other heating means as primary source for heating.	Facilitate access to and strengthen affordability of government-provided utilities and access to adequate heating.
Centralized water system: lack of access to use of a centralized water system.	Facilitate access to and strengthen affordability of government-provided utilities.
Centralized sanitation and garbage disposal: lack of access to use of a centralized sanitation or garbage disposal system.	Facilitate access to and strengthen affordability of government-provided utilities.
Hot running water: lack of access to hot running water.	Facilitate access and strengthen affordability of government-provided utilities.
Quality of paid public services: dissatisfaction with one-third or more paid services used: water supply, sanitation, garbage collection, telephone, electric supply, post, banking, irrigation, public transportation.	Enhance quality of paid public services.
Access to transportation: lack of access to opportunities: poor or no transportation and road networks, especially all-year roads.	Facilitate access to mobility.

Note: For each indicator and dimension, a household is classified as deprived if the underlying index takes the value 1; the household is not deprived if the index takes the value 0.

C. Education: Enhance human capital endowment to promote participation in employment and social life.

High educational attainment has always been a feature of human capital endowment in Armenia, primarily for two reasons: During the Soviet Union period, Armenia was a powerhouse for engineering, research, and development. Moreover, high levels of emigration have raised awareness of the importance of education

(especially in certain languages) for obtaining sound employment opportunities abroad. The two indicators on education identify households currently deprived in this dimension, either because working-age individuals lack adequate educational attainment or because the next generation is at risk of missing out on human capital formation. Even though a separate, self-assessed, indicator of the quality of educational services is incorporated into the analysis to account for factors affecting the quality of schooling, there is no readily available indicator for the skills and abilities actually acquired while being educated.

Table 3. Indicators for Education

Deprivation measured as:	**Dimensions of achievement**
No secondary education: no household member aged 15 to 75 years has any secondary education, vocational or professional.	Enhance human capital endowment; promote sufficient education to find a decent job; ensure participation in economic growth.
Enrollment in schooling: at least one child of compulsory school age, 6 to 17 years, is not attending school.	Enhance human capital endowment; promote sufficient education to find a decent job; ensure participation in economic growth.
Access to education: lack of nearby access to kindergarten, complete secondary school, or primary (general) school.	Ensure access to public education.
Quality of education services: dissatisfaction with education services.	Enhance the quality of paid public services.

Note: For each indicator and dimension, a household is classified as deprived if the underlying index takes the value 1; the household is not deprived if the index takes the value 0.

D. Labor Markets: Improve access to labor markets and productive employment in quality jobs.

Employment generates income for households and hence helps escape poverty. Employment in decent jobs also makes full use of individuals' endowments and raises their participation in social life. Long term unemployment and underemployment reflect the capacity (or lack thereof) of the labor market to provide opportunities that match the skillset of the workforce while displaying the untapped potential in the working age population.

Table 4. Indicators for Participation in the Labor Market

Deprivation measured as:	**Dimensions of achievements**
Labor market participation: more than half of household members of working age do not participate in the labor market.	Improve access to labor markets (participation and employment) and productive employment.
Long term unemployment: at least one household member is not working due to long-term (structural) unemployment.	Improve access to labor markets (participation and employment) and productive employment.

Decent jobs: lack of access to decent jobs; works as an entrepreneur or otherwise informally.	Enhance quality of employment (improve status of employment, address informal employment).
Underemployment: lack of access to a full-time position in the labor market	Enhance quality of employment (improve status of employment, address underemployment and seasonal/occasional employment).

Note: For each indicator and dimension, a household is classified as deprived if the underlying index takes the value 1; the household is not deprived if the index takes the value 0.

E. Health: Ensure access to quality health services.

If any individual cannot complete daily activities because of poor health, that affects all other aspects of life. The achievement of health is measured by the accessibility, affordability, and quality of health services.

Table 5. Indicators of Health

Deprivation measured as:	**Dimensions of achievement**
Termination of usual activity: at least one household member has ceased to perform daily activities because of illness, injury, or poor health.	Satisfactory health condition to participate in life
Affordability of health services: lack of funds to pay for required health services (excluding dentistry) in a health care facility (i.e., access to free services is difficult or nonexistent), tests, examinations, and procedures prescribed by a doctor.	Ensure access to public health services through measures addressing affordability.
Access to health services: lack of neighborhood access to health care facility, emergency ambulance services, pharmacies.	Ensure access to public health services through improved physical access.
Quality of health services: dissatisfied with health services.	Improve conditions in the health sector to reach increased patient satisfaction

Note: For each indicator and dimension, a household is classified as deprived if the underlying index takes the value 1; the household is not deprived if the index takes the value 0.

Constructing a Measure of Multidimensional Poverty

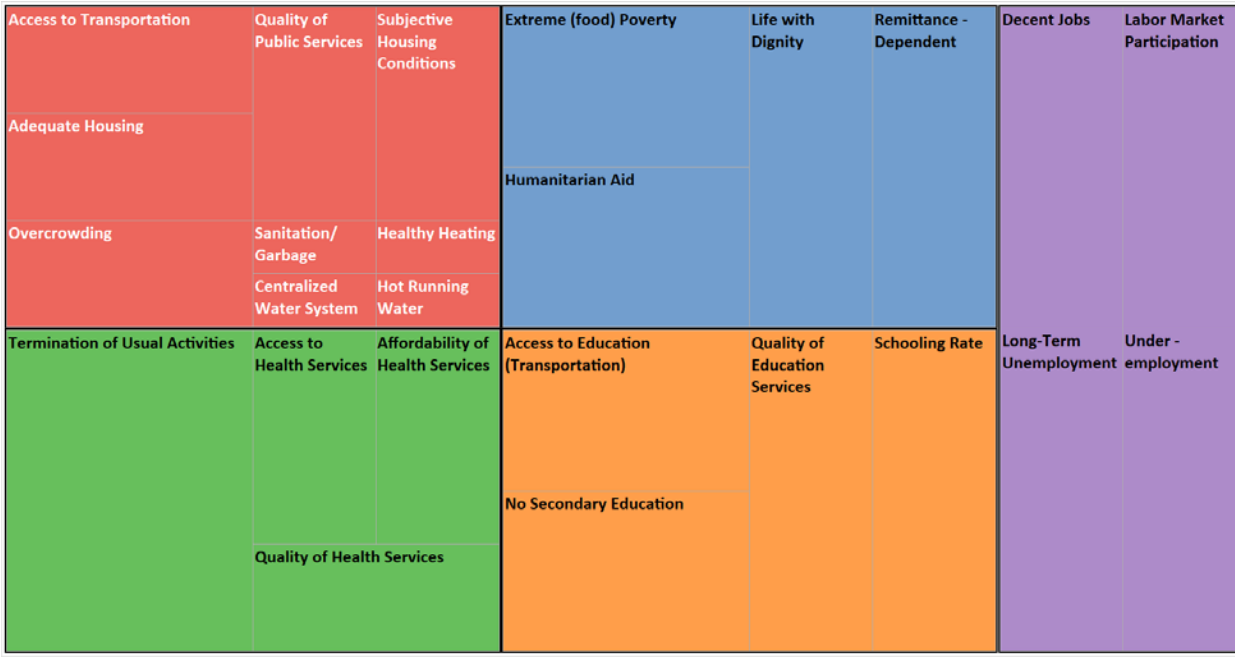
The next step in constructing multidimensional poverty indicators is to find a way to aggregate all the dimensions identified. A dashboard approach with a separate discussion on each deprivation is valuable to illustrate the national trend and variations by location and region (see Annex 1 for interactive dashboards). However, aggregation into a single measure is useful to summarize information and present an aggregate

MPI that accounts for the incidence and intensity of multidimensional poverty. Weights are typically used to aggregate the multiple deprivations. The weighting scheme builds on a nested structure that assigns equal weights of 1/5 to each dimension (see Figure 3). Equal weighting is widely used (Alkire and Foster, 2007, 2011 a and 2011 b)—the method implies that the dimensions are equally important. Even though the results of this weighting scheme can be simply interpreted, its drawback is in assuming that there is no discrimination of dimensions or items. Within each dimension, the set of indicators links to the subjective evaluation, affordability, access, and quality of goods and services (Table 6).

Table 6. Weights for Indicators by Dimension

Basic needs	Each indicator has an equal weight of 1/4.
Housing	Indicators "subjective housing conditions," "adequate housing," and "overcrowding" proxy for the subjective evaluation of housing conditions; each individually has a weight of 1/6, which adds up to 1/2. "Quality of paid public services" and "access to transportation" each have a weight of 1/6. The other indicators – "healthy heating," "centralized water system," "centralized sanitation and garbage disposal," and "hot running water" – describe access and affordability and together have a weight of 1/6, with each separately weighted at 1/24.
Education	Each indicator has an equal weight of 1/4.
Labor	Each indicator has an equal weight of 1/4.
Health	The indicator "Termination of usual activities" links to a subjective evaluation of health status and has a weight of 1/2. The three remaining indicators, for affordability, access, and quality, have weights of 1/6 each.

Figure 3. Weighted Breakdown of Indicators by Dimension



Note: The measure of multidimensional poverty has five dimensions: Basic needs (blue), Education (orange), Health (green), Housing (red), and Labor (violet).

A household is characterized as deprived if the weighted sum of indicators is above 0.25. The threshold of 0.25 requires that such households be deprived in more than one indicator, and when constructing an aggregate measure, in more than one dimension. Where a dimension is constructed from several indicators, first the weighted sum (also referred to as the count index) of all deprivations for this dimension is calculated to see if the result is above 0.25. Consider the following possible situation for the dimension of education: No working-age member of a household has more than secondary education (e.g., the indicator is coded 1, weight of 1/4), but all other education indicators are 0. The weighted count index of these four indicators is therefore 0.25, which is not above the cut-off, so the household is not deprived in the education dimension. However, in another household, in addition to a deprivation of "no secondary education," one child of compulsory schooling age does not attend school, so the weight is another 1/4. The weighted count index of 0.5 is thus above the cut-off of 0.25, making the household deprived. The same rule applies to the definition of multidimensional poverty that aggregates information on all indicators: a household is multidimensionally poor if the weighted count index is above 0.25.

Though the multidimensional poverty indicators use the household as the unit of analysis, many indicators are calculated using individual household member characteristics such as level of education or labor force status. Estimates of multidimensional poverty thus relate to the share of the population living in households deprived in certain indicators or dimensions.

Because the indicators are constructed using household survey data, data may be missing for some sub-group due either to nonresponse or to skip patterns in the survey. These are the two most common Armenian contexts in which data may be missing and the working assumptions made to compensate:

1. No household member falls into the critical age group where deprivations are defined. For instance, a household that has no household members of working age (15 to 75 years) cannot experience any

deprivations related to long-term unemployment or low labor market participation. A similar situation can be observed for households with no school age children in terms of enrollment in schooling. This analysis therefore assumes that households where there are no values for a specific indicator or dimension are not deprived.

2. Information on some indicators is not collected for certain sub-groups. For instance, households in urban areas do not answer questions on how long it takes them to reach the closest provider of such public services as education and health. Here, the threshold for rural areas is reasonably high and it is assumed that households in Yerevan and other cities would be able to access these services much faster due to agglomeration effects, and consequently are not deprived.

   The implications of these working assumptions are that (a) estimates of the share of Armenian households being deprived in a certain indicator or dimension establish a lower bound of deprivations; and (b) the method of dealing with missing data for some sub-groups (in particular urban) may again bias downward the share of the population being deprived.

4. Data and Summary Statistics

The previous section outlined the normative foundations for identification of indicators and dimensions that reflect the full experience of poverty in Armenia. This section draws on ILCS data to detail how each indicator was constructed and presents summary statistics for 2015. [4]

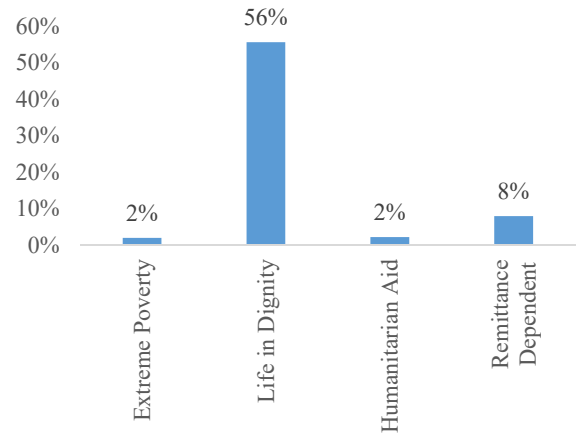
Each year the ILCS interviews more than 5,000 households; is representative at the regional level (marz level, which corresponds to the NUTS 3 regions [5]); and provides comparable data starting from the early 2000s. The ILCS asks about education, labor market outcomes, health behavior, and living conditions of households and individuals. It also collects detailed data on consumption behavior and is used to calculate Armenia's official poverty rate. Since the measure of multidimensional poverty is meant to complement the analysis of consumption poverty, using the same survey instrument is crucial. On the other hand—a serious drawback of using existing rather than new data—constructing the measure on multidimensional poverty is limited by the ILCS information available.

