Applications of the AF Methodology: MPI, Mexico, and Colombia

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UNDP's
2010 *Human Development Report*
first published the MPI 2010
(to be updated annually for countries with new data)

Background: the MPI

- – An international measure of **acute** poverty for 104 developing countries.

- – Launched by UNDP's HDRO and OPHI on 14 July 2010, and in the HDR launched 4 November 2010

- – An experimental series that supplants HPI-I

- – Updated annually for countries having new data

- – MPI-2 may be developed for less poor countries

- – Aims to encourage the development of better national measures of multidimensional poverty

Who are we?

Calculating MPI – team coordinated by Maria Emma Santos involving Mauricio Apablaza, Yele Batana, Marta Barazzetta, Mauro Caselli, Ivan Gonzalez DeAlba, Enrique Hennings, Salvatore Morelli, Juan Pablo Ocampo Sheen, Uma Pradhan, Jose Manuel Roche, Maria Emma Santos, Suman Seth, Shabana Singh, Babak Somekh, Ana Vaz, Rosa Vidarte, Zheng Zhi, and Shuyang. Uma Pradhan, Sarah Malik, Gisela Robles Aguilar, Ale Ratazzi, and Gaston Yalonetzky have also contributed.

Ground Reality Check: Philomena Wanjiru (Kenya), Karen Daka (Madagascar), Carlos & Jessica de los Rios (Peru), Indrajit Roy (India), Monica Wihardja (Indonesia), Elise Klein, John Hammock, and James Jewell.

Other contributors include: Karin Eli (Indicators); Paddy Coulter (Communications), Natalie Cresswell (Administration & Finance).

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Multidimensional Poverty Index (MPI) *acute poverty in developing countries*

1. Data
2. MPI Components
3. Methodology
4. Results
5. Checks
6. Key Issues

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1. **Data: Surveys**

Demographic & Health Surveys *(DHS - 48)*

Multiple Indicator Cluster Surveys *(MICS - 35)*

World Health Survey *(WHS – 19)*

Additionally we used 2 special surveys covering Mexico and urban Argentina.

2. Dimensions of MPI

- Health

- Education

- Standard of living

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2. **Missing Dimensions**

Data are not available to incorporate any of these into the MPI for 100+ countries :

- **Work**

- **Safety from Violence**

- **Empowerment**

- **Political Freedom**

- **Relationships**

    (social capital, inclusion, cohesion, dignity)

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2. **Dimensions and Indicators of MPI**
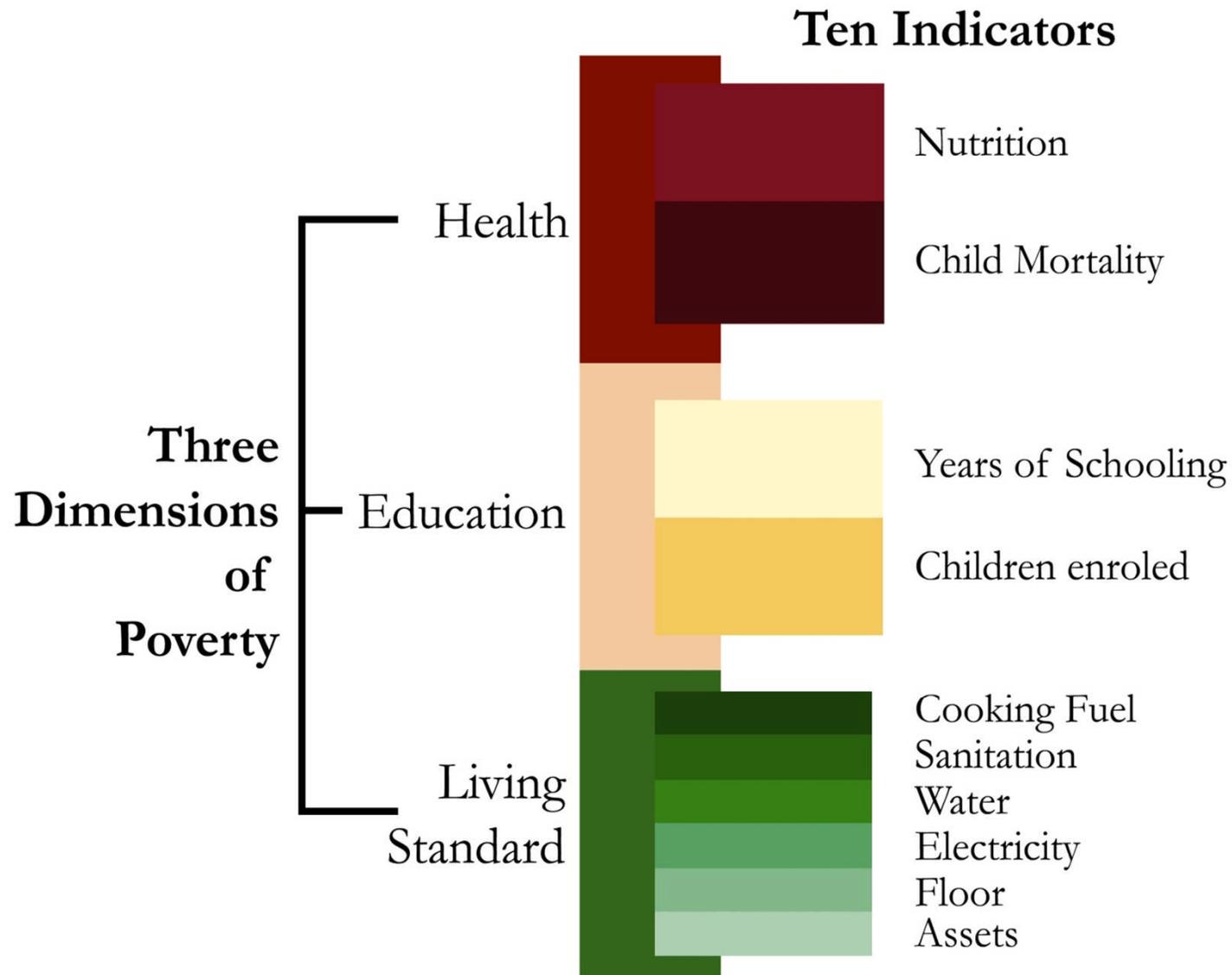
2. Measurement: Indicators & Cutoffs

- **Health**

  - **Child Mortality:** If any child has died in the family

  - **Malnutrition:** If any interviewed adult in the family has low Body Mass Index; if any child is more than 2 standard deviations below the reference normal weight for age, WHO standards) [*WHS has male & female data but no child data; MICS has child data but no adult data; DHS has women 15-49 & child*]

  These are distinctly formulated; mortality is a stock.

2. Measurement: Indicators & Cutoffs

- **Education**
  - **Years of Schooling:** if no person in the household has completed 5 years of schooling

  - **Child Enrolment:** if any school-aged child is out of school, where school-aged is an eight year period from the national starting age.

2. **Measurement: Indicators & Cutoffs**

- **Standard of Living**
    - **Electricity** (no electricity is deprived)
    - **Drinking water** (MDG definitions)
    - **Sanitation** (MDG definitions + not being shared)
    - **Flooring** (dirt/sand/dung are deprived)
    - **Cooking Fuel** (wood/charcoal/dung are deprived)
    - **Assets** (deprived if do *not* own a car/truck and do *not* own *more than one* of these: radio, tv, telephone, bike, motorbike, or refrigerator)

2. **Measurement: Indicators reflect MDGs**

MDG omissions: gender, infectious disease,
income, maternal mortality, environment, tenure

- **Health**
  - Nutrition = MDG 1 (Eradicate Extreme Poverty and Hunger)
  - Mortality = MDG 4 (Reduce Child Mortality)
- **Education**
  - Enrolment = MDG 2 (Achieve Universal Primary Education)
  - Years Schooling = MDG 2
- **Standard of Living**
  - Electricity *not MDG*
  - Sanitation MDG 7
    (Ensure Environmental Sustainability)
  - Floor *not MDG*
  - Cooking Fuel MDG 7
  - Drinking Water MDG 7
  - Assets MDG 1

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2. Measurement: data constraints

The MPI is deeply affected by the lack of **comparable** data.
- key **indicators** are not collected (stock, quality)
- data for some dimensions are **missing**
- **missing values** lead to sample size reduction/biases
- **respondent(s)** vary; individual level data is sparse
- surveys **updated** every 3-5 years, and in different **years**
- data exclude certain populations (elders, institutionalized)
- **income/consumption** surveys lack MPI health indicators.

These can be addressed at a national level for national measures.

"Improving data gathering and its quality in all countries should be a central focus ..."

Bourguignon *et al.* 2008 page 6

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2. Measurement: data constraints

Examples of the constraints:

62 countries have all 10 indicators;

93 have 9 or 10 indicators (31 lack one indicator)

101 have 8-10 indicators (8 lack two indicators)

3 countries lack three indicators (Latvia, Myanmar, Surinam)

Biases from sample size reduction:

15 countries are lower or upper bound estimates of poverty. These include China & S Africa (lower bound).

Pakistan is also a lower bound due to lack of nutrition.

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2. Measurement Components: Weights

Each dimension is equally weighted:

- Health = 1/3

- Education = 1/3

- Standard of Living = 1/3

"the interpretation of the set of indicators is greatly eased where the individual components have degrees of importance that, while not necessarily exactly equal, are not grossly different."
Atkinson, Cantillon, Marlier, Nolan and Vandenbroucke 2002, p 25.

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2. Measurement Components: Weights

- **Each indicator is equally weighted:**
  - **Health** (1/3)
    - Nutrition = **1/6**;
    - Mortality = **1/6**
  - **Education** (1/3)
    - Enrolment = **1/6**
    - Years Schooling = **1/6**
  - **Standard of Living** (1/3)
    - Electricity **1/18**
    - Sanitation **1/18**
    - Floor **1/18**
    - Cooking Fuel **1/18**
    - Drinking Water **1/18**
    - Assets **1/18**

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3. Methodology: Alkire and Foster

The MPI combines two aspects of poverty

1) *incidence* of multi-dimensional poverty ~ the percentage of people who are poor

2) *intensity* of people's poverty ~ the average percentage of dimensions in which poor people are deprived
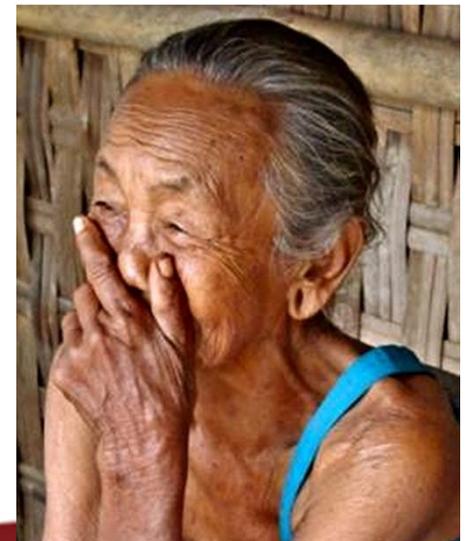
3. Methodology: Identification

Recall the weights on indicators vary

Health and Education: 1.67 each (1/6 * 10)

Standard of Living: 0.55 each (1/18 * 10)

A person is identified as poor if deprived in:

      * any two Health or Education indicators;

      * all six Standard of Living indicators;

      * 1 Health/Ed plus 3 Standard of Living

3. Methodology: Identification

A person is multidimensionally poor if they are deprived in some proportion of the weighted indicators. Example: 33%.

Grace is Deprived In
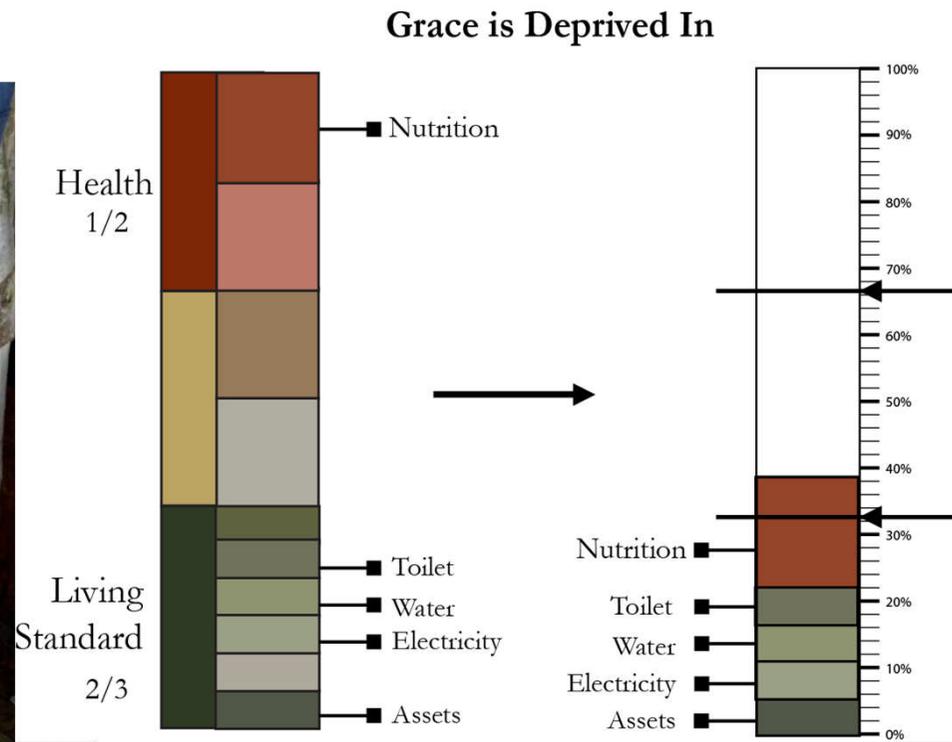
3. **Methodology: Aggregation**

- We construct the MPI using the AF M_0:

$$\text{Formula: } \mathbf{MPI} = M_0 = H \times A$$

- H is the percentage of people who are poor. It shows the *incidence* of multidimensional poverty.

- A is the average proportion of weighted deprivations people suffer at the same time. It shows the *intensity* of people's poverty.

3. Methodology: MPI $g_0(k)$ matrix

Adjusted Headcount Ratio = M_0 = HA = **.442**

k=3   (have MPI for all k values)

Indicators $c(k)$ $c(k)/d$

$$g^0(k) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 1.67 & 1.67 & 1.67 & 1.67 & .55 & 0 & 0 & 0 & 0 & .55 \\ 0 & 1.67 & 0 & 1.67 & .55 & 0 & .55 & .55 & .55 & 0 \\ 0 & 0 & 0 & 1.67 & .55 & .55 & .55 & 0 & .55 & .55 \end{bmatrix} \quad \begin{matrix} 0 & 0 \\ 7.76 & .776 \\ 5.53 & .553 \\ 4.42 & .442 \end{matrix}$$

H = headcount = ¾ = **75%**

A = average deprivation share among poor = **.59 = 59%**

HA = MPI = 0.**442**

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Example: Tabitha

OPHI has done
ground reality checks
in Kenya, Madagascar,
Indonesia, and India.

Washing job:

