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UNIVERSITY OF OXFORD

Summer School on Multidimensional Poverty Analysis

11–23 August 2014

Oxford Department of International Development
Queen Elizabeth House, University of Oxford

Tabita, Kenya · Rabiya, India · Stéphanie, Madagascar · Agathe, Madagascar · Dalma, Kenya · Ann-Sophia, Kenya · Valérie, Madagascar

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Population Subgroup Decomposition and Dimensional Breakdown

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18 August 2014

Session III

Tabita, Kenya · Rabiya, India · Stéphanie, Madagascar · Agatha, Madagascar · Dalma, Kenya · Ann-Sophia, Kenya · Valérie, Madagascar

Focus of This Lecture

Discuss how overall poverty can be decomposed across different population subgroups, and show maps for visual policy analysis

- Population subgroup decomposability

Discuss how poverty can be decomposed to understand the prevalence of deprivations in different dimensions among the poor

- Dimensional breakdown

Main Source of this Lecture

- Alkire S., J. E. Foster, S. Seth, S. Santos, J. M. Roche, P. Ballon, Multidimensional Poverty Measurement and Analysis, Oxford University Press, forthcoming, (Chs 5.5.2 and 5.5.3).

Population Subgroups

- <u>Subgroups</u> (mutually exclusive and exhaustive)
  - The population size of Matrix X is n
  - Matrix X is divided into two population subgroups
    - Group 1: X^1 with population size n^1
    - Group 2: X^2 with population size n^2
    - Note that $n = n^1 + n^2$

$$
\begin{array}{cc}
 & \begin{array}{ccc} \textbf{Inc} & \textbf{Edu} & \textbf{Hel} \end{array} \\
X = & \left[\begin{array}{ccc} 4 & 4 & 2 \\ 3 & 5 & 4 \\ 8 & 6 & 3 \end{array}\right]
\end{array}
\begin{array}{l} \\ \textbf{Person 1} \\ \textbf{Person 2} \\ \textbf{Person 3} \end{array}
$$

Population Subgroups

Population Subgroup Decomposability: A poverty measure is additive decomposable if

$$P(X) = \frac{n^1}{n} P(X^1) + \frac{n^2}{n} P(X^2)$$

Then, one can calculate the contribution of each group to overall poverty:

$$C(X^1) = \frac{n^1}{n} \frac{P(X^1)}{P(X)}$$

Population Subgroups

Reconsider the following example

	Income	Years of Education	Sanitation (Improved?)	Access to Electricity	
$X =$	700	14	Yes	Yes	**Person 1**
	300	13	Yes	No	**Person 2**
	400	10	No	No	**Person 3**
	800	11	Yes	Yes	**Person 4**
$z =$	**500**	**12**	**Yes**	**Yes**	

Population Subgroups

The deprivation matrix

$$g^0 = \begin{array}{cccc|l} \text{Income} & \text{Years of Education} & \text{Sanitation (Improved?)} & \text{Access to Electricity} & \\ \left|\begin{matrix} 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 \\ 1 & 1 & 1 & 1 \\ 0 & 1 & 0 & 0 \end{matrix}\right| & & & & \begin{matrix} \textbf{Person 1} \\ \textbf{Person 2} \\ \textbf{Person 3} \\ \textbf{Person 4} \end{matrix} \end{array}$$

$$z = \left| \begin{matrix} \textbf{500} & \textbf{12} & \textbf{Yes} & \textbf{Yes} \end{matrix} \right|$$

Population Subgroups

The weight vector is (1, 2, 0.5, 0.5); replace deprivation status with weight (*weighted deprivation matrix*)

$$\bar{g}^0 = \begin{array}{c} \text{Income} & \text{Years of Education} & \text{Sanitation (Improved?)} & \text{Access to Electricity} & \\ \left| \begin{array}{cccc} 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0.5 \\ 1 & 2 & 0.5 & 0.5 \\ 0 & 2 & 0 & 0 \end{array} \right| & \begin{array}{l} \text{Person 1} \\ \text{Person 2} \\ \text{Person 3} \\ \text{Person 4} \end{array} \end{array}$$

Population Subgroups

Who is poor when $k = 1.5$?

$$\bar{g}^0 = \begin{array}{ccccc} \text{Income} & \text{Years of Education} & \text{Sanitation (Improved?)} & \text{Access to Electricity} & \\ \left|\begin{matrix} 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0.5 \\ 1 & 2 & 0.5 & 0.5 \\ 0 & 2 & 0 & 0 \end{matrix}\right| & & & & \begin{matrix} \text{Person 1} \\ \text{Person 2} \\ \text{Person 3} \\ \text{Person 4} \end{matrix} \end{array}$$

	Income	Years of Education	Sanitation (Improved?)	Access to Electricity
Person 1	0	0	0	0
Person 2	1	0	0	0.5
Person 3	1	2	0.5	0.5
Person 4	0	2	0	0

Population Subgroups

Who is poor when $k = 1.5$?

$$\bar{g}^0(k) = \begin{array}{c} \\ \\ \\ \\ \end{array}$$

	Income	Years of Education	Sanitation (Improved?)	Access to Electricity	
$\bar{g}^0(k) =$	0	0	0	0	**Person 1**
	1	0	0	**0.5**	**Person 2**
	1	**2**	**0.5**	**0.5**	**Person 3**
	0	**2**	0	0	**Person 4**

Population Subgroups

What is the M_0 of the matrix?

$$\bar{g}^0(k) = \begin{array}{c} \\ \\ \\ \\ \\ \end{array}$$

	Income	Years of Education	Sanitation (Improved?)	Access to Electricity	
$\bar{g}^0(k) =$	0	0	0	0	**Person 1**
	1	0	0	**0.5**	**Person 2**
	1	**2**	**0.5**	**0.5**	**Person 3**
	0	**2**	0	0	**Person 4**

Population Subgroups

What is the M_0 of the matrix? It is 15/32

$$\bar{g}^0(k) = \begin{array}{c} \\ \\ \\ \\ \\ \end{array}\begin{array}{cccc|l} \textbf{Income} & \textbf{Years of Education} & \textbf{Sanitation (Improved?)} & \textbf{Access to Electricity} & \\ \hline 0 & 0 & 0 & 0 & \textbf{Person 1} \\ \mathbf{1} & 0 & 0 & \mathbf{0.5} & \textbf{Person 2} \\ \mathbf{1} & \mathbf{2} & \mathbf{0.5} & \mathbf{0.5} & \textbf{Person 3} \\ 0 & \mathbf{2} & 0 & 0 & \textbf{Person 4} \end{array}$$

Population Subgroups

Let us divide the population into two subgroups

$\bar{g}^0(k) =$

Income	Years of Education	Sanitation (Improved?)	Access to Electricity	
0	0	0	0	**Person 1**
1	0	0	**0.5**	**Person 2**
1	**2**	**0.5**	**0.5**	**Person 3**
0	**2**	0	0	**Person 4**

Population Subgroups

Let us divide the population into two subgroups

$\bar{g}^0(k) =$

Income	Years of Education	Sanitation (Improved?)	Access to Electricity	
0	0	0	0	**Person 1**
1	0	0	**0.5**	**Person 2**
1	**2**	**0.5**	**0.5**	**Person 3**
0	**2**	0	0	**Person 4**

– M_0 for the pink group: 1.5/8 = 3/16

– M_0 for the green group: 6/8 = 3/4

– Overall M_0 = ?

Population Subgroups

Let us divide the population into two subgroups

$\bar{g}^0(k) =$

Income	Years of Education	Sanitation (Improved?)	Access to Electricity	
0	0	0	0	**Person 1**
1	0	0	**0.5**	**Person 2**
1	**2**	**0.5**	**0.5**	**Person 3**
0	**2**	0	0	**Person 4**

– M_0 for the pink group: 1.5/8 = 3/16

– M_0 for the green group: 6/8 = 3/4

– Overall $M_0 = (1/2)\times(3/16) + (1/2)\times(3/4) = 15/32$

Contribution of Subgroup

Let us divide the population into two subgroups

$\bar{g}^0(k) =$

Income	Years of Education	Sanitation (Improved?)	Access to Electricity	
0	0	0	0	**Person 1**
1	0	0	**0.5**	**Person 2**
1	**2**	**0.5**	**0.5**	**Person 3**
0	**2**	0	0	**Person 4**

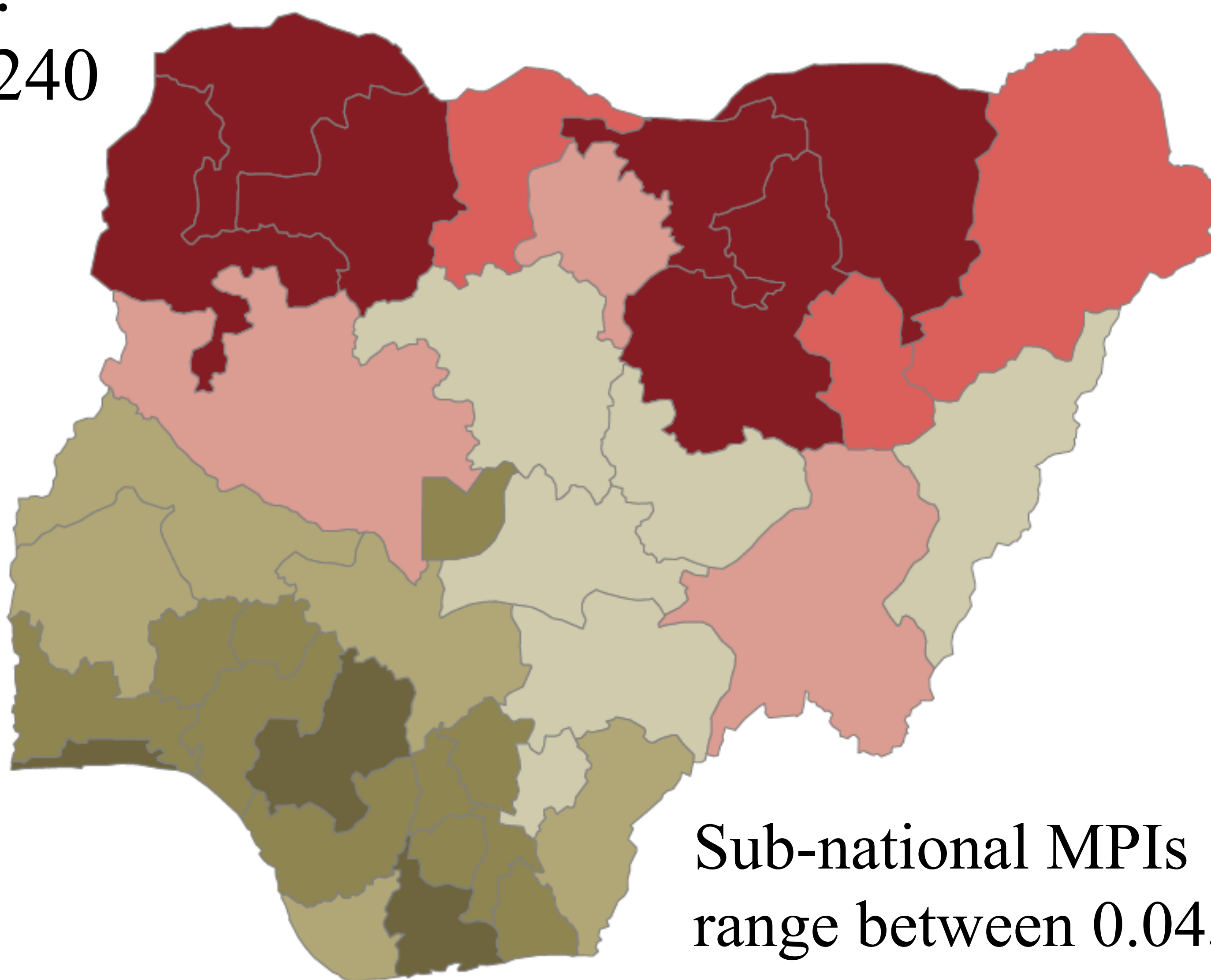
- The contribution of group 1 to M_0 is (1/2)×(3/16)/(15/32) = 1/5
- The contribution of group 2 to M_0 is (1/2)×(3/4)/(15/32) = 4/5
- The total contribution must sum up to 1

How Does it Help to Analyze Results?