Summary Statistics for All Indicators

The dimension on basic needs captures vulnerability to economic shocks, especially the heavy dependence on remittances, that helps to shape the experience of poverty in Armenia. A large fraction of households across the entire welfare distribution receive money from abroad, and 8 percent of individuals would fall below the extreme poverty line if remittances were removed from their disposable household income (Figure 4). Dependence on remittances is most prevalent in urban areas other than Yerevan, where 11 percent of individuals rely on them to avoid extreme poverty (Figure 5).

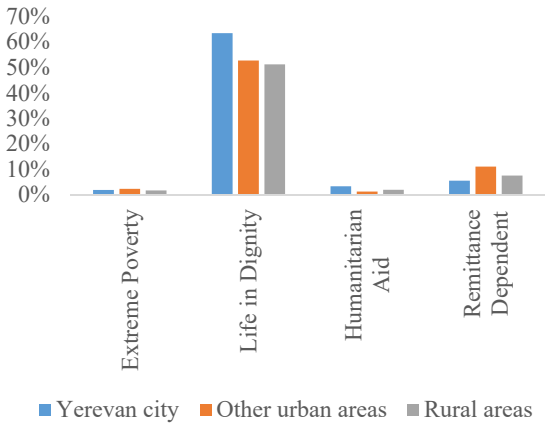
[4] Further information on the construction of each indicator is presented in Annexes 2 and 3. Annex 4 also provides a sample STATA code to replicate the calculations for 2015.
[5] Marz refers to the first-level administrative entities in Armenia. NUTS refers to the Classification of Territorial Units for Statistics developed by Eurostat.

Figure 4. Deprivations in Basic Needs, 2015, Percent



Source: ILCS data.

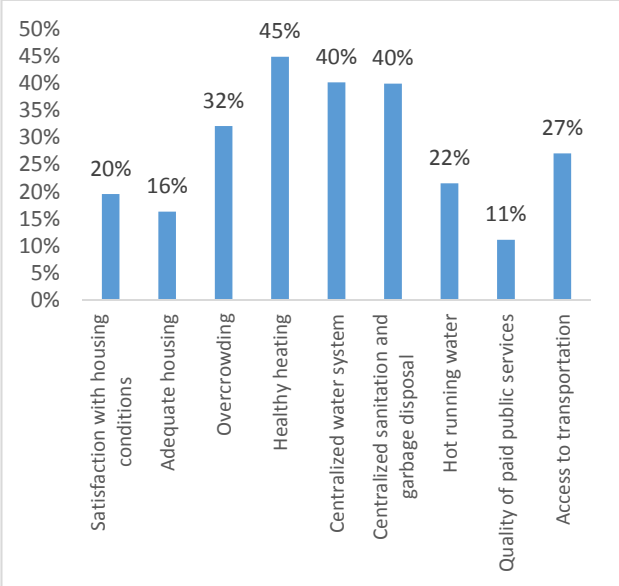
Figure 5. Deprivations in Basic Needs by Location, 2015, Percent



Source: ILCS data.

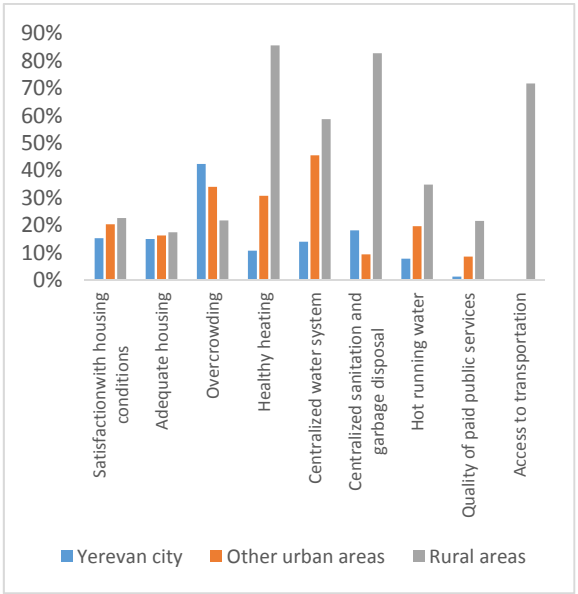
Indicators related to the dimension on housing describe living conditions in Armenia (Figure 6). There is a substantial divide between urban and rural areas linked to agglomeration effects in the provision of public services and to differences in their cost (Figure 7). Unsatisfactory services not only affect individual well-being, but also reduce willingness to pay for goods and services provided by the government.

Figure 6. Housing-Related, 2015, Percent



Source: ILCS data.

Figure 7. Housing-Related Deprivations by Location, 2015, Percent



Source: ILCS data.

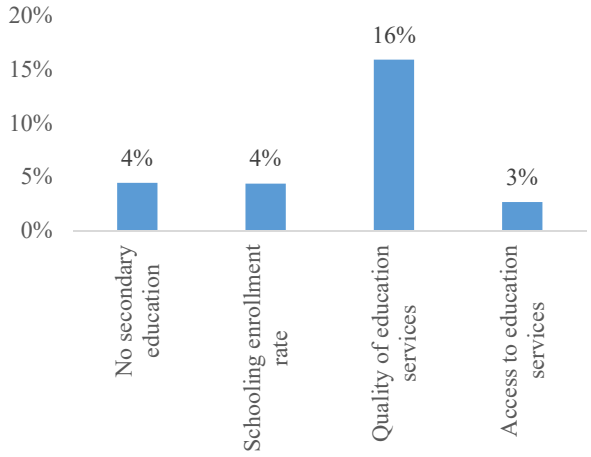
The indicator on healthy heating is especially important in Armenia; rising electricity and gas tariffs have led an increased share of the poor, especially the rural poor, to turn to wood to heat their homes (WB 2014). However, a solely monetary measure, such as consumption poverty, does not take into account the extent to which some households will switch to wood, which is often linked to worsening health conditions and

environmental degradation. In 2015, about 45 percent of the population used wood or carbon for heating or cooking, though urban households are less likely than rural to do so.

Overcrowding is the only housing indicator that clearly shows a reverse regional trend: too many people living in a too small a space is more prevalent in urban than in rural areas. This result is to be expected, given the higher population density in urban areas.

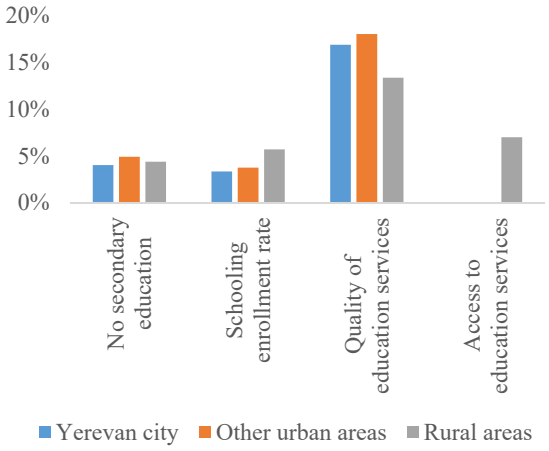
Educational attainment for the current working-age population is generally high; only 4.4 percent of households have no a member with more than secondary education (Figure 8). Similarly, school enrollment of children aged 6–17 is high. However, responses on quality of education (measured for households where at least one member is attending school) reveal significant dissatisfaction with public services.

Figure 8. Education-Related Deprivations, 2015, Percent



Source: ILCS data.

Figure 9. Education-Related Deprivations by Location, 2015, Percent

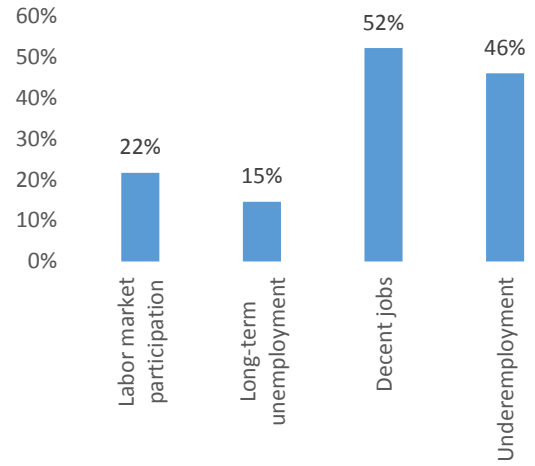


Source: ILCS data.

Over 20 percent of households report that more than half of their working-age members are not working (Figure 10). Armenia has one of the lowest labor force participation rates in the ECA region. Low labor market participation, especially when 14.6 percent of households have at least one member who is long-term unemployed, reflects structural problems in the domestic labor market. Limited work opportunities in rural areas translate into a significant share of households being unable to benefit from decent jobs and a large share working informally (Figure 11).[6]

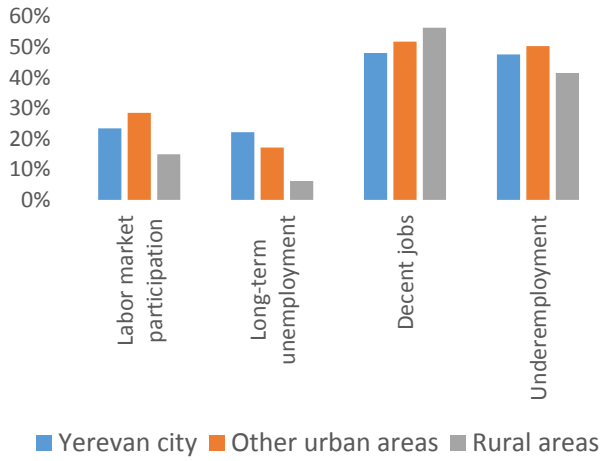
[6] The decent-jobs indicator is constructed to capture deprivation in terms of labor market participation and long-term unemployment. This intentional "double-counting" ensures that the measure captures the labor issues that inform major policy goals in Armenia.

Figure 10. Labor-Related Deprivations, 2015, Percent



Source: ILCS data.

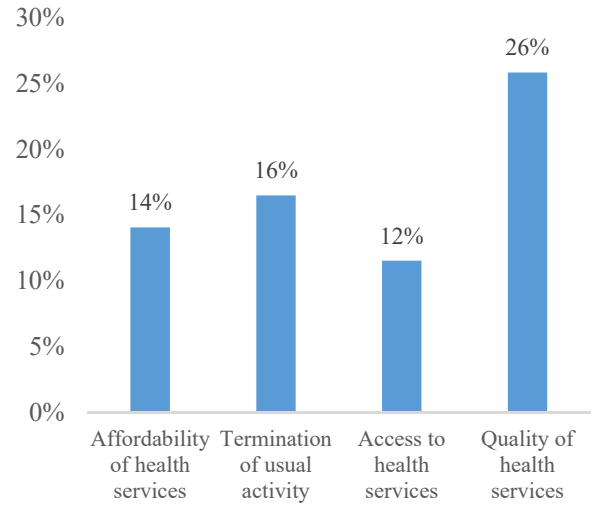
Figure 11. Labor-Related Deprivations by Location, 2015, Percent



Source: ILCS data.

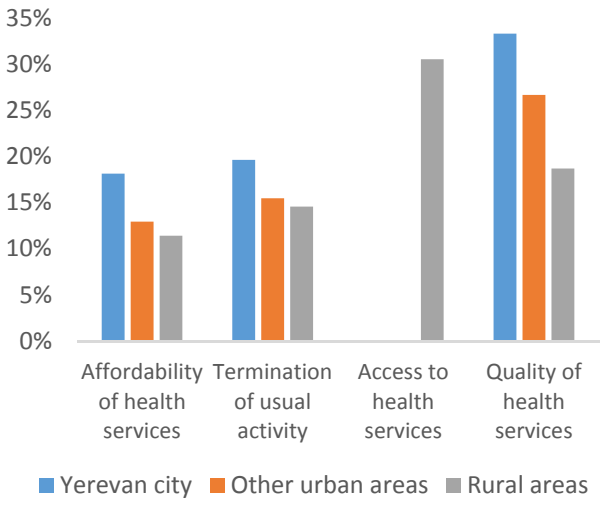
About 10 percent of households either cannot afford health services or lacks access to them (Figure 12). The regional breakdown demonstrates the persistence of greater deprivations in affordability in urban areas and in access in rural areas (Figure 13). Beyond affordability and access, there is also considerable need to improve health care quality. Finally, 16.5 percent of Armenians have had to terminate daily activities for health reasons.