$0.66 per wash

If no washing…

2nd Job: sell recycled cloths

Preparing recycled
cloth to sell

Tabitha's MPI

Tabitha is income poor. What more can the MPI show?
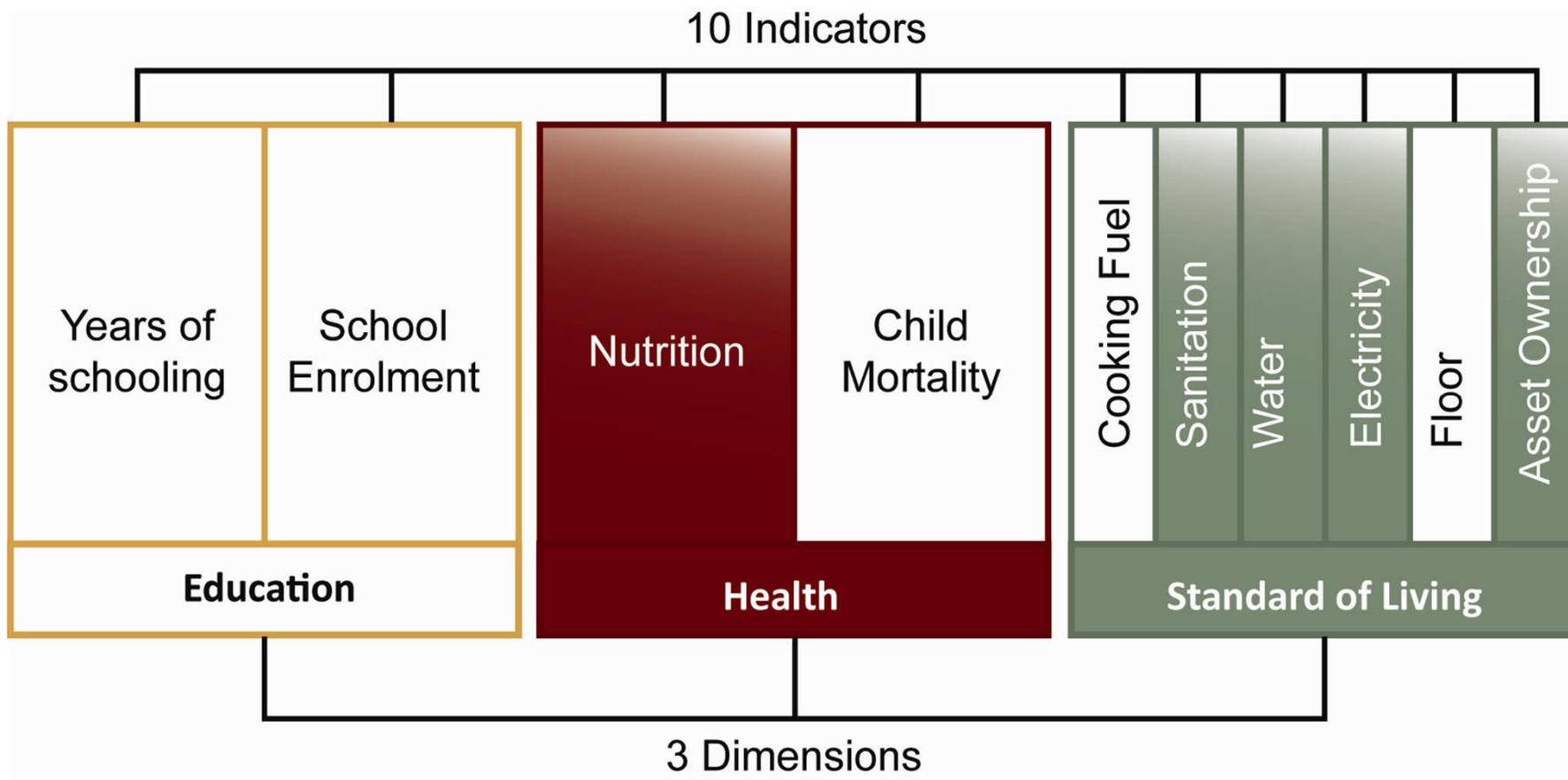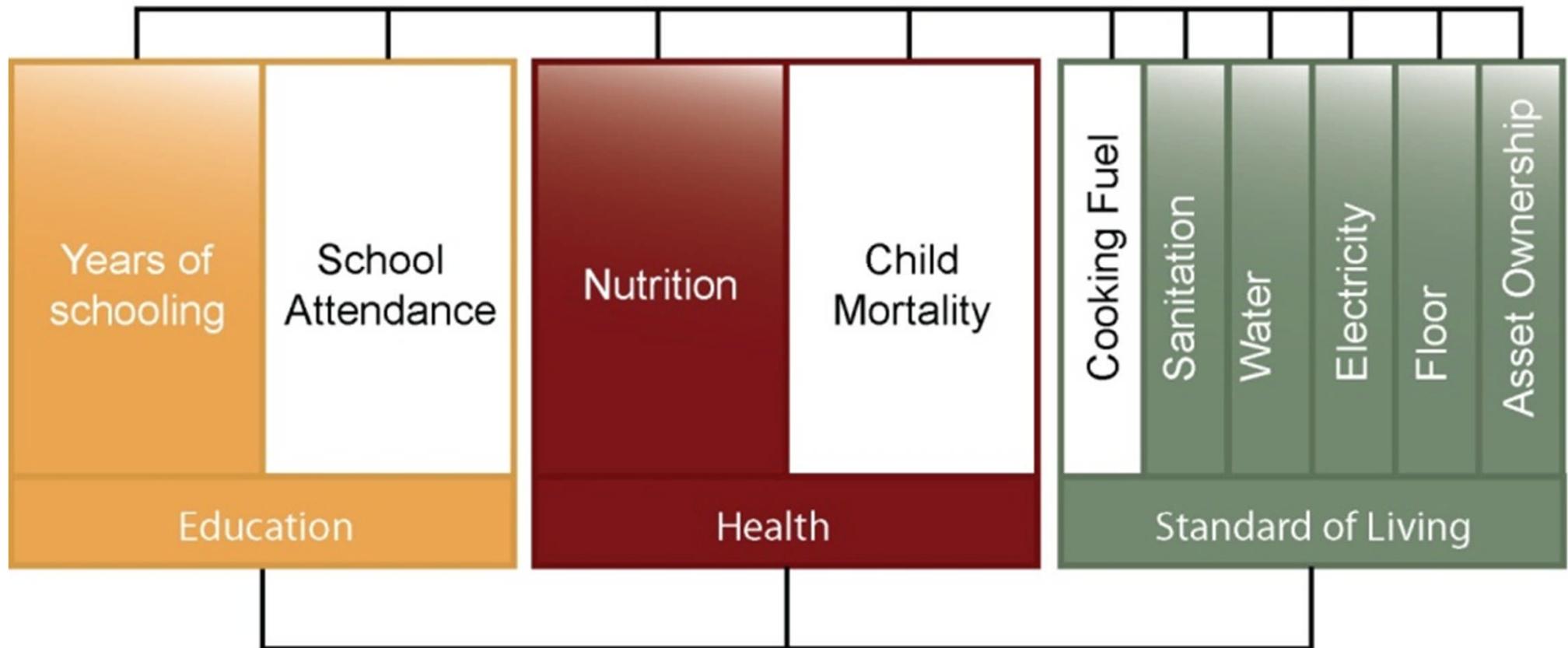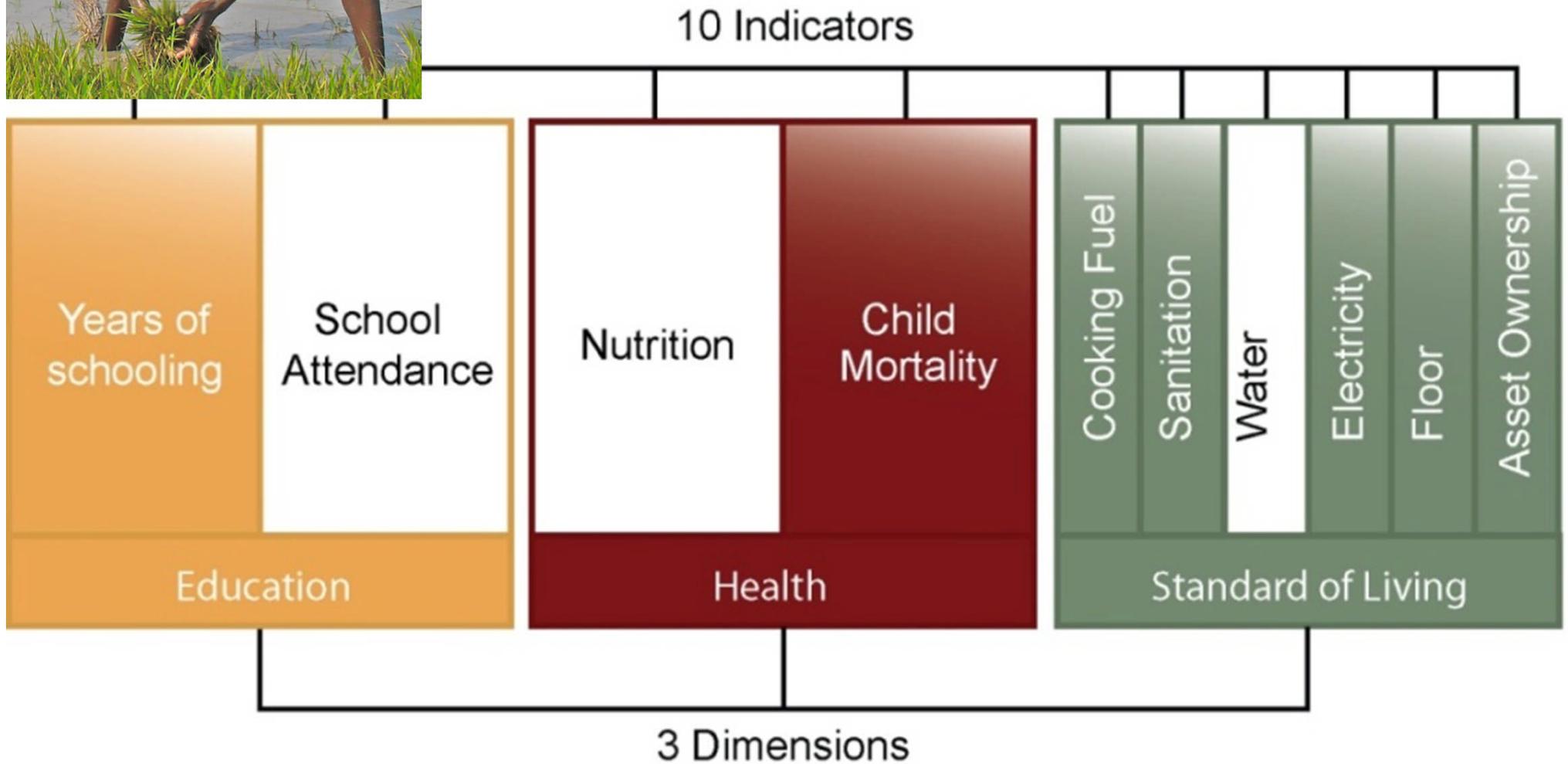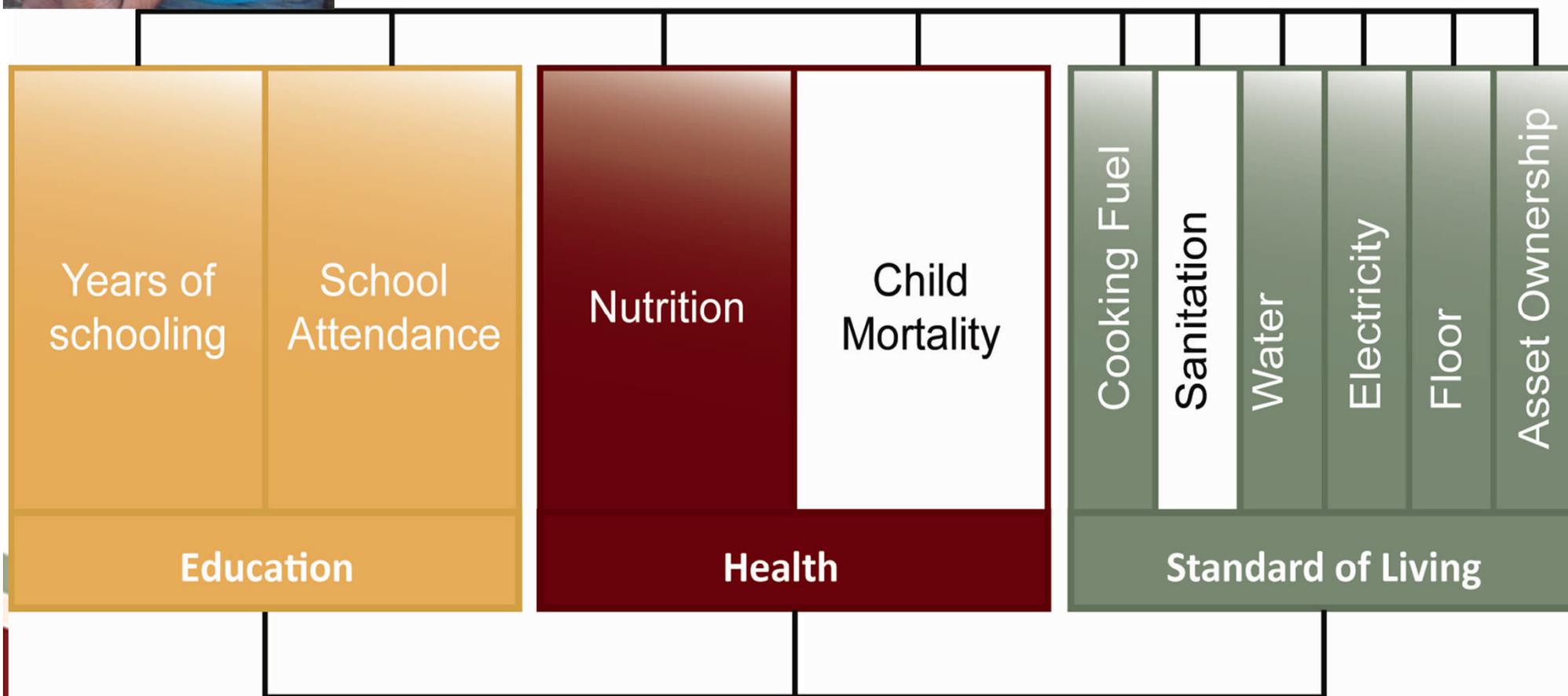
4. Results:

These results are for **104 developing countries**, selected because they have DHS, MICS or WHS data since 2000. Special surveys were used for Mexico and urban Argentina.

They cover **78.5% of the world population** (2007 pop).

Question for reflection:

- What are the problems of using one year's population data to aggregate country poverty estimates based on surveys of different years?
- What are the problems of using the populations of countries which match their [different] survey years?
- Which would you choose and why? How would you qualify/caveat?

104 Developing Countries:

- ~ 24 **Central and E Europe and CIS**,(400M)

- ~ 11 **Arab States**, (217.5 M)

- ~ 18 **Latin America and the Caribbean** (491M)

- ~ 5 **South Asia** (1544M)

- ~ 9 **East Asia and the Pacific** (1868M)

- ~ 37 **Sub-Saharan Africa** (710.4M)

Total Population: 5.230M people

(population figures from 2007; poverty from 2000-2008).

The MPI headcounts fall between $1.25 and $2.00/day headcounts.

~ of the 5230M people living in the 104 countries, **1.66 B** are identified as living in acute multidimensional poverty **(32**% of people)

~ this is between $1.25 and $2 a day

The MPI headcounts and the $1.25/day poverty

Question for reflection:
~ list 3 reasons they might differ
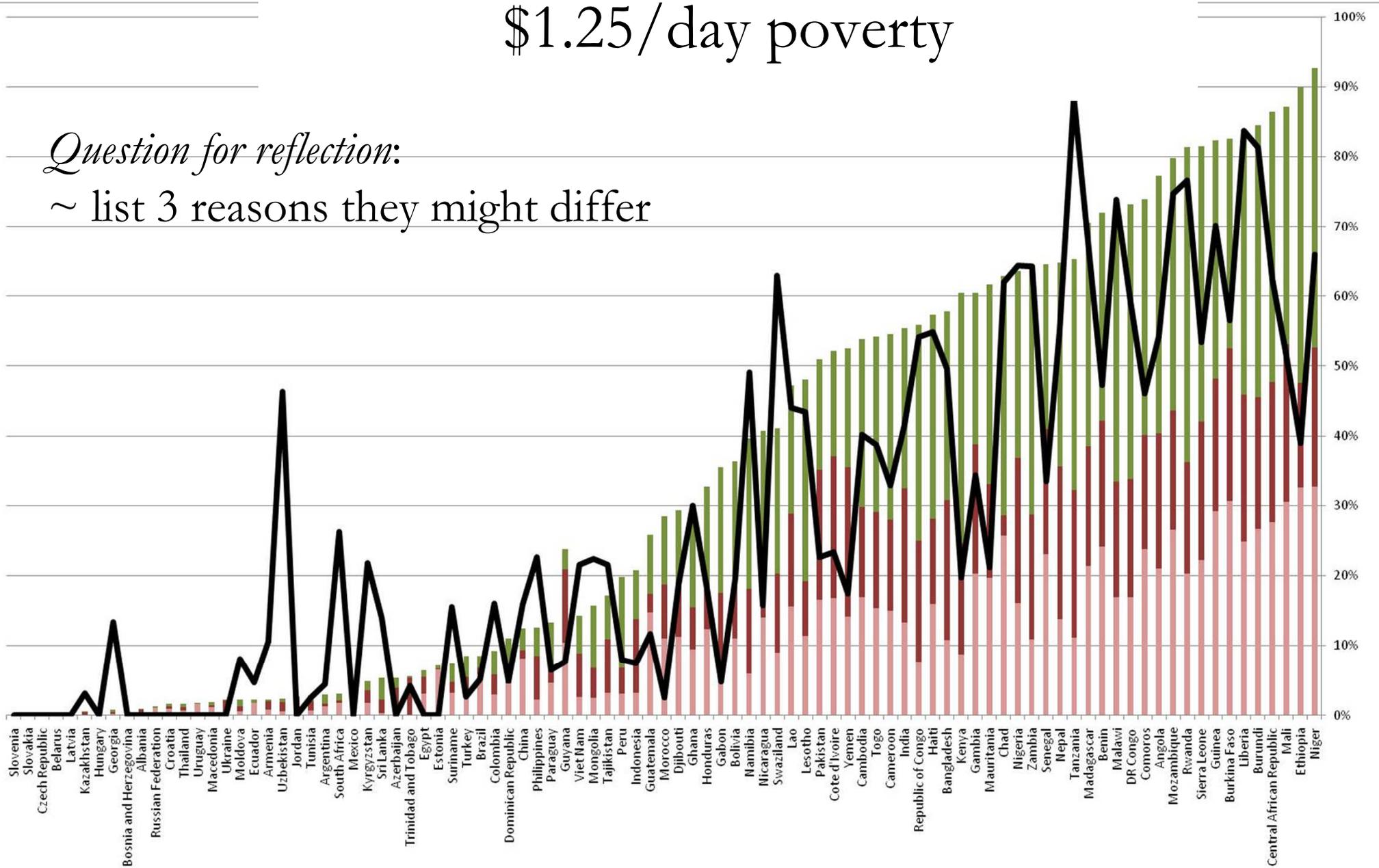
The MPI differs from and complements income poverty.

Of the 93 countries for which we have information on income poverty headcounts:

- The MPI headcount of poor persons is **higher** than $1.25/day headcount in 57 countries

- The MPI headcount is **lower** than $1.25 headcounts in 36 countries.

- Higher than $2 headcounts in 24 countries, lower in 69.

- **The MPI is measuring a related but different underlying phenomenon than income poverty Further research is required.**

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But would 'equal' headcounts mean that income and MPI identify the same people as poor?

Cross-Tabs of MPI with Income Poverty

		MPI	
		Non-Poor	Poor
Income	Non-Poor	A	B (Exclusion Error)
	Poor	C (Inclusion Error)	D

Ordinary Cross-tabs: India NSS 2004

	Education		
Income	**Children 5-12**	**Adults (Illiterate)**	**Adults (<5 years)**
Education Poor **Not** Income Poor	45%	62%	64%
Income Poor **Not** Educ. Poor	70%	46%	36%

We were able to do crosstabs with the 19 WHS countries because WHS has a brief consumption module.

Chad

	Not MPI Poor	MPI Poor	Total
Not Income Poor	23.12	**33.45**	56.56
Income Poor	**13.98**	29.45	43.44
Total	37.10	62.90	100.00

43% are income poor; 63% are MPI poor

However, 37% of income poor people are <u>not</u> MPI poor
(we might expect 0%)

And 53% of MPI poor people are not income poor
(we could expect 31%)

Why? *[WHS data are poor; analyses with good data are needed]*

Total Population

South Asia
1543.9
29%

Sub-Saharan Africa
712.3
13%

Arab States
298.3
6%

Central and Eastern Europe and the Commonwealth of Independent States (CIS)
400
8%

East Asia and the Pacific
1867.7
35%

Latin America and Caribbean
450.8
9%
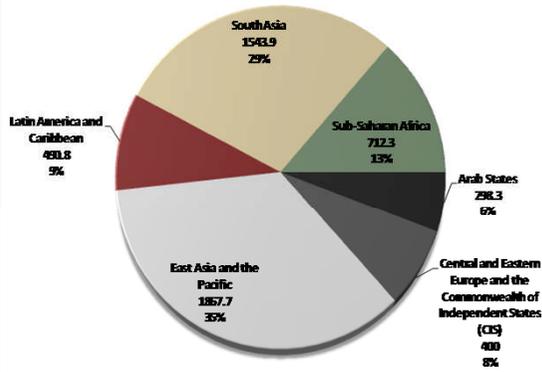
Most poor people in the world by MPI live in South Asia, followed by Sub-Saharan Africa.

MD Poor People

Regional Distribution of the World's Poor (%)

Sub-Saharan Africa
28%

Arab States
2%

Central and Eastern Europe and the CIS
0%

South Asia
51%

East Asia and the Pacific
15%

Latin America and Caribbean
3%
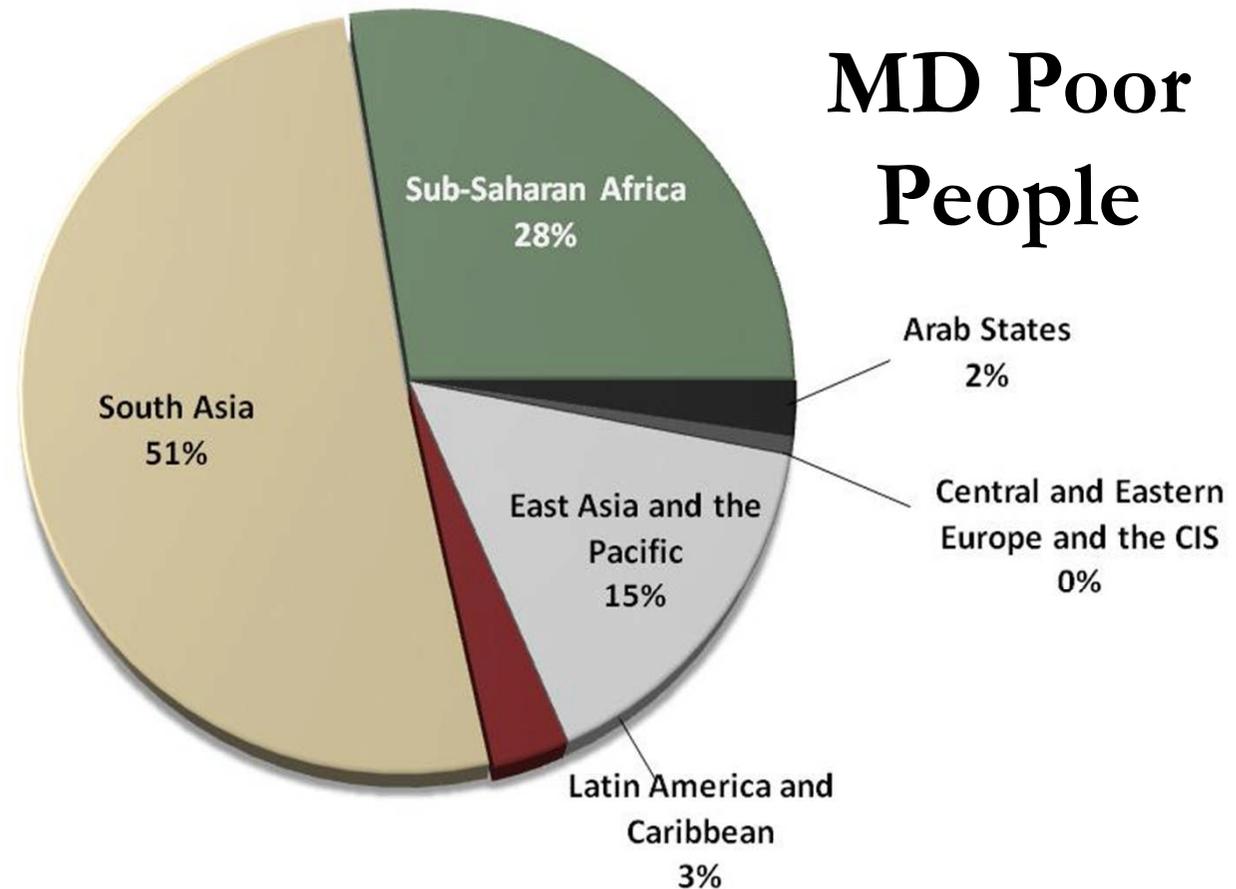
Intensity tends to be highest with high Incidence

MPI = A x H

Poorest Countries, Highest MPI

Niger

Nigeria

Pakistan

Vietnam

Brazil

DR Congo

Ethiopia

India

Indonesia

Bangladesh

China

Jordan

Average Breadth of Poverty (A)

Percentage of People Considered Poor (H)

Legend:
- High Income
- Upper-Middle Income
- Lower-Middle Income
- Low Income
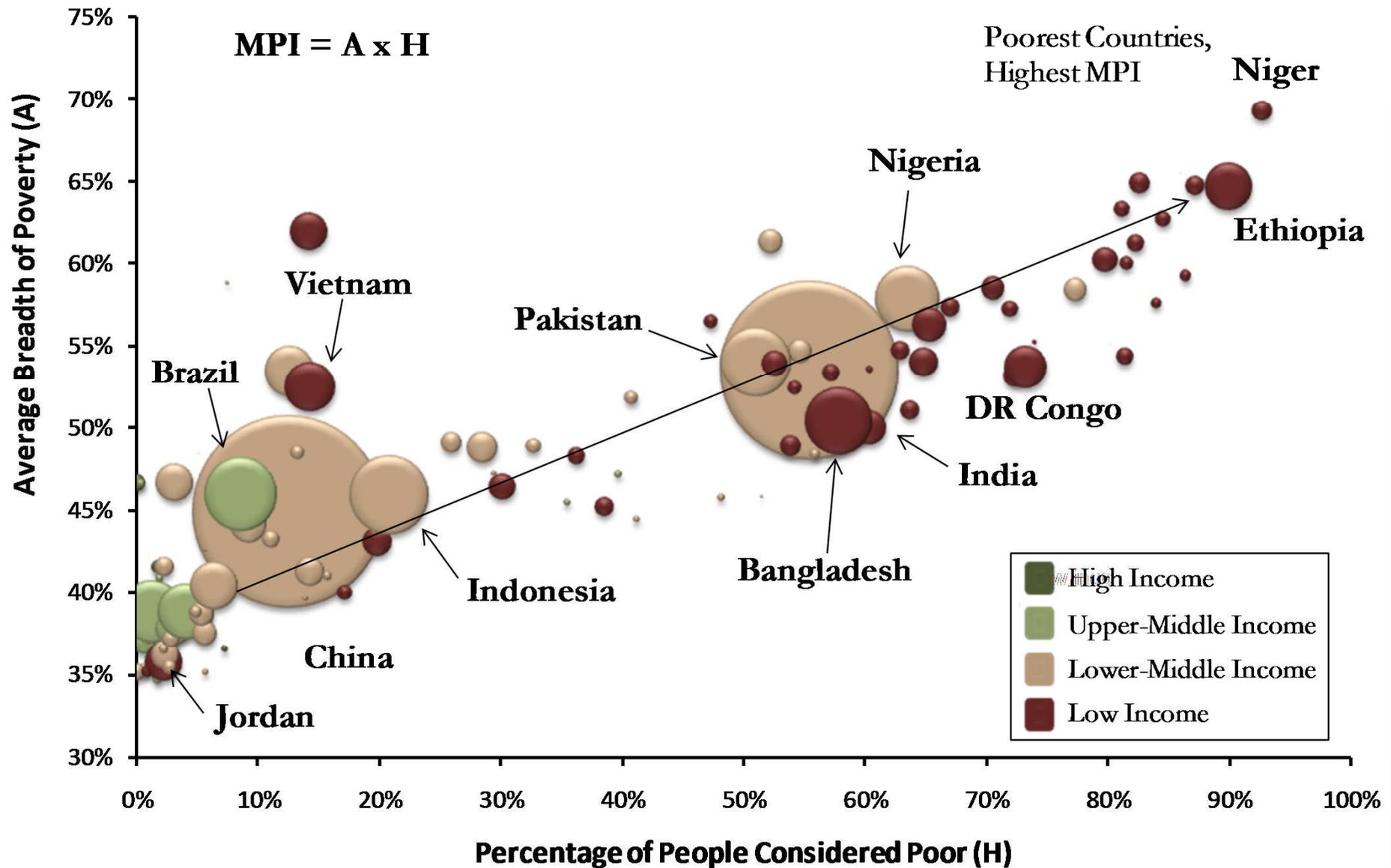
Decompositions by region or ethnic group uncover a large variation in MPI within countries.