Nigeria:
MPI=0.240

Nigeria:

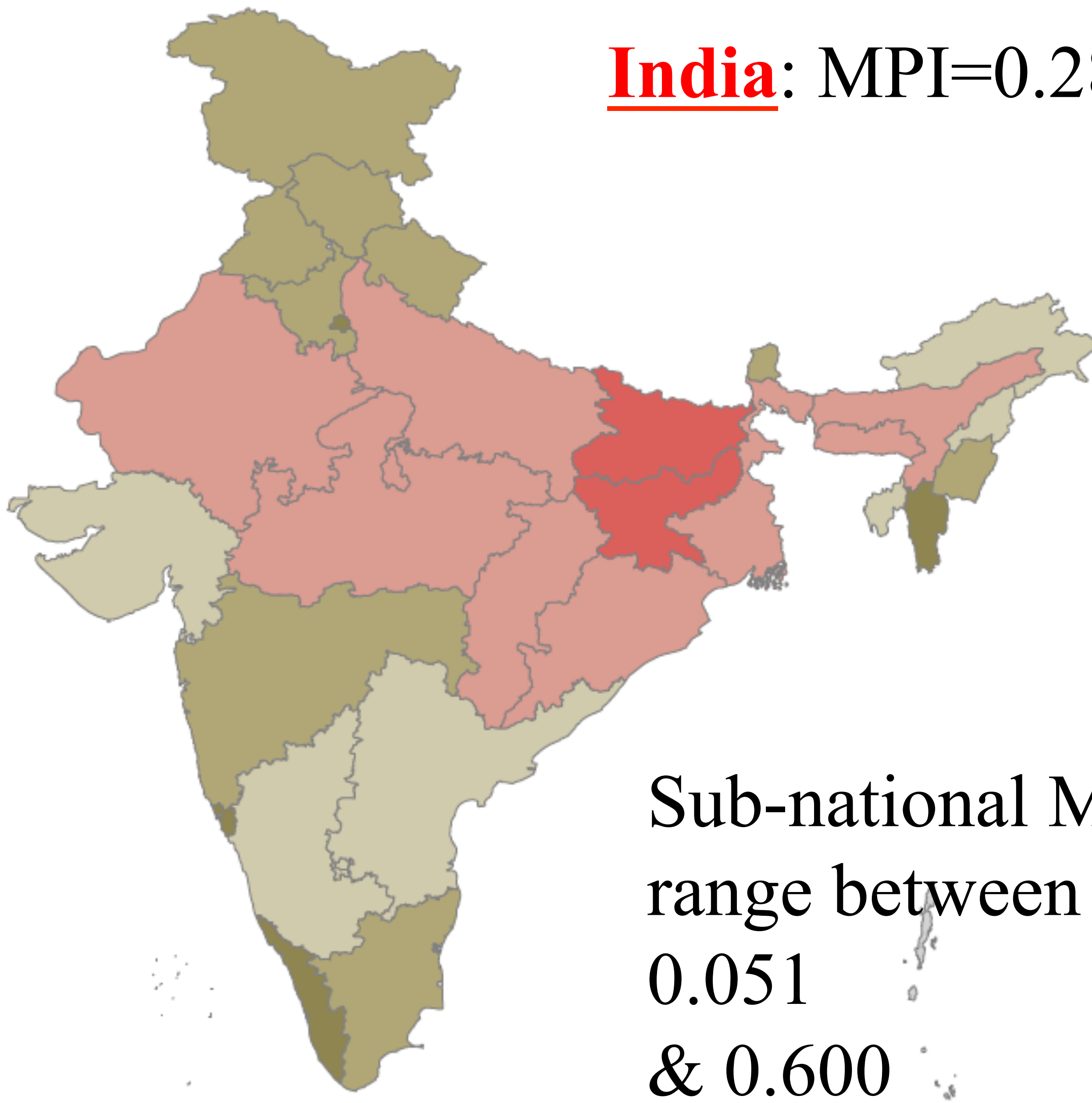
MPI=0.240



Sub-national MPIs range between 0.045 & 0.600

India: MPI=0.283

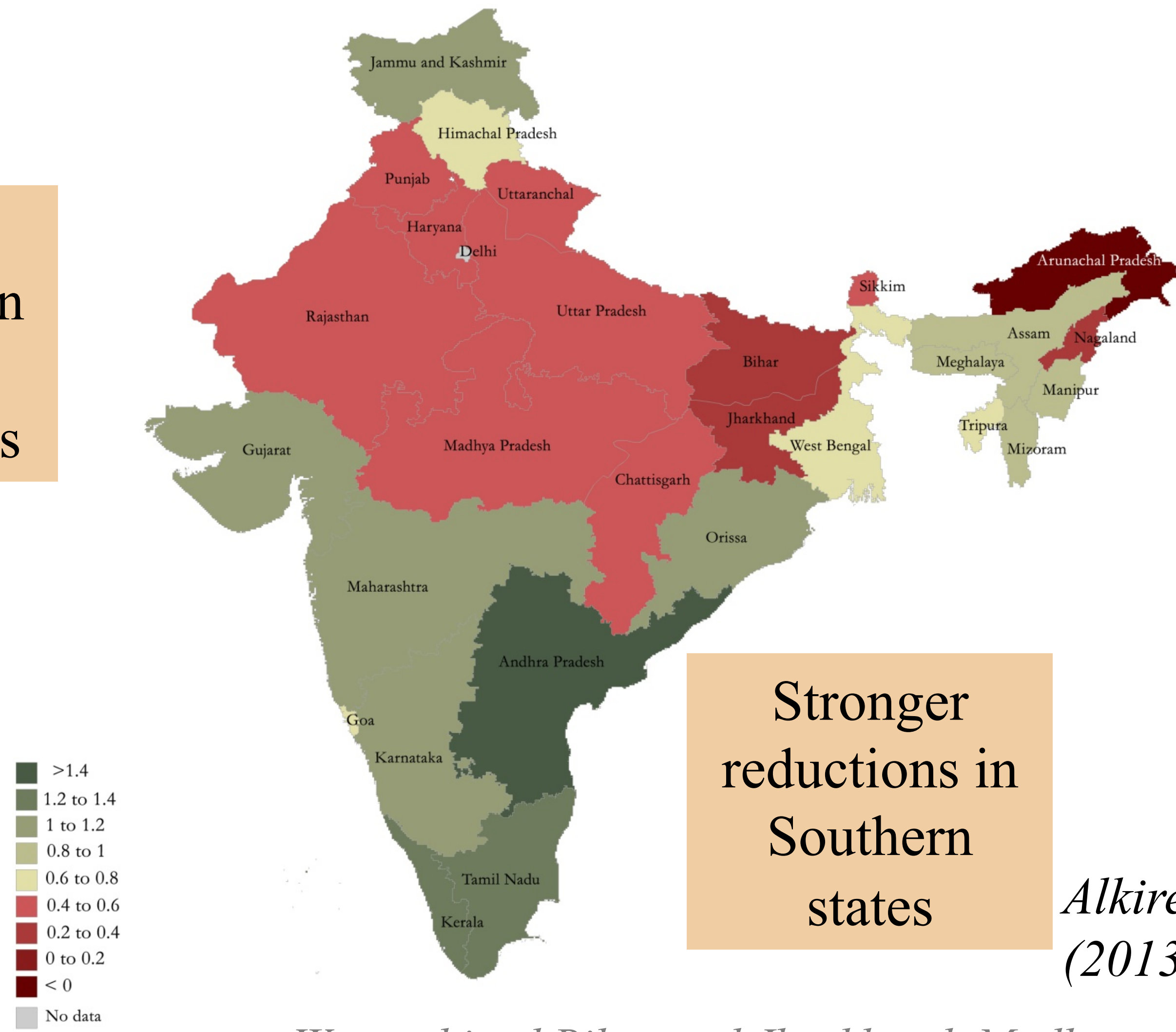
India: MPI=0.283



Sub-national MPIs range between 0.051 & 0.600

Reduction in MPI across States 99-06

Slower reductions in initially poorer states

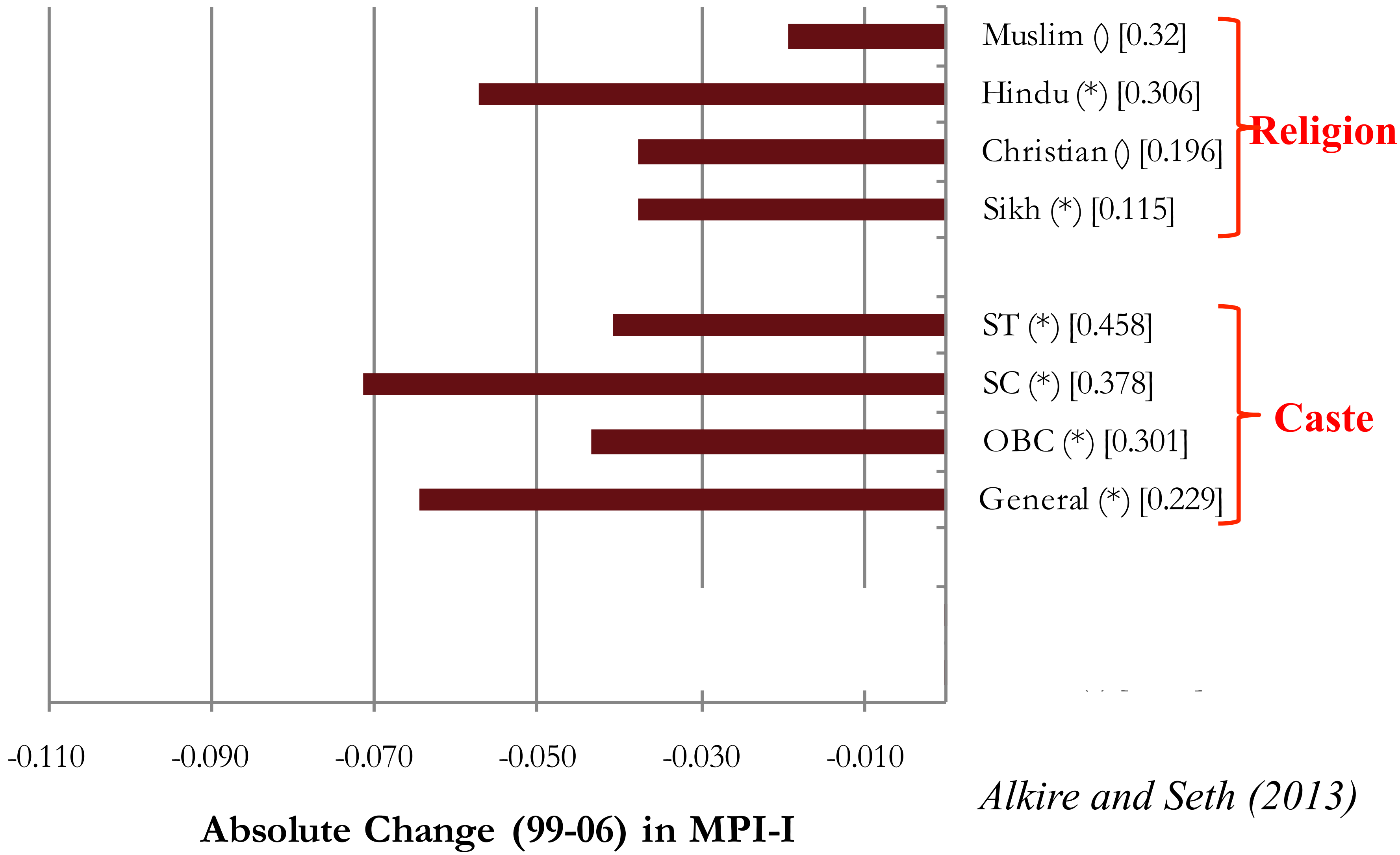


Stronger reductions in Southern states

Alkire and Seth (2013)