Figure 12. Health-Related Deprivations, 2015, Percent



Source: ILCS data.

Figure 13. Health-Related Deprivations by Locations, 2015, Percent.

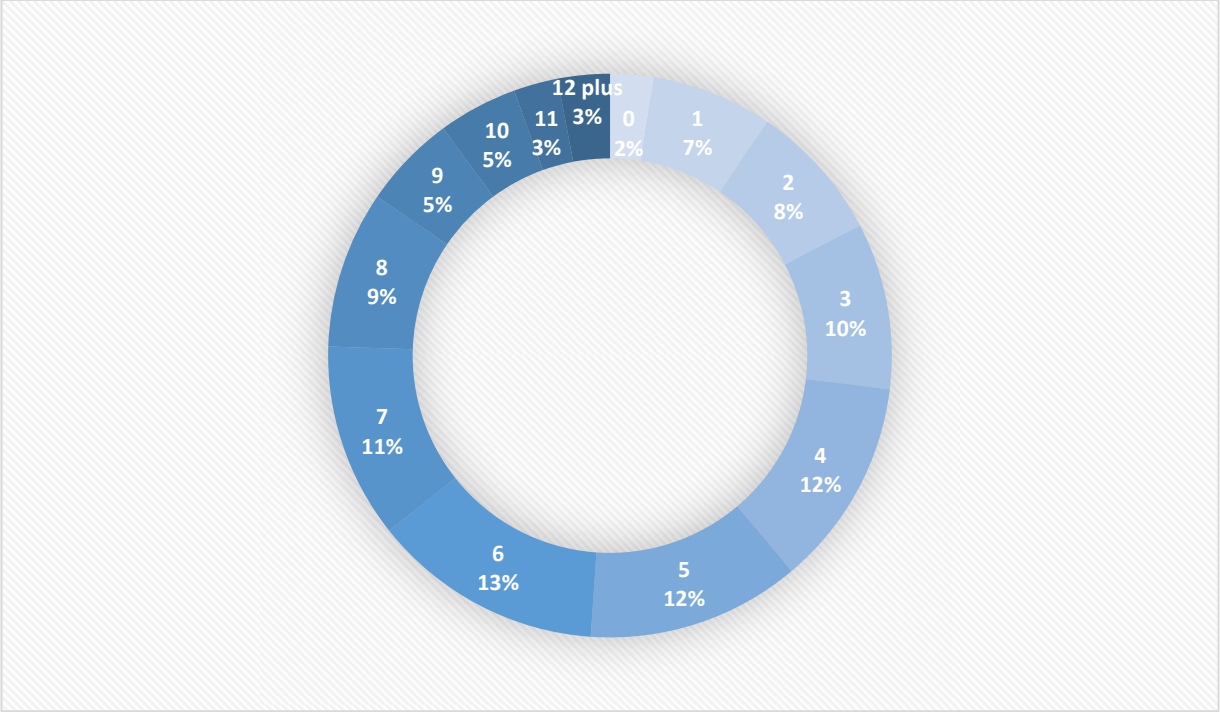


Source: ILCS data.

From Indicators to Overlapping Deprivations

The ability to analyze overlapping deprivations—the number of indicators and dimensions in which households are simultaneously deprived—is one of the main advantages of multidimensional poverty measures (Ferreira and Lugo 2013). Figure 14 illustrates the overlap of deprivations as defined by the indicators and shows the percentage of the population by number of deprivations. In 2015 only 2 percent of the population was completely free of deprivation. At the other end of the distribution, about 25 percent of households were deprived in eight or more indicators simultaneously.

Figure 14. Armenian Experience of 0 to 12 or More Deprivations, 2015, Percent



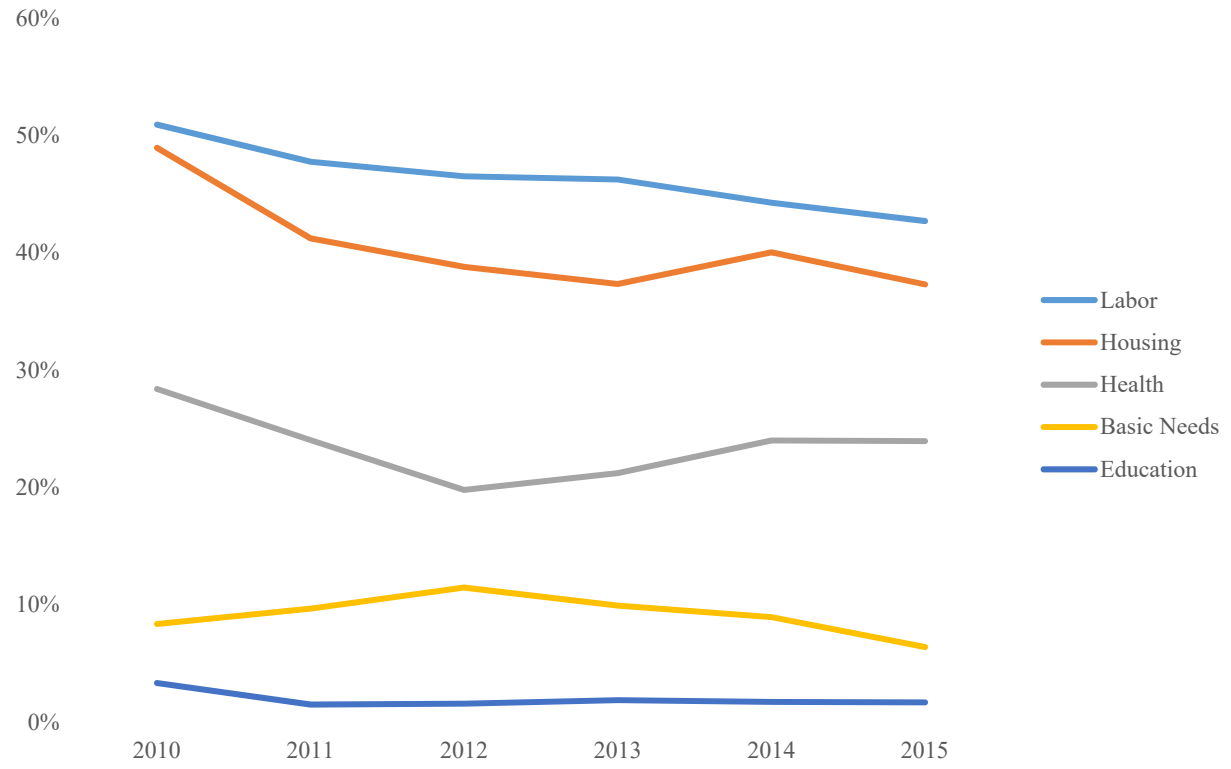
Source: ILCS data.

5. Results

Five Dimensions of Poverty

The divergent trends for five different dimensions of poverty illustrate that the progress of development in Armenia has been uneven.[7] Between 2010 and 2015, the share of the population deprived of labor decreased, and between 2010 and 2012 the share deprived of basic needs went up but then fell back (Figure 15). Both trends track slight improvements in Armenia's economic situation, which is also reflected in a decline in the number living below the upper national poverty line, from 35.8 percent in 2010 to 29.8 percent in 2015. For the health dimension, it appears that individuals experienced improvements in their health status in 2011 and 2012, but thereafter their status worsened. As for housing, the percentage of Armenians deprived of adequate housing continuously decreased until 2013 and then increased again in 2014.

Figure 15. Nonmonetary Dimensions of Poverty, 2010–15, Percent of Population



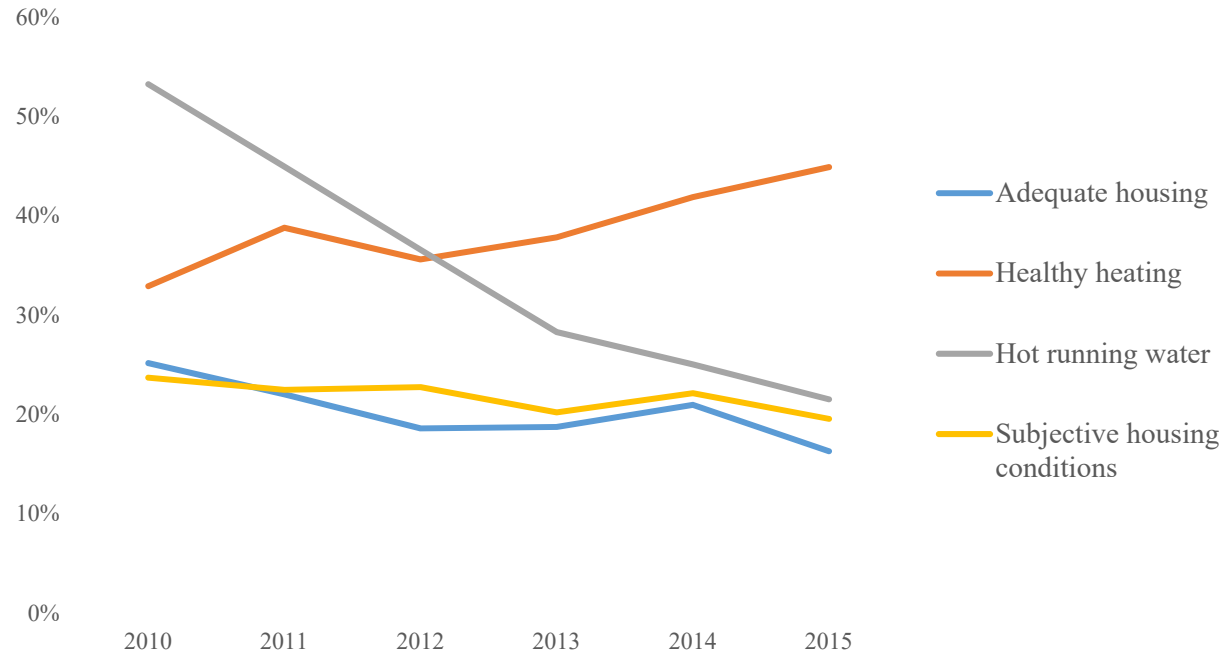
Source: ILCS data.

Improvements in housing were mostly driven by better access to public services and goods, such as hot running water. The indicators for subjective housing conditions and adequate housing have both been relatively stable over time (Figure 16), though the percentage deprived of healthy heating (those who use wood rather than electricity or gas for heating) has gone up, tracking the rise in utility prices. Whereas

[7] As discussed in Section 2, because deprivations are determined at the household level, calculated shares correspond to "the share of the population living in deprived households," shortened for simplicity to "the share of the population".

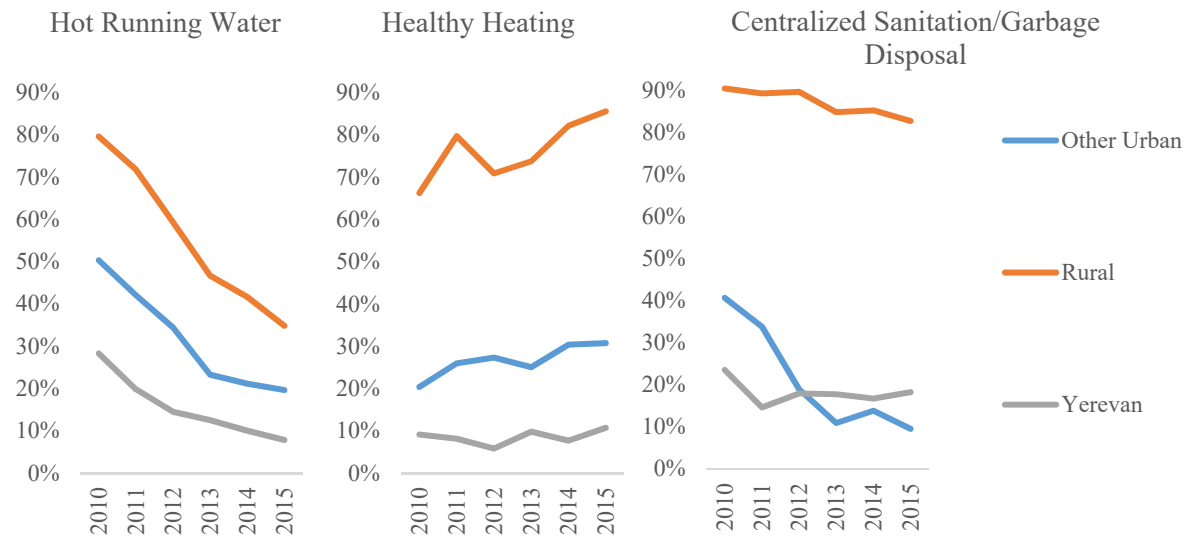
affordability became a concern throughout the country, it is mainly households in rural areas who are able to adjust their heating mix to mitigate price increases (Figure 17). Even though observed gaps are small, differences in access to gas and electricity connections do put rural households at a disadvantage; a monetary measure of poverty would capture very differently price increases for gas and electricity and their potential implications for welfare. Higher prices could be associated with higher consumption spending, which in certain circumstances could be measured as a reduction in monetary poverty, since if the rise in prices is not recognized, higher spending could be interpreted as an increase in household energy consumption.

