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Poverty Maps

Mapping Multidimensional Poverty so policies can fight it efficiently

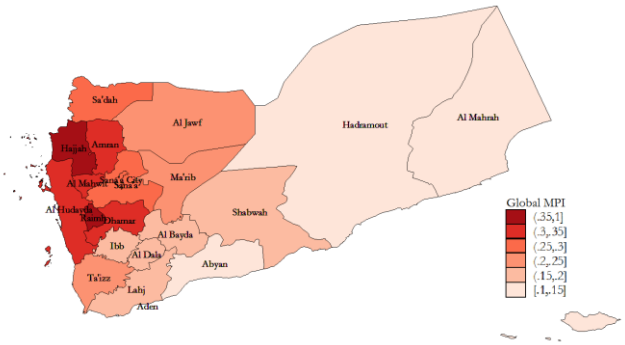
Sabina Alkire and Gisela Robles Aguilar | December 2015

Poverty maps provide a detailed picture of the location and interlinked conditions of the poorest, so that policies can be most effectively designed and targeted. The Global MPI 2015/16 now maps a total of 990 subnational regions across 78 countries. These poverty maps cover 98.5% of MPI poor people. That is, thanks to improved DHS/MICS and national data, OPHI maps the MPI conditions for 4.8 billion people, of whom 1.5 billion are MPI poor. We use recently updated countries – Bangladesh, Malawi and Yemen – to illustrate maps' value-added.

Let us start with the simplest example. In 2006, Yemen's MPI was available only at the national level, and could not be disaggregated. The latest dataset permits Yemen's MPI to be mapped according to 21 subnational regions. What a difference it makes!

Nationally we see Yemen as bordering Saudi Arabia, Oman, and the United Arab Emirates - hardly poor countries! Two sides face the sea. By its MPI we see it is just poorer than Pakistan, and just less poor than Cameroon or Haiti, with 47% of people living in poverty.

The subnational picture brings this to life. Now we see that the large Eastern regions (which are very sparsely populated), are radically less poor than the West, with the exception of the capital Sana'a.



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In Sana'a city, only 14% of the population are poor. In Hajjah, it's 76%. The MPIs of Yemen's 21 regions range from lower poverty in Sana'a – between levels of Tajikistan and Indonesia – to Hajjah that is poorer than the Central African Republic or the Democratic Republic of the Congo.

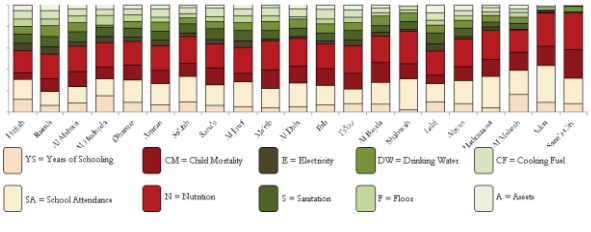
Visual maps are read alongside with the composition of MPI to inform policy, as mentioned above. In Box 1 we see the composition of Yemen's DHS 2013 MPI. Health deprivations contribute most in Sana'a City, located at the right of the graph above, whereas

Why Map Poverty? Policy Motivation

Multidimensional Poverty maps are useful!

Make Equity Visible – Leave No One Behind
Infographics – communicate content simply
Targeting – focus on the poorest regions
Allocation – so the poor are budgeted for
Infrastructure – invest tactically in poor regions
Environment – overlay poverty & ecosystem maps

