11. Uncovering geographies of multidimensional poverty around the world

Jakob Dirksen, Ricardo Nogales and Sabina Alkire

1. INTRODUCTION

For a long time, quantitative poverty measurement was largely confined to the geographic entirety of territorial nation-states. This meant that poverty statistics were most often reported and analysed at the level of a country's total population. However, new methods of measurement and analysis, paired with the increasing availability of sub- and transnational poverty data, have shed light on the oversights of an exclusive focus on country-level totals. National aggregates and averages often conceal stark inequalities between subnational regions and populations (Kim et al., 2016). Making these visible allows a more comprehensive understanding of geographies of poverty, enabling the identification of particularly disadvantaged areas and populations, and the development of targeted anti-poverty solutions.

This chapter offers an overview of multidimensional poverty measurement and analysis as a methodological and empirical approach to understanding geographies of poverty. Starting from the recognition that poverty is a multifaceted, multidimensional phenomenon, it introduces the most widely used method for its measurement and analysis. The chapter also discusses data requirements for multidimensional poverty measurement, analytical strategies to investigate geographies of poverty, and offers empirical results on the spatial distribution of multidimensional poverty around the world. For this, the chapter makes use of the 2023 release of the global Multidimensional Poverty Index (global MPI), an internationally comparable measure of acute multidimensional poverty for 110 countries, which are home to 6.1 billion

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people.[1] We hope that the chapter will serve as a useful resource for students, researchers, and practitioners investigating the spatial distribution of multidimensional poverty, and ways of reducing poverty and deprivation around the world. Additional introductory and review chapters on multidimensional poverty measurement and analysis more broadly are also available in Alkire et al. (2015) and Dirksen and Alkire (2025).

2. CONCEPTUALISING AND MEASURING POVERTY AS A MULTIDIMENSIONAL PHENOMENON

Up until a few decades ago, poverty was mainly talked about and measured in 'unidimensional' terms. Still, today, concepts of poverty or deprivation are most commonly operationalised through national or international – relative or absolute – poverty lines. 'Being poor', in these terms, means someone falling below a pre-defined threshold of money or purchasing power with regard to income or consumption expenditure. These thresholds are often defined *absolutely,* against the price of a basic needs basket meant to express the purchasing power necessary to afford all items in such a basket, e.g. essential food and clothing items. The World Bank's international poverty line of $3.00 per person per day, in 2021 purchasing power parity, is one example of this approach (World Bank, 2025). Other monetary poverty lines are defined *relatively,* anchored at some reference point of the overall distribution, such as the 60 per cent of median equivalised disposable income poverty line used across wide parts of Europe (Eurostat, 2021).

Yet, it is now widely recognised that money can and should not buy everything that is required for sufficient (i.e. non-impoverished) quality of life. Among others, the widely cited *Voices of the Poor study* confirmed what was conceptually and philosophically clear to many: poverty should not be thought of within the exclusive confines of its monetary or material dimension. Indeed, the tens of thousands of participants in this study all around the world referred to the many other dimensions of poverty they experienced, including social exclusion and being deprived of power and voice, access to nutritious food, quality education, healthcare, and quality employment (Narayan et al., 2000a, 2000b; Narayan and Petesch, 2002).

These participatory results resonated with many theoretical underpinnings of multidimensional poverty measurement. Basic needs had always been thought of as multidimensional (Hicks and Streeten, 1979; Stewart, 1985), and rights-based conceptions of poverty, too, went far beyond mere material

[1] The 2025 release, which has become available in the meantime, covers 109 countries that are home to 6.3 billion people (UNDP and OPHI, 2025).