Figure 16. Deprivations for the Housing Dimension, 2010–15, Percent of Population



Source: ILCS data.

Figure 17. Deprivation in Three Indicators of Affordability and Access, 2010–15, Percent of Population



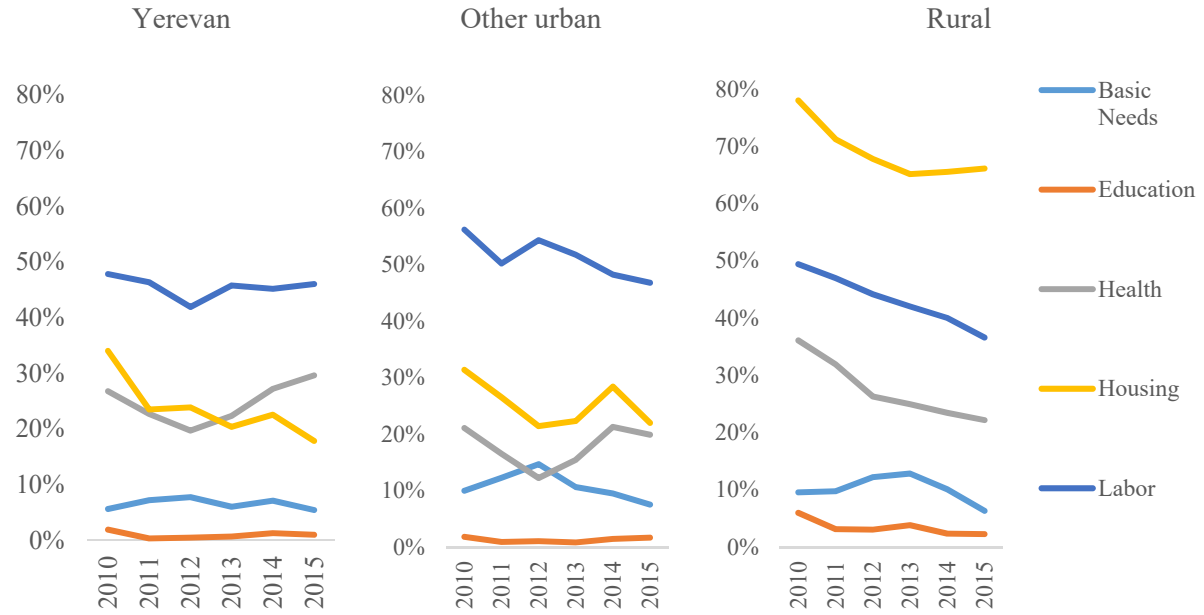
Source: ILCS data.

Regional Differences in Multidimensional Poverty

Disaggregation by location offers a more nuanced picture of multidimensional poverty and describes geographic differences in the complexity, depth, and persistence of poverty. Regional disparities are largest on the housing dimension, although recent investments in physical assets have reduced the gaps between urban and rural areas. Most countries show differences in the availability of public infrastructure and housing conditions, related not only to disparities in climate and geography, but also to the much higher costs of providing public goods and services in rural areas (and even generally outside the capital city) and are often rationalized in terms of cost-benefit analysis. Yet unavailability or limited access, combined with unaffordability, heavily influences the experience of poverty in Armenia and illustrates how identification of the dimension of nonmonetary poverty complements the analysis of monetary poverty.

Between 2010 and 2015, the share of the population with hot running water and access to centralized sanitation and waste disposal consistently rose (see Figure 17). Recent infrastructure improvements seem to have had a positive influence on nonmonetary poverty. A similar situation can be observed for deprivation of centralized sanitation and waste disposal, where the share of the population deprived in this indicator is now lower for other urban areas than for Yerevan (Figure 18).

Figure 18. Deprivation in Poverty Dimensions by Location, 2010 – 15, Percent of Population

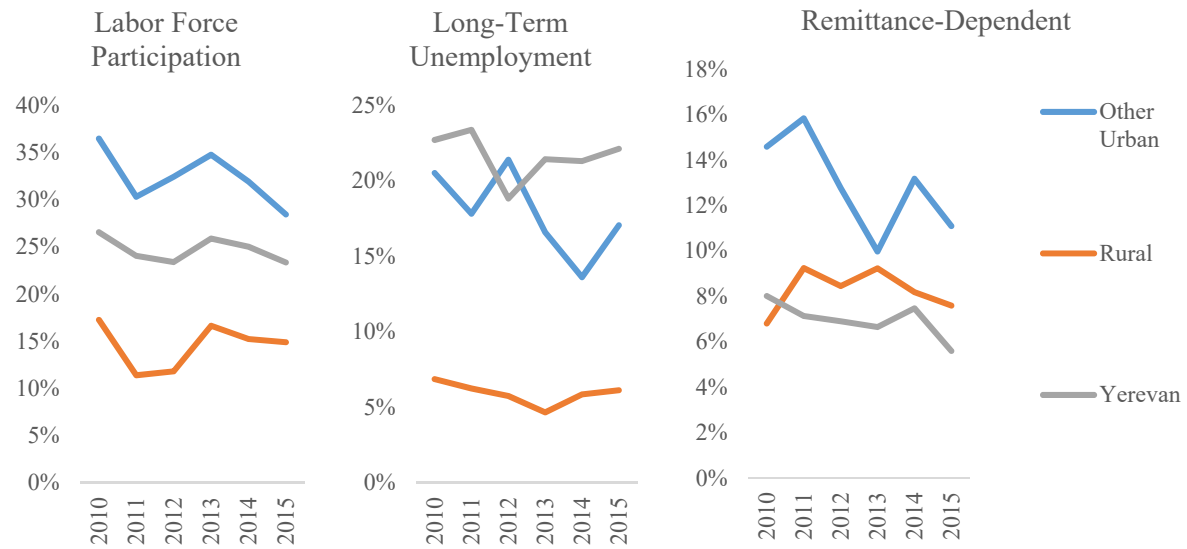


Source: ILCS 2010-2015 data.

For rural and urban populations, assets for the health and education dimensions and assets for the labor dimension differ systematically. Even though educational attainment improved between 2010 and 2015, regional disparities still disadvantage rural households. The analysis of labor deprivations (Figure 19) illustrates that low labor force participation and high structural unemployment are more common in Yerevan and other urban areas than in rural areas. Deprivations on the other two labor indicators—decent jobs, which links to employment status, and underemployment—suggest that quality of employment as reported by rural households is lower than in urban areas. This reflects the large number of self-employed and contributing workers and those in agriculture.[8]

[8] Contributing family workers are those individuals who have jobs in an establishment operated by related persons living in the same household. (OECD Glossary of Statistical Terms).

Figure 19. Deprivations in Three Labor-related Indicators, 2010–15, Percent of Population



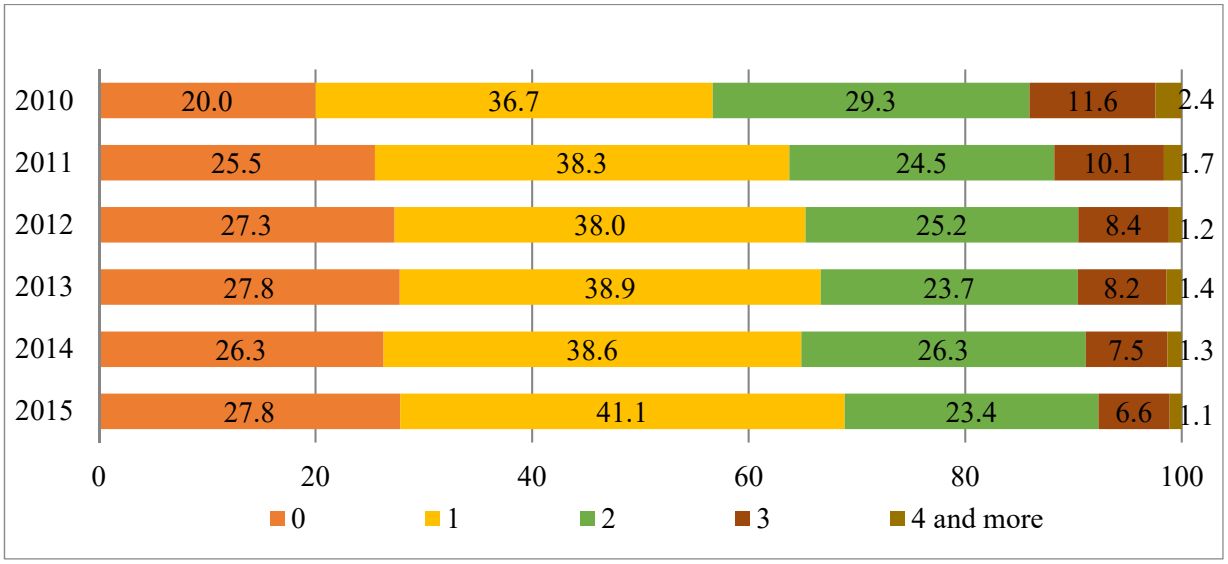
Source: ILCS 2010-15 data.

Recognizing the magnitude of emigration is necessary to understand labor market dynamics in Armenia and the experience of poverty there. Migration extends the labor market beyond national borders and helps households to mitigate idiosyncratic shocks that could otherwise lower incomes and raise unemployment. The high dependence on remittances heightens vulnerabilities to external shocks. Because a relatively large number of households in urban areas other than Yerevan receive remittances, those areas also have a larger number of households that could fall into extreme poverty if remittances were to dry up.

Overlap of Poverty Dimensions

The overlap of deprivations illuminates the complexity and intensity of poverty. Despite the positive trend between 2010 and 2015, the large majority of households still experienced deprivations in many dimensions. In 2015, only 27.8 percent of Armenians did not show any deprivations, but about 7.7 percent was deprived in three or more dimensions—although compared to 2010, the incidence and intensity of nonmonetary poverty have declined with recovery from the global economic crisis that hit Armenia in 2009.

Figure 20. Number of Dimensional Deprivations, 2010–15, Percent



Source: ILCS data.

The overlap of deprivations highlights the association between several dimensions of nonmonetary poverty: (1) A large number of households is deprived in at least one dimension. However, deprivations in one dimension do not imply that households are automatically deprived in all poverty dimensions. (2) There is a close association between deprivations in one dimension and those in other dimensions captured by the measure of multidimensional poverty (see Table 7). Assuming a random distribution of household deprivations, 2.39 percent of the population would have been deprived in basic needs and housing simultaneously. As the actual number is 3.5 percent (something also true for any pairwise comparison), deprivations in one dimension increase the probability of being deprived in another.