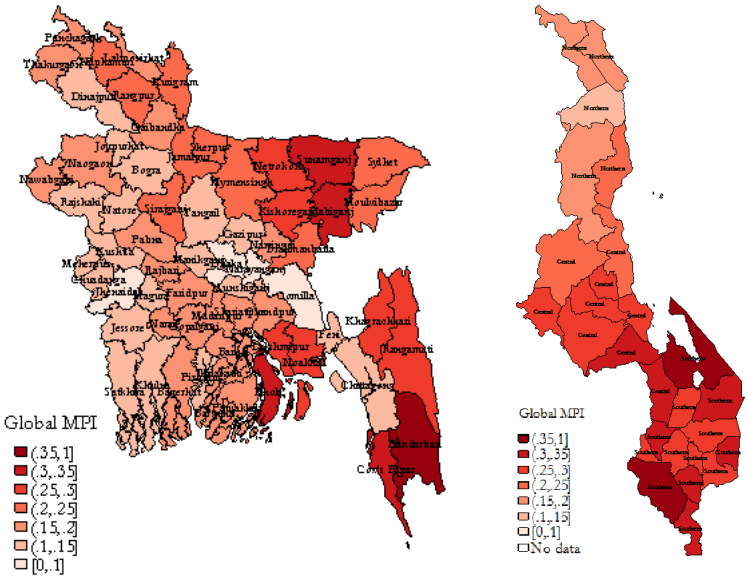
Use the Composition of MPI to inform strategic policies in:



Planning – design policies by regional deprivations
Policy Coordination – seat all actors at MPI table
Local Governance – empower leaders with facts
Integrated policy – design multisectoral responses

education and living standards contribute more in poorer areas like Hajjah, at the left.

The MPI 2015/16 updates also give increased subnational decompositions for other countries, such as Bangladesh and Malawi (pictured below). For example, further disaggregation within the southwest region of Chittagong in Bangladesh, and the Southern region of Malawi, show stark differences in MPI levels. These demonstrate the value-added of high-



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resolution poverty maps – complemented, always, for the MPI, by information on the composition of poverty. The great advances by the Demographic and Health Surveys and Multiple Indicator Cluster Surveys have made it possible to provide these detailed poverty maps.

MPI and $1.90 comparisons

Country-level international poverty measures like MPI and $1.90/day are standardly used to compare countries, compare different poverty measures, or to compare national poverty over time. Figure 1 shows the percentage of people who are poor according to the MPI and the $1.90/ day poverty lines in Bangladesh, Ghana, Cambodia, Malawi, and Yemen, for example – five countries whose updated MPI scores were released in December 2015.

We see that MPI and income poverty measures both give similar country rankings in this case, but that the levels of poverty differ quite dramatically across the two measures. The $1.90 measure cannot at this time be broken down directly, but even national level comparisons are interesting.

How to Build Poverty Maps for MPI

Surprisingly easy!

MPI maps can be built by anyone who can compute the MPI and has access to appropriate data.

Poverty maps can be built from:
Survey Data – according to representative regions
Census Data – for all regions

To map poverty, compute the MPI for each subnational region (applying sampling weights if appropriate). Then create a visual map of poverty in Stata or some other software. The global MPI is defined in the same way across regions. Like all MPIs using the Alkire Foster methodology, it is subgroup decomposable, which means that the population-weighted sum of all subnational MPIs is equal to the national MPI value.

Survey-based maps: Global MPI maps use surveys which are representative by subnational regions. These same regions are mapped in this briefing.

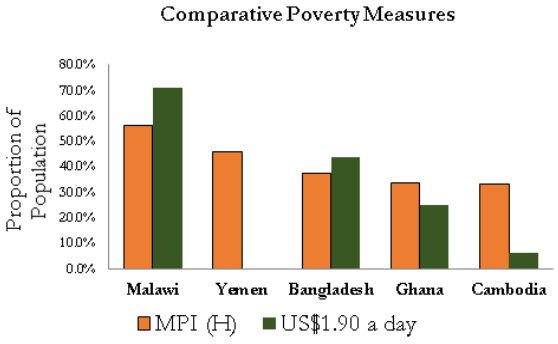
Census-based MPI maps use information in the census directly – for example education, water, housing. Census indicators lack nutrition. See for example South Africa's census-based MPI, the 'SAMPI' (http://beta2.statssa.gov.za/publications/Report-03-10-08/Report-03-10-082014.pdf)

Handy Hints:

- check that the survey sample design is representative by the desired regions.
- check that the 'shapefiles' for the map match the regional definitions in your data.

For more details see our session on Population subgroup decomposition at OPHI's online training portal.

Since 2010 the MPI has been computed for a total of 117 countries; the $1.90/day is available for 118 developing countries, so they are similar in coverage although each include some countries the other lacks.



Which are the poorest regions?

