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Multidimensional Poverty Indices and Children

Four Measurement Strategies

IIEP at GWU, OPHI & UNDP HDRO Seminar Series
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Aim of this Paper

- To outline strategies for synergetic child and all-population multidimensional poverty measurement
- To explain and exemplify these strategies, including normative and technical *pros & cons*

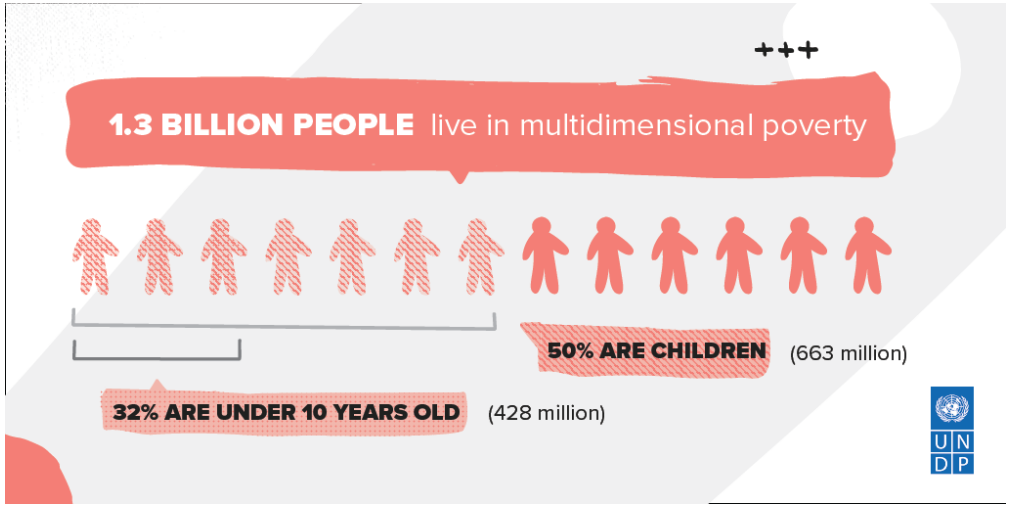
- *Ultimately:* To inform multidimensional poverty measures as policy-tools that help eradicate poverty in all its forms, also and especially among children.

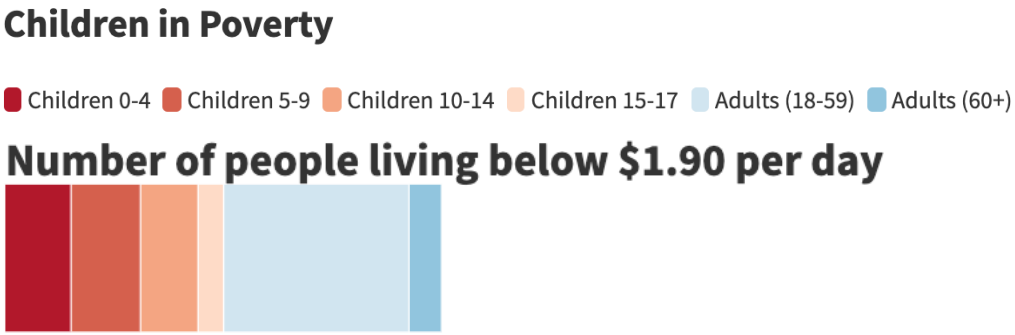
Overview

- Four Measurement & Analytical Strategies for Multidimensional Poverty Indices and Children
  - Motivation
    - Child Poverty & Poverty Measures as Policy-Tools
    - Synergetic versus Disjoint Measurement
  - MPIs & the Alkire-Foster Method
  - 4 Strategies, Examples, and *Pros & Cons*
  - Key Take-Aways for (Child-)MPIs as Policy-Tools
  - Further Research

Motivation

- Children are among the most vulnerable and often poorest members of society
- To break intergenerational cycles of poverty and sustainably alleviate deprivation, child disadvantage requires prioritization
- Deprivation experienced during childhood can affect a person for the rest of their life





Source: World Bank & UNICEF, Global Estimate of Children in Monetary Poverty: An Update

- Children of different ages experience poverty differently, and differently from adults

- Child-focused poverty measures capturing age-appropriate deprivations are key to fully grasp how well- or badly-off children are

  → *beyond 'children in poor households' and 'adult equivalents'*

1 NO POVERTY

END POVERTY IN ALL ITS FORMS EVERYWHERE

Target

1.2

By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions

Indicators

1.2.1

Proportion of population living below the national poverty line, by sex and age

1.2.2

Proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions

SDG 1, Target 1.2., Indicator 1.2.2

Multidimensional Child Poverty: From Complex Weighting to Simple Representation

Maryam Abdu & Enrique Delamonica

Social Indicators Research **136**, 881–905(2018) | Cite this article

Child Poverty in Vietnam: Providing Insights Using a Country-Specific and Multidimensional Model

Keetie Roelen, Franziska Gassmann & Chris de Neubourg

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Beyond Monetary Poverty Analysis: The Dynamics of Multidimensional Child Poverty in Developing Countries

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Social Indicators Research **141**, 1107–1136(2019) | Cite this article

Multidimensional Child Poverty in Vietnam from a Longitudinal Perspective—Improved Lives or Impoverished Conditions?