We combined Bihar and Jharkhand, Madhya Pradesh and Chhattishgarh, and Uttar Pradesh and Uttarakhand

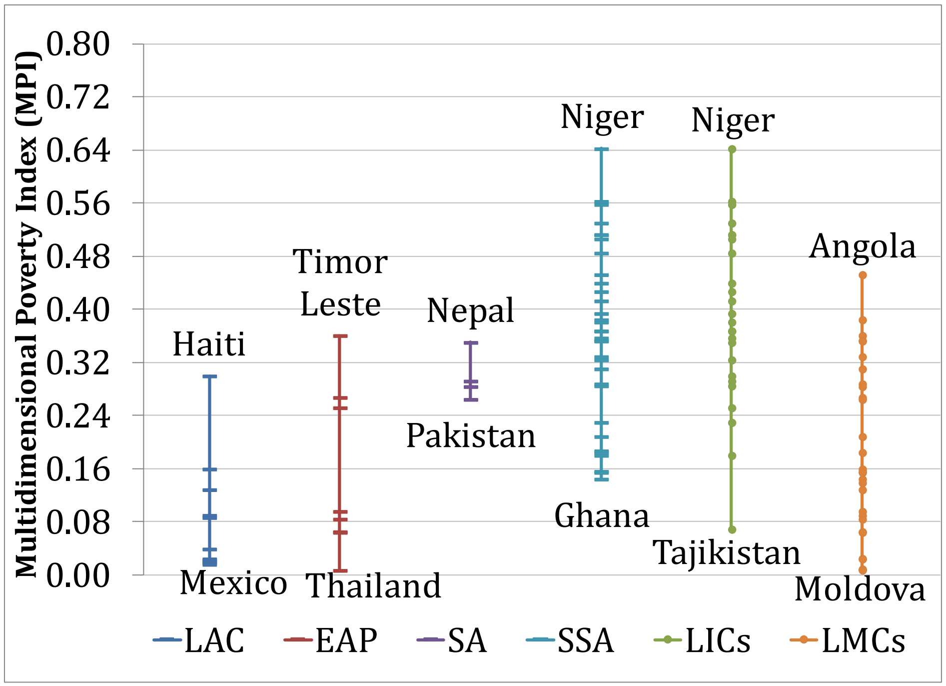
Reduction in MPI: Castes and Religions



Alkire and Seth (2013)

