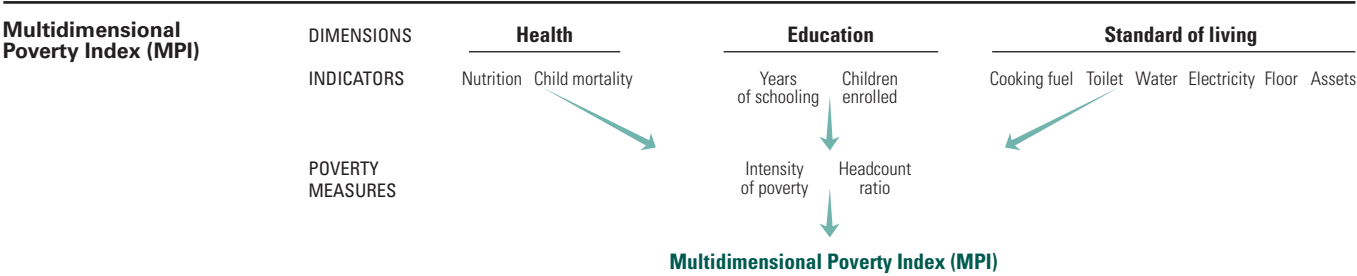


Multidimensional Poverty *3



Obs: MPI builds on the tradition of unsatisfied basic needs (UBN - or NBI in spanish)

Technical note 5. Multidimensional Poverty Index

The Multidimensional Poverty Index (MPI) identifies multiple deprivations at the household level in education, health and standard of living. It uses micro data from household surveys, and—unlike the Inequality-adjusted Human Development Index—all the indicators needed to construct the measure must come from the same survey. More details about the general methodology can be found in Alkire and Santos (2010). More details about changes in the methodology and the treatment of missing responses and non-applicable households are given in Dotter and Klasen (2014) and Kovacevic and Calderon (2014). Programmes (Stata do-files) for computation of the MPI and its components for all countries with appropriate data are available at <http://hdr.undp.org/en/content/mpi-statistical-programmes>.

Data sources

- United Nations Children’s Fund Multiple Indicator Cluster Surveys.
- ICF Macro Demographic and Health Surveys.
- For several countries, national household surveys with the same or similar content and questionnaires are used: Argentina, 2005 Encuesta Nacional de Nutrición y Salud; Brazil, 2012, 2013 and 2014 Pesquisa Nacional por Amostra de Domicílios; China, 2012 China Family Panel Studies; Ecuador, 2006 and 2014 Encuesta de Condiciones de Vida; Jamaica, 2010 and 2012 Jamaica Survey of Living Conditions; Libya, 2007 Pan Arab Population and Family Health

Survey; Mexico, 2006 and 2012 Encuesta Nacional de Salud y Nutricion; Morocco, 2011 Pan Arab Population and Family Health Survey; South Africa, 2008 and 2012 National Income Dynamics Study; State of Palestine, 2006/2007 Palestinian Family Health Survey; and Syrian Arab Republic, 2009 Pan Arab Population and Family Health Survey.

Methodology

Each person is assigned a deprivation score according to his or her household's deprivations in each of the 10 component indicators. The maximum deprivation score is 100 percent, with each dimension equally weighted; thus the maximum deprivation score in each dimension is 33.3 percent. The education and health dimensions have two indicators each, so each indicator is worth 33.3/2, or 16.7 percent. The standard of living dimension has six indicators, so each indicator is worth 33.3/6, or 5.6 percent.

The indicator thresholds for households to be considered deprived are as follows:

Education:

- School attainment: no household member has completed at least six years of schooling.
- School attendance: a school-age child (up to grade 8) is not attending school.²

Health:

- Nutrition: a household member (for whom there is nutrition information) is malnourished, as measured by the body mass index for adults (women ages 15–49 in most of the surveys) and by the height-for-age *z*-score calculated based on World Health Organization standards for children under age 5.
- Child mortality: a child has died in the household within the five years prior to the survey.³

Standard of living:

- Electricity: not having access to electricity.
- Drinking water: not having access to clean drinking water or having access to clean drinking water through a source that is located 30 minutes away or more by walking.
- Sanitation: not having access to improved sanitation facilities or having access only to shared improved sanitation facilities.⁴
- Cooking fuel: using “dirty” cooking fuel (dung, wood or charcoal).
- Having a home with dirt, sand or dung floor.
- Assets: not having at least one asset related to access to information (radio, television or telephone⁵) or having at least one

asset related to information but not having at least one asset related to mobility (bike, motorbike, car, truck, animal cart or motorboat) or at least one asset related to livelihood (refrigerator, arable land⁶ or livestock⁷).