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entitlements (CONEVAL, 2010). Around the world, philosophies from the Andean *buen vivir* to the African *ubuntu* suggest multidimensional notions of quality of life – and deprivation thereof (Metz and Gaie, 2010; Hidalgo-Capitán et al., 2014). At the global stage, it was, in addition to the basic needs approach, in particular the *capability approach* as proposed by Nobel Laureate Amartya Sen that inspired multidimensional concepts and measures of human development and poverty (Sen, 1979, 1999). This view considers poverty as unfreedom or deprivation of *basic capabilities* (real opportunities) to be and do what one has reason to value. It is easy to see that from this it is a short way to a multidimensional concept of well-being or poverty, since we all value and have reason to value much more than just material affluence or purchasing power. Poverty, then, can be understood as a *clustering of disadvantages* in the form of simultaneous, basic unfreedoms (Wolff and de-Shalit, 2007). The capability approach has been very influential in informing multidimensional measurement approaches at the international level, including the flagship Human Development Index (HDI) of the United Nations Development Programme (UNDP) and MPIs at national and international levels.

It took some time for formal methods, technical infrastructure, policy appetite, and data availability to catch up with these philosophical and conceptual bases of multidimensional measurement. However, with greater computational capacities, the increasing number and scope of multi-purpose household surveys (Deaton, 1997), global development commitments such as the Millennium Development Goals (MDGs, in 2015 succeeded by the Sustainable Development Goals [SDGs]), and widespread attention among academics, the first years of the third millennium saw a proliferation of multidimensional poverty measures around the world.

The measure most widely used is based on the Alkire–Foster method, originally developed in 2007 (Alkire and Foster, 2011). It is a multidimensional extension of the well-known family of unidimensional (monetary) poverty measures – the Foster–Greer–Thorbecke class (Foster et al., 1984). The Alkire–Foster method is not only used in thousands of academic studies, but also provides the methodical architecture for more than 50 permanent, official statistics at the national and subnational level (MPPN, 2026), for SDG Indicator 1.2.2, and the work of various NGOs and UN agencies, including the Food and Agriculture Organization (FAO and OPHI, 2022), World Food Programme (WFP, 2021), the World Health Organization (WHO, 2021; Dirksen et al., 2022; Ferreira et al., 2024), as well as the multidimensional poverty measures used by the UNDP and the World Bank (UNDP and OPHI, 2023, 2025; World Bank, 2024). It is also used to measure other multidimensional concepts, including well-being/happiness (Ura et al., 2023), women's empowerment (Alkire et al., 2013), energy poverty (Nussbaumer et al.,

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2012), statistical capacity (Cameron et al., 2021), and quality of employment (Sehnbruch et al., 2020).

The Alkire–Foster method built on previous methodological proposals for multidimensional poverty measurement, including, in particular, Brandolini and d'Alessio (1998), Tsui (1999, 2002), Bourguignon and Chakravarty (2003), and Atkinson (2003) – which, in turn, already built on a larger literature on counting and axiomatic approaches to poverty measurement (Alkire et al., 2015). It combines a set of desirable properties into a unique class of multidimensional poverty measures that have several technical and policy-related advantages, which also make it useful for us to consider *geographies of multidimensional poverty*. Among these properties is its flexibility in terms of exogenous parametric specifications, such as how many and which indicators are included, how these are defined, how much weight they receive, and where cutoffs are set to differentiate deprived from non-deprived, and poor from non-poor. The method follows additively separable aggregation procedures, both across indicators of deprivation and across individuals. This endows all indices based on this method with several axiomatic properties. Two of them are particularly useful to understand the geography of poverty. The first is *subgroup decomposability*: the index can be disaggregated by any set of mutually exclusive and collectively exhaustive population subgroups, like subnational regions – data availability and sampling frameworks permitting. The second is *dimensional breakdown*: the index can also be broken down by indicator (also for each population subgroup) to make visible the contribution of each deprivation to overall levels and intensities of multidimensional poverty.