Table 7. Two-dimensional Overlap of Deprivations, 2015, Percent

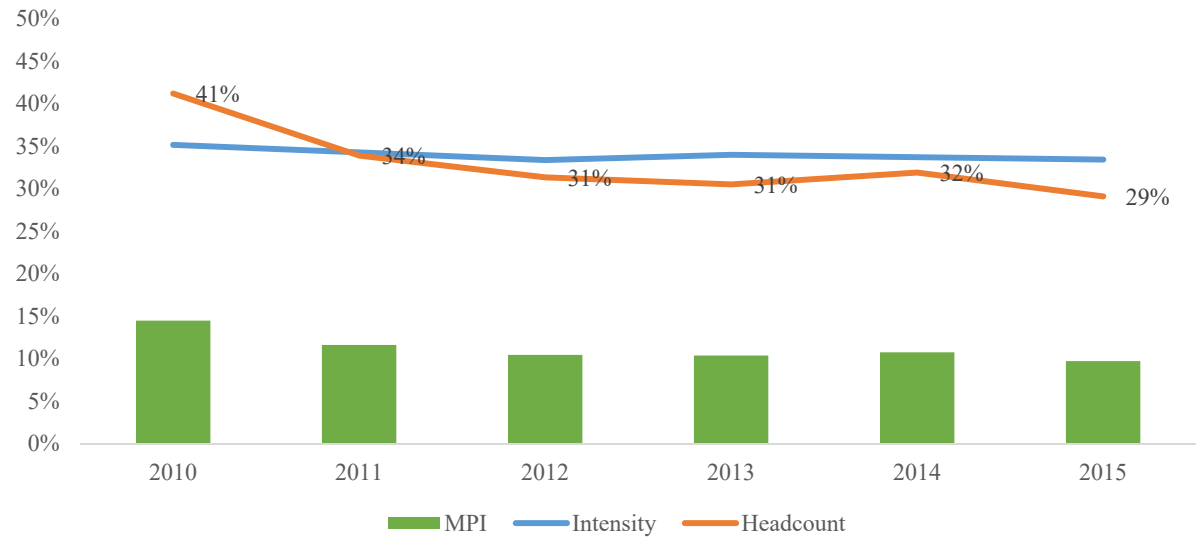
	Basic Needs	**Housing**	**Education**	**Labor**	**Health**	***Population Deprived in Dimension***
Basic needs	100.0					*6.4*
Housing	3.5	100.0				*37.3*
Education	0.2	1.1	100.0			*1.7*
Labor	4.4	16.5	0.7	100.0		*42.7*
Health	1.8	10.1	0.5	11.1	100.0	*24.0*
Population Deprived in dimension	*6.4*	*37.3*	*1.7*	*42.7*	*24.0*	

Source: ILCS 2015 data.

Combination of Incidence and Intensity: The Multidimensional Poverty Index (MPI)

Using a single measure of multidimensional poverty based on the five dimensions specified, in 2015 the incidence of multidimensional poverty (the proportion of the population that experiences multiple overlapping deprivations) was estimated at 29.1 percent. This is quite similar to the incidence of monetary poverty. In addition to the incidence of multidimensional poverty, the intensity of deprivations reflects its severity. The intensity, calculated as the average proportion of deprivations that multidimensionally poor households report, held more or less constant over the entire time period. Finally, the MPI, defined as the product of incidence and intensity, shows a slightly decreasing trend as the incidence of multidimensional poverty has declined.

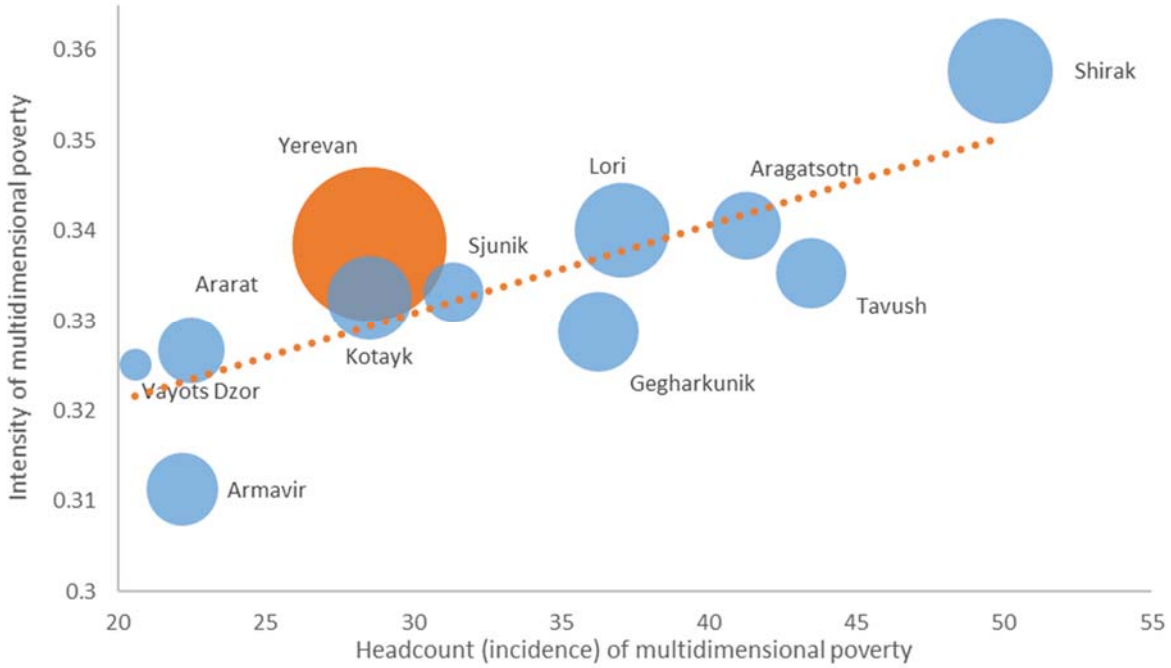
Figure 21. Armenia's MPI: A Combination of Incidence and Intensity, 2015, Percent



Source: ILCS data.

Breaking down the MPI by location of residence shows significant variations. On the horizontal axis, Figure 22 shows the share of the population considered multidimensionally poor (head count, incidence) for each of the eleven marzes in Armenia. Both dimensions show considerable heterogeneity: headcount ranges from 0.21 percent in Vayots Dzor to almost 50 percent in Shirak; intensity is lowest for Armavir and highest for Shirak. However, the figure also illustrates that Yerevan has the largest number of multidimensionally poor households (almost 270,000 individuals). In combination with Kotayk, north of the capital, this regional view suggests that multidimensionally poor households are concentrated in urban areas in the center of the country.

Figure 22. Incidence and Intensity of Multidimensional Poverty by Marz, 2014



Source: ILCS data.

Note: The vertical axis shows the number of household deprivations suffered (intensity). The size of the circles is proportional to the total number of multidimensionally poor households in each marz.

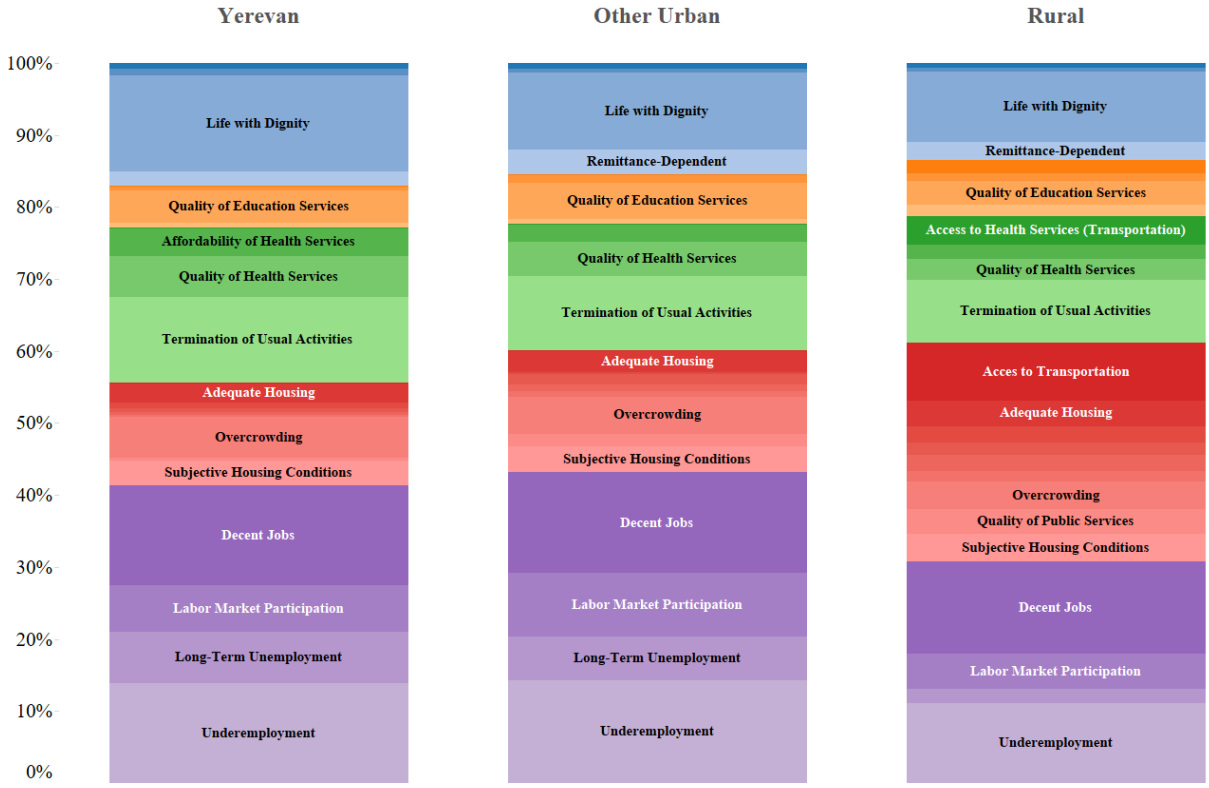
In addition to headcount and intensity, the types of deprivations differ systematically by location. Rural households, as in Shirak, Tavush, or Lori, have more deprivations related to basic needs and inadequate housing conditions and infrastructure.[9] Urban households, as in Kotayk and Yerevan, suffer more from deprivations related to labor and health. The slope of the trend line in Figure 22 indicates the correlation between incidence and intensity by region.

Decomposition of Multidimensional Poverty

Each indicator described contributes to the experience of multidimensional poverty in Armenia. If it is assumed that all deprivations contribute equally, their average contribution would coincide with their weight in the MPI. Yet Figure 23 clearly demonstrates that certain factors are more important than others, with substantial differences by location.

[9] The NSSRA Social Snapshot and Poverty in Armenia, and previous Poverty Assessments (e.g., World Bank 2014) describe welfare patterns and trends of welfare for different locations.

Figure 23. Contribution of Indicators to Multidimensional Poverty by Location. 2015, Percent



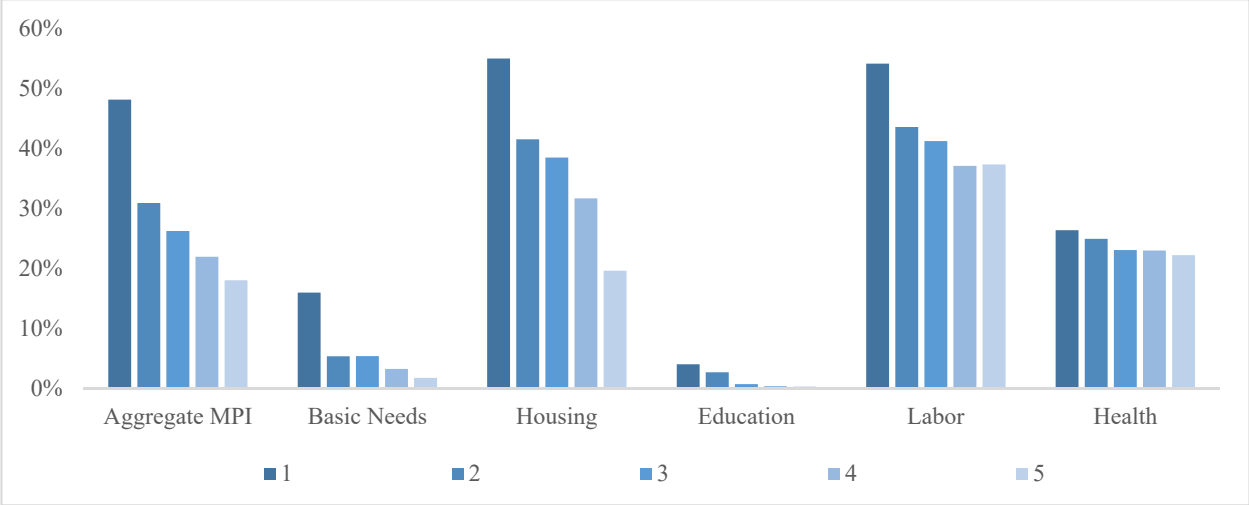
Source: ILCS data.

Independent of location, deprivations related to the labor dimension are a major contributor to multidimensional poverty in Armenia, and housing deprivations help to explain nonmonetary poverty, with major differences by location. Overcrowding reduces well-being in urban areas, and limited access to transportation; lack of adequate housing and worse access to public services and goods are more serious problems for rural households. However, deprivations in basic needs, especially those related to education, have less impact on the MPI in all locations. Indeed, for every location the impact of the decent jobs indicator alone is larger than that of the entire education dimension.