National & Sub-national Disparity in MPI

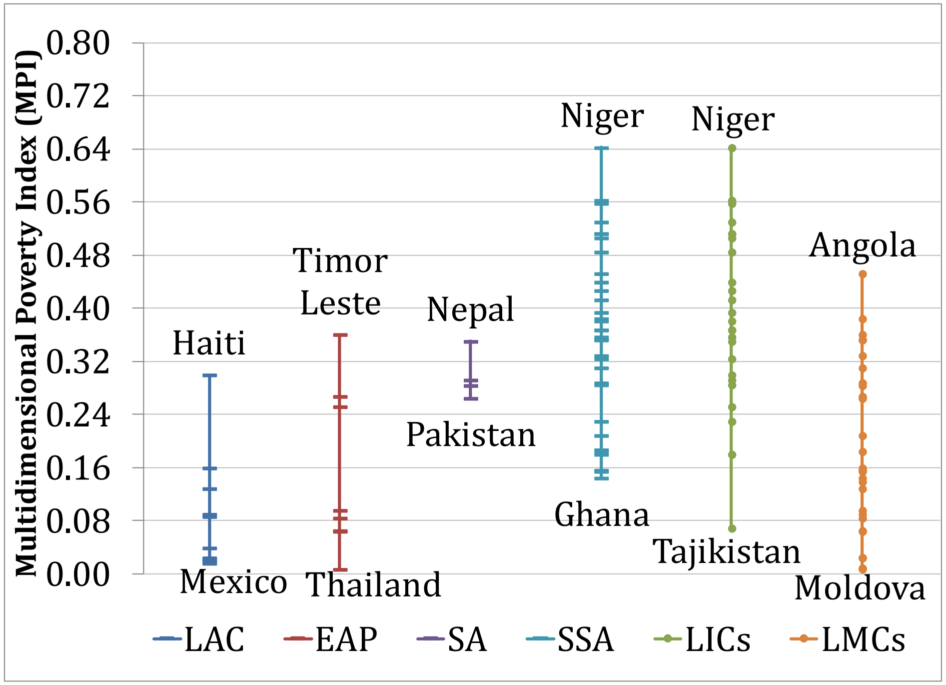
National Disparity



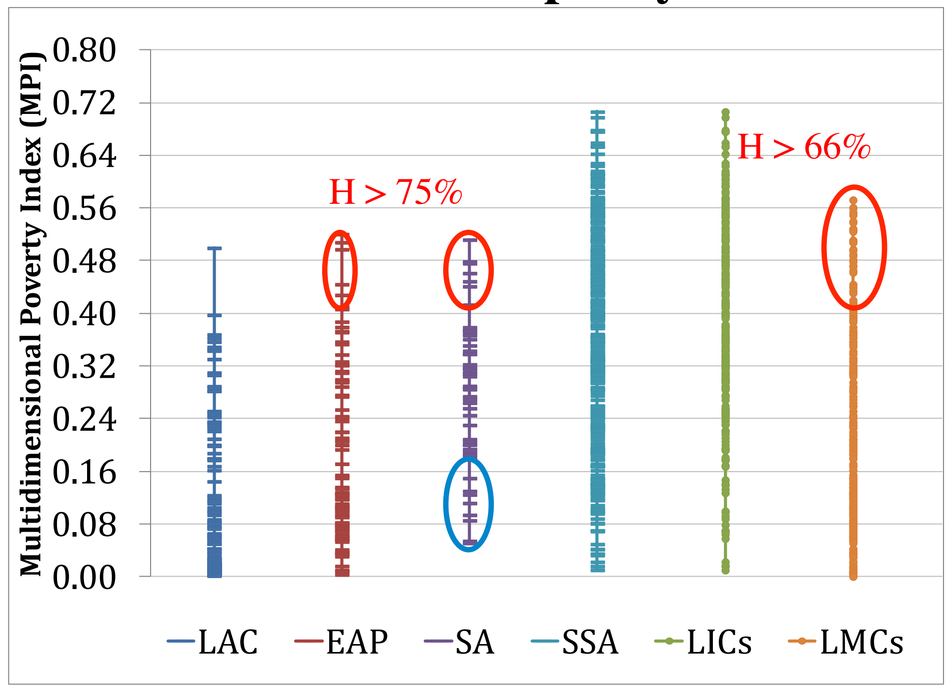
2011 MPI Data

National & Sub-national Disparity in MPI

National Disparity

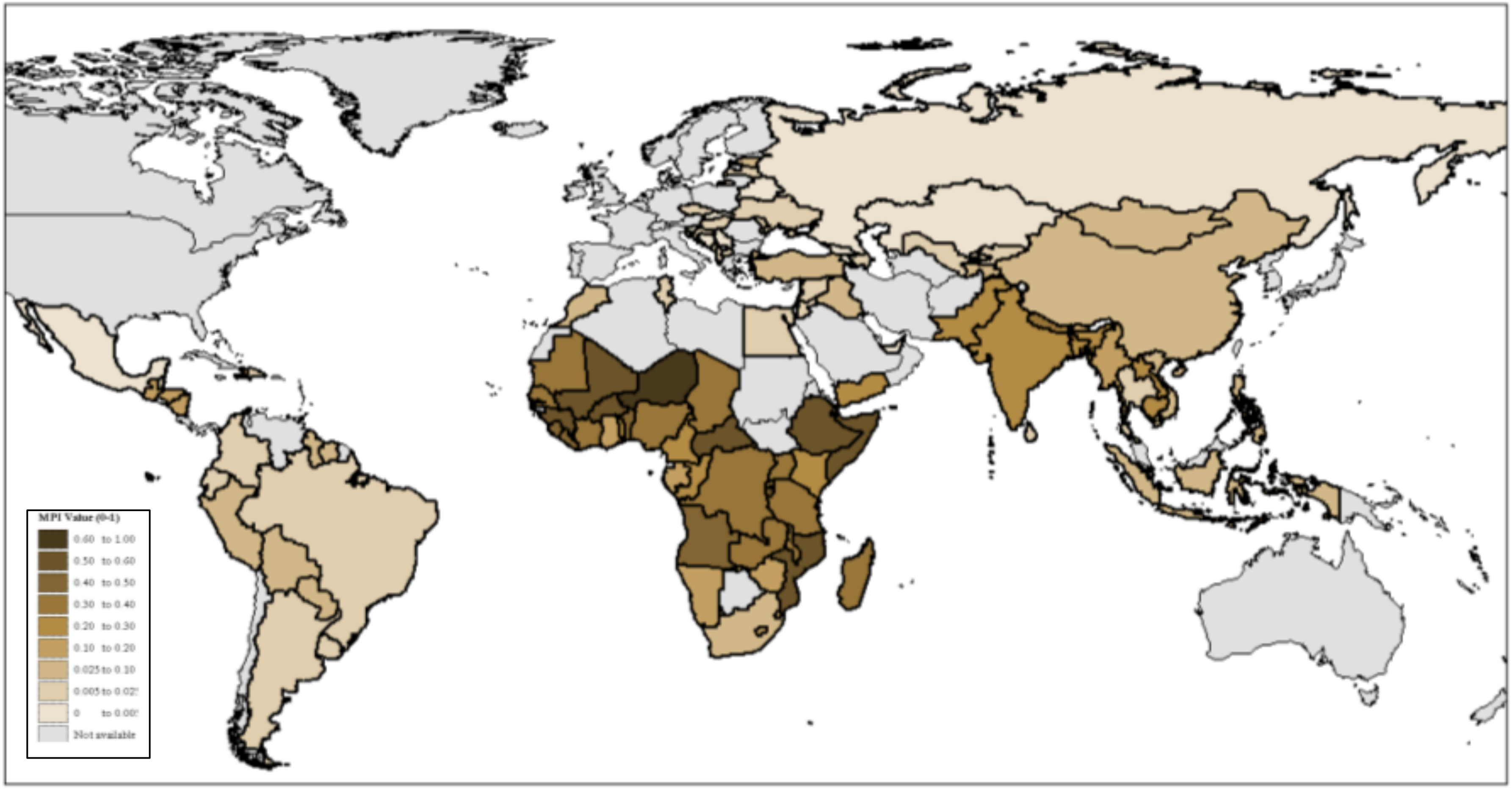


Sub-national Disparity

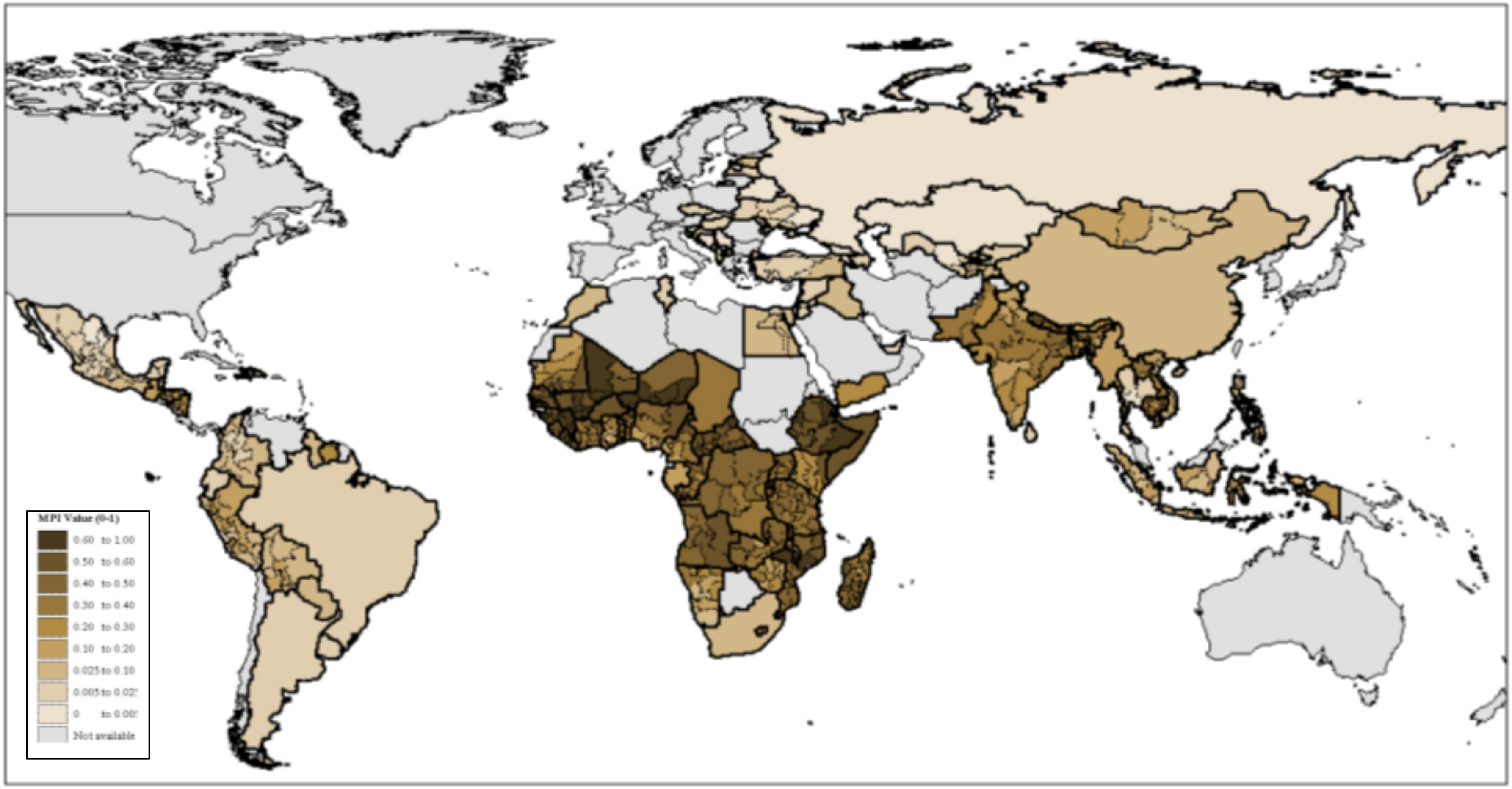


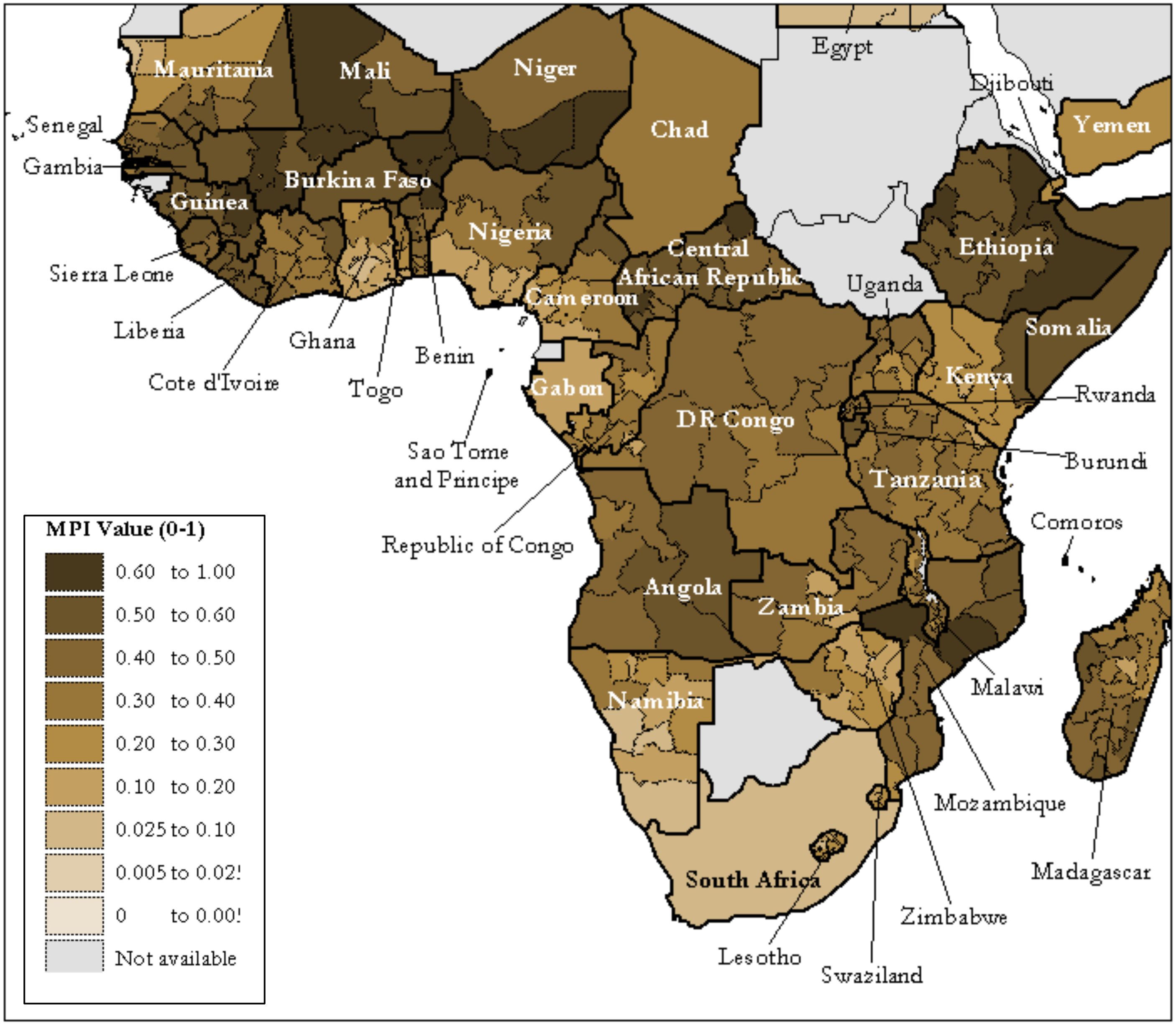
2011 MPI Data

National MPI (Use 2011 results)



Sub-national MPI (Use 2011 results)





Mauritania
Mali
Niger
Egypt
Chad
Djibouti
Yemen
Senegal
Gambia
Burkina Faso
Guinea
Nigeria
Ethiopia
Central African Republic
Sierra Leone
Uganda
Cameroon
Liberia
Ghana
Somalia
Benin
Cote d'Ivoire
Togo
Gabon
Kenya
Rwanda
DR Congo
Sao Tome and Principe
Burundi
Tanzania
Comoros
Republic of Congo
Angola
Zambia
Malawi
Namibia
Mozambique
Madagascar
South Africa
Zimbabwe
Lesotho
Swaziland
MPI Value (0-1)
0.60 to 1.00
0.50 to 0.60
0.40 to 0.50
0.30 to 0.40
0.20 to 0.30
0.10 to 0.20
0.025 to 0.10
0.005 to 0.02!
0 to 0.00!
Not available

Dimensional Breakdown

Q1: What is the difference between the raw headcount ratio and the censored headcount ratio?

Q2: Can the raw headcount ratio of a dimension be lower than its censored headcount ratio?

Q3: Can the censored headcount ratio of a dimension be higher than the multidimensional headcount ratio?

Q4: What is the relationship between the censored headcount ratios and M_0?

Q5: What kind of policy analysis can be conducted using the censored headcount ratio?

Example

An achievement matrix with 4 dimensions

$$
\begin{array}{cc}
 & \begin{array}{cccc} \textbf{Income} & \textbf{Years of Education} & \textbf{Sanitation (Improved?)} & \textbf{Access to Electricity} \end{array} \\
X = & \left|\begin{array}{cccc} 700 & 14 & 1 & 1 \\ 300 & 13 & 1 & 0 \\ 400 & 10 & 0 & 0 \\ 800 & 11 & 1 & 1 \end{array}\right|
\end{array}
\begin{array}{l} \textbf{Person 1} \\ \textbf{Person 2} \\ \textbf{Person 3} \\ \textbf{Person 4} \end{array}
$$

$$
z = \left|\begin{array}{cccc} \mathbf{500} & \mathbf{12} & \mathbf{1} & \mathbf{1} \end{array}\right|
$$

z is the vector of poverty lines

Example

Replace entries: 1 if deprived, 0 if not deprived

$$g^0 = \begin{array}{cccc|l} \textbf{Income} & \textbf{Years of Education} & \textbf{Sanitation (Improved?)} & \textbf{Access to Electricity} & \\ 0 & 0 & 0 & 0 & \textbf{Person 1} \\ 1 & 0 & 0 & 1 & \textbf{Person 2} \\ 1 & 1 & 1 & 1 & \textbf{Person 3} \\ 0 & 1 & 0 & 0 & \textbf{Person 4} \end{array}$$

$$z = \left| \begin{array}{cccc} \textbf{500} & \textbf{12} & \textbf{Yes} & \textbf{Yes} \end{array} \right|$$

<u>These entries fall below cutoffs</u>

Example

What is the *uncensored Headcount Ratio* of each of the four dimensions?

	Income	Years of Education	Sanitation (Improved?)	Access to Electricity	
$g^0 =$	0	0	0	0	**Person 1**
	1	0	0	1	**Person 2**
	1	1	1	1	**Person 3**
	0	1	0	0	**Person 4**

Income: 2/4 Education: 2/4 Sanitation: 1/4 Electricity: 2/4

Example

Suppose the weight vector is (1, 2, 0.5, 0.5)

$$
\begin{array}{cccccc}
 & \text{Income} & \text{Years of Education} & \text{Sanitation (Improved?)} & \text{Access to Electricity} & \\
g^0 = & \left|\begin{matrix} 0 \\ 1 \\ 1 \\ 0 \end{matrix}\right. & \begin{matrix} 0 \\ 0 \\ 1 \\ 1 \end{matrix} & \begin{matrix} 0 \\ 0 \\ 1 \\ 0 \end{matrix} & \left.\begin{matrix} 0 \\ 1 \\ 1 \\ 0 \end{matrix}\right| & \begin{matrix} \textbf{Person 1} \\ \textbf{Person 2} \\ \textbf{Person 3} \\ \textbf{Person 4} \end{matrix}
\end{array}
$$

Example

Suppose the weight vector is (1, 2, 0.5, 0.5)

– Replace the deprivation status with the weights

$$g^0 = \begin{array}{cccc|l} \textbf{Income} & \textbf{Years of Education} & \textbf{Sanitation (Improved?)} & \textbf{Access to Electricity} & \\ \hline 0 & 0 & 0 & 0 & \textbf{Person 1} \\ 1 & 0 & 0 & 1 & \textbf{Person 2} \\ 1 & 1 & 1 & 1 & \textbf{Person 3} \\ 0 & 1 & 0 & 0 & \textbf{Person 4} \end{array}$$

Example

Suppose the weight vector is (1, 2, 0.5, 0.5)