MPI Value

Value	
0.00	Mexico / Brazil / China
	Dominican Republic
0.10	Indonesia
	Ghana
	Bolivia
0.20	
0.30	India / **Kenya**
	Tanzania
0.40	
0.50	Mozambique
	Mali
0.60	
	Niger
0.70	
0.80	

Nairobi
Central — Central Urban / Central Rural
Eastern
Western
Coast
Rift Valley
Nyanza
North Eastern — North Eastern Urban / North Eastern Rural
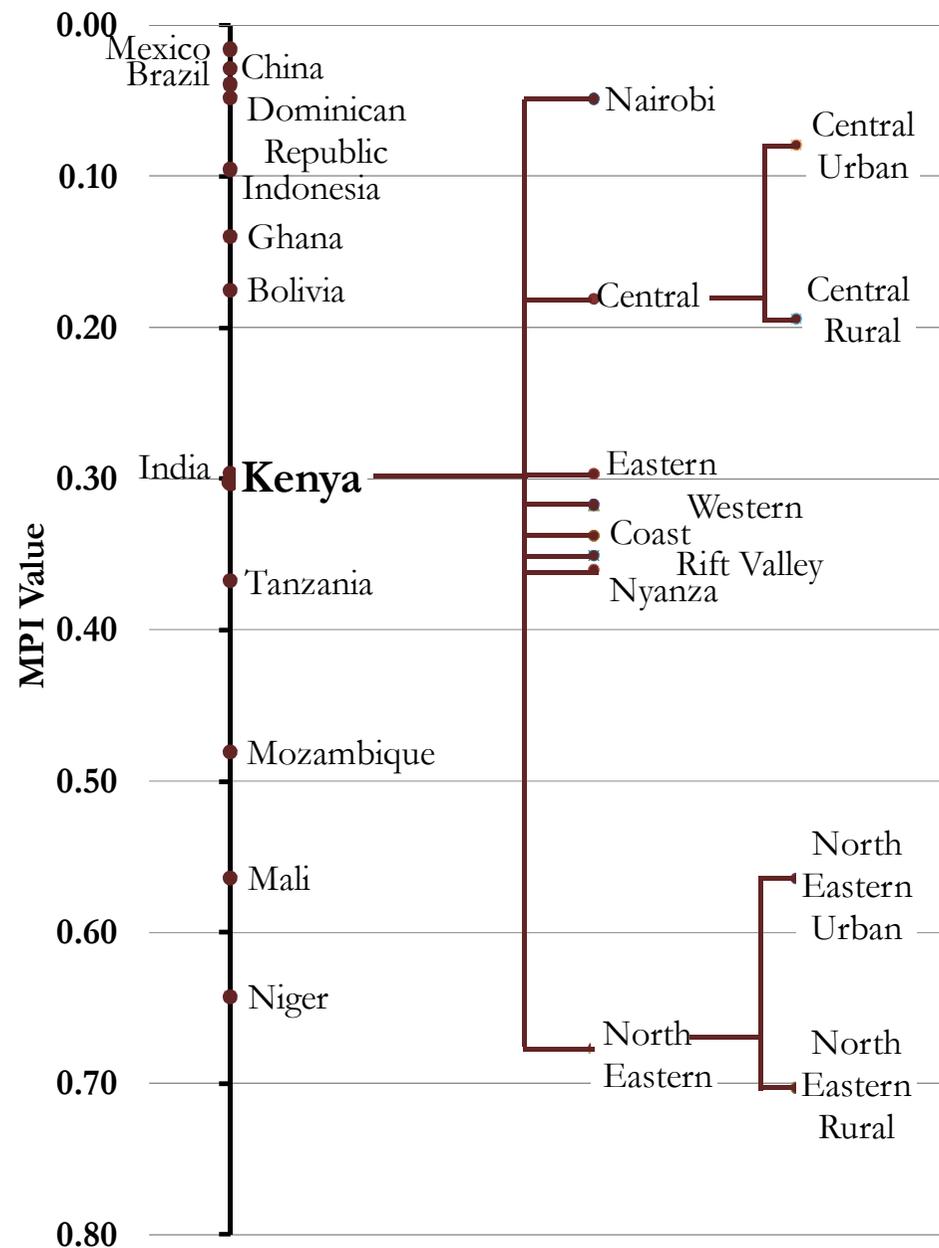
- In Kerala India 16% of the population is MPI poor; in Bihar it is 81%.
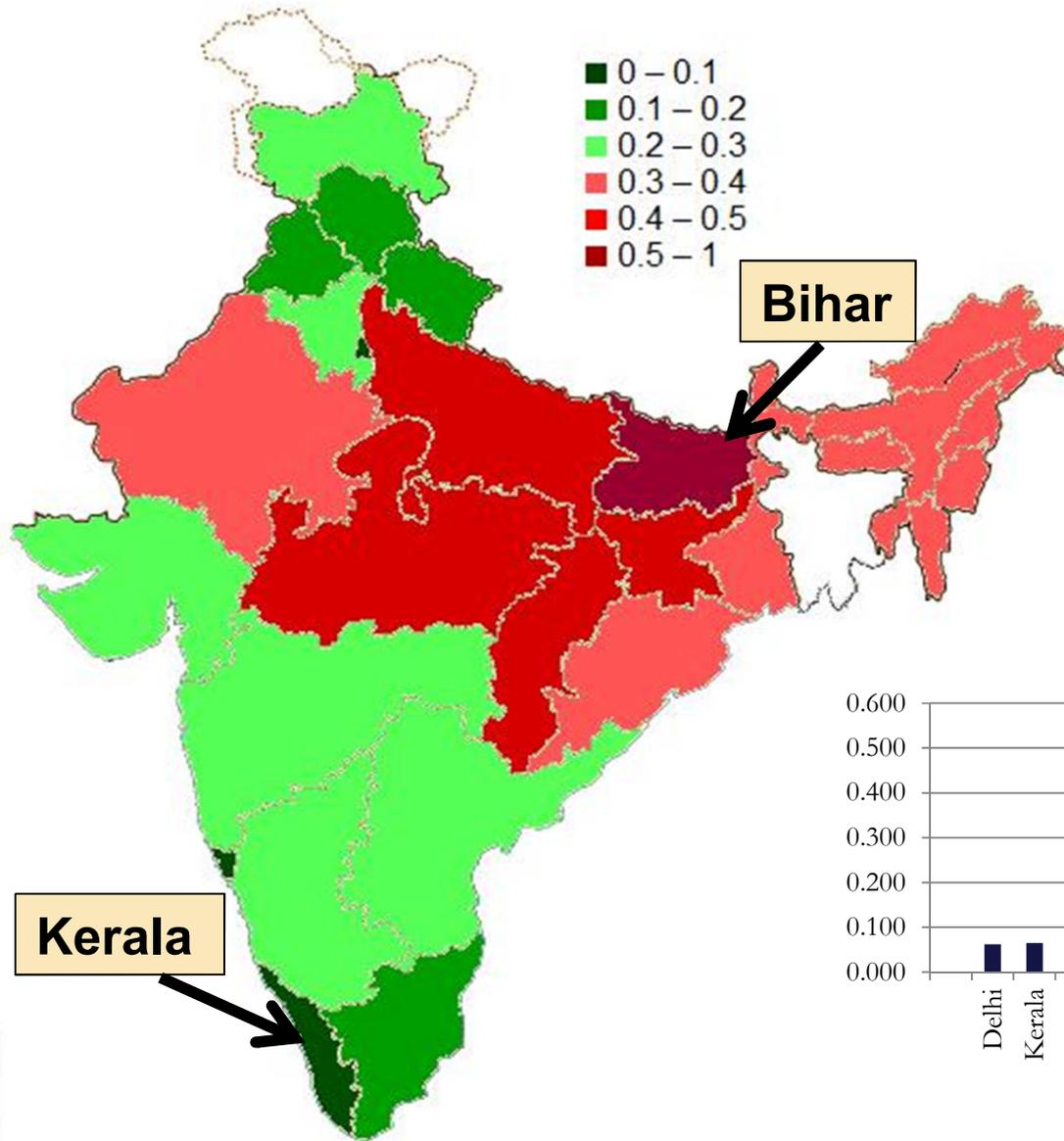
MPI for Indian States/regions
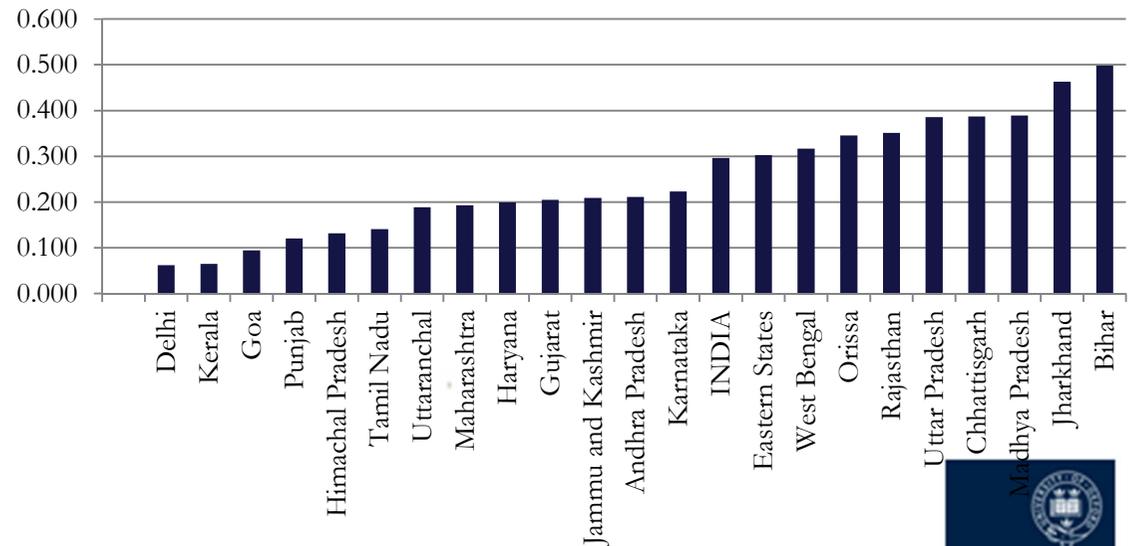
The MPI: Consistent Subindices

The MPI can be broken down in different ways:

1. By Headcount – to show *how many* are poor

2. By Dimension – to show *how* people are poor

3. By Intensity – to show *who* has greatest intensity

4. By Sub-group – to show how groups vary (in headcount, intensity, and composition)

Question for Reflection: is the MPI a 'single index?'

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Composition of Poverty:
High Resolution Lens

	Madhya Pradesh, India	DR Congo
Population 2007	69.97M	62.50M
MPI	0.39	0.39
MPI Headcount	69.5%	**73.2%**
Avg Intensity	**56%**	53.7%

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Composition of Poverty: key for policy

The Contribution of Indicators to MPI
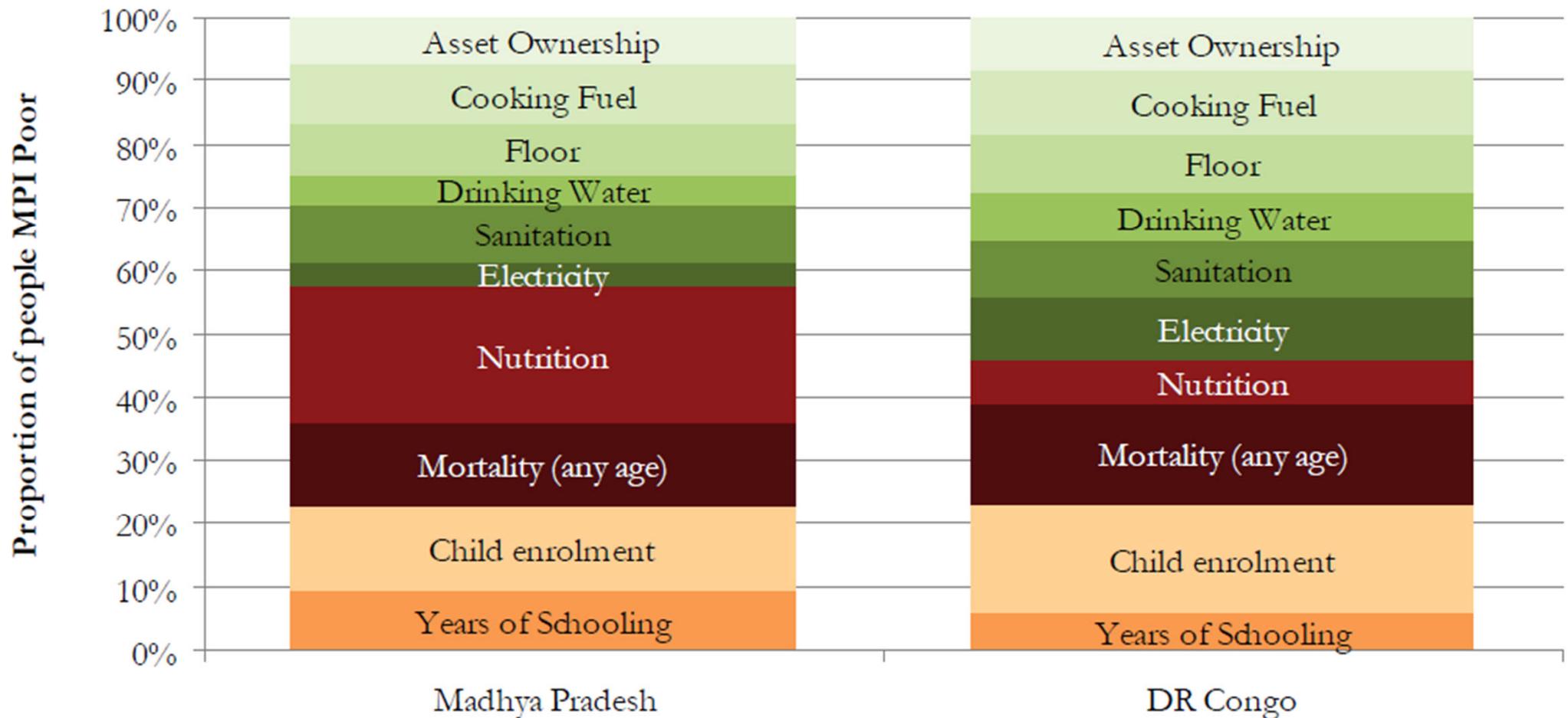
DRC: Larger Std of Living Deprivations

The Contribution of Indicators to MPI
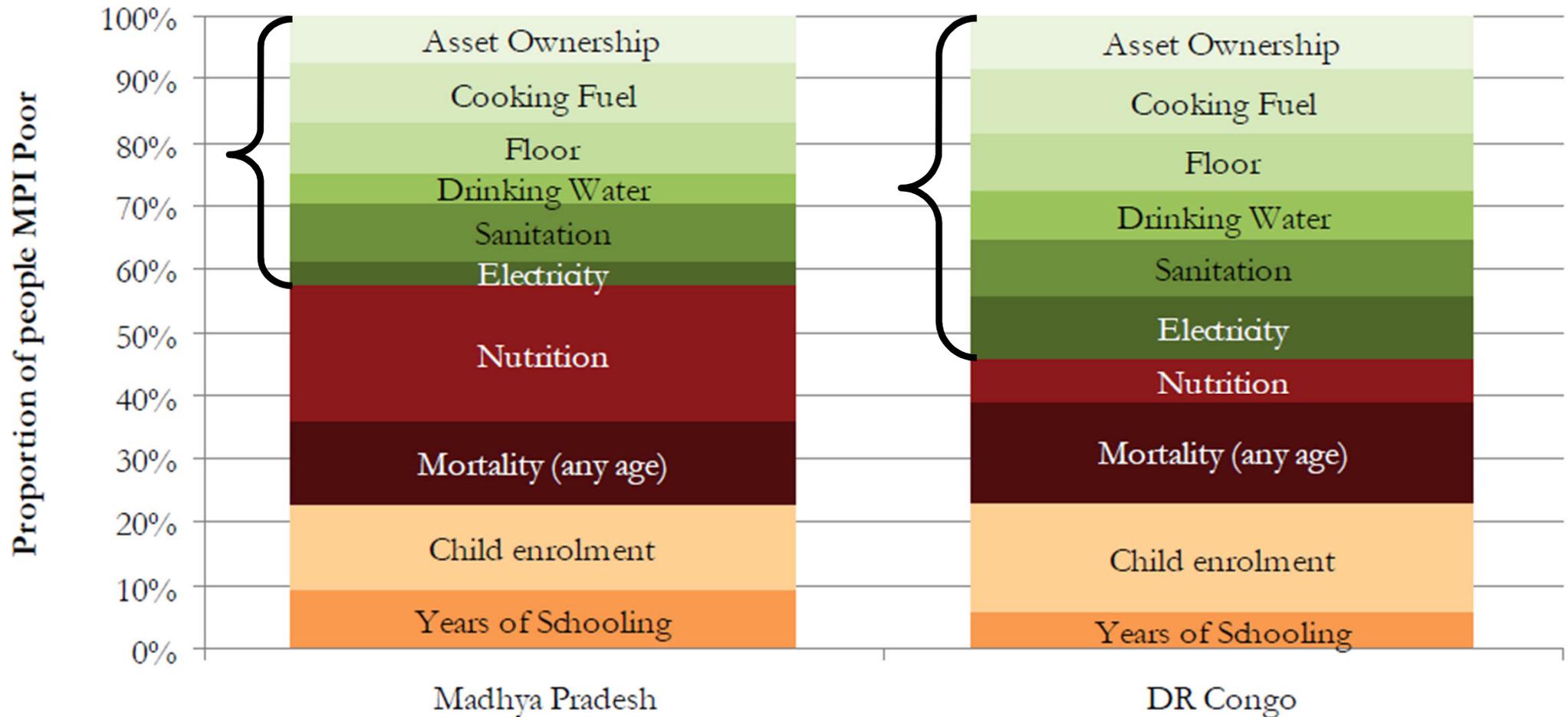
Madhya Pradesh: Larger Malnutrition