Keetie Roelen

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Children and Youth Services Review

Volume 57, October 2015, Pages 159-170

Developing a child-focused and multidimensional model of child poverty for South Africa

Michael Noble, Gemma Wright & Lucie Cluver

Pages 39-53 | Published online: 22 Jan 2007

A multidimensional child poverty index in China

Di Qi [a], Yichao Wu [b]

Child Indicators Research
https://doi.org/10.1007/s12187-020-09744-6

Child poverty: a multidimensional measurement

Amélia Bastos
ISEG-Technical University of Lisbon, Lisbon, Portugal, and
Carla Machado
Member of the Research Centre for Applied Mathematics and Economics, Lisbon, Portugal

Development and Change
Published on behalf of the Institute of Social Studies, The Hague

Leaving No One Behind: Multidimensional Child Poverty in Botswana

Khaufelo Raymond Lekobane [1,2] · Keetie Roelen [1]

Monetary and Multidimensional Child Poverty: A Contradiction in Terms?

Keetie Roelen

SOCIAL AND ECONOMIC POLICY WORKING BRIEFS
FEBRUARY 2011
UNICEF POLICY AND PRACTICE

A Multidimensional Approach to Measuring Child Poverty

Measurement of Multidimensional Child Poverty

Authors | Authors and affiliations
Alessandro Carraro, Lucia Ferrone

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Disjoint

versus

Synergetic Measurement

MPIs as Policy Tools

But: For policy-purposes, additional child poverty measures can be difficult to interpret and derive clear guidance from

Why?

- All-population measures include children & overlap with child-specific measures

- Coherent **disjoint** measurement requires entirely separate child vs. adult measures
  → Proliferation of measures for many subgroups

- Invites siloed, but impedes multisectoral solutions
- Interpersonal comparisons across groups and full welfare orderings are difficult
  – *How to identify and prioritise those worst-off overall?*

- Disjoint measurement also puts additional strain on statistical capacity

  →SDG Indicator 1.2.2 is only 1 among 231.

MPIs & the Alkire-Foster Method

- Multidimensional poverty measures rely on the joint distribution of deprivations
- Deprivation profiles capture overlapping disadvantages at the individual/household level
- Multidimensional poverty cutoff discriminates poor/non-poor

Alkire-Foster (AF) MPIs

$$MPI = H \, x \, A.$$

Incidence ~ the percentage of people who are poor, or the poverty rate or headcount ratio: H.

Intensity ~ the average percentage of dimensions in which poor people are deprived, or the average deprivation score of poor persons: A.

Alkire and Foster (2011)

Key Policy Advantages of the AF-Method

- Allows for disaggregation by population subgroups, e.g. by subnational regions, urban—rural areas, or **age** (*subgroup decomposability axiom*)

- Allows for breakdown by indicator, to reflect indicator-wise levels and contributions to MPI, e.g. for **child-specific** deprivation indicators (*dimensional breakdown axiom*)