- Replace the deprivation status with the weights

$$
\bar{g}^0 = \begin{array}{c} \\ \\ \\ \\ \end{array}
\begin{array}{cccc|l}
\textbf{Income} & \textbf{Years of Education} & \textbf{Sanitation (Improved?)} & \textbf{Access to Electricity} & \\
\end{array}
$$

$$
\bar{g}^0 = \left|\begin{array}{cccc} 0 & 0 & 0 & 0 \\ \mathbf{1} & 0 & 0 & \mathbf{0.5} \\ \mathbf{1} & \mathbf{2} & \mathbf{0.5} & \mathbf{0.5} \\ 0 & \mathbf{2} & 0 & 0 \end{array}\right| \begin{array}{l} \textbf{Person 1} \\ \textbf{Person 2} \\ \textbf{Person 3} \\ \textbf{Person 4} \end{array}
$$

Example

Suppose the weight vector is (1, 2, 0.5, 0.5). Each weight is w_j

– Replace the deprivation status with the weights

$$\bar{g}^0 = \begin{array}{cccc|l} \textbf{Income} & \textbf{Years of Education} & \textbf{Sanitation (Improved?)} & \textbf{Access to Electricity} & \\ 0 & 0 & 0 & 0 & \textbf{Person 1} \\ \mathbf{1} & 0 & 0 & \mathbf{0.5} & \textbf{Person 2} \\ \mathbf{1} & \mathbf{2} & \mathbf{0.5} & \mathbf{0.5} & \textbf{Person 3} \\ 0 & \mathbf{2} & 0 & 0 & \textbf{Person 4} \end{array}$$

Example

Suppose the weight vector is (1, 2, 0.5, 0.5)

– Construct the deprivation score vector

$$\bar{g}^0 = \begin{array}{ccccc} \text{Income} & \text{Years of Education} & \text{Sanitation (Improved?)} & \text{Access to Electricity} & \\ \left|\begin{matrix} 0 \\ 1 \\ 1 \\ 0 \end{matrix}\right. & \begin{matrix} 0 \\ 0 \\ 2 \\ 2 \end{matrix} & \begin{matrix} 0 \\ 0 \\ 0.5 \\ 0 \end{matrix} & \left.\begin{matrix} 0 \\ 0.5 \\ 0.5 \\ 0 \end{matrix}\right| & \begin{matrix} \textbf{Person 1} \\ \textbf{Person 2} \\ \textbf{Person 3} \\ \textbf{Person 4} \end{matrix} \end{array}$$

Example

Suppose the weight vector is (1, 2, 0.5, 0.5).

– Construct the deprivation score vector

$$\bar{g}^0 = \begin{array}{cccc|c} \textbf{Income} & \textbf{Years of Education} & \textbf{Sanitation (Improved?)} & \textbf{Access to Electricity} & \textbf{c} \\ \hline 0 & 0 & 0 & 0 & \mathbf{0} \\ \mathbf{1} & 0 & 0 & \mathbf{0.5} & \mathbf{1.5} \\ \mathbf{1} & \mathbf{2} & \mathbf{0.5} & \mathbf{0.5} & \mathbf{4} \\ 0 & \mathbf{2} & 0 & 0 & \mathbf{2} \end{array}$$

Example

If the poverty cutoff is $k = 2$, who is poor?

– Construct the deprivation score vector

$$\bar{g}^0 = \begin{array}{cccc|c} \textbf{Income} & \textbf{Years of Education} & \textbf{Sanitation (Improved?)} & \textbf{Access to Electricity} & \textbf{c} \\ \left| \begin{array}{cccc} 0 & 0 & 0 & 0 \\ \mathbf{1} & 0 & 0 & \mathbf{0.5} \\ \mathbf{1} & \mathbf{2} & \mathbf{0.5} & \mathbf{0.5} \\ 0 & \mathbf{2} & 0 & 0 \end{array} \right| & & & & \begin{array}{c} \mathbf{0} \\ \mathbf{1.5} \\ \boxed{\begin{array}{c} \mathbf{4} \\ \mathbf{2} \end{array}} \end{array} \end{array}$$

Example

Let us now censor the deprivation matrix and vector

$$
\begin{array}{ccccc|c}
 & \text{Income} & \text{Years of Education} & \text{Sanitation (Improved?)} & \text{Access to Electricity} & \mathbf{c} \\
\hline
 & 0 & 0 & 0 & 0 & \mathbf{0} \\
\bar{g}^0 = & \mathbf{1} & 0 & 0 & \mathbf{0.5} & \mathbf{1.5} \\
 & \mathbf{1} & \mathbf{2} & \mathbf{0.5} & \mathbf{0.5} & \mathbf{4} \\
 & 0 & \mathbf{2} & 0 & 0 & \mathbf{2}
\end{array}
$$

Example

Let us now censor the deprivation matrix and vector

$$
\bar{g}^0(k) = \begin{array}{c} \text{Income} & \text{Years of Education} & \text{Sanitation (Improved?)} & \text{Access to Electricity} & & c \\ \left| \begin{array}{cccc} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 1 & 2 & 0.5 & 0.5 \\ 0 & 2 & 0 & 0 \end{array} \right| & & & & & \begin{array}{c} 0 \\ 0 \\ \boxed{\begin{array}{c} 4 \\ 2 \end{array}} \end{array} \end{array}
$$

The M_0 is 6/16

Dimensional Composition

There are four dimensions – denoted by $d = 4$

$$\bar{g}^0(k) = \begin{array}{ccccc} \text{Income} & \text{Years of Education} & \text{Sanitation (Improved?)} & \text{Access to Electricity} & \\ \left| \begin{array}{cccc} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 1 & 2 & 0.5 & 0.5 \\ 0 & 2 & 0 & 0 \end{array} \right| & & & & \begin{array}{l} \text{Person 1} \\ \text{Person 2} \\ \text{Person 3} \\ \text{Person 4} \end{array} \end{array}$$

	Income	Years of Education	Sanitation (Improved?)	Access to Electricity
Person 1	0	0	0	0
Person 2	0	0	0	0
Person 3	**1**	**2**	**0.5**	**0.5**
Person 4	0	**2**	0	0

Dimensional Composition

What is the *censored* headcount ratio of each dimension?

$$\bar{g}^0(k) = \begin{array}{c} \begin{array}{cccc} \text{Income} & \text{Years of Education} & \text{Sanitation (Improved?)} & \text{Access to Electricity} \end{array} \\ \left| \begin{array}{cccc} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ \mathbf{1} & \mathbf{2} & \mathbf{0.5} & \mathbf{0.5} \\ 0 & \mathbf{2} & 0 & 0 \end{array} \right| \end{array} \begin{array}{l} \\ \text{Person 1} \\ \text{Person 2} \\ \text{Person 3} \\ \text{Person 4} \end{array}$$

Dimensional Composition

What is the *censored* headcount ratio of each dimension?

$$\bar{g}^0(k) = \begin{array}{cccc|l} \textbf{Income} & \textbf{Years of Education} & \textbf{Sanitation (Improved?)} & \textbf{Access to Electricity} & \\ 0 & 0 & 0 & 0 & \textbf{Person 1} \\ 0 & 0 & 0 & 0 & \textbf{Person 2} \\ \mathbf{1} & \mathbf{2} & \mathbf{0.5} & \mathbf{0.5} & \textbf{Person 3} \\ 0 & \mathbf{2} & 0 & 0 & \textbf{Person 4} \end{array}$$

Income: 1/4

Education: 2/4

Sanitation: 1/4

Electricity: 1/4

Uncensored vs. Censored Headcount Ratio

The uncensored headcount (UH) ratio of a dimension denotes the proportion of the population deprived in a dimension.

The censored headcount (CH) ratio of a dimension denotes the proportion of the population that is multidimensionally poor and deprived in that dimension at the same time.

M_0 and Censored Headcount Ratio

If the censored headcount ratio of indicator j is denoted by h_j, then the M_0 measure can be expressed as

$$M_0(X) = \sum_j (w_j/d) \times h_j(k)$$

where w_j is the weight attached to dimension j

Contribution of dimension j to overall poverty is

$$(w_j/d) \times [h_j/M_0(X)] \text{ for all } j$$

M_0 and UH Ratio in Union Approach

What is the relationship between the M_0 and the raw headcount ratio when a <u>union approach</u> is used for identifying the poor?

With a union approach, the censored headcount ratio for a dimension is its raw headcount ratio.

Thus, the M_0 with the union approach is the weighted average of the raw headcount ratios.

Dimensional Contribution

What is the contribution of the education dimension to M_0?

$$
\begin{array}{r|cccc|l}
 & \textbf{Income} & \textbf{Years of Education} & \textbf{Sanitation (Improved?)} & \textbf{Access to Electricity} & \\
 & 0 & 0 & 0 & 0 & \textbf{Person 1} \\
 & 0 & 0 & 0 & 0 & \textbf{Person 2} \\
\bar{g}^0(k) = & \mathbf{1} & \mathbf{2} & \mathbf{0.5} & \mathbf{0.5} & \textbf{Person 3} \\
 & 0 & \mathbf{2} & 0 & 0 & \textbf{Person 4}
\end{array}
$$

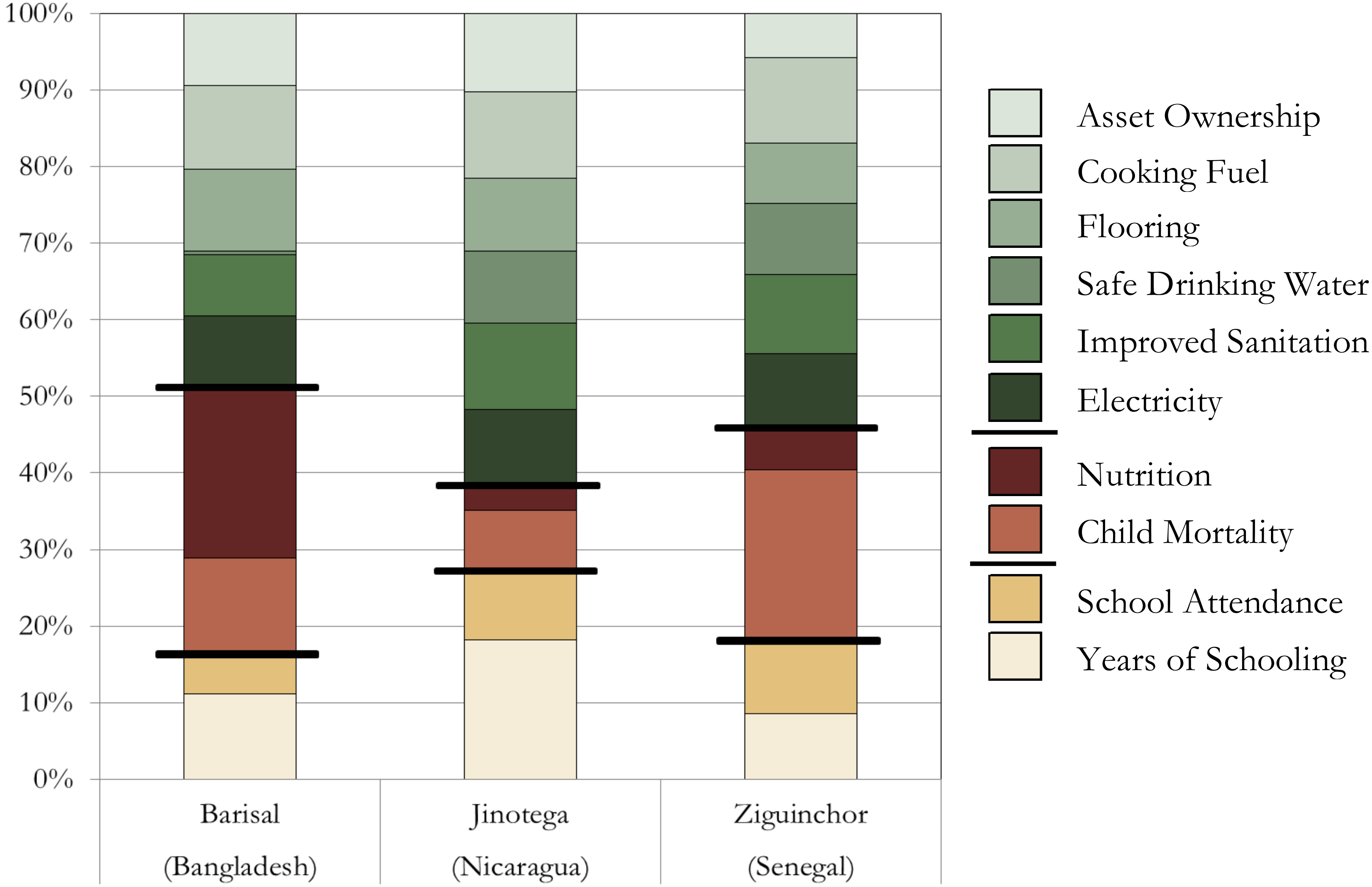
Dimensional Contribution

What is the contribution of the education dimension to M_0?