To identify the multidimensionally poor, the deprivation scores for each indicator are summed to obtain the household deprivation score. A cutoff of 33.3 percent, which is equivalent to 1/3 of the weighted indicators, is used to distinguish between the poor and nonpoor. If the deprivation score is 33.3 percent or higher, that household (and everyone in it) is multidimensionally poor. Households with a deprivation score of 20 percent or higher but less than 33.3 percent are near multidimensional poverty. Households with a deprivation score of 50 percent or higher are severely multidimensionally poor.

The headcount ratio, H , is the proportion of the multidimensionally poor in the population:

$$H = \frac{q}{n}$$

where q is the number of people who are multidimensionally poor and n is the total population.

The intensity of poverty, A , reflects the proportion of the weighted component indicators in which, on average, poor people are deprived. For poor households only (deprivation score c of 33.3 percent or higher), the deprivation scores are summed and divided by the total number of poor people:

$$A = \frac{\sum_{i=1}^q c_i}{q}$$

where c_i is the deprivation score that the i th poor person experiences.

The deprivation score c_i of the i th poor person can be expressed as the sum of the weights associated with each indicator j ($j = 1, 2, \dots, 10$) in which person i is deprived, $c_i = c_{i1} + c_{i2} + \dots + c_{i10}$.

The MPI value is the product of two measures: the multidimensional poverty headcount ratio and the intensity of poverty.

$$MPI = H \cdot A$$

Example using hypothetical data

Indicator	Indicator weights	Household			
		1	2	3	4
Household size		4	7	5	4
Education					
No one has completed six years of schooling	$(\frac{1}{3}) \div 2 = 16.7\%$	0	1	0	1
At least one school-age child not enrolled in school	$(\frac{1}{3}) \div 2 = 16.7\%$	0	1	0	0
Health					
At least one member is malnourished	$(\frac{1}{3}) \div 2 = 16.7\%$	0	0	1	0
One or more children have died	$(\frac{1}{3}) \div 2 = 16.7\%$	1	1	0	1
Living conditions					
No electricity	$(\frac{1}{3}) \div 6 = 5.6\%$	0	1	1	1
No access to clean drinking water	$(\frac{1}{3}) \div 6 = 5.6\%$	0	0	1	0
No access to adequate sanitation	$(\frac{1}{3}) \div 6 = 5.6\%$	0	1	1	0
House has dirt floor	$(\frac{1}{3}) \div 6 = 5.6\%$	0	0	0	0
Household uses "dirty" cooking fuel (dung, firewood or charcoal)	$(\frac{1}{3}) \div 6 = 5.6\%$	1	1	1	1
Household has no access to information and has no assets related to mobility or assets related to livelihood.	$(\frac{1}{3}) \div 6 = 5.6\%$	0	1	0	1
Results					
Household deprivation score, c (sum of each deprivation multiplied by its weight)		22.2%	72.2%	38.9%	50.0%
Is the household poor ($c \geq 33.3$ percent)?		No	Yes	Yes	Yes

Note: 1 indicates deprivation in the indicator; 0 indicates nondeprivation.

Weighted deprivations:

- Household 1: $(1 \cdot 16.67) + (1 \cdot 5.56) = 22.2$ percent.
- Household 2: 72.2 percent.
- Household 3: 38.9 percent.
- Household 4: 50.0 percent.

Based on this hypothetical population of four households:

Headcount ratio (H) =

$$\left(\frac{0 + 7 + 5 + 4}{4 + 7 + 5 + 4} \right) = 0.800$$

(80 percent of people live in poor households).