National MPIs and Global MPI

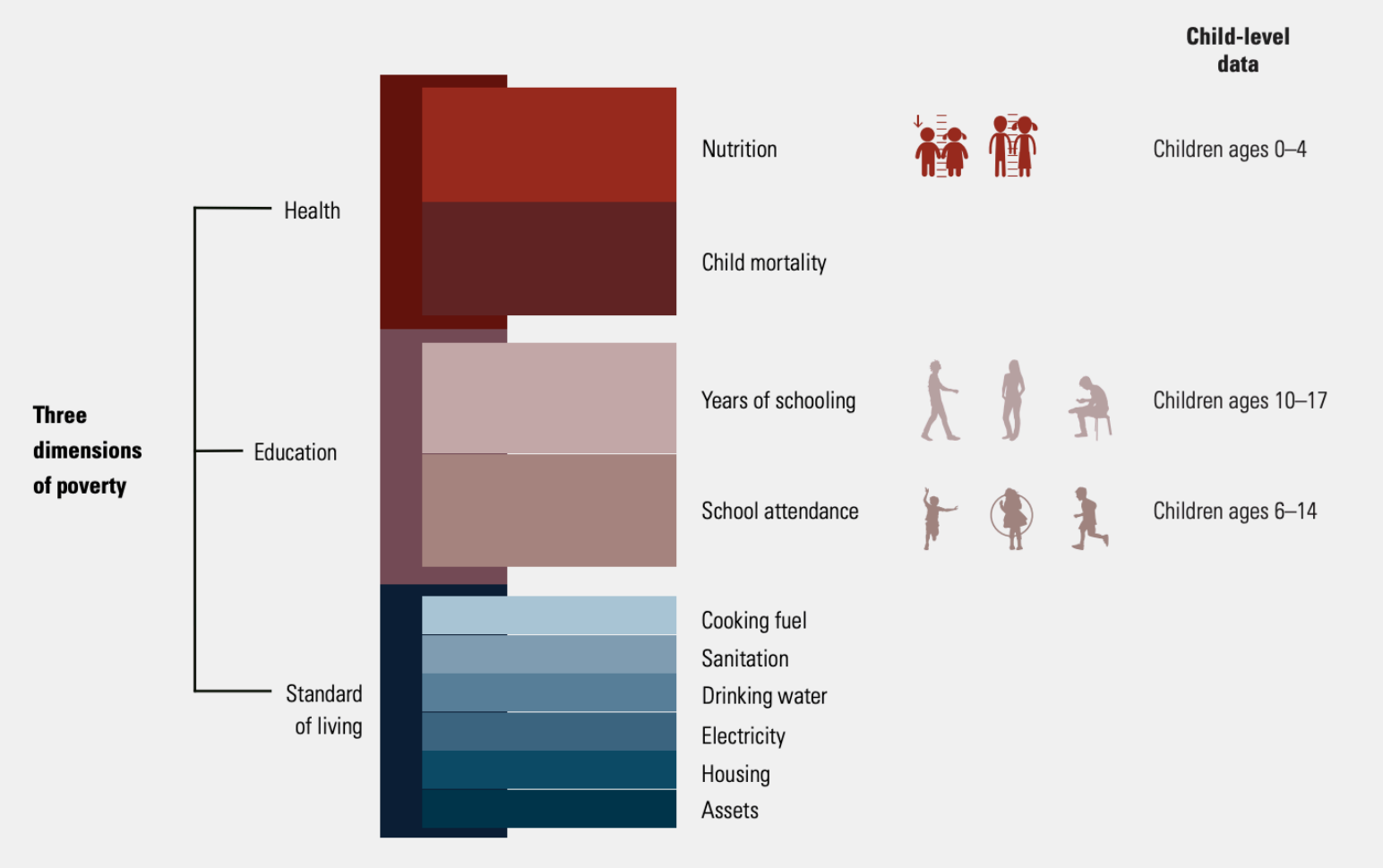
- Global MPI
  - Harmonised measure of acute multidimensional poverty for 100+ countries and almost 6 billion people
- National MPIs
  - Tailored to countries' contexts and priorities

1

Include & Analyse Child Indicators in National MPIs

- Method: Include child-specific or child-inclusive indicators prominently in National MPI
  - e.g. school attendance, child nutrition, etc.
  - ensure that household-level indicators are child-relevant

Child-level data in the global Multidimensional Poverty Index



Source: Oxford Poverty and Human Development Initiative 2018.