Correlation between the MPI and Other Measures of Welfare

Although the indicators and dimensions on which Armenia's MPI is based capture deprivations related to nonmonetary aspects of poverty, some indicators can be expected to correlate closely with welfare measures based on consumption spending. Figure 24 shows that the share of the population being deprived is highest for the 1st quintile of the (monetary) welfare distribution and decreases consumption (Figure 24). This relationship is by design more pronounced for basic needs and can also be observed for housing. On the other hand, descriptive statistics for the dimensions of education, labor, and health make it clear that the consumption gradient is far less pronounced. For labor, this links to the idea that having a job most certainly translates into higher income but does not necessarily allow individuals to work where they are fully employed in a decent job.

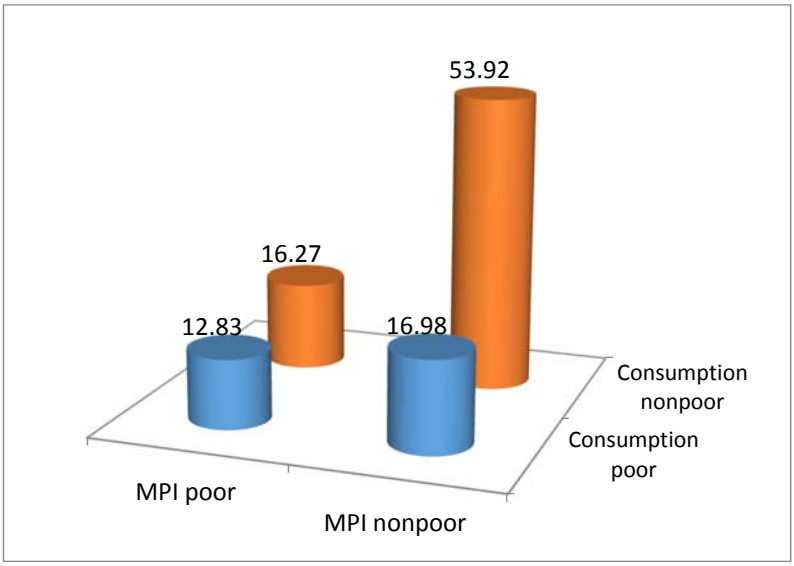
Figure 24. Population Deprived in Each Dimension, by Welfare Quintile, 2015, Percent



Source: ILCS data.

Note: Quintile 1 is the poorest; 5 is the richest.

Figure 25. Percent of Armenians who Are Multidimensionally and Consumption Poor, 2015



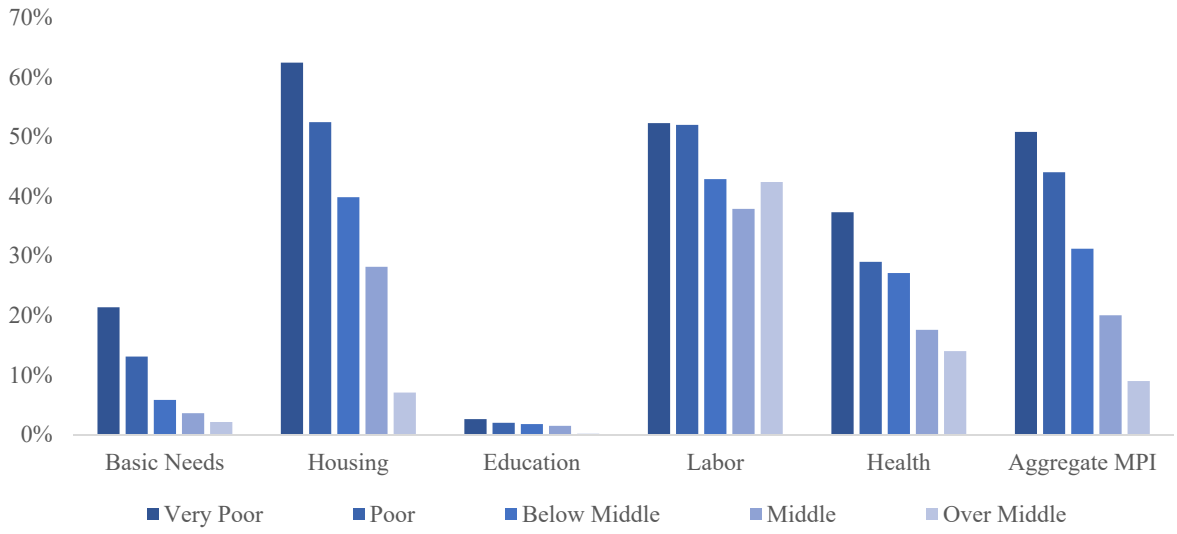
For all dimensions, the share of households being deprived in any dimension is higher among poor than nonpoor households (with a poverty rate of 29.8 percent, the first quintile and half of the second are considered monetarily poor). Even among nonpoor households, a large share report deprivations in one of the five dimensions. Clearly, many Armenians are still vulnerable to poverty because their insufficient endowment limits their functioning and capabilities.

Source: ILCS data.

A comparison with subjective measures of well-being illustrates that the MPI is also highly correlated with household perception of living conditions (Figure 26). For most dimensions, the share of deprived households increases as households consider themselves to be relatively poorer. The starkest difference can be observed in the housing and basic needs dimensions; the disparity is much lower for labor and health

and almost nonexistent for education. One way of interpreting the differences depending on dimensions could be that people suffering from housing and basic needs deprivations feel that there are living a poorer life. Although there is need to analyze this relationship further to draw sound conclusions statements, one can expect that, e.g., living in a damaged house or receiving humanitarian assistance, is more evidently associated with "feeling poor."

Figure 26, Percent of Armenians Who Consider Themselves Deprived in Each Dimension, 2015



Source: ILCS data.
Note: Only nine households considered themselves to be rich in 2015.

6. Conclusion

An MPI is a useful complement to the monetary measure used to monitor deprivations in Armenia. The absolute number of individuals living in households deprived in each dimension of nonmonetary poverty is large: e.g., almost 1.2 million experience deprivations in the labor dimension—the biggest contributor to multidimensional poverty in Armenia. The second most important deprivation is housing, where more than 1 million individuals report multiple deprivations. For health 0.7 million and for education 0.05 million individuals suffer from overlapping nonmonetary deprivations. More than 0.18 million individuals in Armenia fall below the national food poverty line, are vulnerable to major shocks such as a decline in remittances, or report that either in absolute or relative terms they are materially deprived.

In 2015 12.83 percent of Armenians is both multidimensionally poor and lives below the upper national poverty line[10] (Figure 25). For this group, a better understanding of what underlies the persistence of poverty can enable policy makers to target interventions to the specific deprivations these households experience. A second group of households is multidimensionally poor but lives above the upper national poverty line (16.27 percent); deprivations make them more vulnerable to shocks and decrease their quality of life. The third group does not experience multiple deprivations but currently lives below the upper national poverty

[10] The upper national poverty line is officially used to measure consumption poverty in Armenia. In 2014 the corresponding threshold was 40,264 Armenia drams per adult equivalent per month.

line (16.98 percent). In contrast to the first and second groups, these households have adequate education, health, and housing but often work in low-productivity sectors. Policies to improve their living conditions and programs to move them out of monetary poverty would differ from interventions for the first and second groups. Like the analysis of consumption poverty, the measure of multidimensional poverty can be deconstructed by region, location, and other factors as well as by the dimensions identified.

In addition to a more nuanced picture of the experience of poverty in a country, the combined analysis of multidimensional and consumption poverty offers the possibility of better targeting poverty reduction policies, especially to groups for whom poverty is most intense. Combined analysis can be an invaluable analytical tool to identify the most vulnerable people—the poorest of the poor—and identify poverty patterns over time. Thus, the MPI can be central to designing poverty alleviation programs and policies in Armenia. Moreover, as has been the experience in countries like Mexico, the indicators and the composite MPI itself can be used to coordinate the poverty reduction efforts of multiple agencies or ministries.

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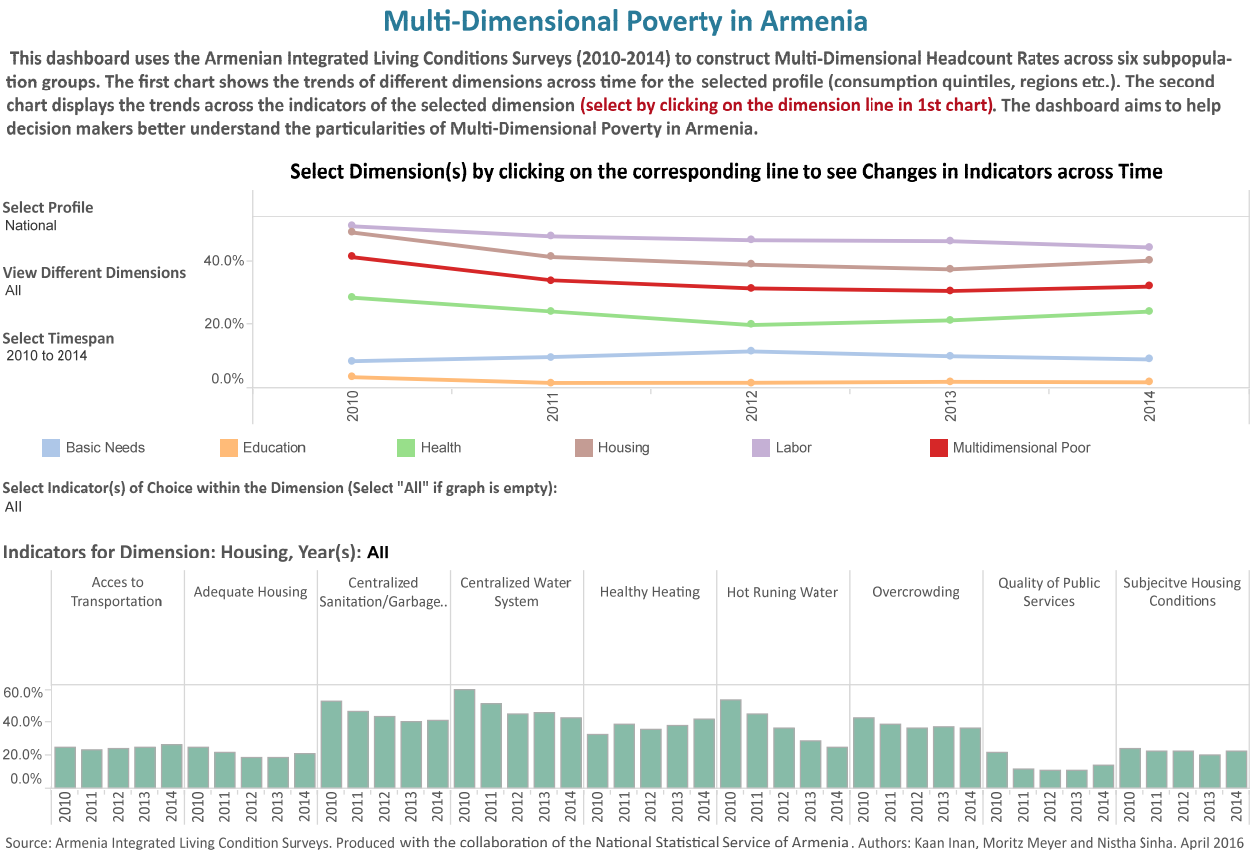
Annex 1. Interactive Dashboards on Multidimensional Poverty in Armenia

The Multidimensional Poverty dashboard allows users both to quickly browse through the time trends of poverty and the incidence of deprivation for subpopulation groups across dimensions and to investigate changes across indicators in each dimension. The user can select from five subpopulation categories (monetary poverty, consumption quintiles, marz, urban-rural divide, and subjective poverty) and click on an individual dimension line to populate the figure in the bottom section with the indicators of the selected dimension. If the bottom chart gets crowded with too many indicators, the user can also select any given indicator.