The Contribution of Indicators to MPI

Madhya Pradesh | DR Congo

Proportion of people MPI Poor

Indicators (from top): Asset Ownership, Cooking Fuel, Floor, Drinking Water, Sanitation, Electricity, Nutrition, Mortality (any age), Child enrolment, Years of Schooling
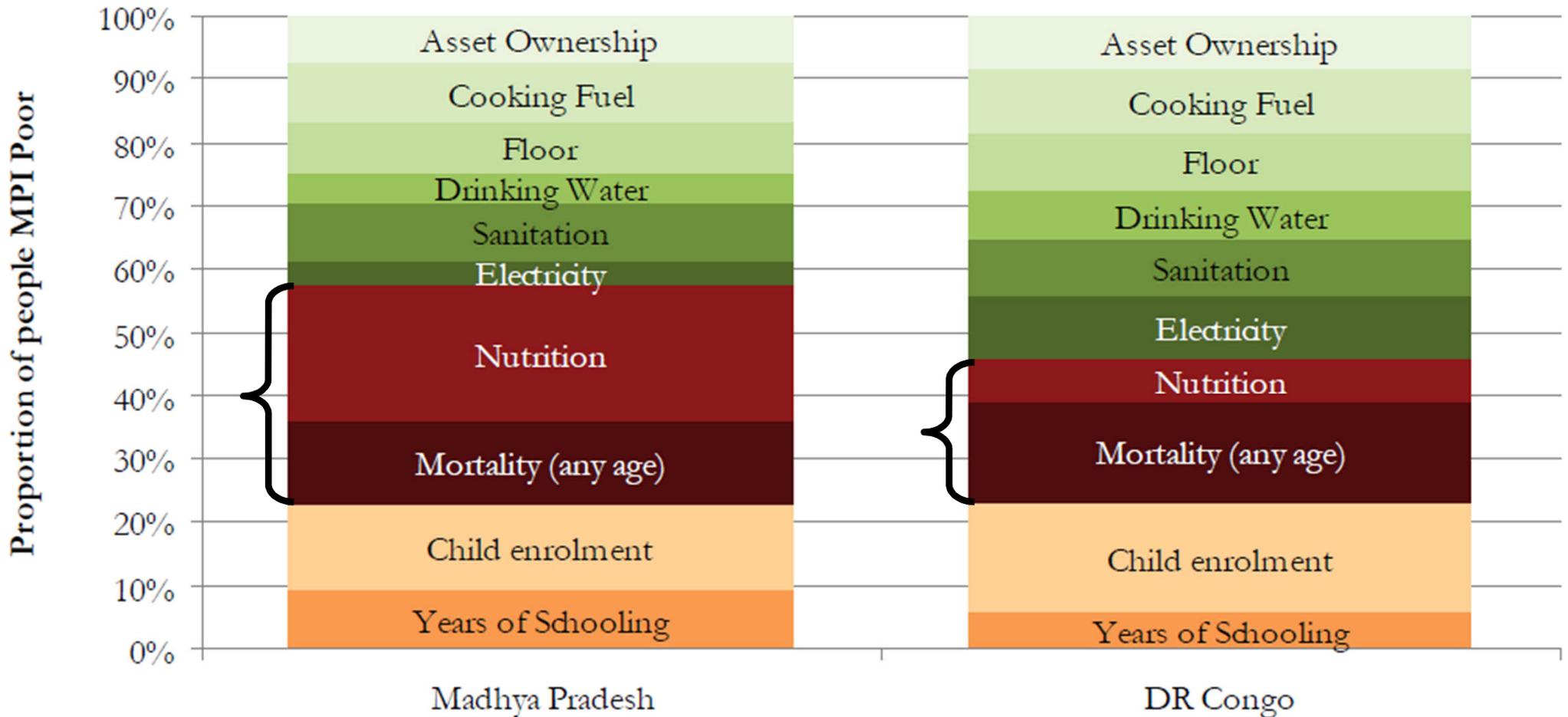
Break down of intensity
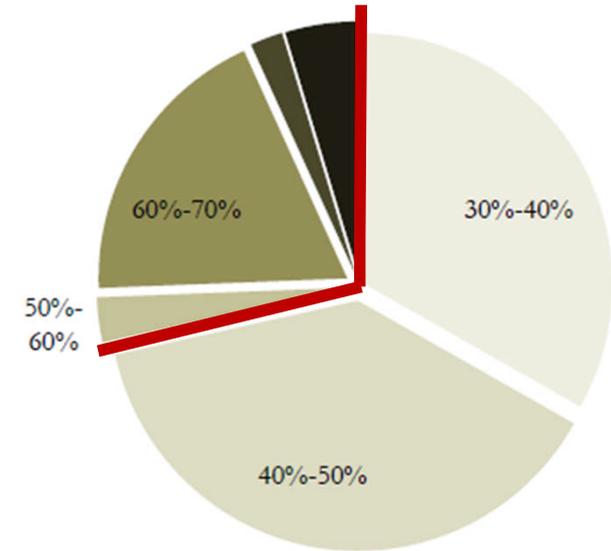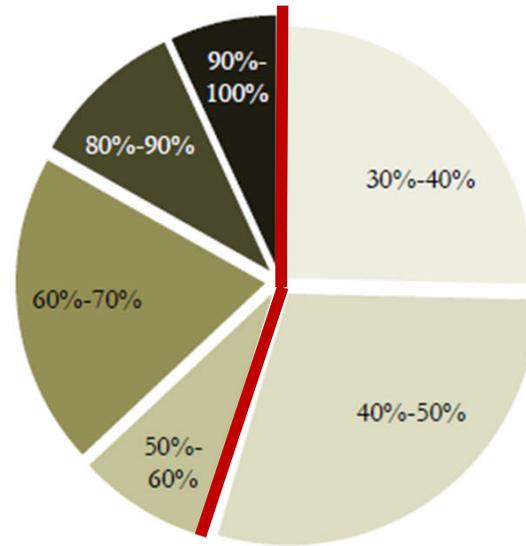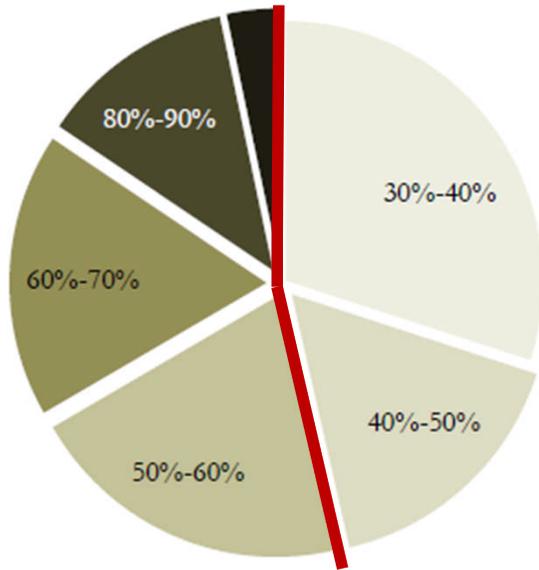
Intensity of Deprivation Among MPI Poor . Intensity of Deprivation Among MPI Poor   F. Intensity of Deprivation Among MPI Poo

	India	Cameroon	Kenya
MPI =	0.296	0.299	0.302
A =	53.5%	54.7%	50%

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Pathways to Poverty Reduction

Bangladesh improved school attendance, Ethiopia nutrition and water, Ghana many indicators.

Legend:
- Assets
- Cooking Fuel
- Floor
- Water
- Sanitation
- Electricity
- Nutrition
- Mortality
- Child Enrolment
- Schooling

Y-axis: Percent Variation in each deprivation of the poor (0% to -70%)

Groups: Bangladesh, Ethiopia, Ghana
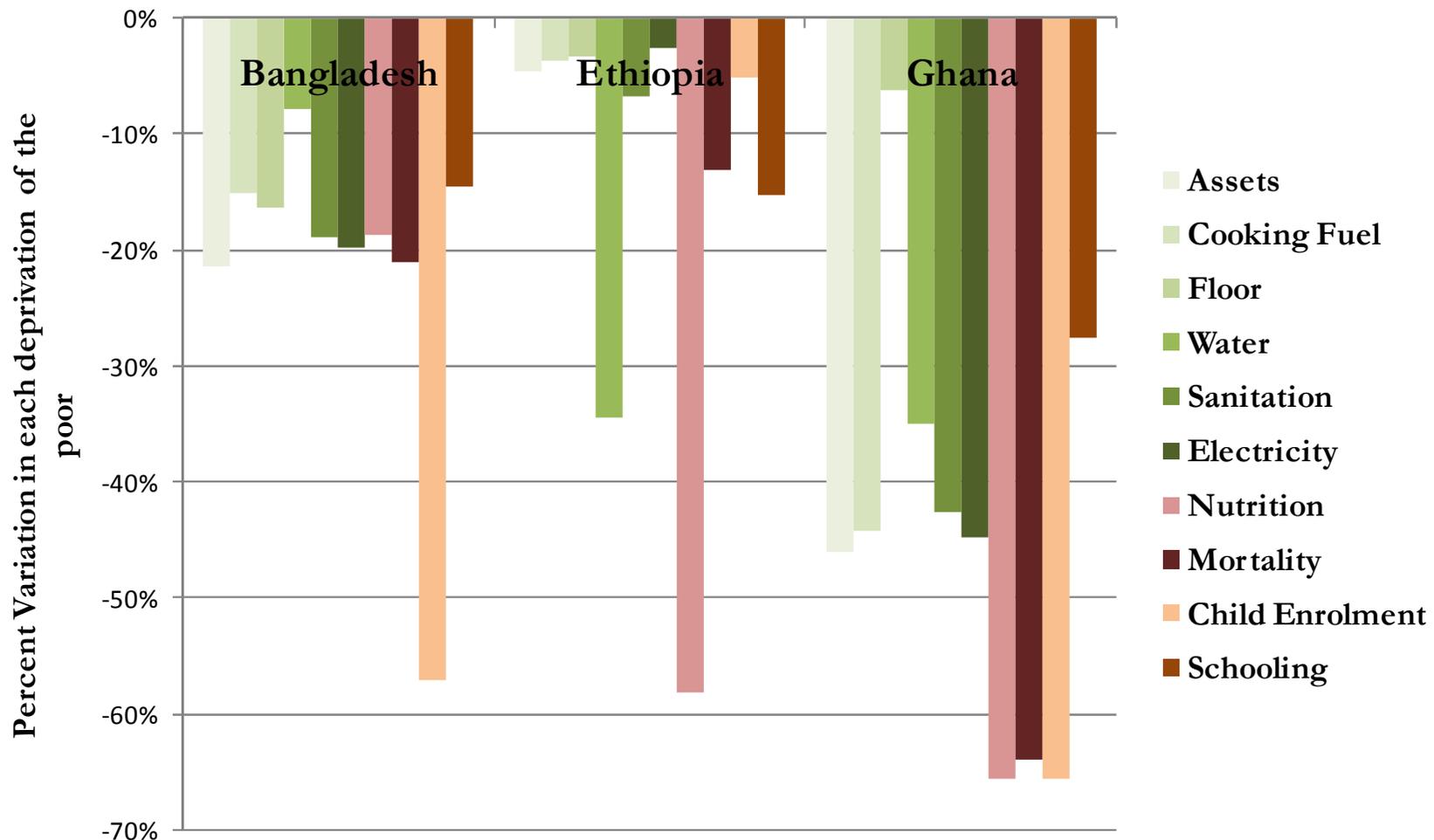
Sometimes deprivations <u>increase</u> in regions. Variations are easily seen & studied.

Which of the 10 indicators really changed over time?

Upper confidence interval

Lower confidence interval

Point estimate

Education 2003, Education 2008, Enrollment 2003, Enrollment 2008, Mortality 2003, Mortality 2008, Nutrition 2003, Nutrition 2008, Electricity 2003, Electricity 2008, Sanitation 2003, Sanitation 2008, Water 2003, Water 2008, Floor 2003, Floor 2008, Cooking 2003, Cooking 2008, Assets 2003, Assets 2008

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5. Robustness Checks

- An international measure of multidimensional poverty is quite a crude instrument.

- As this is a new methodology, we tried to scrutinize the measure, and tune it to reflect multidimensional poverty with sufficient accuracy to add value for policy.

Some basic checks:

- **Quality Checks** – triangulating our results with other data sources

- **Robustness** of measure to different z cutoffs (we implemented a total of 18 measures, having different indicators and cutoffs)

- **Robustness** to changes in the k cutoff

- **Identification of the poor**: does it identify the same households as poor as a) income poor; and b) bottom quintile by the DHS wealth index?

MPI is robust to changes in key to indicators & cutoffs

Question for Reflection:
What correlations do you want to run & why?

			MPI 1	MPI 2	MPI 3
			Excluding Enrolment	Using weight-for-age	Using weight-for-height
				Selected Measure	
MPI 2	Using weight-for-age (Selected Measure)	Pearson	0.989		
		Spearman	0.977		
		Kendall (Taub)	0.884		
MPI 3	Using weight-for-height	Pearson	0.986	0.999	
		Spearman	0.974	0.998	
		Kendall (Taub)	0.872	0.975	
MPI 4	Using height-for-age	Pearson	0.987	0.998	0.996
		Spearman	0.976	0.996	0.994
		Kendall (Taub)	0.881	0.960	0.946

Number of countries: **85 (All DHS and MICS countries)**

All MPI 1-4 use the New Reference Population to calculate children´s nutritional indicators

In all cases a cutoff of being deprived in 30% of the weighted indicators was used

MPI is robust to changes in key to indicators & cutoffs

			MPI 1	MPI 2	MPI 3	MPI 4
			Excluding Enrolment	Using weight-for-age	Using weight-for-height	Using height-for-age
				Selected Measure		
MPI 2	Using weight-for-age (Selected Measure)	Pearson	0.989			
		Spearman	0.988			
		Kendall (Taub)	0.920			
MPI 3	Using weight-for-height	Pearson	0.986	0.996		
		Spearman	0.985	0.999		
		Kendall (Taub)	0.908	0.984		
MPI 4	Using height-for-age	Pearson	0.987	0.998	0.996	
		Spearman	0.987	0.998	0.996	
		Kendall (Taub)	0.917	0.969	0.962	
MPI 5	Using under 5 mortality (rather than age non-specific mortality)	Pearson	0.991	0.998	0.997	0.996
		Spearman	0.989	0.997	0.995	0.996
		Kendall (Taub)	0.920	0.975	0.966	0.959
Number of countries:	51 (All DHS and three MICS countries which have Birth History)					

All MPI 1-4 use the New Reference Population to calculate children´s nutritional indicators

In all cases a cutoff of being deprived in 30% of the weighted indicators was used

Robustness to poverty cutoff from 20% to 40% - AFR
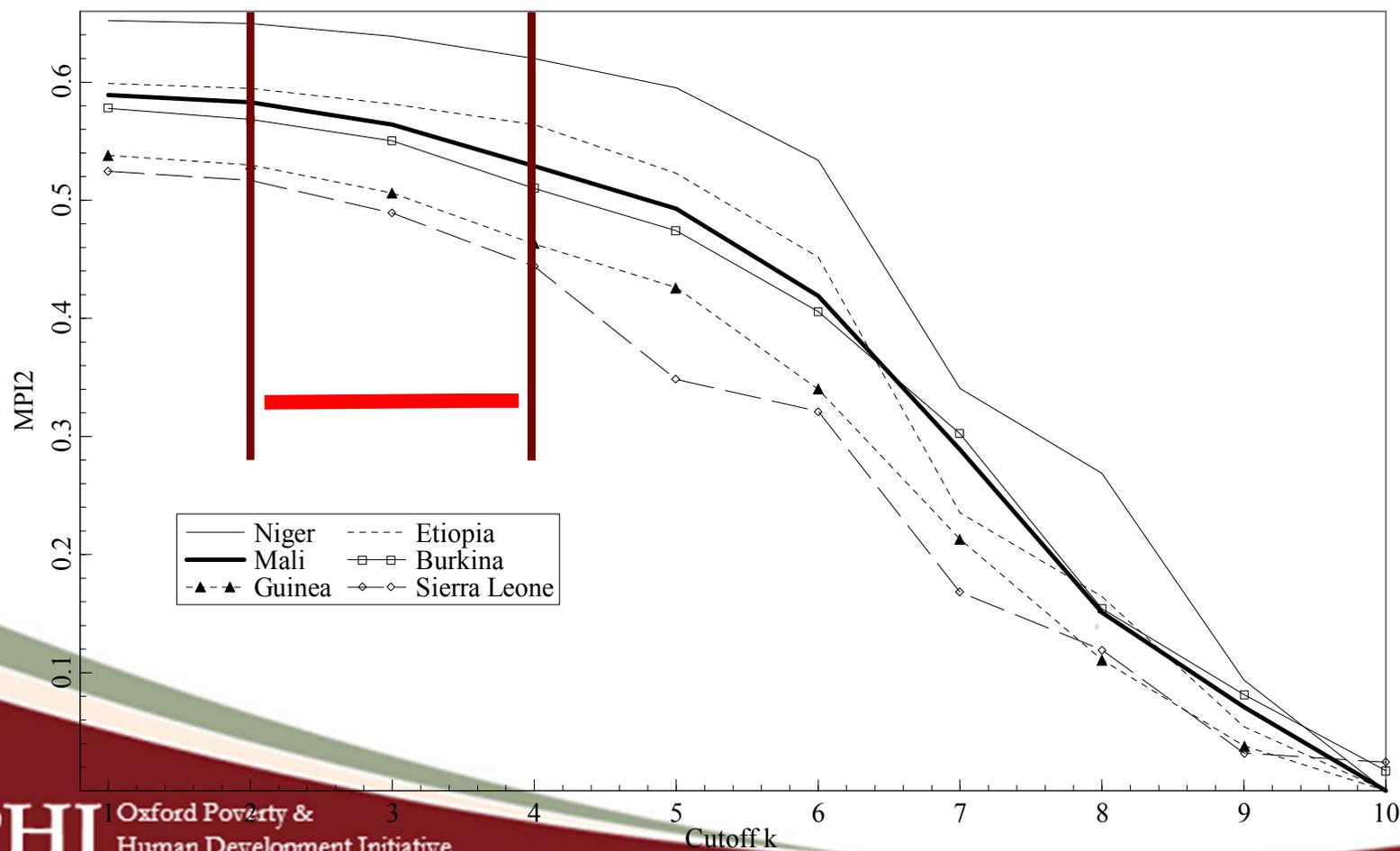
Robustness of MPI in South Asia

MPI comparisons for some South Asian countries as k is varied

India and Bangladesh are not robust $k=2$ to $k=4$

Legend: Bangladesh, India, Nepal, Sri Lanka, Pakistan

MPI — Cutoff k

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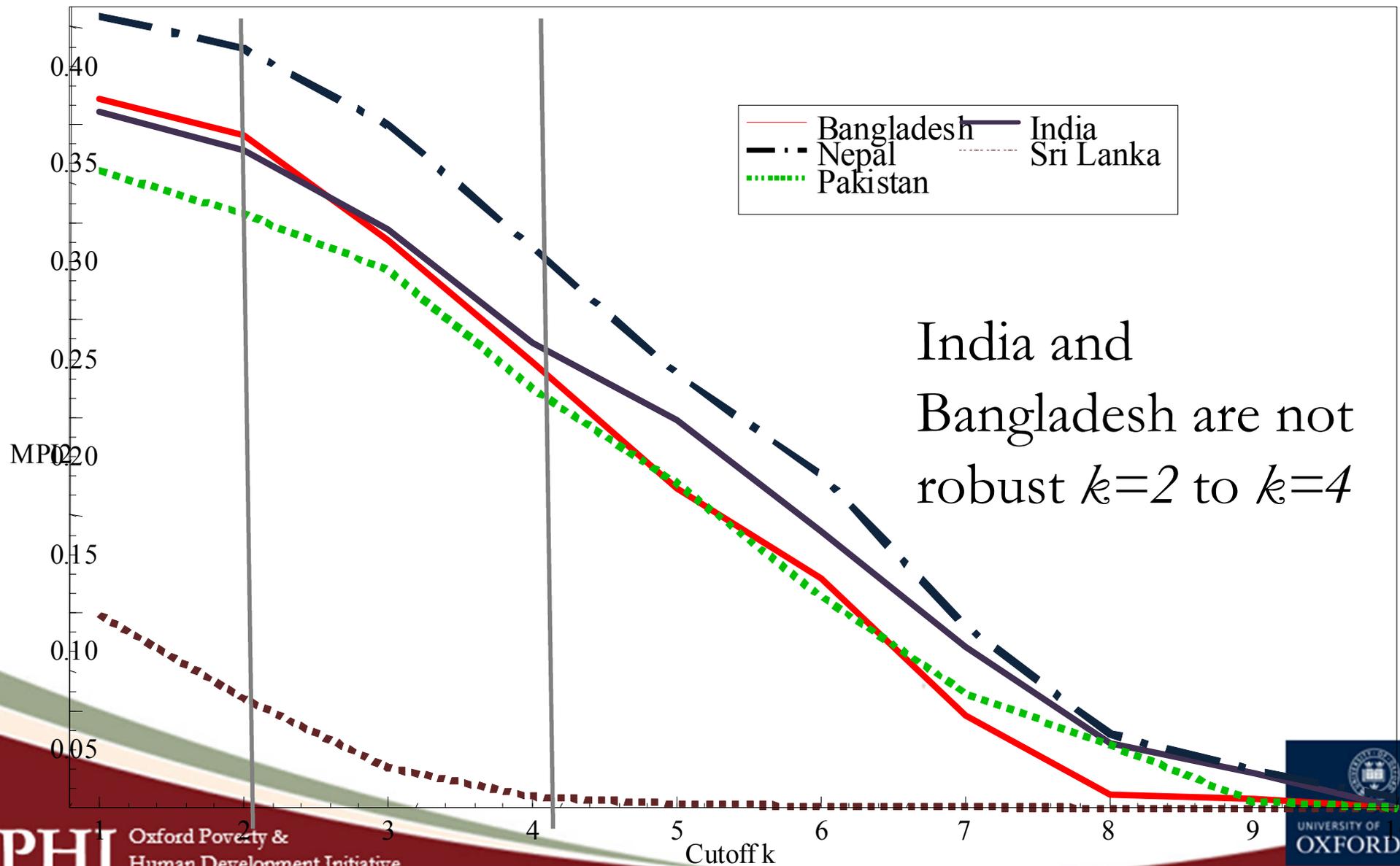
MPI is robust to varying k=2 to 4 Latin American example
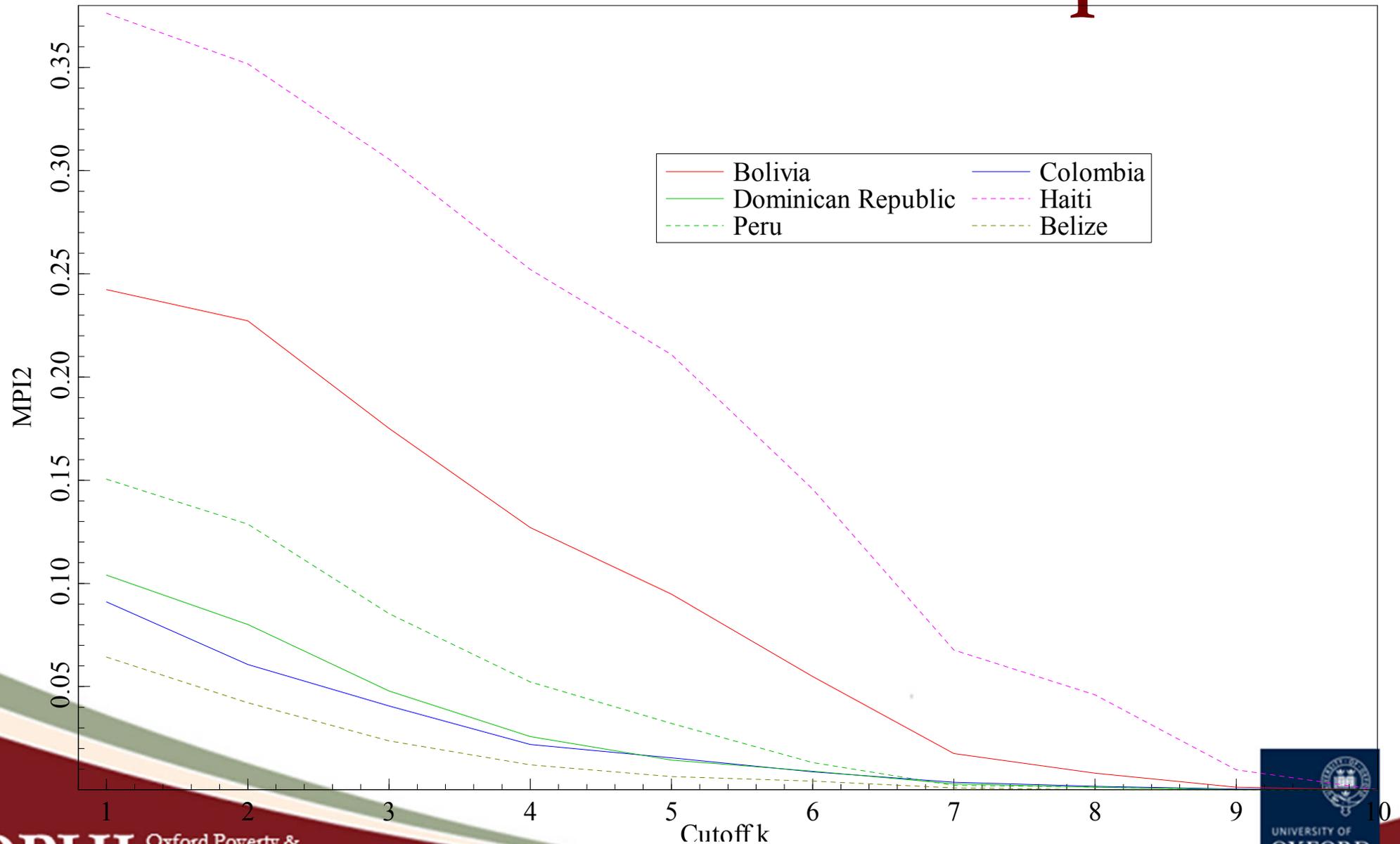
MPI is robust to varying *k*= 2 to 4