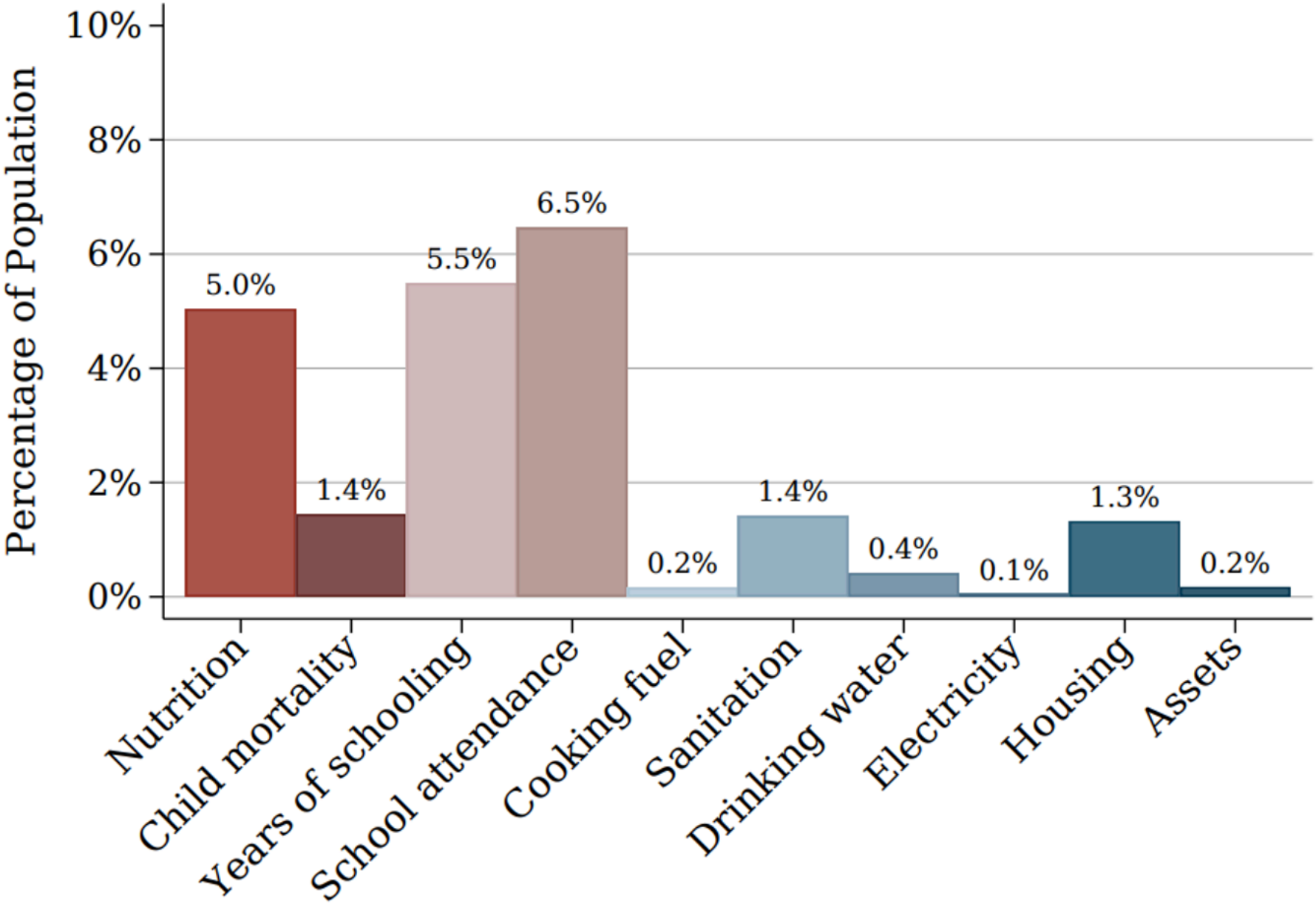
Child Indicators in National MPIs

1.2.2

Dimensions	Indicators	SDG Targets & Indicators*	Global MPI		National MPIs	Afghanistan	Angola	Armenia	Bhutan	Chile (4D+5D)	Colombia	Costa Rica	Dominican Republic	Ecuador	El Salvador	Ghana	Guatemala	Honduras	Malaysia	Maldives	Mexico	Mozambique (3D+4D)	Nepal	Nigeria	Pakistan	Palestine	Panama	Philippines	Rwanda	Seychelles	Sierra Leone	South Africa	Viet Nam
Education	School Attendance	4.1.1 / 4.5.1	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Years of Schooling / School Attainment	4.1.1 / 4.5.1	✓			✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Educational Quality / Literacy / Human Capital Formation)	4.c / 4.6						✓			✓	✓						✓							✓								
	School Lag	4.1.1 / 4.5.1								✓	✓	✓	✓	✓	✓	✓	✓									✓	✓						
	Proximity to Education Services	4						✓														✓											
	Affordability of Education	4												✓																			
	Early Childhood Care and/or Services	4.2.1 / 4.2.2 / 4.5.1									✓	✓	✓		✓		✓																
Health	Nutrition	2.1.1 / /2.2.1	✓							✓						✓				✓		✓	✓	✓				✓		✓	✓		✓
	Breast-Feeding																																
	Child Mortality	3.2.1 / 3.2.2	✓						✓				✓										✓	✓							✓	✓	✓
	Ante-Natal Care	3.8.1																							✓								
	Assisted Delivery	3.8.1 / 3.1.2				✓																			✓								
	Immunisation	3.b.1																							✓						✓		
Childhood Conditions	Child Labour	8.7.1									✓		✓	✓	✓		✓	✓										✓					
	Youth NEET	8.6.1 / 4.3.1 / 4.5				✓																				✓				✓			
	Birth Registration	16.9.1											✓																				
	Early Pregnancy or Marriage / Female Genital Mutilation	5.3.1 / 5.3.2																												✓			