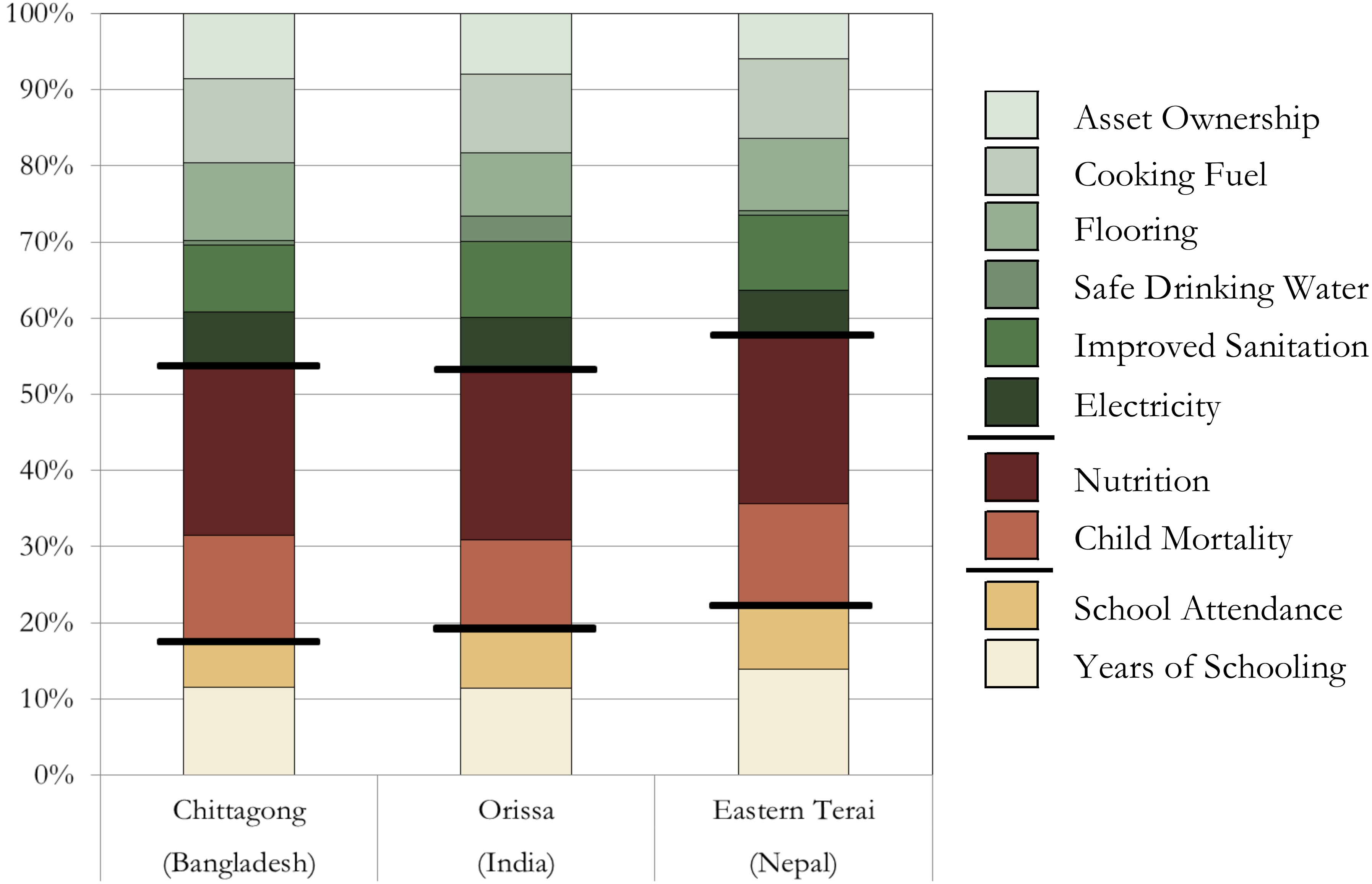
$$
g^0(k) = \begin{array}{|cccc|l}
\text{Income} & \text{Years of Education} & \text{Sanitation (Improved?)} & \text{Access to Electricity} & \\
\hline
0 & 0 & 0 & 0 & \text{Person 1} \\
0 & 0 & 0 & 0 & \text{Person 2} \\
\mathbf{1} & \mathbf{2} & \mathbf{0.5} & \mathbf{0.5} & \text{Person 3} \\
0 & \mathbf{2} & 0 & 0 & \text{Person 4}
\end{array}
$$

The contribution is $\underbrace{(2/4)}_{w_E} \times [\underbrace{(2/4)}_{h_E(k)}/\underbrace{(6/16)}_{M_0}] = 2/3$