- 95% of the possible pairs of countries have a dominance relation for k 2 to 4. That is, we can say that one country is unambiguously poorer than another regardless of whether we require to be poor in 20, 30 or 40% of the weighted indicators.

Question for Reflection: How do you choose the 'boundary' *k* values to test? What values of *k* can you exclude - and why?

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Robustness to Weights

- Recall: MPI varies from 0 to 0.642 and the headcount varies from 0 to 93%.

- Re-weight each dimension:
    - 33%   50%   25%   25%
    - 33%   25%   50%   25%
    - 33%   25%   25%   50%

- How does this affect:
    - MPI, H, A
    - Ranking of countries

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Robustness to Weights

The MPI country rankings are robust to a range of weights:

-High Correlations – 0.90 and above
-High Rank Concordance – 0.975 and above
-Reject null Hypothesis of rank independence @ 99%
-88% pairwise comparisons totally robust
-5 of bottom 60 countries switch ranks 10 or more places

Questions for reflection:
  - How do you justify weights 25-50% for dimension?
  - How would you test robustness of indicator weights?

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Media Coverage of the 2010 MPI

– The Report was covered in over 60 countries, e.g. in:

- TIME Magazine
- The New York Times
- The Wall Street Journal
- BBC
- The Economist
- The Guardian
- The Financial Times
- The Huffington Post
- Foreign Policy
- The Hindu
- Christian Science Monitor
- The Globe and Mail
- The Times of India

Human Development
Report 2010

The Real Wealth of Nations:
Pathways to Human Development

20th Anniversary Edition

20th
Anniversary
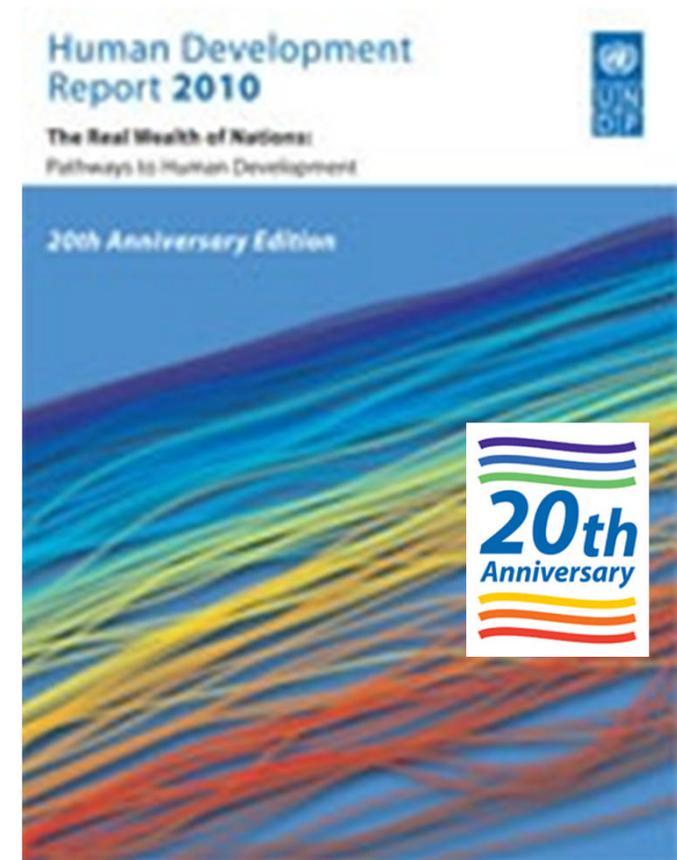
6. Some key issues: data

- **Data Constraints:** Most criticisms address these (*why don't you include _____?*). How to respond well?

- 'new' questionnaires on standard surveys

- 'new' dimensions

- individual level data, excluded populations

- combination of surveys, administrative data, mapping

- combination of data for different reference groups

Question for Reflection:

What would be the 'ideal' indicators for your exercise?

OPHI Oxford Poverty & Human Development Initiative

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6. Some key issues: implementation

- **International MPI**
  - Robustness (weights, bootstrapping, hh size, indicators)
  - Updating & Improving existing MPI
  - MPI-2 for an overlapping set of middle-high HD countries

- **National Measures:** *some questions*
  - What is the purpose of the measure?
    - Targeting the poorest (for services / cash transfers)
    - National Poverty Reporting (akin to Income)
    - Monitoring and Evaluation
  - How choose dimensions/indicators/cutoffs/weights?
  - Should income be included or kept separate?
  - Who decides, implements, designs survey, reports

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6. Some key issues: research

- **Methodological**
  - Time series, Panel data methodologies, Chronic Poverty
  - Robustness tests (weights, cutoffs, indicators)
  - Test statistics, measurement error, uncertainty, inference
  - Appropriate validation 'tests' for national measures

- **Policy Analysis**
  - Sequence of interventions
  - How decompositions inform allocation/policy design
  - Income poverty & deprivations in other dimensions
  - Analysis & endogeneity
  - MPI changes and levels across different policy environs

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Policy Applications of MPI

- **Target** groups/regions with the greatest MD poverty.
- **Identify coupled deprivations** – common patterns
- **Show impacts** of policy interventions quickly.
- **Design policy** according to structure of MD poverty

National MPIs are being tailored to the context.

Multidimensional Poverty in Mexico Methodology & results

First released December, 2009

Measuring poverty by mandate of the law

Social Development Law

Dimensions for poverty measurement

- **Current income per capita**
- **Average educational backwardness at household**
- **Access to health services**
- **Access to social security**
- **Quality of living spaces**
- **Housing access to basic services**
- **Access to food**
- **Degree of social cohesion**

Methodological approach
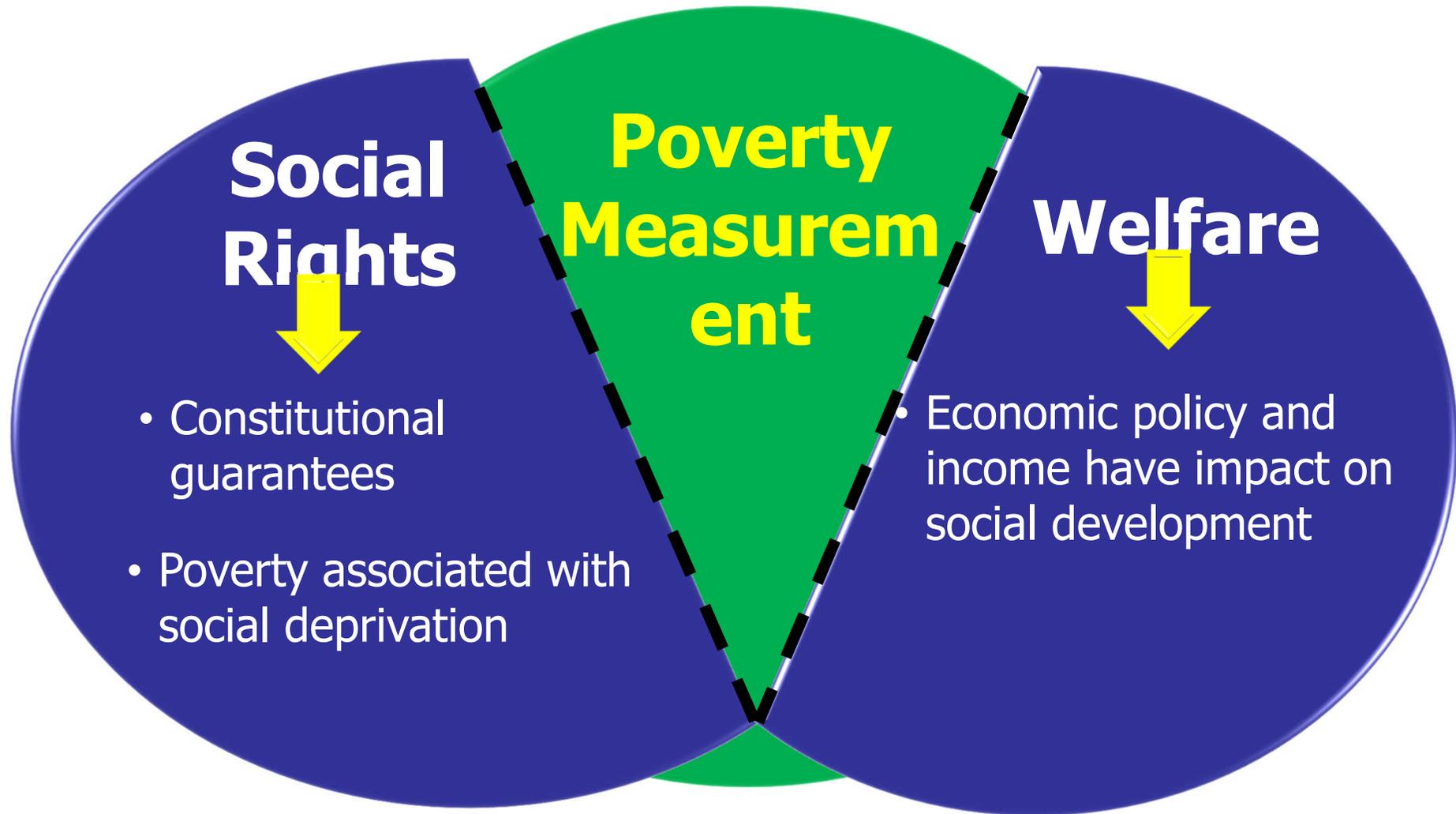
What are the main features of the new methodology?

Current income per capita

Population

Wellbeing

Income

6 5 4 3 2 1 0

Deprivations
Social Rights

Six Social Rights:

- **Education**
- **Health**
- **Social Security**
- **Housing**
- **Basic services**
- **Feeding**
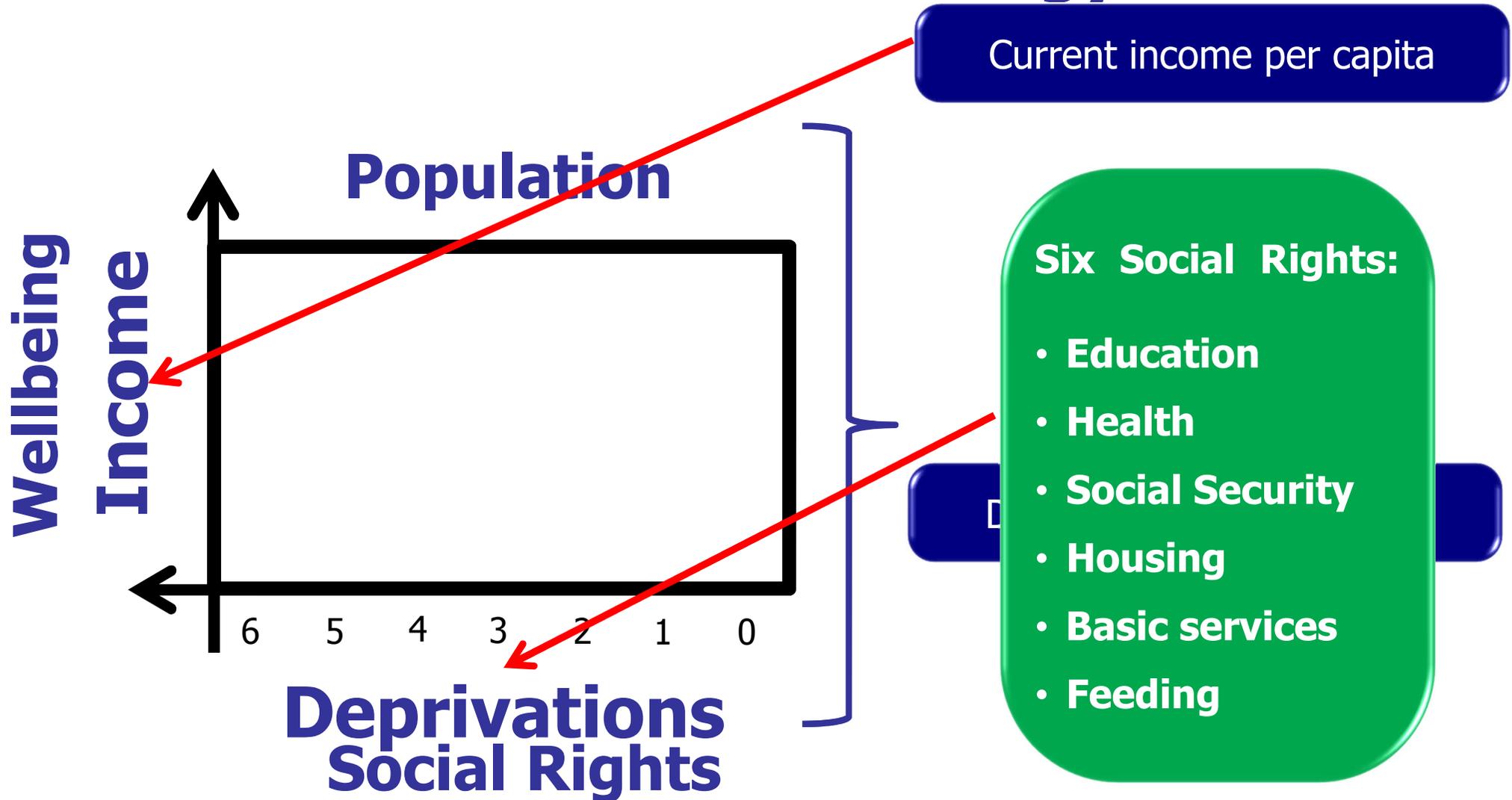
Poverty Identification

Economic wellbeing line

$1,921.7 U
$1,202.8 R   *EWL*

$874.6 U
$613.8 R   *MWL*

Minimum wellbeing line

With deprivations

Vulnerable people by social deprivations

Without Deprivations

Ideal Situation

MULTIDIMENSIONALLY POOR

Moderate Multidimensional Poverty

EXTREME Multidimensional Poverty

Vulnerable people by income

6   5   4   3   2   1   0

Deprivations
Social Rights
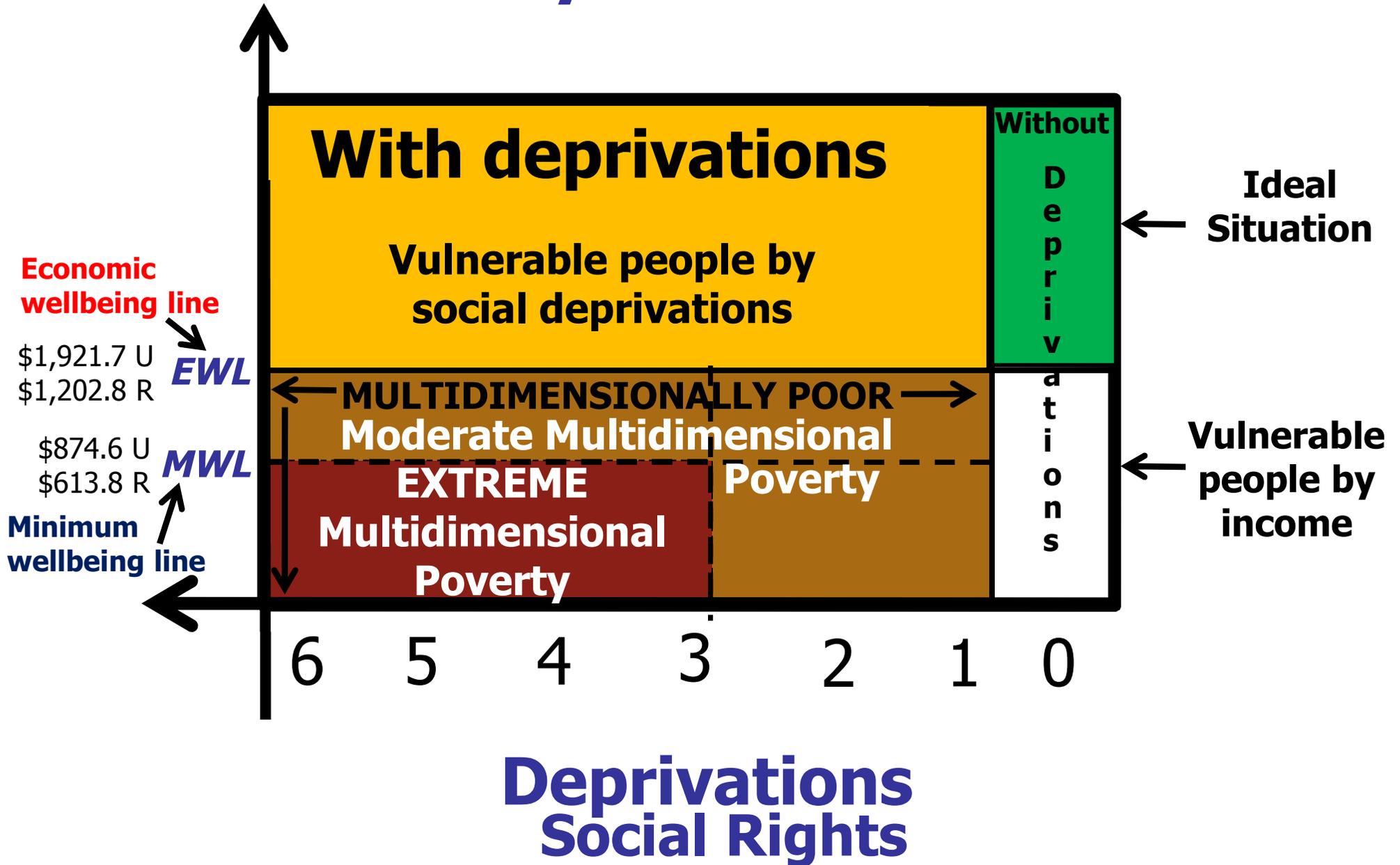
Advantages of the methodology
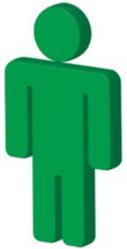
**Insert poverty within the broad objectives of social policy**

Visualize the progress of social policy not only on income but on multiple deprivations

Distinguish action areas of economic policy and social policy on social development

Results 2008 Survey:

Total Population 2008

Wellbeing Income (vertical axis label)

Vulnerable people by social deprivations

33.0%
35.2 millions
2.0 Deprivation average

18.3%
19.5 millions

MODERATE POVERTY

33.7%
36.0 millions
2.3 Deprivation average

EXTREME POVERTY

10.5%
11.2 millions
3.9 Deprivation average

Vulnerable people by income
4.5%
4.8 millions

6   5   4   3   2   1   0

Deprivations Social Rights

Senior population 2008

Wellbeing Income (vertical axis)