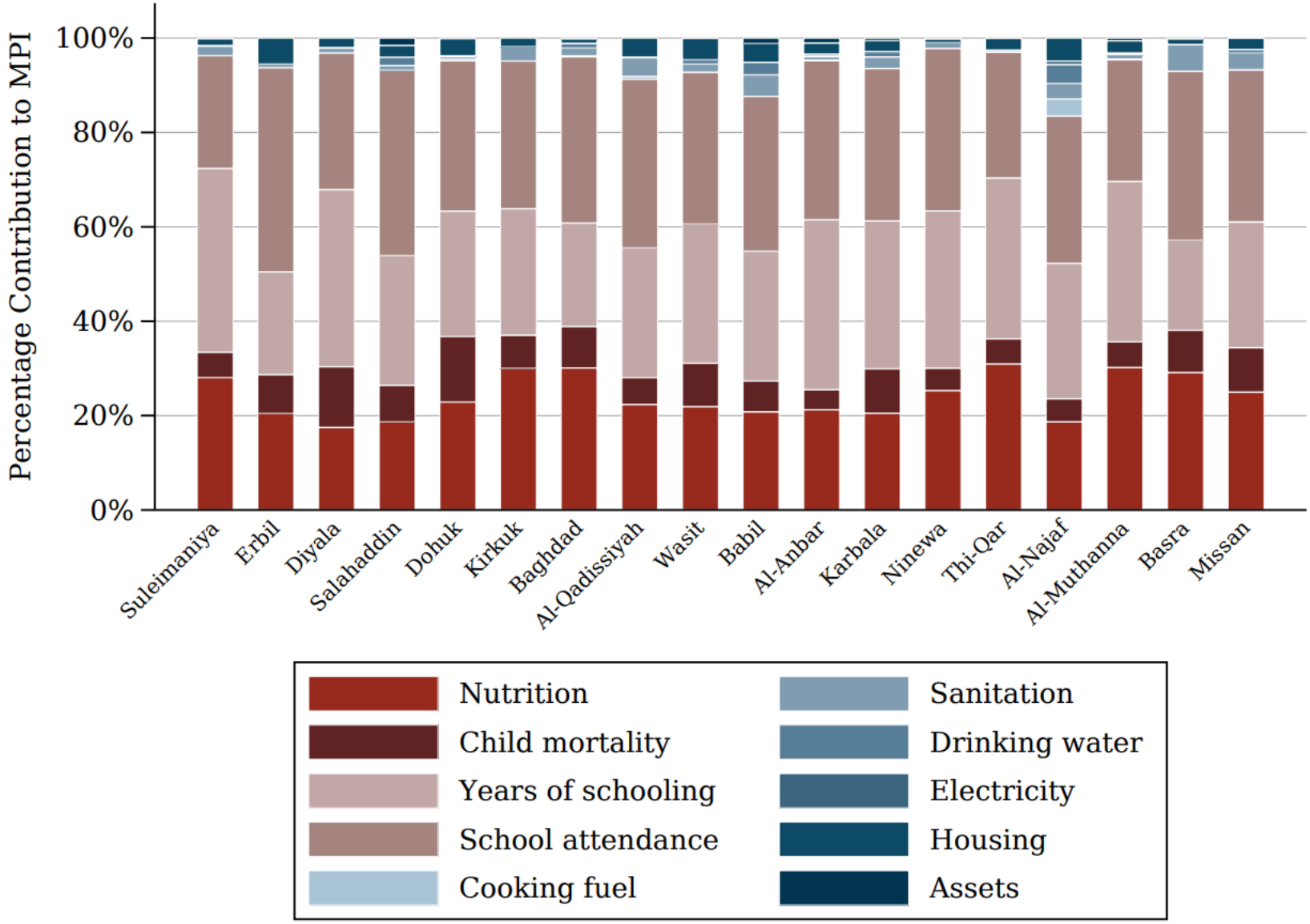
Source: Dirksen (2020)

Figure 1. Censored Headcount Ratios, 2020 Global MPI, Iraq



Source: OPHI (2020a): 6. Data: MICS 2018.

Figure 10. Indicator Contribution to Global MPI of Subnational Regions



Pros & Cons

Pros	**Cons**
Definition of poverty considers adult and child conditions together.	Number of child indicators that can be considered is limited.
National MPI itself draws attention to child deprivations.	Not all indicators may be equally child-relevant.
To reduce national poverty, attention to child deprivations is essential.	Indicators for narrow age ranges may be left out if many households do not have a child of that age.
Child indicators of National MPI can be further analysed.	
Avoids confusing overlap between disjoint measures.	
Synergetic measure provides clear policy message, e.g. for budgeting.	
Political support and communication are simple and straightforward.	
A synergetic National MPI is computationally and labour-wise inexpensive.	

2

Child-Disaggregating National MPIs

- Method: Sub-group decomposing MPIs by Age
  - e.g. children (0-17) vs. adults or narrower age cohorts

Age-Disaggregated National MPIs & Results

Countries with Age-Disaggregation	Children Poorer than Adults
Afghanistan	Yes
Armenia	n/a
Bhutan	Yes
Chile	Yes
Costa Rica	Yes
El Salvador	Yes
Maldives	Yes
Mexico	Yes
Nepal	Yes
Seychelles	Yes
Sierra Leone*	Yes
(Pakistan)**	Yes
Global MPI	Yes

*0-14

** Not yet publicly posted as official age-disaggregations.

Pros & Cons

Pros	**Cons**
National MPI itself draws attention to child deprivations; child disaggregation then focuses on children.	Children can be identified as poor without households being deprived in any child indicator.
Profiles the empirical fact that children are poorer than adults & provides number of children who are MPI-poor, and where they are.	Does not directly show if a child is individually deprived.
Brings into national policy dialogue the point that attention to children is essential to reducing national MPI.	Indicators pertaining to narrow age ranges will still not be considered.
Political support and communication are simple and straightforward – it is easy to talk about disaggregation, and raise concerns if children are poorer than adults.	Child results may be sensitive to the demographic structure and household size.