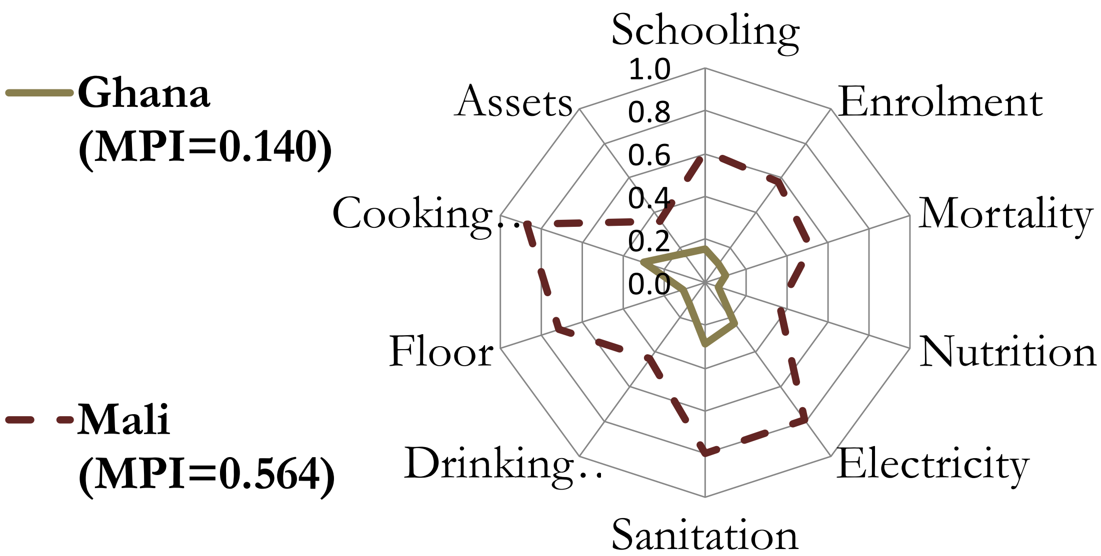
Similar MPI, but Different Composition

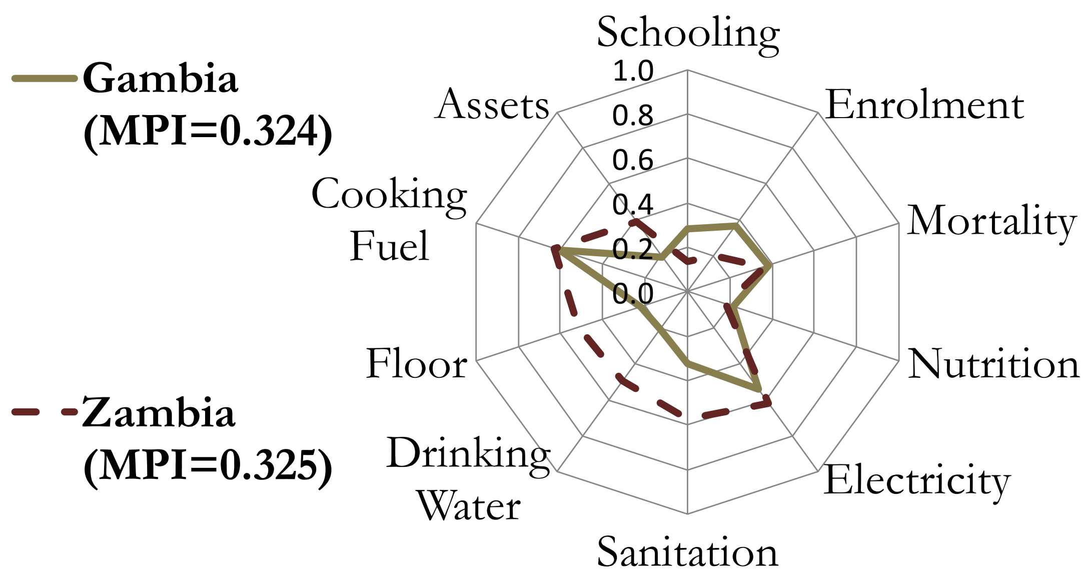


Different MPI, Similar Composition



Another way of Presenting Composition Graphically

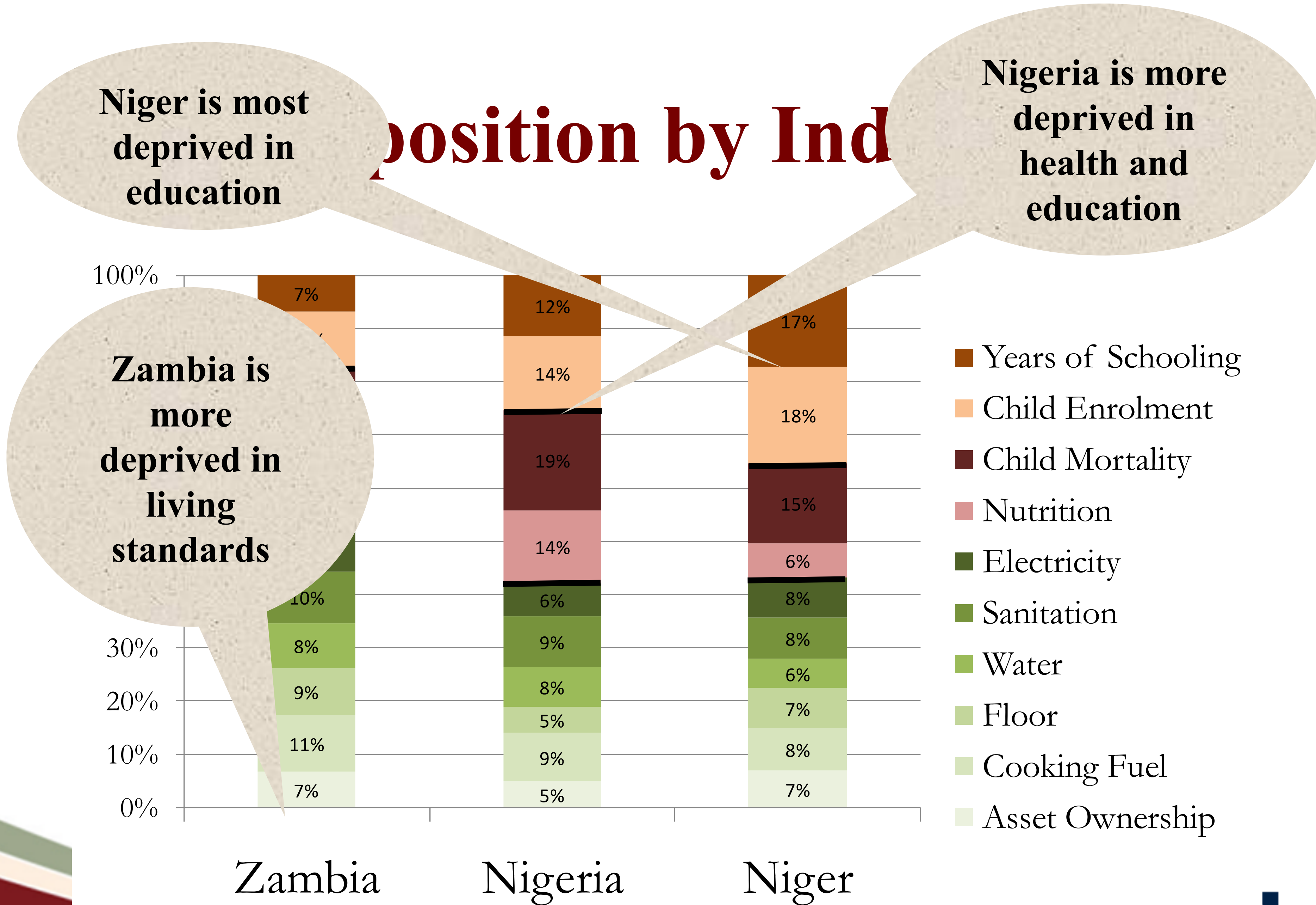




Poverty types
(Roche 2010 for MPI Analysis)

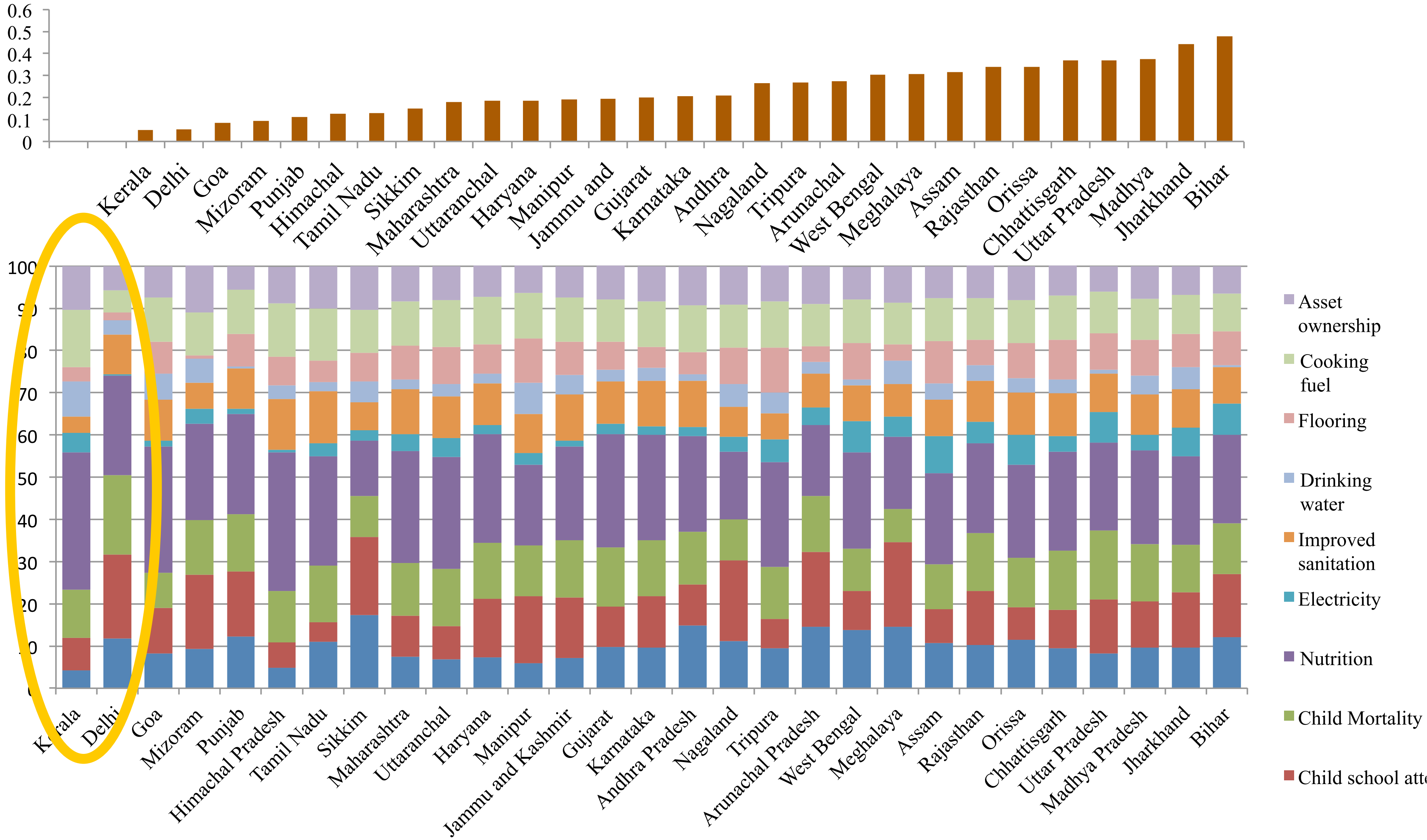
OPHI Oxford Poverty & Human Development Initiative

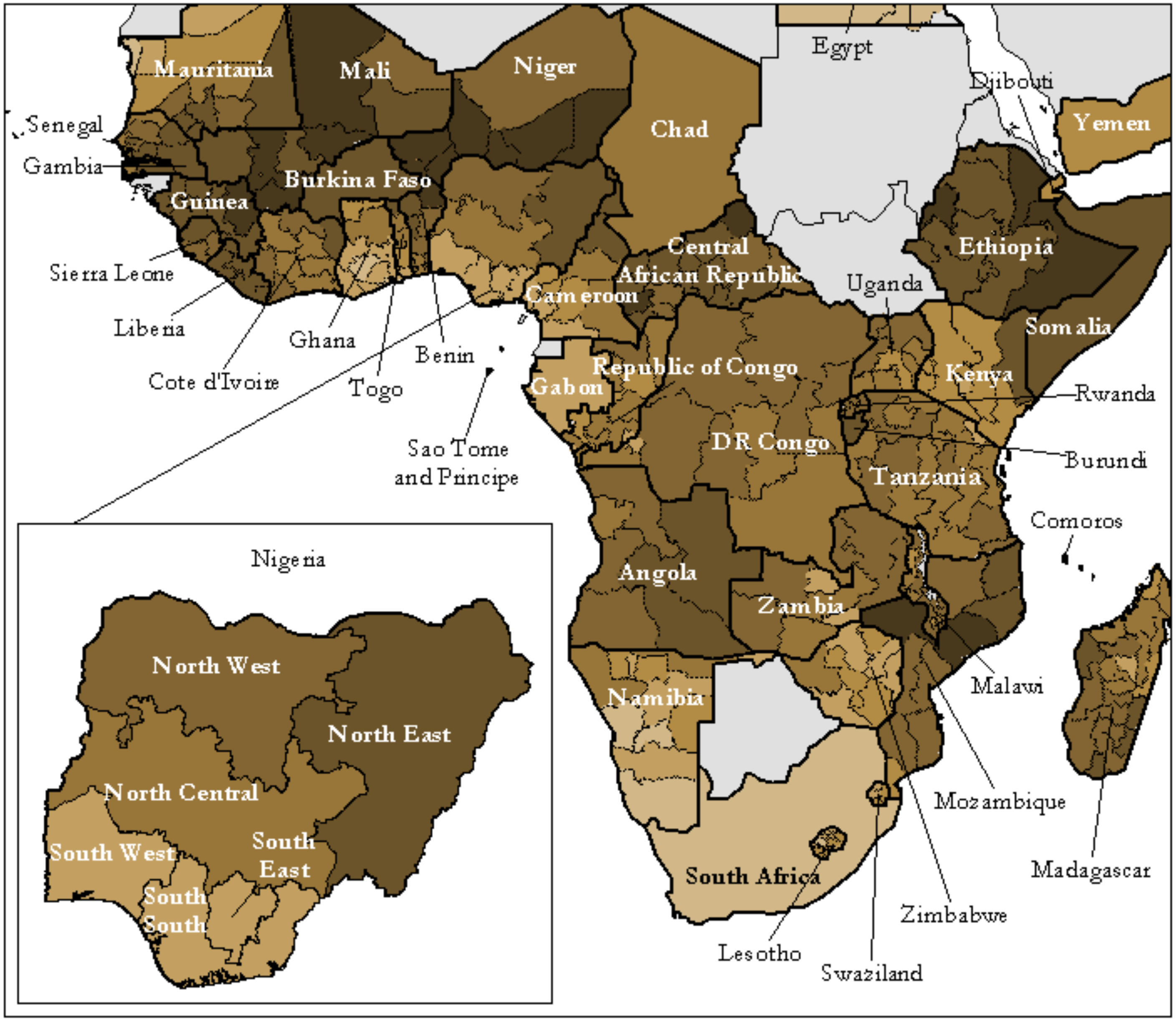
...position by Ind...



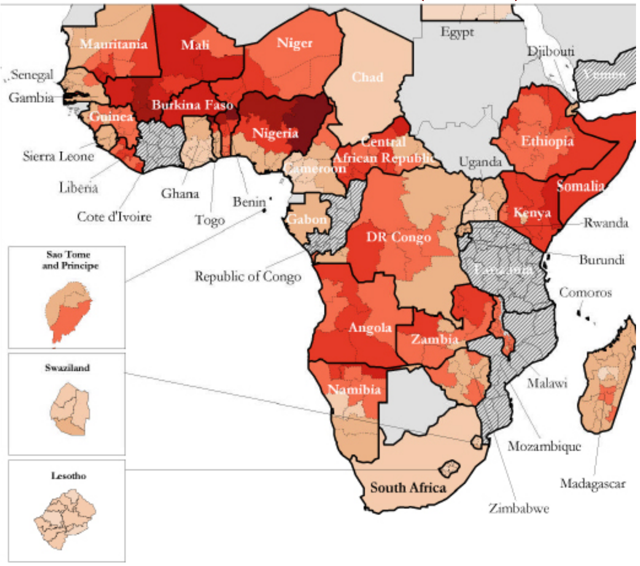
MPI 2011(Alkire & Santos 2010)

The composition of the MPI can inform policy. It can change across countries and states.