Deprivations Social Rights (horizontal axis)

Vulnerable people by social deprivations
34.0 %
2.4 millions
2.0 Deprivation average

17.2%
1.2 millions

MODERATE POVERTY
32.5 %
2.3 millions
2.3 Deprivation average

EXTREME POVERTY
12.0 %
0.8 millions
3.9 Deprivation average

Vulnerable people by income
4.3%
0.3 millions

6 5 4 3 2 1 0

Indigenous population 2008

Wellbeing Income (vertical axis)

Deprivations Social Rights (horizontal axis)

Vulnerable people by social deprivations
20.0 %
1.4 millions
2.8 Deprivation average

3.1%
0.21 millions

MODERATE POVERTY
36.5 %
2.5 millions
3.1 Deprivation average

EXTREME POVERTY
39.2 %
2.7 millions
4.2 Deprivation average

Vulnerable people by income
1.2%
.1 millions

6 5 4 3 2 1 0

Non Indigenous population 2008

Wellbeing Income (vertical axis label)

Deprivations Social Rights (horizontal axis label)

Vulnerable people by social deprivations

33.9 %
33.8 millions
2.0 Deprivation average

19.4%
18.0 millions

MODERATE POVERTY

33.5 %
33.5 millions
2.3 Deprivation average

Vulnerable people by income
4.7%
4.7 millions

EXTREME POVERTY
8.5 %
8.5 millions
3.7 Deprivation average

6 5 4 3 2 1 0

Multidimensional poverty incidence

Ranks	Total of States
[20% - 40%)	14
[40% - 60%)	14
[60% - 80%]	4
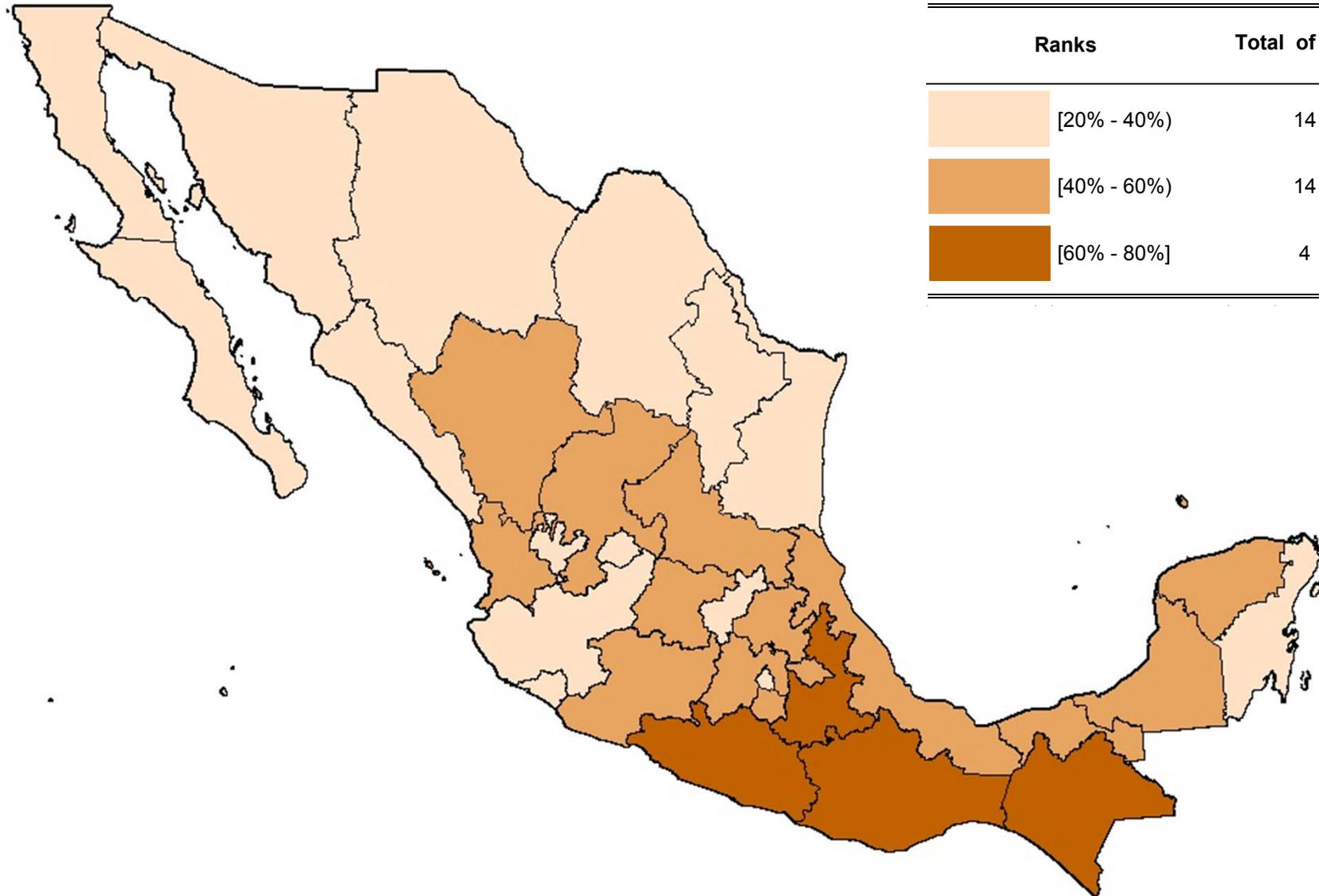
Percentage of population with social deprivations Mexico, 2008

Social deprivation	Percentage
Access to social security	64.7
Access to health services	40.7
Educational backwardness	21.7
Access to food	21.6
Housing access to basic services	18.9
Quality of living spaces	17.5

Source: CONEVAL estimations with information from MCS-ENIGH, 2008

Results 2010 Survey:

Change in the number of poor people in Mexico, 2008-2010
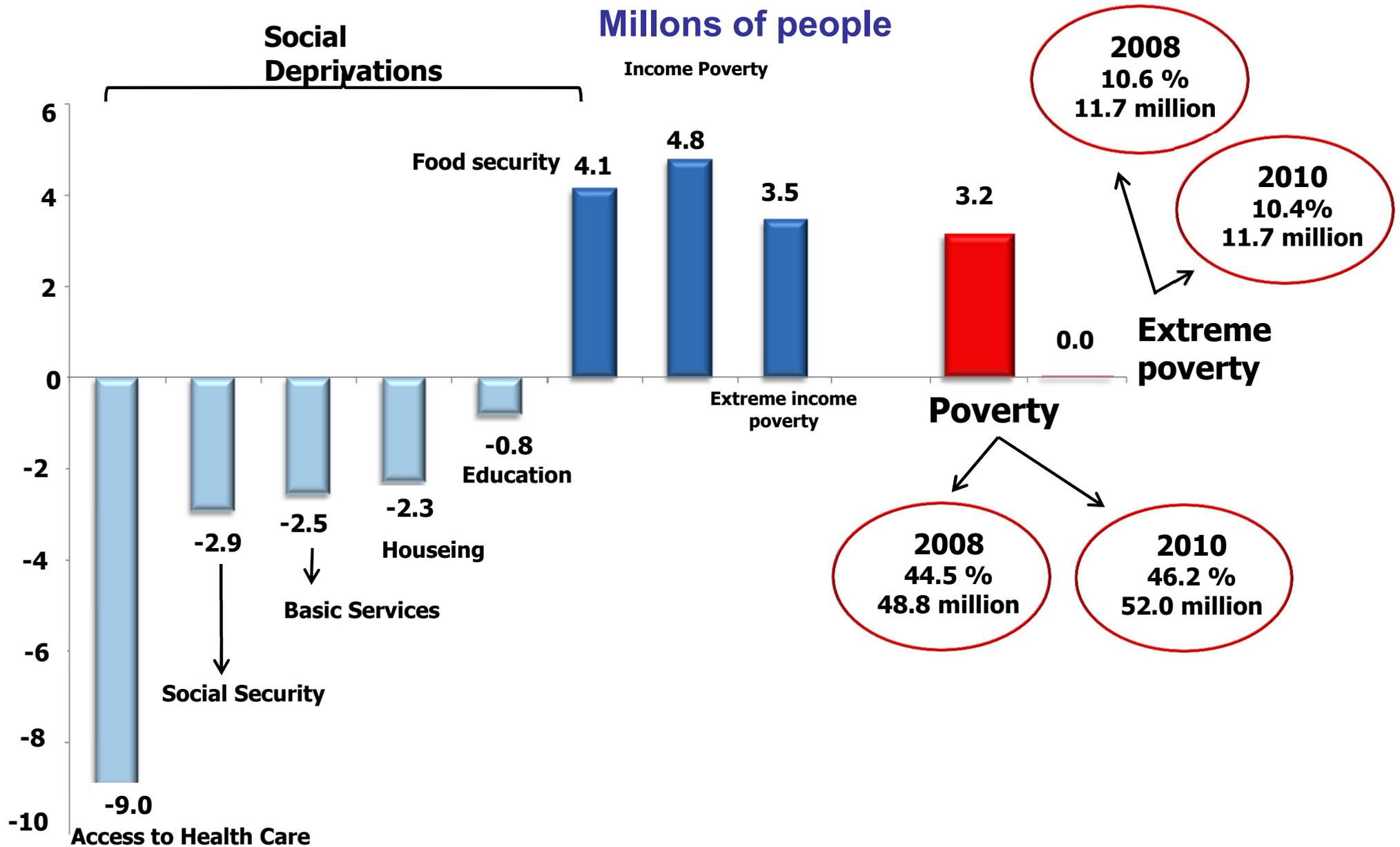
# Changes in the number of people in extreme poverty, by state

Miles de personas

State	Value
México	214
Veracruz	183
Jalisco	43
Yucatán	35
Querétaro	32
Sonora	27
Tamaulipas	23
Guanajuato	21
Sinaloa	19
Nayarit	19
Zacatecas	16
Baja California Sur	14
Campeche	13
Tlaxcala	8
Chihuahua	4
Colima	4
Distrito Federal	4
Baja California	-3
Coahuila	-4
Aguascalientes	-4
San Luis Potosí	-5
Durango	-16
Quintana Roo	-22
Oaxaca	-22
Morelos	-27
Nuevo León	-30
Tabasco	-38
Hidalgo	-61
Guerrero	-69
Chiapas	-72
Michoacán	-98
Puebla	-170

Mexican people in extreme poverty

	2008	2010
Percentage	10.6	10.4
Millions of people	11.7	11.7

An increase of 38,000

Changes 2008-2010
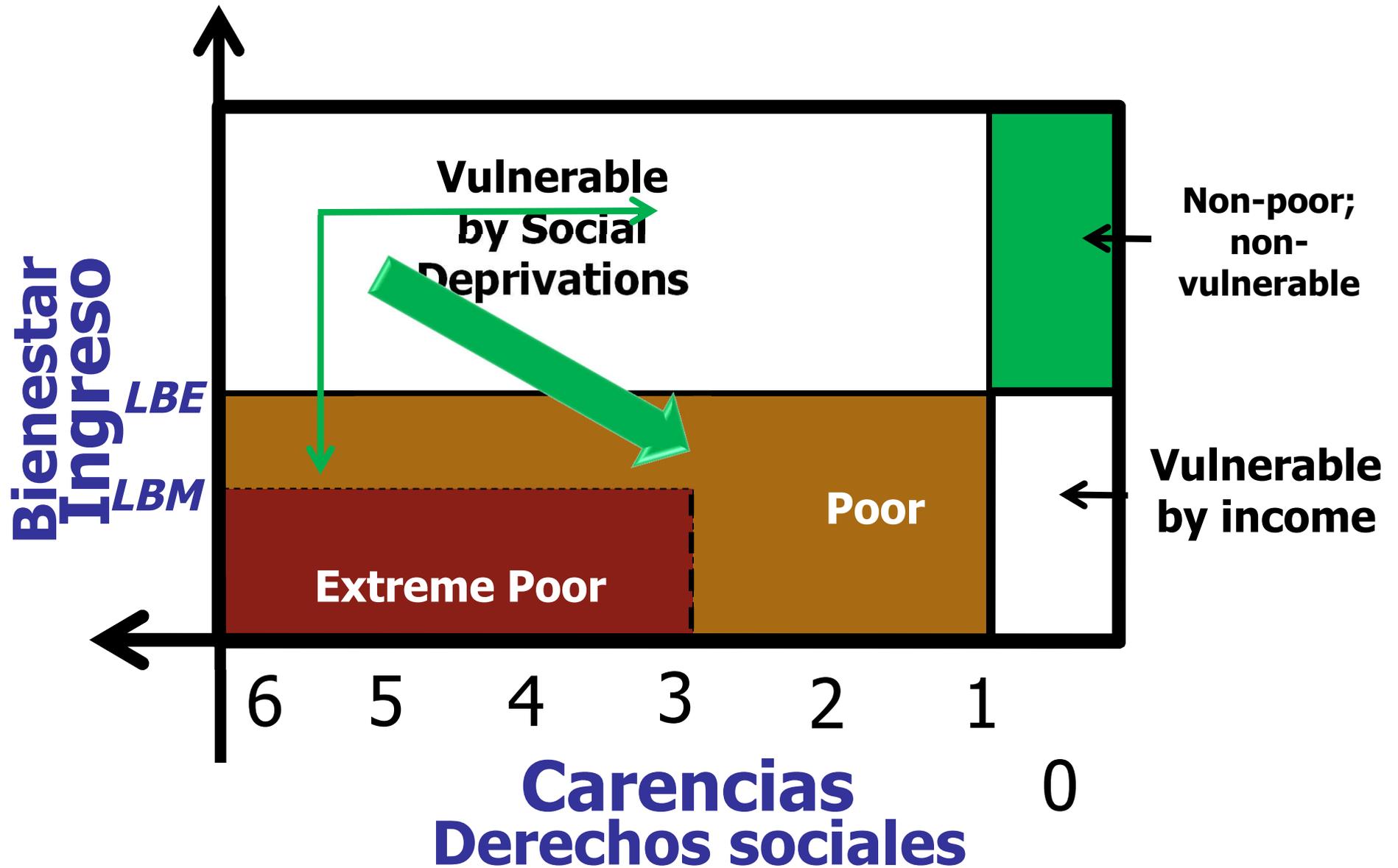
The average number of social deprivations of poor people by state (blue = 2008; green = 2010)

Poor people can have up to 6 deprivations.
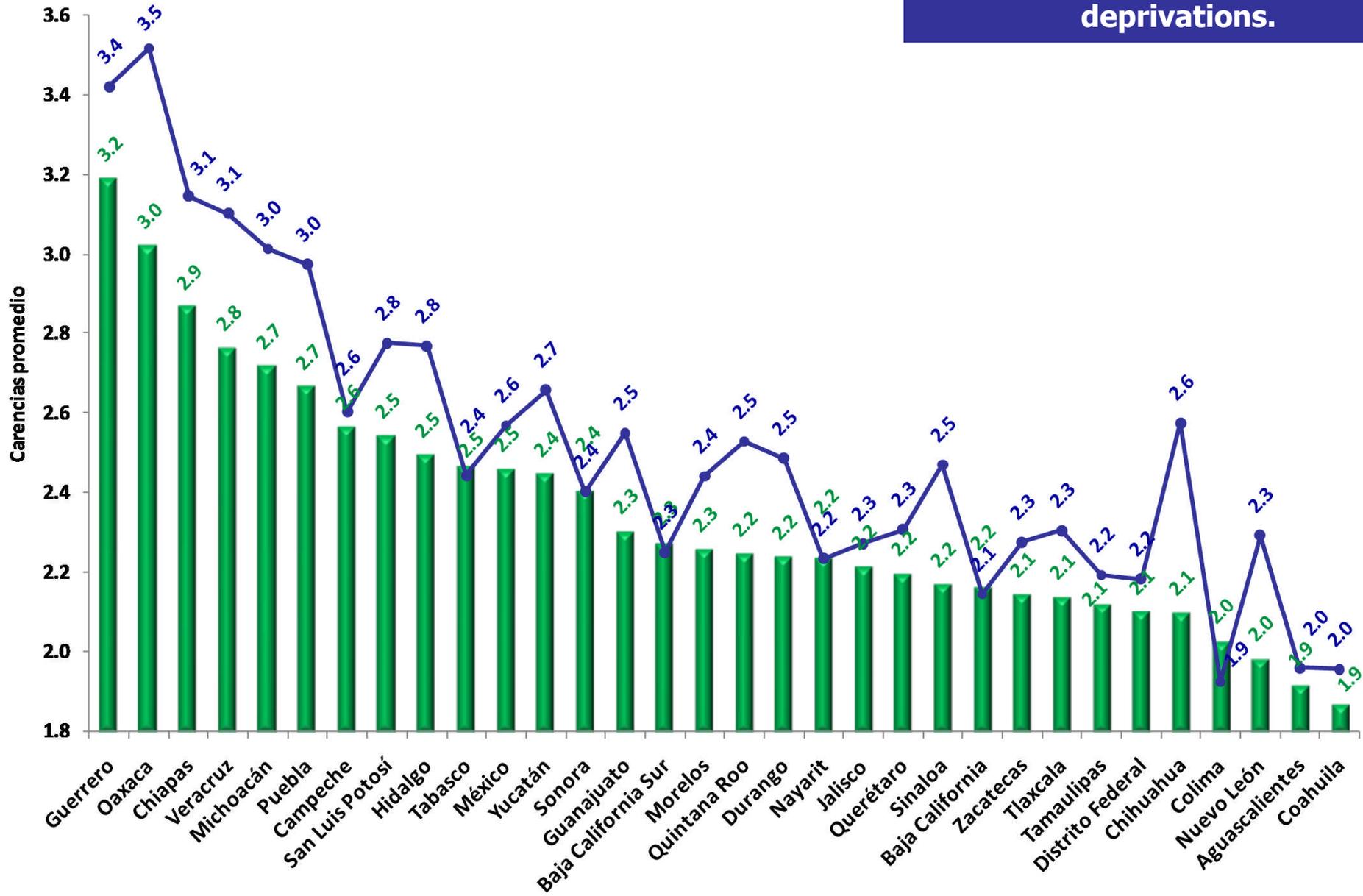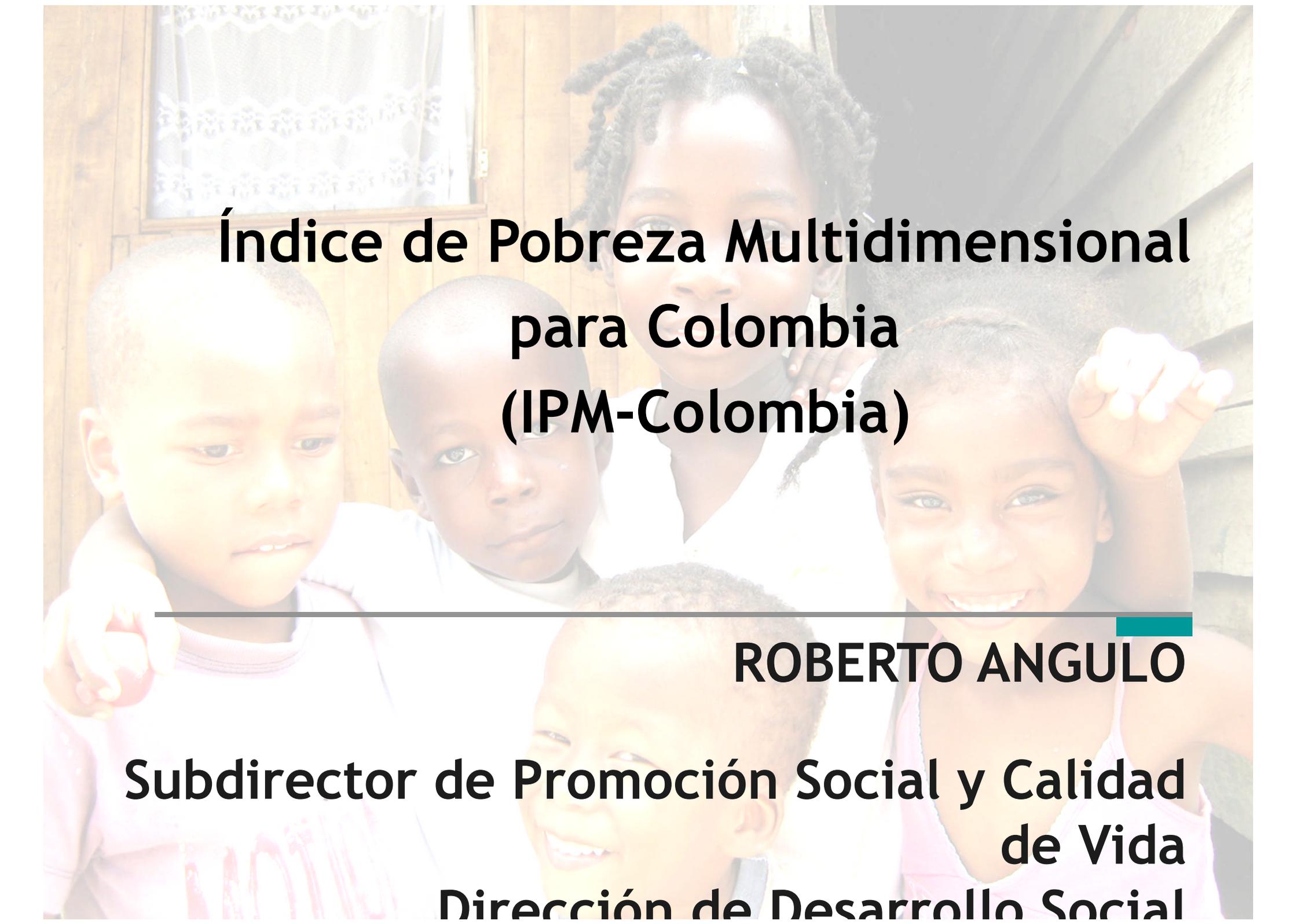
Índice de Pobreza Multidimensional para Colombia (IPM-Colombia)

ROBERTO ANGULO

Subdirector de Promoción Social y Calidad de Vida

Dirección de Desarrollo Social

Selection of Variables

Criteria for variable selection

1. Frequent usage (national or international); literature review; discussion with experts; other indicators. IPM-OPHI Internacional, NBI, ICV y Sisbén III.