3

Analysing Intra- & Inter-Household Inequalities in Child Indicators

- Method: Disaggregating child indicators at individual level by age, gender, etc.
  - Reveals gendered and age-wise patterns of deprivation and intra-household inequalities

Country	School-age boys/girls who are MPI poor and not attending school		Children under 5 years of age who are MPI poor and malnourished	
	Boys	**Girls**	**Boys**	**Girls**
Afghanistan	24.8**	44.0**	-	-
Bangladesh	12.1**	7.2**	30.6	31.0
Bhutan	8.7	7.8	24.2	24.3
India	6.1**	6.8**	27.6	27.8
Maldives	0.1	0.1	0.6	0.7
Nepal	3.1**	6.0**	25.5	27.0
Pakistan	19.7**	27.2**	26.6	27.8
South Asia	**9.0**	**10.7**	**27.7**	**28.1**

Note: * Gender differences are statistically significant at 5%;
** Gender differences are statistically significant at 1%.

Source: Alkire, ul Haq, and Alim (2019): 14

	Percentage of school-age children who reside in an MPI poor household where at least one school-age child does not attend school and another does	Percentage of children aged 0–4 who reside in MPI poor households where at least one child is malnourished and another is not
Afghanistan	34.3	-
Bangladesh	12.7	12.1
Bhutan	9.9	14.7
India	8.1	21.8
Maldives	0.3	16.1
Nepal	7.0	17.4
Pakistan	22.4	33.7
South Asia	**11.2**	**22.7**

Source: Alkire, ul Haq, and Alim (2019): 15.

Pros & Cons

Pros	**Cons**
Linked to National MPI directly, and yet brings the intrahousehold, gender and age aspects of child poverty into view.	Gendered and intrahousehold patterns require an extra step to see – they cannot be read directly from the measure.
Shows whether all eligible children in a household are deprived or only some of them.	Deprivations are examined one by one. Joint distribution covers household-level deprivations.
Shows % of children deprived by HH MPI-status.	
Shows composition & intensity of MPI among children deprived in that indicator.	

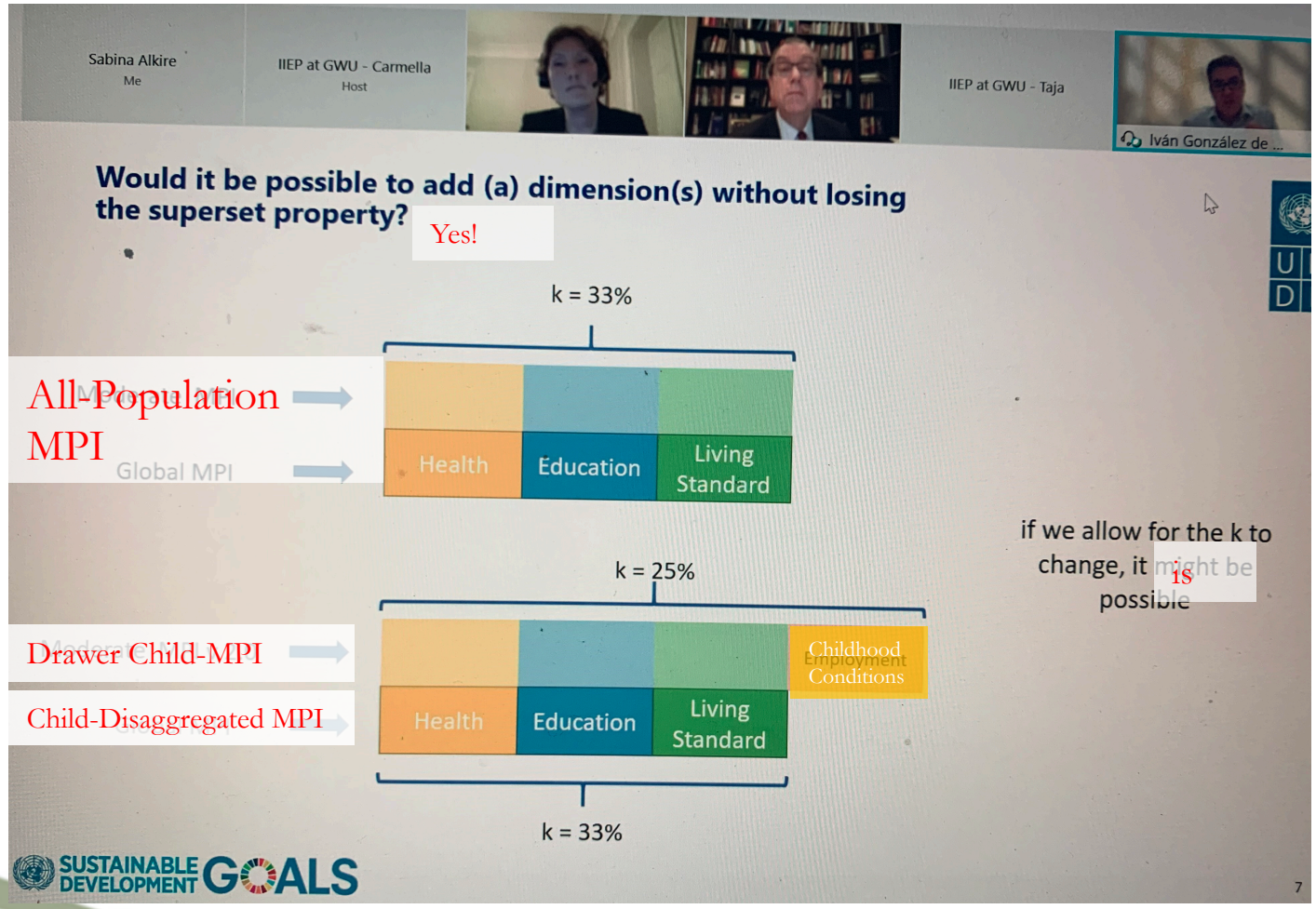
4

The 'Drawer' Approach

Individual-Level Child-MPI including age-appropriate deprivation indicators

- Method: Directly adding one or more child-dimension(s) to age-disaggregated all-population MPI
  - <u>retaining and refining poverty identification function</u>

What is the "Drawer Approach"?



Dimension	Indicator	Deprivation Cutoff	C-MPI ($k = 1/4$)	MPI ($k = 1/3$)
Child Development	Early childhood (0-4) I1	**Nutrition:** if z-score of weight-for-age is below minus two standard deviations from the median of the reference population.	1/8	
	Early childhood (0-4) I2	**Early Childhood Conditions:** 0-5m: if not exclusively breastfed; 6-23m: if has no vaccination card OR has never been vaccinated was never vaccinated; 24-35m: if has no toys OR was left alone or at the care of another child for more than 1 hour in the last week; 36-59: if an adult member of the household did not engage with the child in 4 or more activities during the last week.	1/8	
	School-age children (5-13) I1	**Attendance:** if not attending school.	1/8	
	School-age children (5-13) I2	**Child labor:** 5-11y: if spent at least 1 hour performing economic activities during previous week; 12-13: if spent at least 14 hours performing economic activities during previous week.	1/8	
	Older children (14-17) I1	**Schooling or working:** if not attending school AND is working AND (has less than 8 years of schooling OR is working under dangerous conditions)	1/8	
	Older children (14-17) I2	**Child labor:** 14y: if spent at least 14 hours performing economic activities during previous week; 15-17: if spent at least 43 hours performing economic activities during previous week.	1/8	
HH Education Environment	Years of Schooling	No household member has completed five years of schooling	1/8	1/6
	Child School Attendance	Any school-aged child is not attending school up to class 8+	1/8	1/6
HH Health Environment	Child Mortality	Any child has died in the family	1/8	1/6
	Nutrition	Any adult or child for whom there is nutritional information is malnourished	1/8	1/6
Living standards	Electricity	The household has no electricity	1/24	1/18
	Improved Sanitation	The households sanitation facility is not improved (according to MDG guidelines), or it is improved but shared with other households	1/24	1/18
	Improved Drinking Water	The household does not have access to improved drinking water (according to MDG guidelines) or safe drinking water is more than a 30-minute walk from home, roundtrip	1/24	1/18
	Flooring	The household has a dirt, sand or dung floor	1/24	1/18
	Cooking Fuel	The household cooks with dung, wood or charcoal	1/24	1/18
	Assets ownership	The household does not own more than one radio, TV, telephone, bike, motorbike or refrigerator and does not own a car or truck	1/24	1/18

Note: Weights in the dimension of Child Development sum up to 1/4 within each age group.

Source: Vaz, Oldiges, and Alkire (2020).

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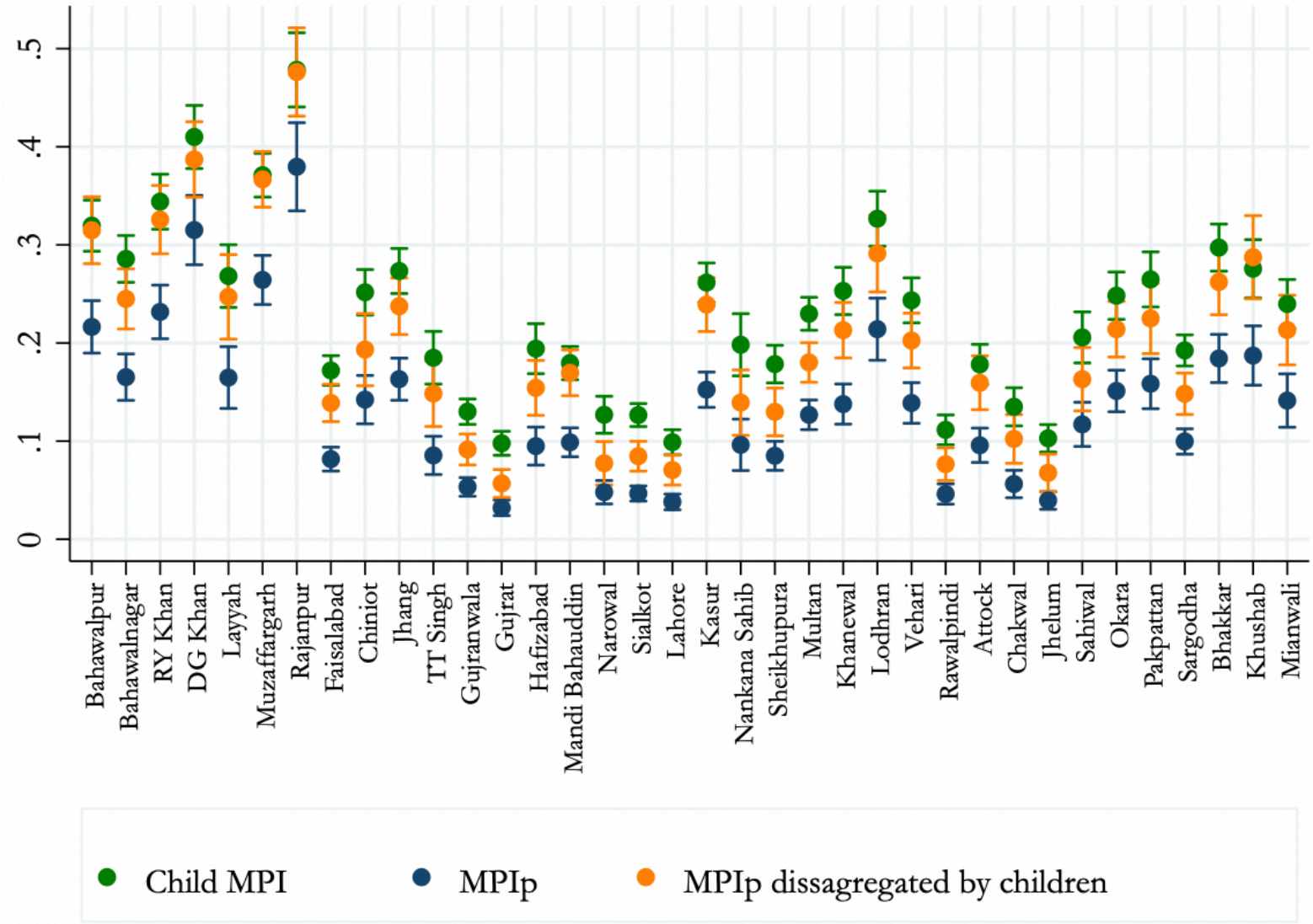

Source: OPHI (2020b).

Pros & Cons

Pros	**Cons**
Directly links to the National MPI and includes age-specific indicators of child poverty.	Strong data requirements to cover the entire cycle of childhood.
All children who identified as poor by National MPI are poor by the 'Drawer' Child MPI & it captures additional poor children in non-poor households.	Child-deprivation sub-indicators not always straightforwardly comparable across age-cohorts.
Budget and policy recommendations of household indicators are to be taken from the National MPI, but additional information is offered for child-focused policies.	Data availability has strong impact on design and results of child-specific indicators.
Allows for the inclusion of child-specific indicators covering the cycle of childhood.	Disaggregation is more difficult due to the small sample size of child-sub-cohorts.
Easy to understand and communicate alongside the National MPI.	Structure of National MPI limits structure of Drawer Child MPI.
	Two measures still more difficult to communicate and interpret than one, even if they are closely aligned.

Key Take-Aways

- Disjoint measures cause confusion and make interpretation for policy-applications difficult.
- There are promising synergetic measurement strategies

  1) Ensure that National MPI captures key child deprivations and analyse these

  2) Age-disaggregate the National MPI

  3) Analyse intra- & inter-household patterns and inequalities of deprivation

  4) A separate, individual-level Child-MPI can be directly linked to the National MPI, e.g. 'Drawer Approach'

Future Research

- Beyond important, context-specific child poverty measurement:
  - How to achieve policy-actionable synergies between measures:
    - Advancing analysis of intra- and interhousehold inequalities by gender and age
    - Advancing empirical studies of linked Child-MPIs (e.g. Drawer Approach)

Future Research

- Theoretical and Normative Questions:
  - *Equivalence and Direct Comparability of Age-Specific Deprivational Indicators in Child-MPIs?*
  - Strong emphasis on harmonised measurement for international-level analyses
    - E.g. harmonised global and regional MPIs & no direct comparison of different National MPIs
  - But for Child-Poverty measures:
    - direct equivalence (through equal weights) of sometimes very different age-specific indicators is an implicit assumption throughout the literature

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