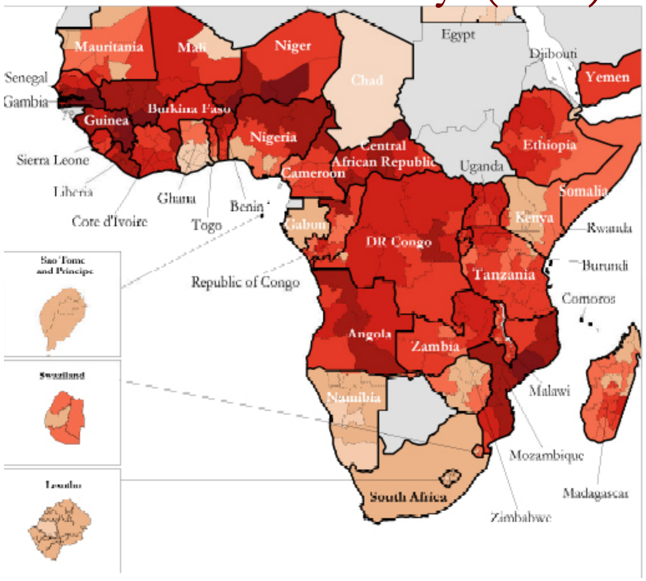



Mauritania
Mali
Niger
Chad
Egypt
Djibouti
Yemen
Senegal
Gambia
Burkina Faso
Guinea
Sierra Leone
Liberia
Cote d'Ivoire
Ghana
Togo
Benin
Central African Republic
Cameroon
Uganda
Ethiopia
Somalia
Kenya
Rwanda
Burundi
Republic of Congo
Gabon
Sao Tome and Principe
DR Congo
Tanzania
Comoros
Angola
Zambia
Malawi
Namibia
Mozambique
Madagascar
South Africa
Zimbabwe
Lesotho
Swaziland
Nigeria
North West
North East
North Central
South West
South East
South South

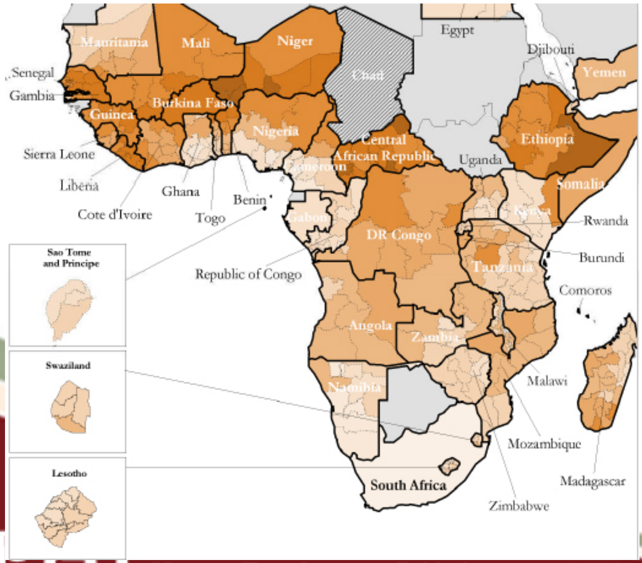
Nutrition (CH)



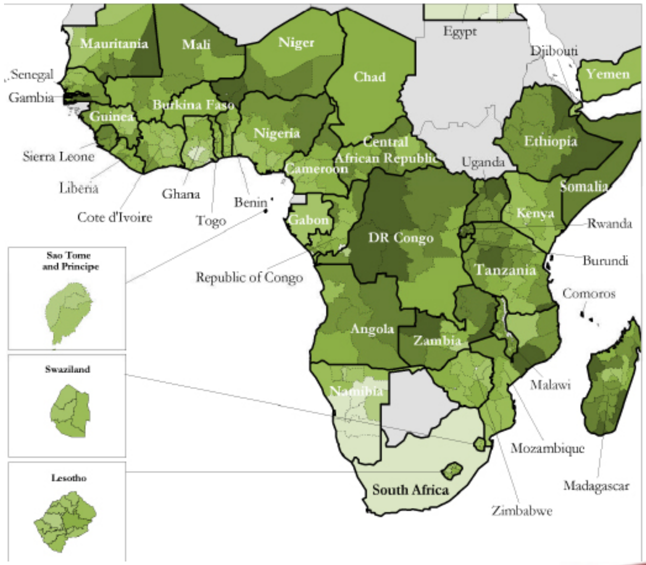
Child Mortality (CH)

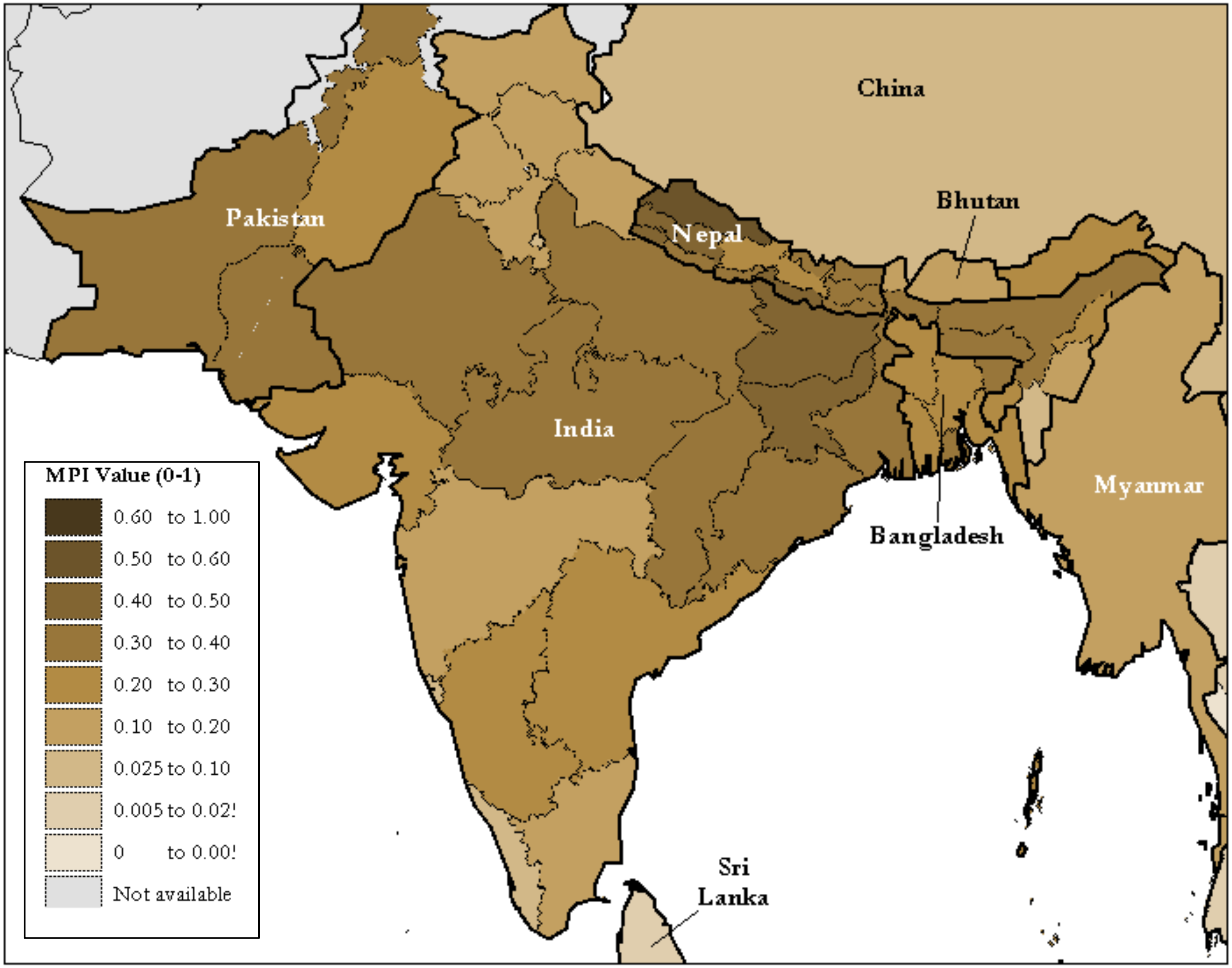


School Attendance (CH)

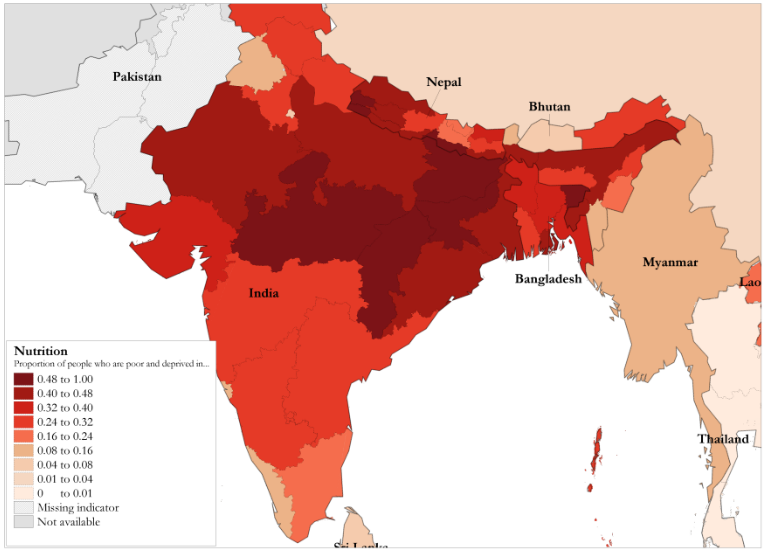


Safe Drinking Water (CH)

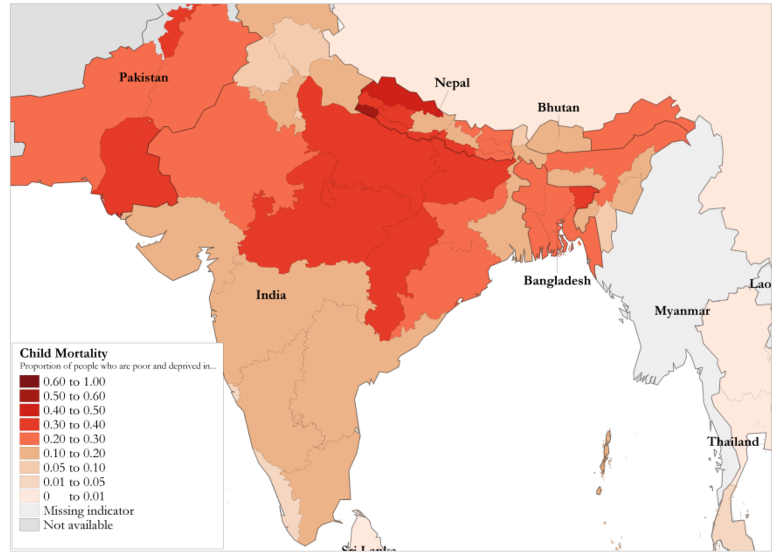



China
Bhutan
Pakistan
Nepal
India
Myanmar
Bangladesh
Sri
Lanka
MPI Value (0-1)
0.60 to 1.00
0.50 to 0.60
0.40 to 0.50
0.30 to 0.40
0.20 to 0.30
0.10 to 0.20
0.025 to 0.10
0.005 to 0.02!
0 to 0.00!
Not available

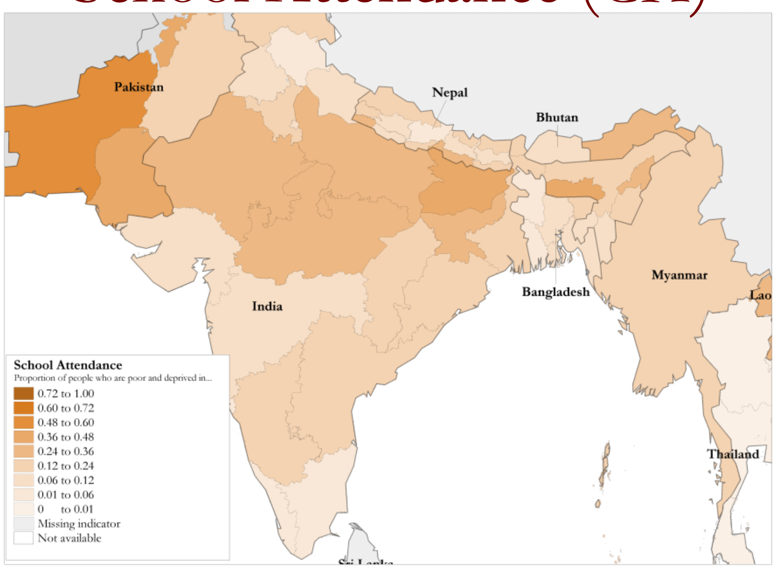
Nutrition (CH)



Child Mortality (CH)



School Attendance (CH)



Safe Drinking Water (CH)