Intensity of poverty (A) =

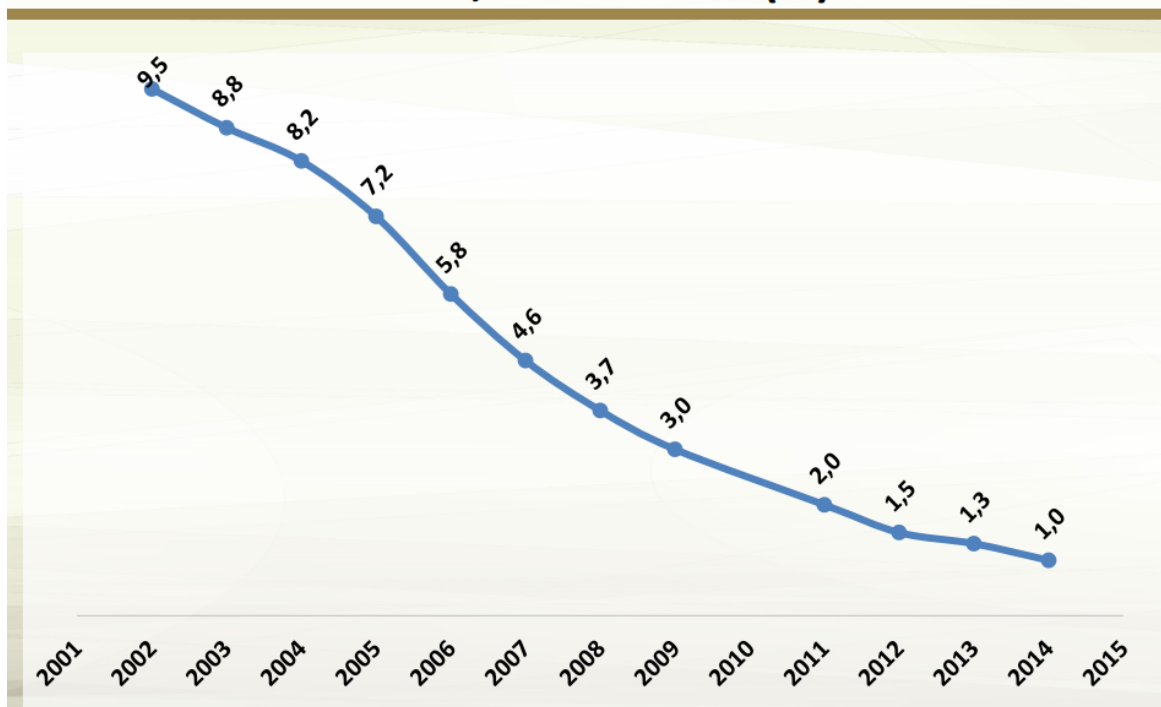
$$\frac{(72.2 \cdot 7) + (38.9 \cdot 5) + (50.0 \cdot 4)}{(7 + 5 + 4)} = 56.3 \text{ percent}$$

(the average poor person is deprived in 56.3 percent of the weighted indicators).

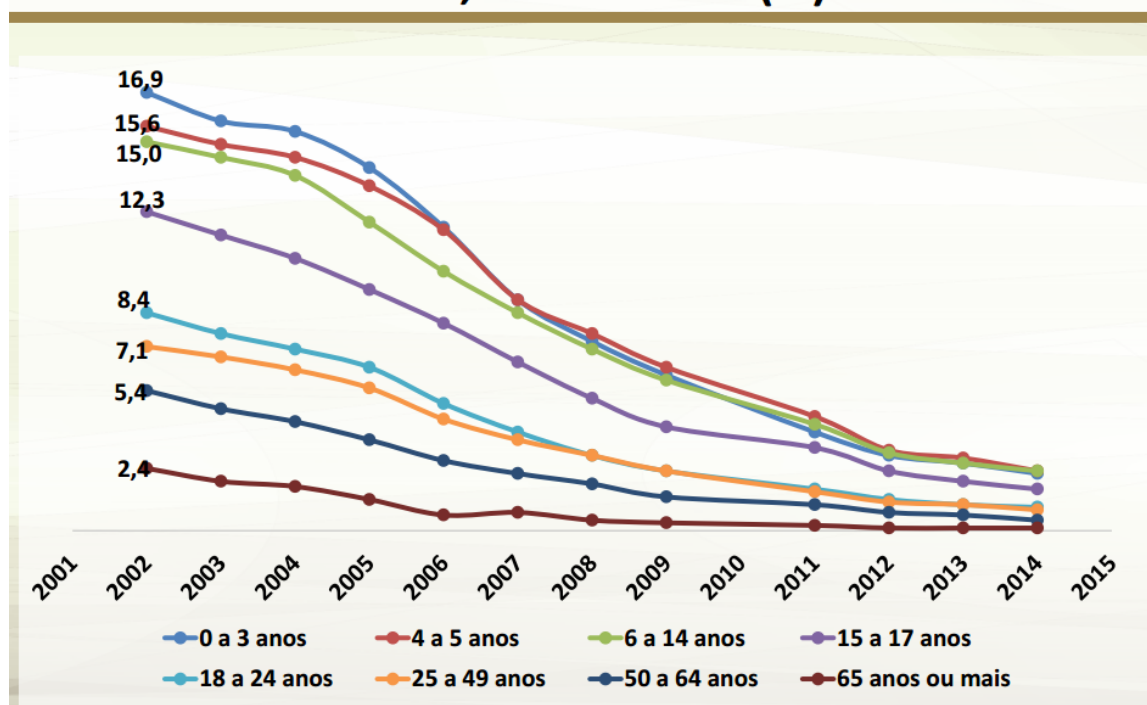
$$\text{MPI} = H \cdot A = 0.8 \cdot 0.563 = 0.450.$$

Chronic Multidimensional Poverty in Brazil – Total and By Age Groups

Evolução da pobreza crônica multidimensional Brasil, 2002 - 2014 (%)



Pobreza crônica multidimensional por faixas etárias Brasil, 2002 – 2014 (%)



Source: PNAD/IBGE – MDS

“The fall of MPI is even bigger than the fall of income based poverty”