2. Indicators can be affected by public policies.

3. Availability of information (in the survey of Quality of Life in Colombia).

Criteria to validate variables

Precision of the sample to estimate the variable – estimated coeff of variation <15%.

*EL DANE utiliza:
0-7: Estimación precisa
8-14: precisión aceptable
15-20 ó 15-25: Precisión regular y por lo tanto se debe utilizar con precaución

Household as Unit of Analysis

- The deprivations are experienced simultaneously by household members not by isolated persons. Colombia's MPI is compatible with the public policy intstruments that are designed to reduce poverty. This is justified by the Constitution.

- *"La garantía de las condiciones de vida digna en los acuerdos sociales no está dada por la responsabilidad de los individuos de forma aislada* - Constitución Política de Colombia

- *There is empiircal evidence in Colombia that households respond to adverse situations, not just isolated individuals.* - Combination of actions involve different members of the household

- *The instruments, programmes and strategies for poverty reduction in Colombia are focused on the household not on isolated individuals. Examples of such programmes:* – SISBEN, UNIDOS, Familias en Acción

Dimensions of MPI Colombia

Educational conditions	Childhood and youth	Work	Health	Housing & Public services
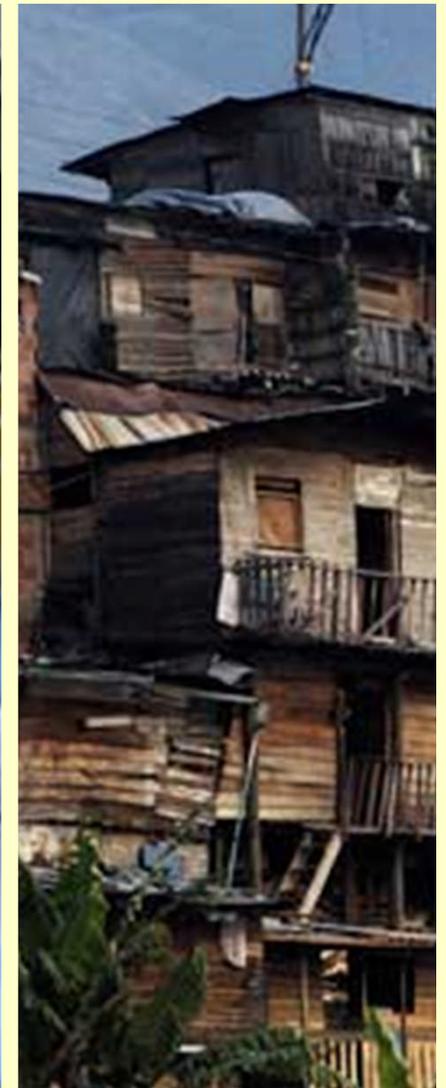
Educational Conditions

Logro Educativo: Un hogar se encuentra en privación si el logro educativo promedio de las personas de 15 años o más es inferior a 9 años de educación.

Alfabetismo: Un hogar se considera en privación si en el hay alguna persona de 15 años o más que no sabe leer y escribir

Childhood & Youth

Asistencia escolar: Hogares con al menos un niño entre 6 y 16 años que no asiste a una institución educativa

Regazo Escolar: Hogares con al menos un niño entre 7 y 17 años con rezago escolar (número de años aprobados es inferior a la norma nacional)

Acceso a servicios para el cuidado de la primera infancia: Hogares con al menos un niño de 0 a 5 años sin acceso a todos los servicios de cuidado integral (salud, nutrición y cuidado)

Trabajo Infantil: Hogares con al menos un niño entre 12 y 17 años trabajando

$$\left(\frac{ocupados\ con\ afiliación\ a\ pensión}{PEA} \right)$$

Work

Desempleo de larga duración: Hogares con al menos una persona de la PEA desempleada por más de 12 meses

Tasa de empleo formal: Al menos un ocupado del hogar no tiene afiliación a pensiones (proxy de informalidad), o se encuentra en desempleo

Salud

Aseguramiento en salud: Hogares con al menos una persona mayor de 5 años que no se encuentre asegurada al salud

Servicio de salud dada una necesidad: Hogares con al menos una persona que en los últimos 30 días tuvieron una enfermedad, accidente, problema odontológico o algún otro problema de salud que no haya implicado hospitalización y que para tratar este problema de salud no acudieron a un médico general, especialista, odontólogo, terapista o institución de salud

Housing & Public Services

Acceso a fuente de agua mejorada: *Hogares urbanos* - sin servicio público de acueducto en la vivienda. *Hogares rurales* - agua de pozo sin bomba, agua lluvia, río, manantial, carro tanque, aguatero u otra fuente

Eliminación de excretas: *Hogares urbanos* - sin servicio público de alcantarillado. *Hogares rurales* - inodoro sin conexión, bajamar o no tienen servicio sanitario

Pisos: Tierra

Paredes exteriores*: Hogares urbanos* - madera burda, tabla, tablón, guadua, otro vegetal, Zinc, tela, cartón, deshechos y sin paredes. *Hogares rurales* - guadua, otro vegetal, zinc, tela, cartón, deshechos y sin paredes

Hacinamiento Crítico: *Hogares urbanos* - 3 o más personas por cuarto. *Hogares rurales* - más de 3 personas por cuarto

Dimensions, Variables and Weights – MPI Colombia

Educational Conditions 0.2	**Childhood & Youth** 0.2	**Work** 0.2	**Health** 0.2	**Housing & Public Services** 0.2
Schooling	School Attendance	Absence of long-term unemploy-ment	Coverage	Improved Water
Illiteracy	At the right level	Formal work	Access to health care given a necessity	Sanitation
0.1	Access to infant services			Flooring
	No Child Labour			Exterior Walls
				Overcrowding
	0.05	0.1	0.1	0.04

Weights & Poverty Cutoff

Poverty Cutoff

Nested Weights

Statistical Criteria for Poverty Cutoff k:

1. Each indicator CVE<15%.

2. Robustness of k (for relevant rankings)

3. Statistical significance of the difference betweeen indicators for each value of k.

•Equal among dimensions

•Equal among indicators within each dimension

Weights and Poverty Cutoff – Further considerations.

The number of MPI deprivations experienced by those who were income poor, and those who perceived themselves to be poor, was compared with the number of deprivations among the non-income and non-subjective poor.

Median and Average number of deprivations 2008

	Median	Average
People who perceive themselves to be poor	5.0	5.0
Income poor people	5.1	5.2
Income poor people who perceive self as poor	5.4	5.6
Those who don't perceive themselves as poor	3.0	3.2
Those who are not income poor	3.0	3.2
All people	3.8	4.1

Fuente: Cálculos DNP-SPSCV, con datos de la ECV2008

A non-poor person on average has 3 deprivations, which suggests that a low value of k would capture deprivations that were not related to or sufficient to identify poverty.

Choosing poverty cutoff - other multidimensional poverty measures
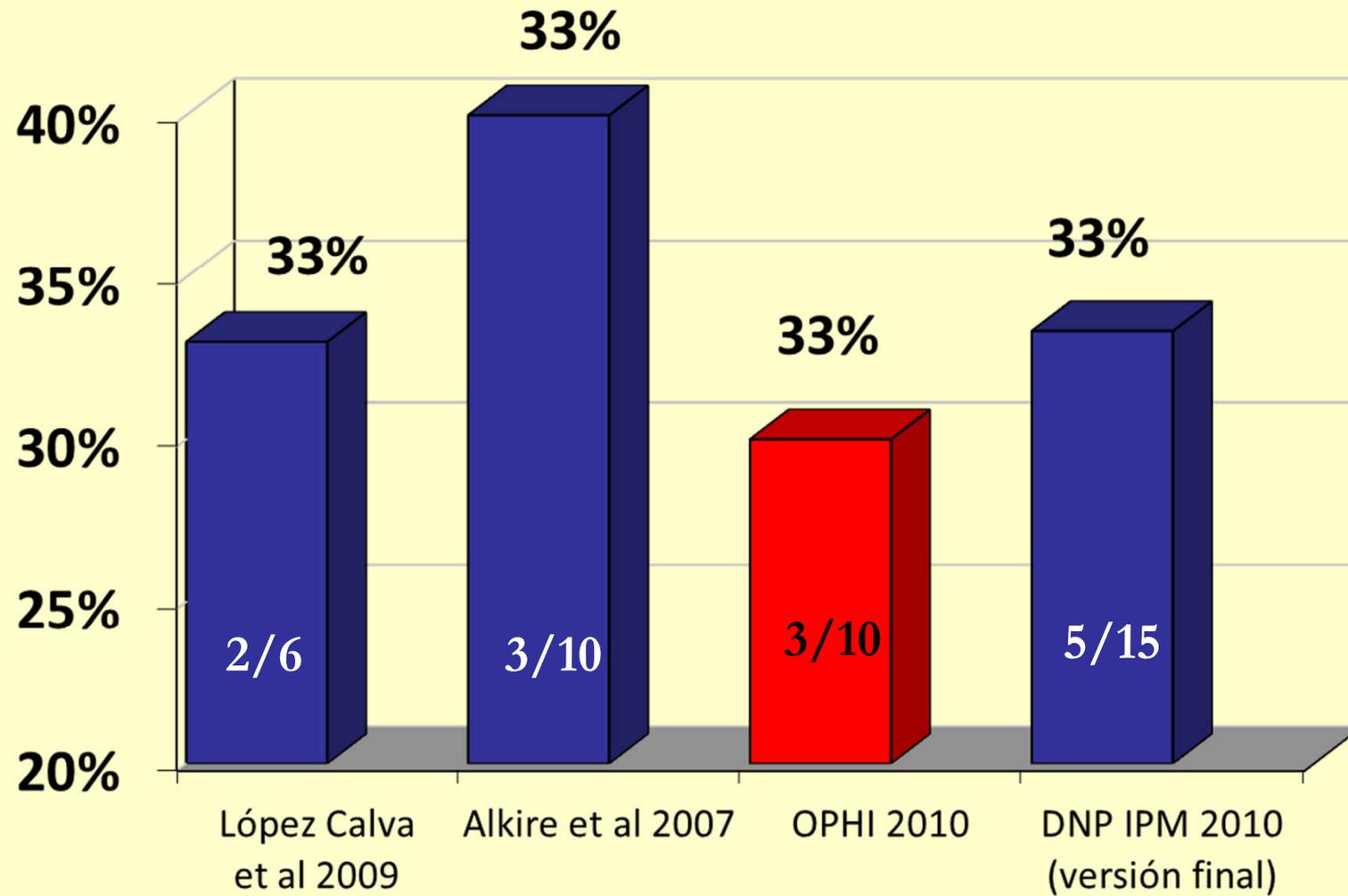
Survey of the Quality of Life, for years 1997, 2003, and 2008.

	1997	2003	2008
Sample size	9.121 hh	22.949 hh	13.600 hh
Representativ eness	National, Rural/Urban, and Regions		

Diseño muestral probabilístico, estratificado, de conglomerados y polietápico

Results – MPI Colombia

Incidence (H) And Adjusted Headcount (M0) for $k = 5/15$

Fuente: DNP, DDS, SPSCV. 2011
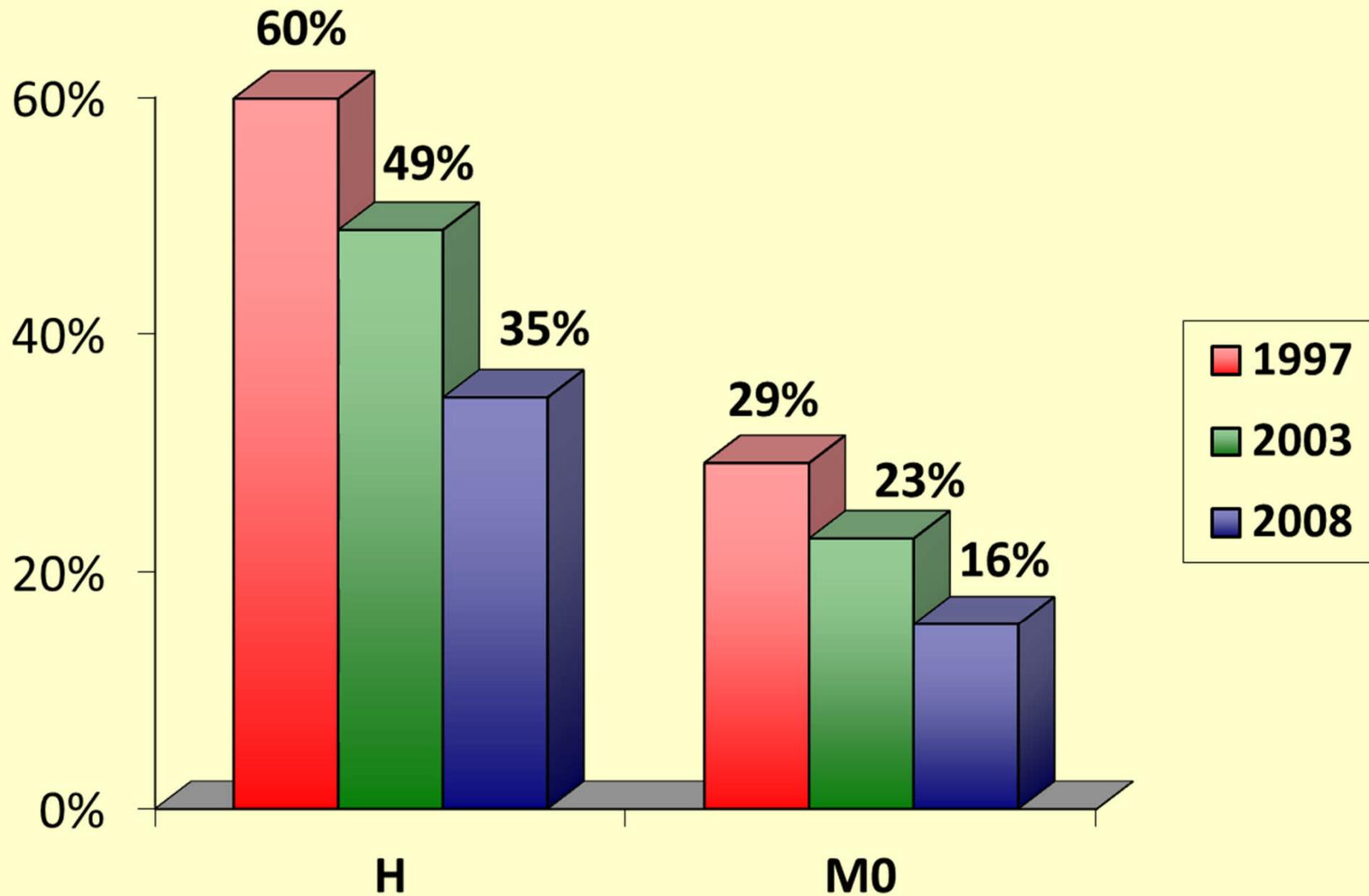
For 3 values of k

Intensity or Average Deprivation Share (A)

K	1997	2003	2008	1997-2008 p.p
4	46%	43%	41%	-5
5	49%	47%	45%	-4
6	53%	51%	50%	-3

Incidence (H) For all values of k (1997-2008)

Fuente: DNP, DDS, SPSCV. 2011
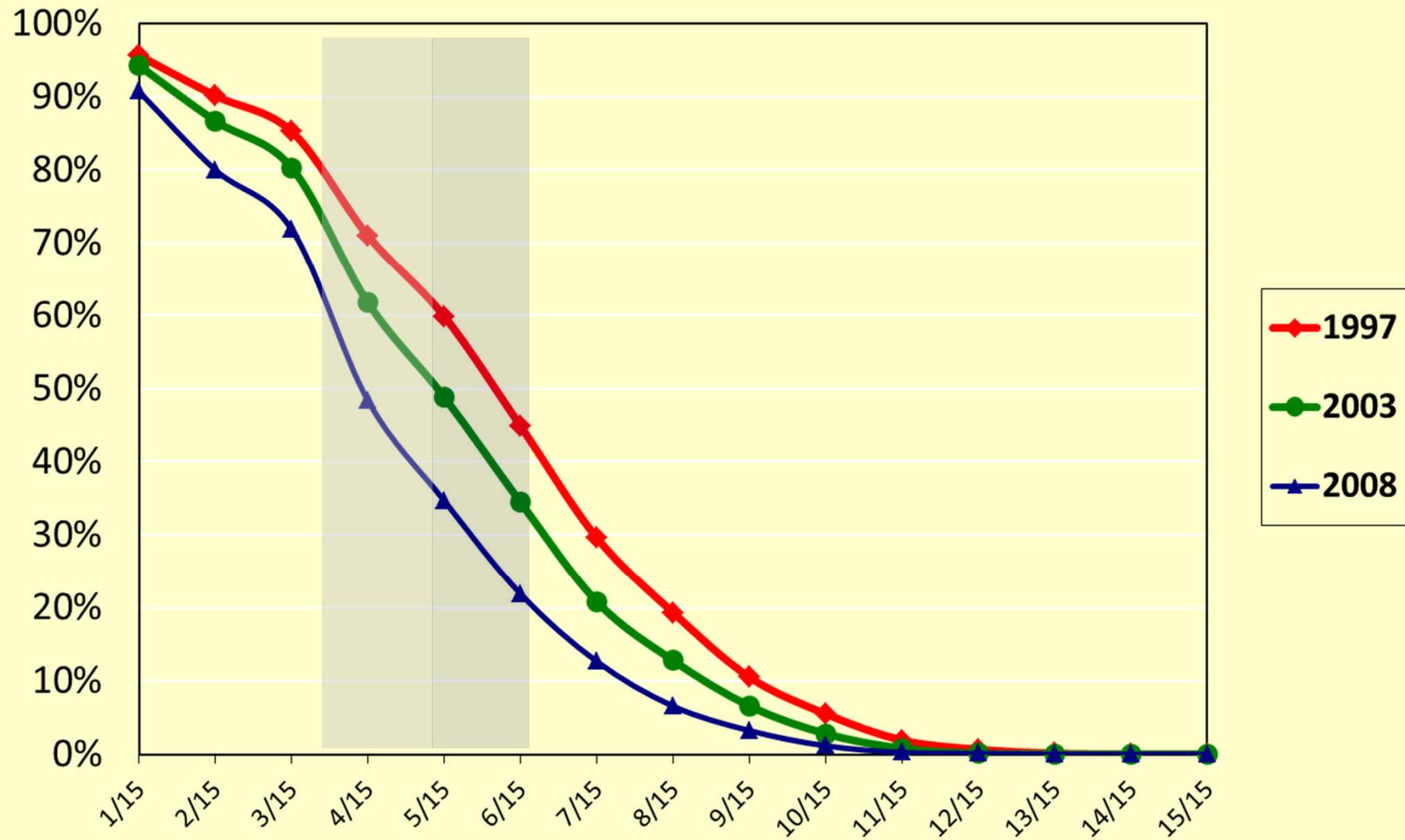
Adjusted Headcount (M0) for all values of *k* (1997-2008)