LINK: http://tab.worldbank.org/#/site/WBG/views/MPI_armenia_allyears_contribution/MPIoverview

SHORT LINK: https://goo.gl/fyhKfJ



Source: Armenia Integrated Living Condition Surveys. Produced with the collaboration of the National Statistical Service of Armenia. Authors: Kaan Inan, Moritz Meyer and Nistha Sinha. April 2016

Annex 2. Summary Statistics

Table A1. Multidimensional Poverty in Armenia, by Location, 2010–15, Percent

Indicator	National						Yerevan		Other Urban		Rural	
	2010	2011	2012	2013	2014	2015	2010	2015	2010	2015	2010	2015
Extreme poverty	3.0	3.7	2.8	2.7	2.3	2.0	2.2	2.0	6.1	2.4	1.1	1.7
Life in dignity	50.1	50.3	50.8	49.5	50.3	55.7	50.9	63.5	40.6	52.7	57.4	51.2
Humanitarian aid	4.0	4.6	9.5	7.3	5.1	2.2	1.7	3.4	2.5	1.3	7.4	2.0
Remittance-dependent	9.6	10.6	9.3	8.6	9.5	8.0	8.0	5.6	14.6	11.1	6.8	7.6
Subjective housing conditions	23.7	22.5	22.8	20.2	22.2	19.6	25.1	15.3	19.8	20.4	25.6	22.6
Hot running water	53.3	45.0	36.6	28.3	25.0	21.5	28.3	7.9	50.3	19.7	79.6	34.9
Adequate housing	25.2	22.1	18.6	18.8	21.0	16.3	26.8	15.0	19.2	16.3	28.6	17.5
Quality of paid public services	21.6	11.6	11.1	10.8	14.0	11.1	19.1	1.3	12.6	8.6	31.6	21.6
Access to transportation	25.0	23.7	23.7	25.2	26.4	27.1	n.a.	n.a.	n.a.	n.a.	70.1	71.7
Overcrowding	42.6	38.6	36.7	37.1	36.4	32.1	54.5	42.4	40.4	34.0	33.0	21.8
Healthy heating	32.9	38.8	35.6	37.9	41.9	44.9	9.1	10.8	20.4	30.8	66.3	85.6
Centralized water system	59.8	51.4	45.2	45.8	42.3	40.2	39.5	14.0	77.6	45.5	64.3	58.7
Centralized sanitation and garbage disposal	52.6	46.8	43.8	40.2	40.8	40.0	23.5	18.2	40.6	9.4	90.5	82.7
No secondary education	4.1	3.7	3.9	4.3	4.0	4.4	2.3	4.1	4.1	4.9	5.8	4.4
Schooling rate	7.7	4.4	4.7	4.4	4.6	4.4	5.3	3.4	6.4	3.8	11.2	5.7
Quality of education services	18.6	16.5	11.7	15.0	17.2	15.9	18.6	16.9	22.3	18.1	15.4	13.4
Access to education services	3.9	2.0	3.2	1.8	2.0	2.6	n.a.	n.a.	n.a.	n.a.	11.0	7.0
Labor market participation	26.3	21.5	22.0	25.2	23.6	21.7	26.6	23.4	36.5	28.5	17.3	14.9
Long-term unemployment	16.4	15.6	14.9	13.8	13.3	14.6	22.7	22.1	20.5	17.1	6.9	6.1
Decent jobs	57.1	54.8	53.6	53.6	52.9	52.3	49.9	48.0	58.7	51.7	62.6	56.3
Underemployment	55.0	50.9	49.9	49.3	48.0	46.1	50.3	47.6	59.0	50.3	56.1	41.5
Termination of usual activity	21.1	18.1	13.5	14.7	17.0	16.5	19.1	19.6	18.1	15.5	25.5	14.6
Access to health services	13.0	12.1	9.6	7.6	8.6	11.5	n.a.	n.a.	n.a.	n.a.	36.5	30.5
Quality of health services	28.1	26.7	25.4	29.9	28.9	25.8	26.0	33.3	30.3	26.7	28.2	18.7
Affordability of health services	15.3	11.4	11.8	13.2	13.2	14.1	21.1	18.1	9.1	12.9	15.0	11.4

Source: ILCS data.

Table A2. Multidimensional Poverty in Armenia Yerevan and Marzes, 2015

Indicator	Aragatsotn	Ararat	Armavir	Gegharkunik	Kotayk	Lori	Shirak	Sjunik	Tavush	Vayots dzor	Yerevan
Extreme poverty	0.4	1.3	2.1	1.3	2.3	2.8	3.9	0.7	2.0	1.0	2.0
Life in dignity	90.8	9.5	77.8	51.8	35.5	46.8	67.1	67.9	63.2	27.9	63.5
Humanitarian aid	6.9	0.9	0.3	0.5	1.0	1.8	0.9	0.1	7.4	1.7	3.4
Remittance-dependent	20.0	4.3	8.5	7.2	9.8	9.1	16.4	7.2	3.2	6.3	5.6
Subjective housing conditions	30.3	20.1	5.6	19.1	28.6	28.2	16.9	5.7	48.0	20.8	15.3
Hot running water	30.8	22.6	22.5	31.4	21.4	32.6	43.0	3.7	45.1	35.0	7.9
Adequate housing	12.6	14.3	7.1	12.9	15.5	27.0	27.8	1.6	27.5	23.9	15.0
Quality of paid public services	40.0	17.9	6.4	32.2	10.7	0.2	28.6	3.4	24.6	7.1	1.3
Access to transportation	61.9	50.5	60.6	45.2	32.1	30.6	35.0	17.9	16.4	55.2	n.a
Overcrowding	4.2	25.1	16.5	25.0	37.3	32.1	34.2	27.2	31.2	25.7	42.4
Healthy heating	87.3	64.5	63.4	76.7	38.1	59.5	54.0	51.5	81.4	72.2	10.8
Centralized water system	65.3	92.4	36.1	42.7	48.0	65.3	57.9	2.0	60.8	9.8	14.0
Centralized sanitation and garbage disposal	74.7	66.0	61.4	71.9	19.3	43.2	40.4	30.8	64.3	58.6	18.2
No secondary education	6.8	7.2	3.6	3.4	2.6	5.4	4.4	4.5	6.6	2.0	4.1
Schooling rate	0.5	6.2	7.3	3.7	4.2	6.3	2.5	1.9	7.7	6.2	3.4
Quality of education services	25.9	15.2	0.9	23.1	5.5	9.7	13.9	59.7	22.2	4.7	16.9
Access to education services	5.4	0.0	2.6	3.0	4.3	8.6	0.2	2.5	10.4	6.3	n.a.
Labor market participation	11.2	13.0	18.9	23.6	23.8	29.9	31.2	14.1	12.4	10.4	23.4
Long-term unemployment	1.9	11.0	3.6	0.0	8.7	12.3	30.5	22.9	6.7	11.9	22.1
Decent jobs	56.4	48.2	54.8	57.6	44.3	61.5	72.4	43.7	49.2	46.2	48.0
Underemployment	31.3	36.6	43.3	66.1	38.1	48.7	61.8	39.4	38.7	35.7	47.6
Termination of usual activity	23.4	22.2	7.2	11.8	18.6	22.0	11.1	7.4	8.1	9.5	19.6
Access to health services	16.8	2.0	23.8	24.4	11.4	13.8	21.5	20.1	20.4	43.4	n.a.
Quality of health services	28.9	28.2	0.2	29.8	14.6	22.2	24.9	52.2	24.9	12.0	33.3
Affordability of health services	0.0	17.2	5.2	4.6	11.4	28.3	4.7	16.7	11.4	17.0	18.1

Source: ILCS data.

Table A3. Multidimensional Poverty in Armenia by Consumption Quintiles, 2010 and 2015, Percent)

Indicator	2010					2015				
	Q 1	Q 2	Q 3	Q 4	Q 5	Q 1	Q 2	Q 3	Q 4	Q 5
Extreme poverty	15.0	0.0	0.0	0.0	0.0	12.5	0.0	0.0	0.0	0.0
Life in dignity	61.1	55.4	53.1	48.2	32.7	64.7	52.0	50.9	39.7	39.9
Humanitarian aid	2.7	3.1	4.6	5.1	4.5	8.4	5.5	4.3	4.8	2.8
Remittance-dependent	22.8	6.3	7.2	6.8	4.7	21.8	8.9	6.4	8.0	4.4
Subjective housing conditions	36.9	28.2	22.3	18.2	13.0	39.0	26.6	20.5	14.9	13.5
Hot running water	75.4	57.6	53.0	43.7	36.6	43.3	27.9	22.3	16.5	10.8
Adequate housing	39.1	29.6	26.2	18.2	12.8	40.3	25.8	19.4	12.6	11.9
Quality of paid public services	22.8	23.8	23.3	21.5	16.8	20.4	14.1	16.6	11.8	8.5
Access to transportation	22.3	25.9	26.4	27.9	22.6	26.2	28.0	30.5	32.6	25.1
Overcrowding	58.4	48.1	40.7	34.0	31.6	59.1	53.0	39.5	39.8	30.2
Healthy heating	44.2	41.0	32.5	27.4	19.5	55.8	52.0	48.8	39.7	24.6
Centralized water system	68.6	63.9	62.7	53.7	50.3	47.0	45.8	45.8	42.3	34.7
Centralized sanitation and garbage disposal	59.0	59.8	53.7	49.1	41.3	41.8	41.4	46.3	43.9	38.2
No secondary education	5.0	3.9	3.8	4.8	2.8	3.2	1.8	1.9	2.0	1.0
Schooling rate	12.6	10.7	7.3	5.3	2.8	12.7	6.7	4.4	2.1	3.3
Quality of education services	21.3	22.7	16.3	18.8	13.6	16.4	16.3	18.5	17.8	17.8
Access to education services	3.5	4.2	5.1	4.1	2.7	3.6	2.5	1.6	1.8	0.4
Labor market participation	31.3	28.0	24.9	23.1	23.9	30.8	22.3	21.4	22.7	23.8
Long-term unemployment	24.9	15.4	16.7	13.7	11.3	17.2	15.6	14.7	11.8	12.2
Decent jobs	66.1	57.7	59.6	52.4	49.6	61.9	55.3	53.5	53.3	47.2
Underemployment	68.3	55.0	56.7	49.1	45.9	60.4	48.5	46.2	47.0	43.9
Termination of usual activity	18.8	19.4	22.6	21.7	22.9	13.1	20.0	16.6	16.2	22.2
Access to health services	13.7	14.5	12.8	14.3	10.0	9.4	8.9	10.1	8.4	5.5
Quality of health services	32.4	30.3	28.1	27.2	22.3	25.3	27.3	33.8	28.3	27.1
Affordability of health services	20.2	21.3	15.0	11.2	8.7	21.5	20.3	9.8	9.7	7.9

Source: ILCS data.

Note: Q stands for quintile of the welfare distribution. In 2010 the national poverty rate was 35.8 percent and in 2015 29.8 percent.

Table A4. Multidimensional Poverty in Armenia by Subjective Well-being, 2010 and 2015, Percent

Indicator	2010					2015				
	VP*	P	BM	M	OM	VP	P	BM	M	OM
Extreme poverty	11.5	7.7	2.6	1.6	0.0	16.7	6.3	1.1	0.5	0.2
Life in dignity	88.5	70.7	61.0	33.4	15.5	74.7	69.1	59.8	46.1	17.4
Humanitarian aid	10.7	6.9	4.0	3.1	0.4	18.8	4.0	2.1	0.9	0.6
Remittance-dependent	15.4	12.3	8.6	9.5	8.0	17.1	12.3	6.9	6.9	8.9
Subjective housing conditions	56.2	40.7	29.8	12.2	1.0	71.3	37.1	23.1	5.7	2.9
Hot running water	89.8	77.9	52.9	45.7	27.4	56.8	38.0	20.6	14.9	5.6
Adequate housing	52.7	41.5	28.1	17.4	2.8	40.4	25.7	18.0	9.6	3.9
Quality of paid public services	32.9	31.9	24.5	15.9	8.8	9.1	17.2	12.8	7.1	3.1
Access to transportation	35.5	39.4	25.3	19.7	20.7	24.2	22.0	26.9	30.6	14.7
Overcrowding	49.0	43.0	45.0	40.8	29.4	45.5	41.0	32.9	26.9	27.1
Healthy heating	59.0	48.6	34.5	26.6	12.8	65.5	49.1	44.7	43.9	22.5
Centralized water system	75.5	75.0	56.4	57.8	53.0	28.3	39.0	41.1	41.3	24.7
Centralized sanitation and garbage disposal	57.5	63.3	52.3	49.3	45.3	32.0	36.2	38.6	45.1	23.5
No secondary education	15.2	7.2	4.0	2.7	0.9	13.5	8.8	4.1	2.9	0.6
Schooling rate	13.4	11.5	7.4	6.5	6.3	15.7	4.9	4.1	4.0	1.1
Quality of education services	13.8	18.5	21.6	16.6	9.7	6.6	13.2	18.5	14.8	7.3
Access to education services	2.7	3.0	4.5	3.4	6.8	4.2	2.3	2.3	3.3	1.5
Labor market participation	30.8	27.6	24.8	26.6	30.3	34.6	26.0	20.8	19.7	25.9
Long-term unemployment	17.0	15.3	18.9	14.6	11.3	13.2	18.3	15.5	12.0	14.8
Decent jobs	67.1	66.3	58.0	53.5	46.3	54.9	59.6	53.5	47.4	48.0
Underemployment	70.6	65.9	56.9	49.6	43.0	59.9	56.9	46.4	40.3	44.3
Termination of usual activity	31.4	21.3	23.7	18.4	17.2	25.0	19.5	17.3	13.8	12.2
Access to health services	23.1	12.3	12.8	12.7	15.7	14.2	15.1	11.1	11.1	2.8
Quality of health services	57.8	38.3	34.1	18.7	9.5	31.6	37.0	30.3	16.4	7.2
Affordability of health services	25.6	27.4	19.2	7.9	0.6	33.7	16.8	16.3	9.5	3.8

Source: ILCS data.