The poorest region of all 990 for which OPHI has multidimensional poverty estimates is Salamat in south-east Chad, a landlocked region just south of the Sahel, bordering the Central African Republic. Using Salamat's 2010 MICS dataset we find that nearly 98% of its 354,000 inhabitants are poor. On average, each poor person in Salamat is deprived in 73% of the MPI dimensions, which also makes it the region with the highest intensity of poverty. In fact, three of our five poorest regions are in Chad. The country with the next-poorest region is East Burkina Faso, where 97% of people are MPI poor, and average intensity of 72%. In 52 subnational regions, home to 107 million people, 90% or more of the population are MPI poor. Each of these regions is in Africa.

The table below identifies the number of regions and poor people who experience different intensities of poverty. For example the first row shows the people who are deprived in 90% or more of the MPI's weighted indicators at the same time.

Percentage of MPI Poor People	Number of regions	Poor people in regions
90-100%	53	107 million
80-89.9%	81	144 million
70-79.9%	94	226 million
60-69.9%	77	368 million
50-59.9%	71	162 million
40-49.9%	75	142 million
30-39.9%	93	157 million
20-29.9%	105	51 million
10-19.9%	123	100 million
0.1-9.9%	217	52 million

Maps and the Sustainable Development Goals

Target 1.2 of the SDGs calls on countries to reduce poverty 'in all its dimensions.' Multidimensional poverty maps are intuitive tools for countries to understand where policy interventions are most needed, and they can also assist in monitoring progress. Moreover, the indicators used for measuring multidimensional poverty are aligned with the SDGs, which means that maps can be of great use in national efforts towards SDG attainment.

Source Data

Alkire, S., and G. Robles, G. (2015). "Multidimensional Poverty Index 2015: Brief Methodological Note and Results." *OPHI Briefing* 36.

Alkire, S. and Santos, M. E. (2014). "Measuring Acute Poverty in the Developing World: Robustness and Scope of the Multidimensional Poverty Index." *World Development* 59: 251-274.

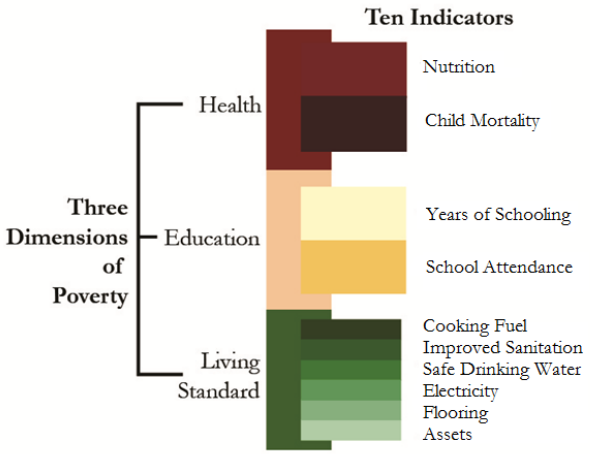
United Nations Development Programme, *2015 Human Development Report,* New York, December 2015.

About the global MPI:

The global MPI is an international measure of poverty that combines simultaneous disadvantages experienced by the poor across different areas of their lives, covering education, health and living standards (Alkire and Santos 2014; UNDP 2015, Alkire and Robles 2015). If a person is deprived in one-third or more of ten weighted indicators, they are identified as multidimensionally poor (Figure 1). The MPI has been estimated by OPHI and published in UNDP's *Human Development Reports* since 2010.

OPHI's Winter 2015/2016 MPI updates cover 5.2 billion people in 101 developing countries. The household surveys used were carried out from 2004-2014, with 23 countries having surveys from 2013 or later, 48 from 2012 or later, and 78 countries from 2010 or later. The MPI has been decomposed into 990 sub-national regions.

For each country and region, data tables provide the MPI value plus other information: the percentage of poor people (headcount ratio) and intensity (average percentage of deprivations poor people experience) for each sub-national region, as well as the percentage of people who are poor and deprived in each of the ten component indicators, the weighted contribution of each indicator, and other related measures. All information, including maps and sub-national MPI values, is available in OPHI's interactive databank.



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