Fuente: DNP, DDS, SPSCV. 2010
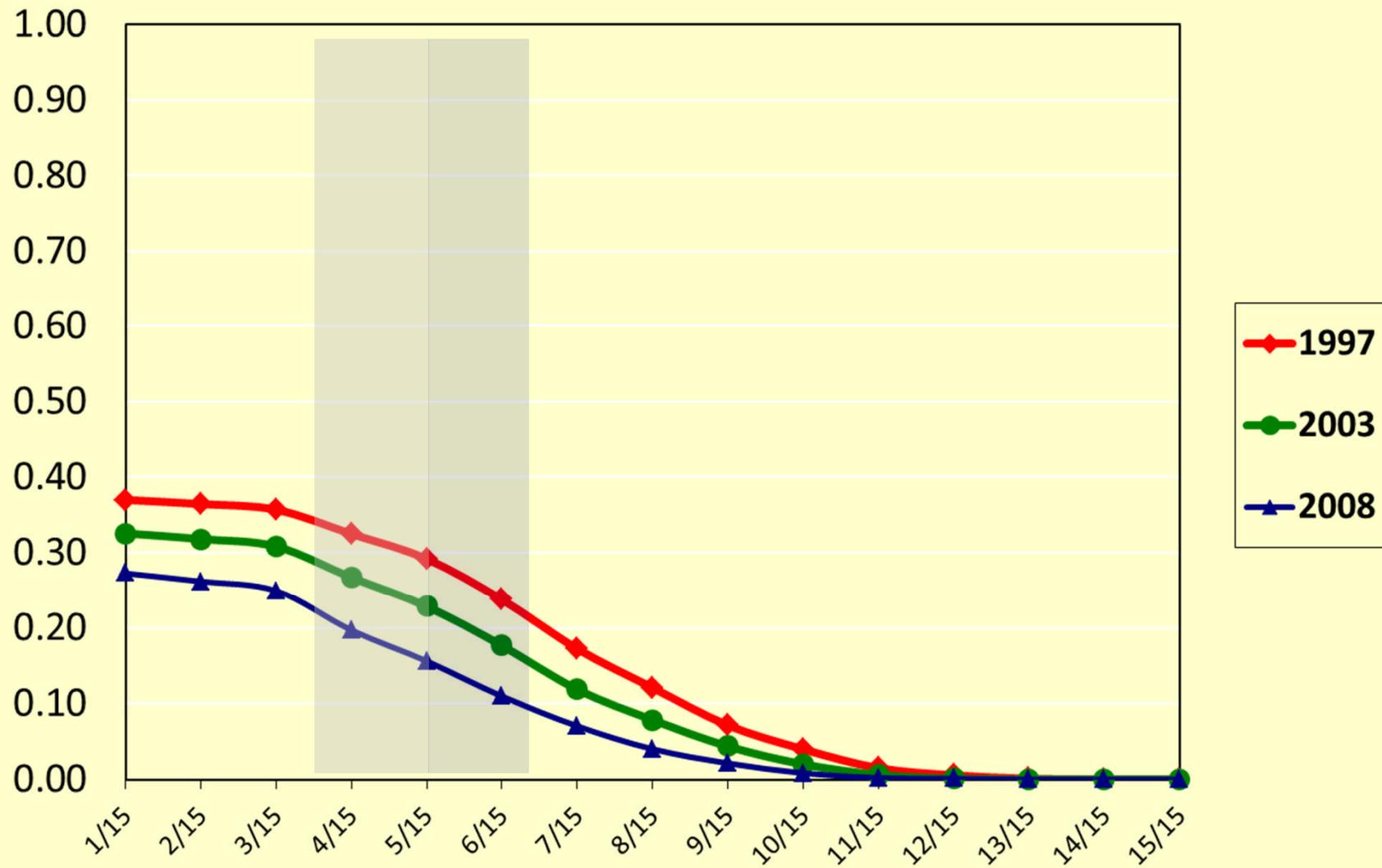
Intensity (A) for all values of *k* (1997-2008)

Fuente: DNP, DDS, SPSCV. 2011
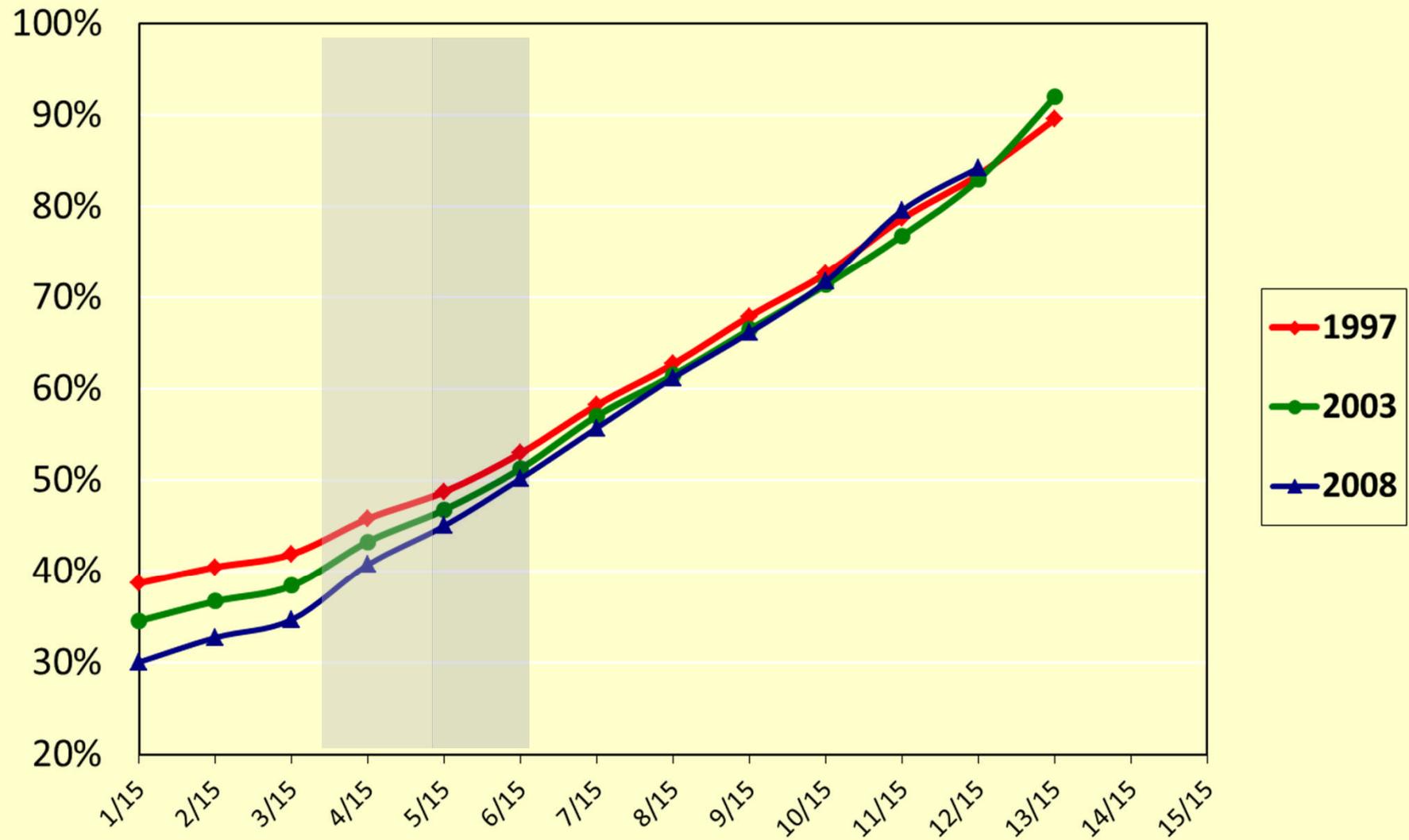
# Percentage of hh with deprivations in each dimension: Poor vs non-poor, 2008

Legend:
- ■ No pobre
- ■ Pobre

Data labels (Pobre values, red): 99%, 96%, 72%, 53%, 43%, 38%, 32%, 30%, 27%, 26%, 24%, 23%, 21%, 10%, 8%

Data labels (No pobre values, blue): 76%, 45%, 31%, 14%, 4%, 8%, 7%, 6%, 10%, 4%, 5%, 2%, 1%, 5%, 1%

Categories:
- Tasa de empleo formal
- Logro educativo
- Rezago escolar
- Aseguramiento en salud
- Analfabetismo
- Hacinamiento
- Eliminación de excretas
- Acce fuente de agua mejorada
- Acce a servicios para la pr infancia
- Trabajo infantil
- Acce serv salud dada necesidad
- Pisos
- Asistencia escolar
- Desempleo de larga duración
- Material paredes ext

Fuente: DNP, DDS, SPSCV. 2010

Incidencia (H) e Incidencia Ajustada (M0) cabecera-resto para K=5/15

Incidencia (H)

**La pobreza disminuye notablemente pero las brechas urbano rurales aumentan**
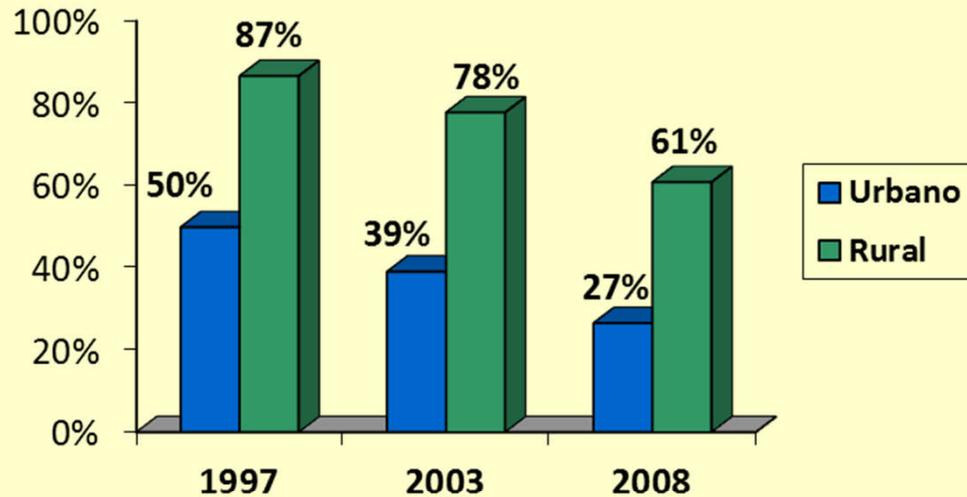
Urbano / Rural

1997: Urbano 50%, Rural 87%
2003: Urbano 39%, Rural 78%
2008: Urbano 27%, Rural 61%

H rural/H urbano

1997: 1.74
2003: 1.99
2008: 2.29

Incidencia Ajustada (M0)

Urbano / Rural

1997: Urbano 23%, Rural 46%
2003: Urbano 17%, Rural 40%
2008: Urbano 12%, Rural 28%

M0 rural/M0 urbano

1997: 2.02
2003: 2.30
2008: 2.46

Fuente: DNP, DDS, SPSCV. 2011
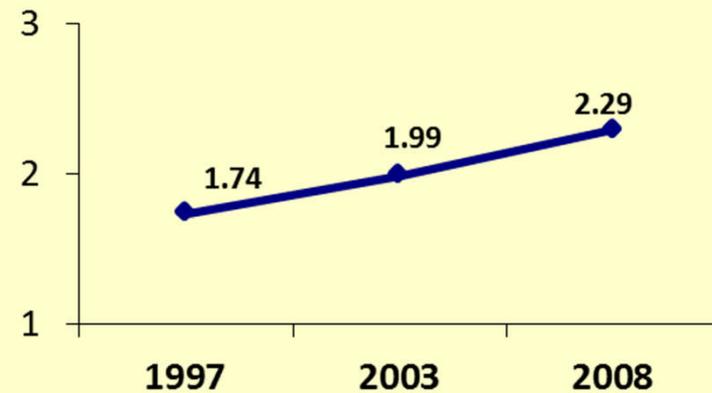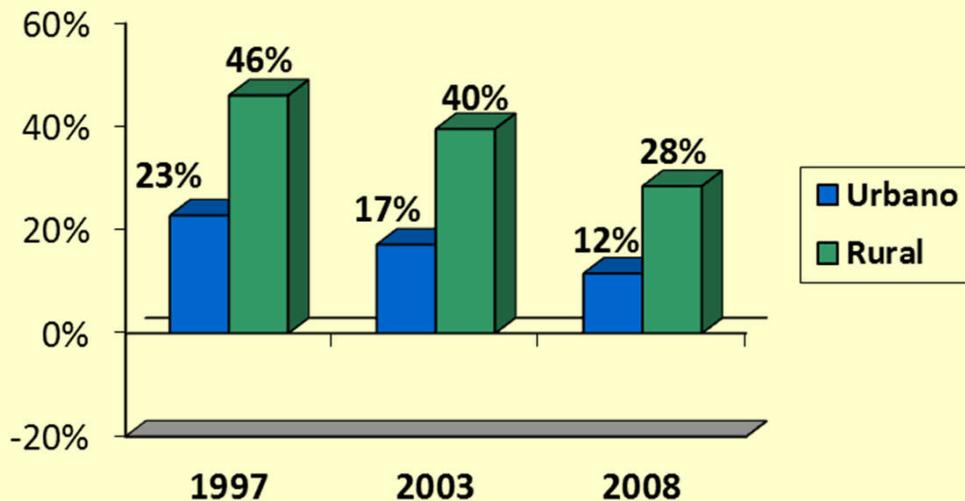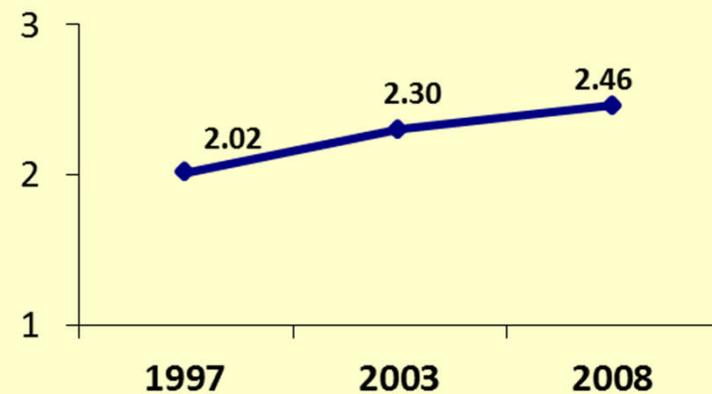
Headcount (H) by region 1997 - 2008
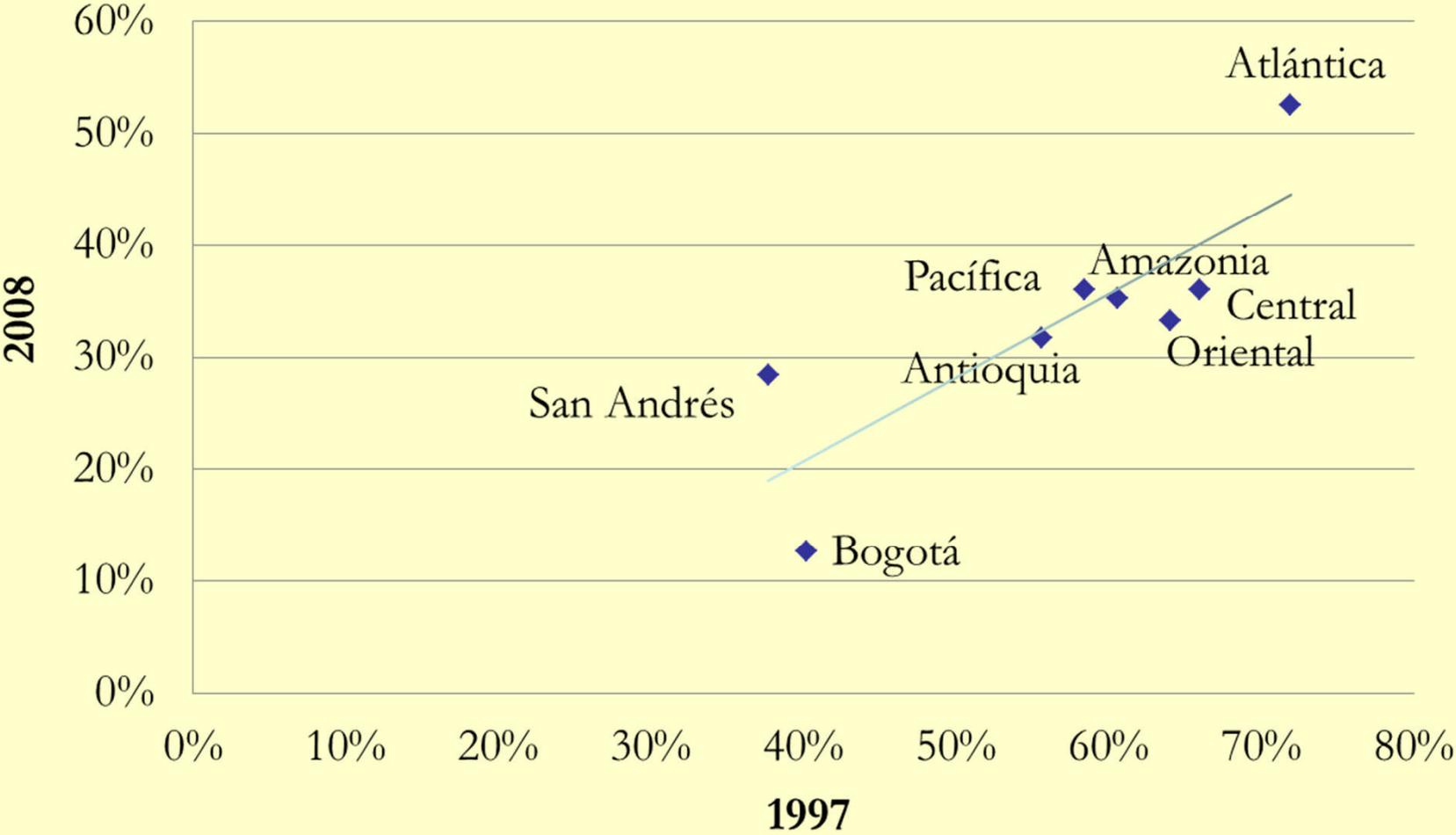
ÍNDICE DE POBREZA MULTIDIMENSIONAL
Meta PND

MPI in Policy – Public Goals

- The Government of Colombia goals with the indicators of the MPI.

- The goals are based on the 'national plan' and the goals that the different ministries or sectors had set for themselves.

- Progress towards the goals will be reviewed at the Cabinet and Ministerial level.

- As a result of these targets, there is also a goal for the overall reduction in MPI Headcount.

The MPI headcount Goal

Indicador	2008	2014	Diferencia
Headcount of Multidimensional Poverty (IPM-Colombia)	34.7%	**22.5%**	-12.2%
Absolute Number of MPI poor people	15,415,986	10,701,598	-4,714,388
Absolute Number of non-MPI-poor people	29,034,274	36,959,770	7,925,496

The goal for MPI in 2014 is to have an MPI Headcount of 22.5%. This implies a reduction in poverty by 12.2% a year from 2008.

IPM – Meta PND

IPM			METAS PLAN NACIONAL DE DESARROLLO 2010-2014			
Dimensión	**Variable - Indicador**		**Indicador PND**		**Línea base 2009**	**Meta 2014**
Condiciones educativas del hogar	Logro educativo	Escolaridad promedio de las personas de 15 años y más del hogar	Años promedio aprobados de educación población de 15 a 24		9,15	9,80
	Analfabetismo	Porcentaje de personas del hogar de 15 años y más que saben leer y escribir	Tasa de analfabetismo (mayores de 15 años)		6,70%	5,70%
Condiciones de la niñez y juventud	Asistencia escolar	Proporción de niños entre 6 y 16 años asistiendo al colegio	Tasa de Cobertura Bruta	Media	79,27%	91,00%
	Rezago escolar	Proporción de niños y jóvenes (7-17 años) dentro del hogar sin rezago escolar (según la norma nacional)	Tasa de Deserción Intra-anual en preescolar, básica y media		5,15%	3.80%
	Acceso a servicios para el cuidado de la primera infancia	Proporción de niños de cero a cinco años con acceso a servicios para el cuidado de la Primera Infancia en el hogar	Dado que los datos de la encuesta no permiten medir exactamente la Atención Integral a Primera Infancia, y en comparación con los datos oficiales, la cobertura según la ECV 2008 es superior, no se calcula meta de reducción para este indicador			
	Trabajo infantil	Proporción de niños en el hogar que no se encuentra en condición de trabajo infantil.	Porcentaje de niños, niñas y adolescentes (entre 5 y 17 años) fuera del mercado laboral		1.768.153	35%

IPM – Meta PND

| IPM			METAS PLAN NACIONAL DE DESARROLLO 2010-2014		
Dimensión	**Variable - Indicador**		**Indicador PND**	**Línea base 2009**	**Meta 2014**
Trabajo	Desempleo de larga duración	Proporción de PEA del hogar que no se encuentra en desempleo de larga duración	Tasa de desempleo. Total nacional (%)	12%	8,9%
	Tasa de empleo formal	Proporción de la PEA del hogar que son ocupados con afiliación a pensiones	Afiliados al Sistema de Pensiones. Porcentaje	32%	42%
Salud	Aseguramiento en salud	Proporción de miembros del hogar, mayores de cinco años, asegurados a Seguridad Social en Salud	Afiliados al Régimen Contributivo	18.116.769[1]	19.593.047
			Cobertura del Régimen Subsidiado	90,27%	100%
	Acceso a servicio de salud dada una necesidad	Proporción de personas del hogar que acceden a servicio institucional de salud ante una necesidad sentida			

IPM – Meta PND

IPM			METAS PLAN NACIONAL DE DESARROLLO 2010-2014		
Dimensión	**Variable - Indicador**		**Indicador PND**	**Línea base 2009**	**Meta 2014**
Acceso a servicios públicos domiciliarios y condiciones de la vivienda[2]	Acceso a fuente de agua mejorada	Privación según acceso del hogar a acueducto o fuente de agua mejorada	Cobertura del servicio de acueducto	91.79% hogares	94.12% hogares
	Eliminación de excretas	Privación según acceso del hogar a servicio de alcantarillado o tipo de servicio sanitario	Cobertura del servicio de alcantarillado	87.48% hogares	90.76% hogares
	Pisos	Carencia del material predominante	Porcentaje de hogares con carencias en los materiales de la vivienda	9.40%	6.70%
	Paredes exteriores	Carencia del material predominante			
	Hacinamiento crítico	Urbano: 3 o más personas por cuarto Rural: Mas de 3 personas por cuarto	Porcentaje de hogares en hacinamiento crítico	12.50%	8.20%

Las metas asociadas a esta dimensión fueron adaptadas con la DDUPA con base en las que aparecen en el PND, para lograr correspondencia con los indicadores del IPM.

Indicadores de pobreza	Indicadores de desigualdad
Pobreza (ingreso autónomo)	Gini (ingreso autónomo)
Pobreza (ingreso después de subsidios)	Gini (con subsidios)
Índice de pobreza multidimensional de Oxford (IPM)	Índice de Oportunidades Humanas (IOH)

Lunchtime!!!