Note: * VP = Very poor, P = Poor, BM = Below middle, M = Middle, and OM = Over Middle. Rich is not presented because not enough households defined themselves in this category.

Annex 3. Construction of Deprivations

Basic Needs Dimension

- **Extreme (Food) Poverty (DEP_a1):** Identifies whether adult equivalent consumption is more or less than the national food poverty line. A household is deprived if adult equivalent consumption is below the line. Original variable name in dataset: aec_r, foodln
  Values used for the food poverty line are as follows (in Armenian drams):

	2010	2011	2012	2013	2014	2015
Food poverty line	19,126	21,306	21,732	22,993	23,384	24,109

- **Life in Dignity (DEP_a3):** Identifies whether household can afford to buy food or clothes. Household is deprived if respondent states that there is not enough money for everyday meals or clothes. Original variable name in dataset: k1_1

- **Humanitarian Aid (DEP_a4):** Identifies households that receive humanitarian aid. Household is deprived if it has received such aid during the last 12 months. Original variable name in dataset: m13 (2010, 2011, 2012, 2015) or m14 (2013, 2014).

- **Remittance-Dependent (DEP_a6):** Identifies households that have lower consumption levels than the food poverty line after discounting for any remittances received; such households are considered deprived. Households that do not receive remittances but consume less than the food poverty line are also considered deprived. Original variable names in dataset: y1_2 (identifies remittances), y1_3drm (amount of remittance), aec_r (consumption), foodln (food poverty line)

Housing Dimension

- **Subjective Housing Conditions (DEP_b1):** Identifies households that evaluate their housing conditions as bad or very bad. Original variable names in dataset: c19 (2010), c17 (2011, 2012, 2013, 2014, 2015)

- **Adequate Housing (DEP_b2):** Identifies households that have a complaint about housing and environment conditions in terms of floor area, noise from neighbor or outside, lighting, heating , humidity, leaking roof, dilapidated walls and floor, dilapidated window frames and doors, heavy traffic, industrial pollution, elevator functioning, water quality, garbage removal, services for common areas and yards. Households that have a complaint about at least a third of the conditions are considered deprived. Original variable names in dataset: c16_1, c16_2, c16_3, c16_4, c16_5, c16_6, c16_7, c16_8, c16_9, c16_10, c16_11, c16_12, c16_13, c16_14 (2011, 2012, 2013, 2014, 2015), c18_1, c18_2, c18_3, c18_4, c18_5, c18_6, c18_7, c18_8, c18_9, c18_10, c18_11, c18_12, c18_13, c18_14 (2010).

- **Overcrowding (DEP_b3):** Identifies households whose members live in overcrowded conditions according to the Eurostat definition.[11] The household is considered to be overcrowded if any of the following conditions are 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;

[11] http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Overcrowding_rate

- one room per pair of children under 12.

Households that have any individuals that live in overcrowded conditions are considered to be deprived. The rooms do not include bathroom, toilet. or kitchen. Original variable names in dataset: a1_1 (gender), a1_5 (marital status), age, c4 (number of rooms, excluding bathroom, toilet, kitchen).

- **Healthy Heating (DEP_b4):** Identifies households whose main source of heating is considered to be detrimental to health. Households heating with oil and diesel, wood, or any source other than central heating, electricity, natural gas, or liquefied gas are considered deprived. Original variable names in dataset: c14_1 (2010), c12_1 (2011, 2012, 2013, 2014, 2015).

- **Continuous Access to Centralized Water System (DEP_b5):** Identifies household access to centralized water and the quality of access. Households that do not have access to centralized water for every day of the month and each hour of the day are considered deprived. Original variable names in dataset: c9 (sources of water), c10 (location of water source), c11_1 (access days in month), c11_2 (access hours in the day) for 2011, 2012, 2013, 2014 and 2015. c10, c11, c12_1 and c12_2 for 2010.

- **Centralized Sanitation and Garbage Disposal (DEP_b7):** Identifies households that do not have a centralized sanitation compound or disposal of household garbage using either a rubbish evacuation system or dust-cart collection. Households that use other means of garbage disposal and either do not have a functioning centralized sanitation compound are considered deprived. Original variable names in dataset: c8_3 (sanitation), c15 (garbage disposal) for 2011, 2012, 2013, 2014 and 2015. c9_3 (sanitation), c10 (garbage disposal) for 2010.

- **Hot Running Water (DEP_b10):** Identifies households that do not have access to functional hot running water. Original variable names in dataset: c8_2 (2011, 2012, 2013, 2014, 2015), c9_2 (2010).

- **Quality of Public Services (DEP_b27):** Measures how satisfied households are with nine different public services: water supply, sanitation, garbage collection, telephone, electricity supply, post, banking, irrigation, and public transportation. Households that are not satisfied with more than a third of the public services they rate are considered deprived. Original variable names in dataset: l1_row, l1_1 (2012, 2013, 2014, 2015), l3_row, l3_1 (2010, 2011).

- **Access to Transportation (DEP_b28):** Identifies households that rate as poor roads within their settlements or to regional towns or markets. Households in urban areas are usually not asked this question, and are assumed not to be deprived. Original variable names in dataset: c30_1_1, c30_2_1 (2011, 2012, 2013, 2014, 2015), c31_1_1, c31_2_1 (2010)

Education Dimension

Secondary Education (DEP_d1): Identifies household in which no member aged 15 or more has completed secondary education. Original variable names in dataset: a1_9, age

- **Compulsory Schooling (DEP_d2):** Identifies households that have at least one child of compulsory schooling age (6–17 years) is not attending school. Households with no children of that age are deemed to be not deprived. Original variable names in dataset: e2_7, age.

- **Quality of Education Services (DEP_d3):** Identifies households that are not satisfied with education services. Original variable names in dataset: l1_row, l1_1 (2012, 2013, 2014, 2015), l3_row, l3_1 (2010, 2011).

- **Access to Education (DEP_d6):** Identifies households that do not have adequate access to education services. If any child spends more than over 20 minutes walking or riding a bicycle to attend kindergarten, primary, or secondary school the household is considered deprived. Households in which any child spends over an hour using other means of transportation in commuting to school are also considered deprived.

Urban households are usually not asked this question, and are assumed not to be deprived. Original variable names in dataset: c29_5_3, c29_6_3, c29_7_3 (2011, 2012, 2013, 2014, 2015), c30_5_3, c30_6_3, c30_7_3 (2010).

Labor Dimension

Indicators in the labor dimension use two constructed variables, wap (working age population) and lfs (labor force status). The former is a binary variable that equals 1 for all individuals between the ages of 15 and 75; the latter categorizes individuals as either out of the labor force, employed, or unemployed using the following original variables: d2_5 (all years), d1_4 (2014, 2015), d1_4a (2010, 2011, 2012, 2013), d2_9, d2_10 (2013, 2014), d2_10, d2_11 (2010, 2011, 2012).

- **Labor Market Participation (DEP_e1):** Identifies households in which more than half of working age (15-75) individuals are not in the labor force. Households that do not have any person of working age are considered not deprived. Original variable names in dataset: wap, lfs (all years)

- **Long-Term Unemployment (DEP_e2):** A household is considered deprived if any working-age member has been unemployed for one year or more and is actively looking for a job. Households that have no members of working age are considered not deprived. Original variable names in dataset: wap, lfs (all years), d2_8 (2013, 2014, 2015), d2_9 (2010, 2011, 2012).

- **Decent Jobs (DEP_e8):** Identifies households with individuals that are self-employed or contribute to a family business. Household is deprived if all employed members are in those categories. Households that were deprived in either DEP_e1 or DEP_e2 are automatically considered deprived. Households with no members of working age are considered not deprived. Original variable names in dataset: wap, lfs (all years), d1_5 (2014, 2015), d1_7a (2010, 2011, 2012, 2013).

- **Underemployment (DEP_e9):** A household is deprived if all employed individuals either work less than 30 hours a week or are seasonal workers. Households deprived in either DEP_e1 or DEP_e2 are automatically considered deprived. Households with no members of working age are considered not deprived. Original variable names in dataset: wap, lfs (all years), d1_9, d1_11 (2014, 2015), d1_18a, d1_22a (2011, 2012, 2013), d1_17a, d1_21a (2010).

Health Dimension

- **Affordability of Health Services (DEP_f4):** Identifies households that lack the funds to pay for required health services (excluding dentist) in a health care facility, such as tests, examinations, and procedures prescribed by a doctor. Households with any members not able to afford such services in the 30 days previous to being surveyed are considered deprived; those with no member who has recently sought medical attention are considered not deprived. Original variable names in dataset: i1_18 (2012, 2013, 2014, 2015), i1_16 (2010, 2011).

- **Termination of Usual Activities (DEP_f13):** Identifies households where at least one member terminated usual activities because of illness, injury, or bad health. Original variable names in dataset: i1_3 (all years).

- **Access to Health Services (DEP_f14):** Identifies households in rural areas that have no access to health care facility (1), emergency ambulance services (2), or pharmacies (3) in the neighborhood. Households that cannot reach the nearest of these within 20 minutes or less by any available mean of transportation are considered deprived. Urban households are considered not deprived. Original variable names in dataset: c29_1_3, c29_2_3, c29_3_3 (2011, 2012, 2013, 2014, 2015), c30_1_3, c30_2_3, c30_3_3 (2010).

- **Quality of Health Services (DEP_f15):** Identifies households that are not satisfied with health services. Original variable names in dataset: l1_row, l1_1 (2012, 2013, 2014, 2015), l3_row, l3_1 (2010, 2011)

Annex 4. Data Files and Program Codes for the Measure of Multidimensional Poverty (sample 2015)

Household Level Data Files for the Calculation of Multidimensional Poverty in Armenia (2015 example):

recno	popw	poorMD_DIa	poorMD_DIb	poorMD_DId	poorMD_DIe	poorMD_DIf	poorMD_AI	typev	year
1	42.9630	0	0	0	0	0	0	Yerevan	2015
2	42.9630	0	0	0	0	0	0	Yerevan	2015
3	21.4815	1	0	0	0	1	0	Yerevan	2015
4	64.4444	0	0	0	0	0	0	Yerevan	2015
5	42.9630	0	0	0	0	0	0	Yerevan	2015
6	64.4444	0	0	0	0	0	0	Yerevan	2015
7	21.4815	0	0	0	0	0	0	Yerevan	2015
8	64.4444	0	0	0	0	0	0	Yerevan	2015
9	64.4444	0	0	0	1	0	0	Yerevan	2015
10	247.4722	0	0	0	0	0	0	Yerevan	2015
11	494.9444	0	0	0	1	0	1	Yerevan	2015
12	1732.3056	0	1	0	1	1	1	Yerevan	2015
13	2227.2500	0	1	0	0	0	0	Yerevan	2015
14	247.4722	0	0	0	1	0	0	Yerevan	2015
15	742.4167	0	1	0	0	0	0	Yerevan	2015
16	742.4167	0	1	0	1	0	1	Yerevan	2015
17	247.4722	0	0	0	0	0	0	Yerevan	2015
18	1237.3611	0	1	0	0	0	0	Yerevan	2015
19	164.7037	0	0	0	0	0	0	Yerevan	2015
20	494.1111	0	0	0	0	0	0	Yerevan	2015

Datasets with information about deprivations at the indicator and dimension levels are available for years 2010 to 2015. In the example shown above, each row represents a household, identified by variable “recno”.

The datasets display whether the household is deprived on any given indicator (not shown above), dimension (shown above, e.g. poorMD_DIa corresponds to Basic Needs) or is multi-dimensionally poor (poorMD_AI). The datasets also include information on the locality of the household (typev) and the corresponding population weight (popw).

The datasets and a sample (2015) program code on the construction of the multidimensional poverty index from the raw data can be accessed through the following link: