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Multidimensional Poverty Indices:

Actionable Metrics for Challenging Times

James Foster,

GW Elliott School of International Affairs and OPHI

UNDESA: Inclusive and resilient recovery from COVID-19 for sustainable livelihoods, well-being and dignity for all: eradicating poverty and hunger in all its forms and dimensions to achieve the 2030 Agenda

August 2, 2021

The MPI Platform vs Monetary Poverty

MPI = M_0 = H x A

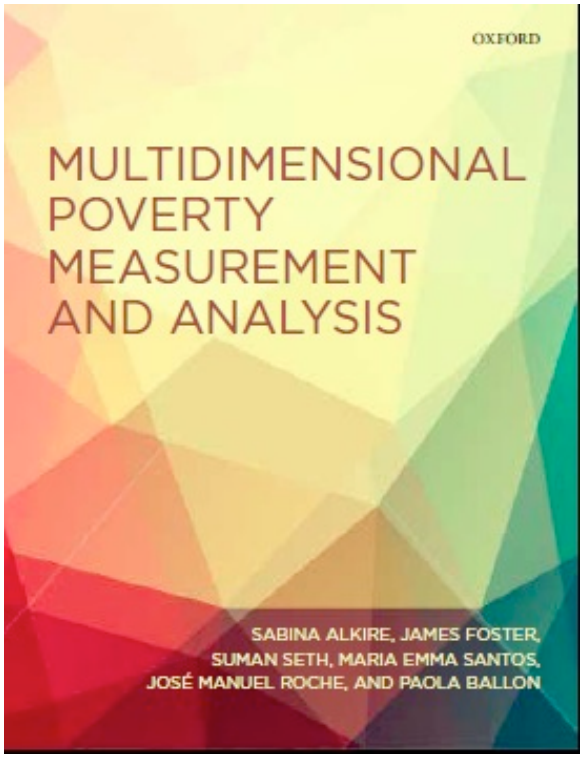
H = Multidimensional poverty rate

A = Average intensity (breadth) of poverty

Poverty Gap = P_1 = H x I

H = Monetary poverty rate

I = Average intensity (depth) of poverty



Econometrica, Vol. 52, No. 3 (May, 1984)

A CLASS OF DECOMPOSABLE POVERTY MEASURES

By James Foster, Joel Greer, and Erik Thorbecke[1]

Several recent studies of poverty have demonstrated the usefulness of breaking down a population into subgroups defined along ethnic, geographical, or other lines [e.g. **1**, **20**]. Such an approach to poverty analysis places requirements on the poverty measure in addition to those proposed by Sen [**15**, **16**]. In particular, the question of how the measure relates subgroup poverty to total poverty is crucial to its applicability in this form of analysis. At the very least, one would expect that a decrease in the poverty level of one subgroup *ceteris paribus* should lead to less poverty for the population as a whole. At best, one might hope to obtain a quantitative estimate of the effect of a change in subgroup poverty on total poverty, or to give a subgroup's contribution to total poverty.

One way to satisfy the above criteria is to use a poverty measure that is additively decomposable in the sense that total poverty is a weighted average of the subgroup poverty levels.[2] However, the existing decomposable poverty measures are inadequate in that they violate one or more of the basic properties proposed by Sen.[3] Stated another way, of all the measures [**1**, **3**, **10**, **19**] that are acceptable by the Sen criteria, none is decomposable. In fact, the Sen measure and its variants that rely on rank-order weighting fail to satisfy the basic condition that an increase in subgroup poverty must increase total poverty (see footnote 6). This note is a first step towards resolving these inadequacies.

In what follows we present a simple, new poverty measure[4] that (i) is additively decomposable with population-share weights, (ii) satisfies the basic properties proposed by Sen, and (iii) is justified by a relative deprivation concept of poverty. The inequality measure associated with our poverty measure is shown to be the squared coefficient of variation and indeed the poverty measure may be expressed as a combination of this inequality measure, the headcount ratio, and the income-gap ratio in a fashion similar to Sen [**15**]. We generalize the new poverty measure to a parametric family of measures where the parameter can be interpreted as an indicator of "aversion to poverty." A brief empirical application demonstrates the usefulness of the decomposability property.

1. A DECOMPOSABLE POVERTY MEASURE

Let $y = (y_1, y_2, \ldots, y_n)$ be a vector of household incomes in increasing order, and suppose that $z > 0$ is the predetermined poverty line. Where $g_i = z - y_i$ is the income shortfall of the ith household, $q = q(y; z)$ is the number of poor households (having income no greater than z), and $n = n(y)$ is the total number of households, consider the

[1] We would like to thank the participants of the Cornell Development Seminar, Gary Fields, and the anonymous referees for helpful comments. In addition, we owe a special debt of gratitude to Amartya Sen for his thoughtful remarks and encouragement. This note is based on a longer working paper [**8**] and on dissertation research by J. Greer.

[2] See [**1**, **20**]. In contrast, decomposability as applied to inequality measures involves a "between-group" term to account for differences among subgroup mean incomes [**4**, **17**]. Here one poverty level is postulated to apply to all subgroups; hence a "between-group" poverty term would appear to be unnecessary.

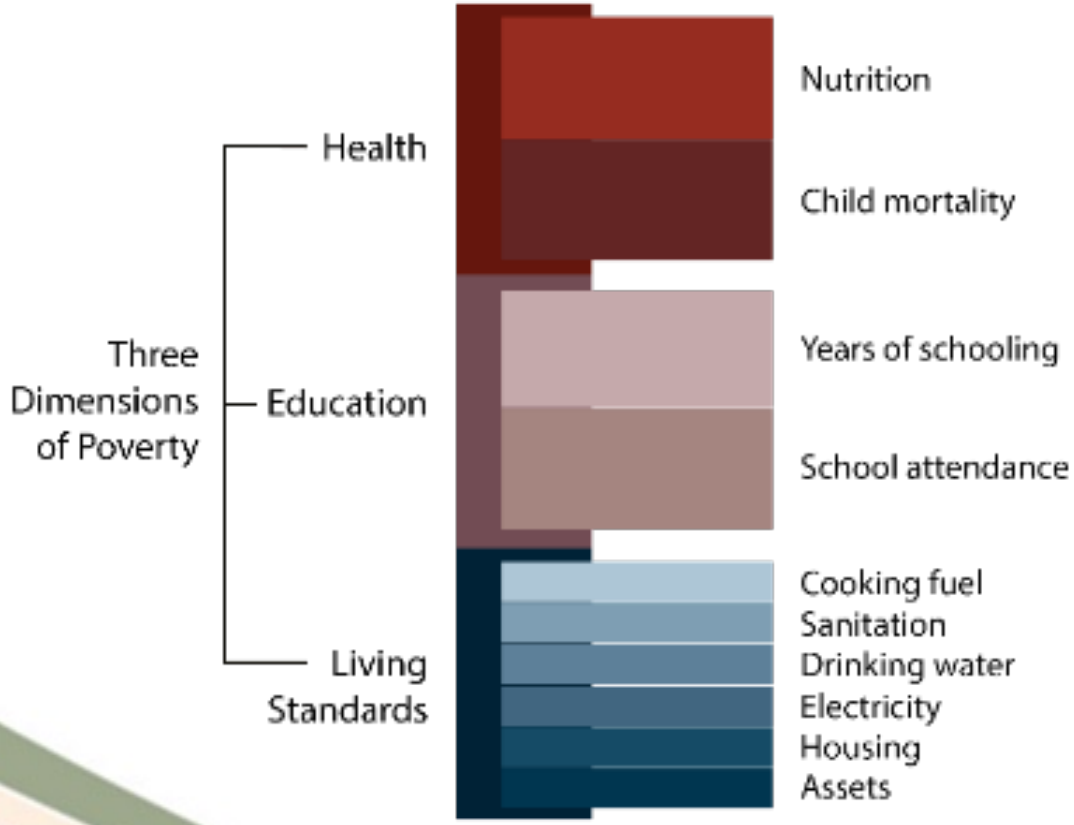
[3] In their empirical work, Anand [**1**], Kakwani [**9**], and Van Ginneken [**20**] use decomposable measures that violate the transfer axioms.

[4] While revising the initial submitted version, we became aware of independent work by Kundu [**12**] which also gives P_2 and indicates some of its properties. However, Kundu's paper addresses quite different issues and, in particular, decomposability is not mentioned.

THE GLOBAL MPI 2020

107 countries and 5.9 billion people
10 indicators

Data Source: DHS and MICS surveys for 94 countries plus PAPFAM and national surveys.



Uses data on interlinked deprivations

Persons deprived in a critical mass of weighted indicators are poor

Tables offer deprivations by indicator, disaggregation by age & region, confidence intervals etc.

Link

REGIONAL MPIS

- **Reflect local values**
- **Encourage regional cooperation**

Oxford Poverty & Human Development Initiative (OPHI)
Oxford Department of International Development
Queen Elizabeth House (QEH), University of Oxford

OPHI WORKING PAPER NO. 79

A Multidimensional Poverty Index for Latin America

Maria Emma Santos*, Pablo Villatoro**, Xavier Mancero*** and Pascual Gerstenfeld****

January 2015

Link

Abstract
This paper proposes a new Multidimensional Poverty Index for Latin America (MPI-LA). The index builds upon the rich tradition in poverty measurement in the region in terms of both the Unsatisfied Basic Needs (UBN) approach and the Poverty Line approach and the recent conceptual and methodological developments in the area of multidimensional poverty measurement. The index combines monetary and non-monetary indicators, includes some new indicators not typically used in the region, and updates deprivation cutoffs for certain traditional UBN indicators, aiming to maximize regional comparability within the data constraints. The index is estimated for 17 countries of the region

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This study has been prepared as a joint activity of OPHI and the Economic Commission for Latin America and the Caribbean (ECLAC), under the framework of the cooperation agreement between both institutions and within OPHI team on Multidimensional Poverty Measurement. Any opinions and views on policy expressed are those of the authors and not necessarily those of CEPAL.

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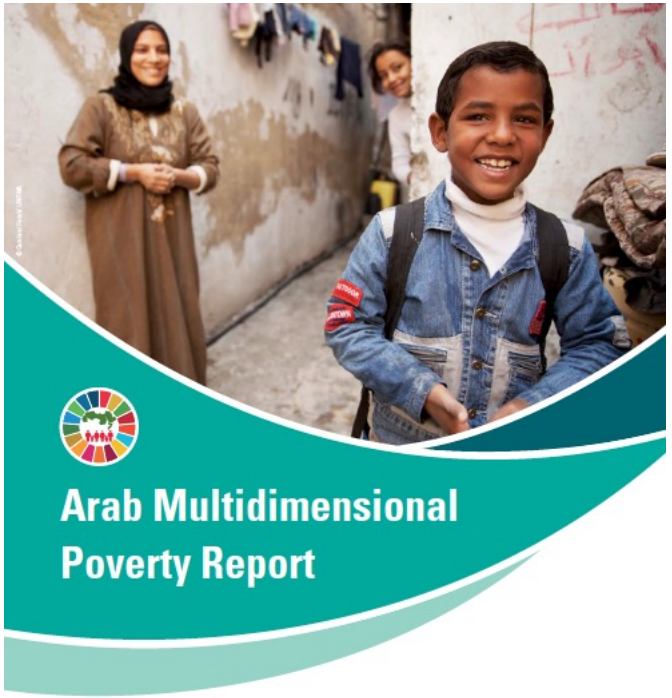
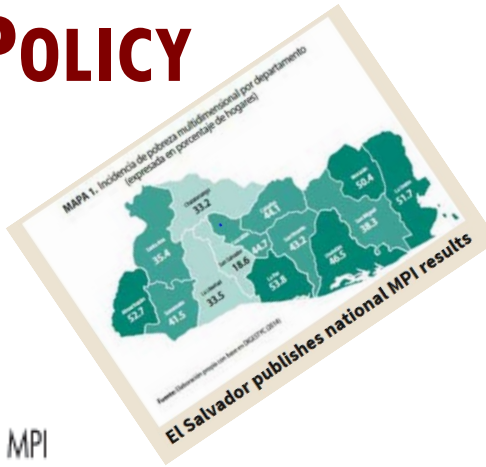


Link

National MPIs: Tailor Made for Policy

- Reflect national priorities
- Computed as official national statistics
- Vital for policy: target, coordinate, monitor
- Comparable over time, groups, provinces



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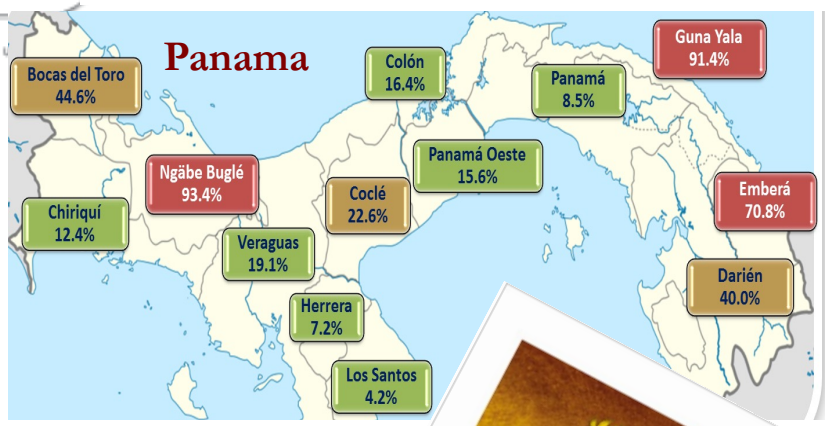
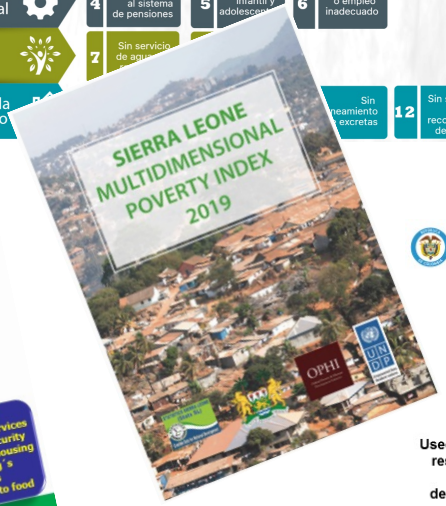
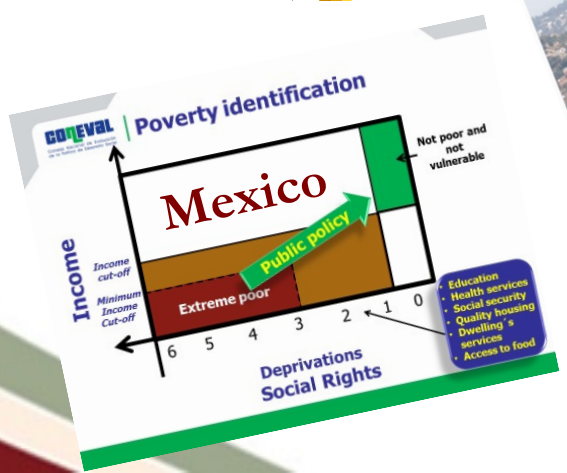
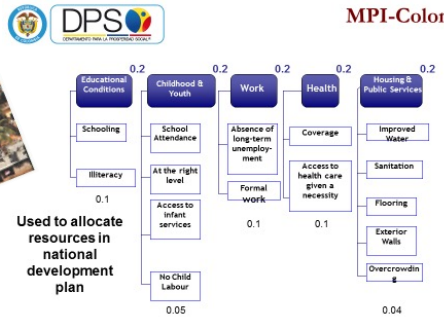
The South African MPI

Creating a multidimensional poverty index using census data









Colombia

HIGH-LEVEL MPPN SIDE EVENT AT THE 75TH UNGA

Poverty at a Crossroad: Using Leadership and the Multidimensional Poverty Index to Build Back Better

Co-hosted by Chile, Pakistan & UNDP

Link

Leadership Panel:

H.E. Sebastian Piñera, President of Chile

H.E. Imran Khan, Prime Minister of Pakistan

H.E. Ashraf Ghani, President of Afghanistan

H.E. Carlos Alvarado Quesada, President of Costa Rica

H.E. Juan Orlando Hernández, President of Honduras

H.E. K.P. Sharma Oli, Prime Minister of Nepal

H.E. María Alejandra Muñoz, Vice President of Ecuador

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'Undoubtedly, the MPI …is a tool that allows better targeting efforts to slow down the damage and to sustain protection for those who have less access.'

Data Revolution?

Bad News

Data gaps and weak NSSs

Need investments in global public goods

Measuring the Statistical Capacity of Nations*

Grant J. Cameron ✉, Hai-Anh H. Dang, Mustafa Dinc, James Foster ✉, Michael M. Lokshin

Volume 83, Issue 4
August 2021
Pages 870-896

Link

Good News

MPIs are far less data intensive

MPIs from nontraditional sources are feasible and cost effective

App 1: Finding Those Most at Risk

Key deprivations

- Nutrition
- Clean water
- Clean cooking fuel

Analysis of global MPI data yields:

- **3.6 billion** people "At Risk"
  - Affected by **at least one** COVID-19-related deprivation
    - 62% of 5.8 billion people living in 103 countries of developing regions covered by the 2020 global MPI
- **435 million** people "At High Risk"
  - Deprived in all three COVID-19 risk factors **at the same time**

Alkire, Dirksen, Nogales, and Oldiges
OPHI Policy Briefing 53a 2020

Link

App 2: MVI for Honduras

Estimated 260,000 people received a single electronic voucher redeemable in selected establishments around the country for food, medicines and biosafety equipment

Dimensions and indicators of the Multidimensional Vulnerability Index (MVI)

Dimension	Indicator
High-risk population	60 years old or more people
	People with chronic diseases
	Unemployment because of health problems
Health, food, household and services	Access to food
	Access to water
	Access to sanitation
	Overcrowding
Economic resilience	Housing payments
	Goods and assets
	Financial services
	Comunication
Financial means and work security	Type of employment
	Permanent employment
	Sector
	Social security

Source: UNDP-Honduras.

Link

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