The Alkire–Foster method is a matrix-based[2] algorithm that measures multidimensional poverty by creating deprivation profiles for every person. These are then discriminated against the multidimensional equivalent of a poverty line. To do this, a 'counting' approach with a 'dual cutoff' is applied, as follows. First, depending on the specific measurement purpose, the dimensions and indicators of poverty are chosen (see also Alkire, 2013). Then, a first cutoff, the 'deprivation cutoff', is defined and applied for each indicator. Deprivation cutoffs determine whether a person is deprived or non-deprived in each indicator. Based on these cutoffs, each person is assigned a binary deprivation/non-deprivation status across all considered poverty indicators. This yields a deprivation profile for each person, showing which deprivations they are affected by (1) and which not (0). Deprivations are weighted to express the relative importance of each indicator – with more weight indicating a more important deprivation. The deprivations are then aggregated into a count of

[2] With 1, …, *d* columns for the indicators of poverty included in the measure and 1, …, *n* rows for every person in the society under consideration.

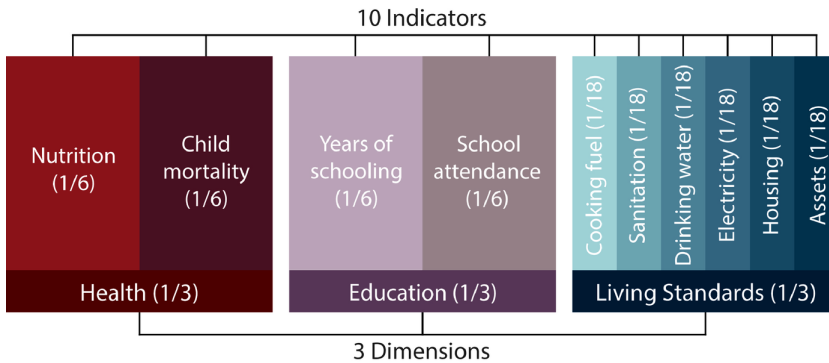
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the weighted deprivations that each person experiences – ranging from 0 (no deprivations) to 1 or 100 per cent (all weighted deprivations). A second multidimensional poverty cutoff then specifies the critical threshold of weighted deprivations that will identify a person as multidimensionally poor, given that they experience the equivalent of at least this share of weighted deprivations (or more).

The most widely used measure from the Alkire–Foster class is the MPI. It is effectively computed as the product of two sub-indices: i) the headcount ratio or incidence of multidimensional poverty (H, i.e. the percentage of the population that is multidimensionally poor) and ii) the intensity of multidimensional poverty (A, i.e. the average weighted deprivation score among the multidimensionally poor), so, $MPI = \mathrm{H} \times \mathrm{A}$. Thus, by construction, the MPI changes if any poor person becomes more or less deprived (i.e. acquires or gets rid of one or more deprivations).

To illustrate this measurement algorithm, Figure 11.1 and Table 11.1 describe the poverty identification mechanism used for the global MPI. Figure 11.1 shows the three dimensions of the global MPI: health, education, and living standards. Each dimension is equally weighted at 1/3. The indicators within each dimension are also equally weighted at 1/6 for the pairs of indicators in the health and education dimensions; and 1/18 for the six indicators in the living standards dimension.

In order to create each person's deprivation profile, the deprivation cutoffs for each indicator (detailed in Table 11.1) are applied. This identifies whether a person is deprived or non-deprived in each indicator. The weighted deprivation



Source: OPHI, 2018.

Figure 11.1 The dimensions and indicators of the global MPI

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Table 11.1 Global MPI – dimensions, indicators, deprivation cutoffs, and weights

Dimensions	Indicator	Deprived if…	SDG area	Weight
Health	Nutrition	Any person under 70 years of age for whom there is nutritional information is **undernourished**. (1)	SDG 2	1/6
Health	Child mortality	A child **under 18** has **died** in the household in the five-year period preceding the survey. (2)	SDG 3	1/6
Education	Years of schooling	**No** eligible household member has completed **six years** of **schooling**. (3)	SDG 4	1/6
Education	School attendance	Any school-aged child is **not attending** school **up to** the age at which he/she would complete **class 8**. (4)	SDG 4	1/6
Living standards	Cooking fuel	A household cooks using **solid fuel**, such as dung, agricultural crop, shrubs, wood, charcoal, or coal. (5)	SDG 7	1/18
Living standards	Sanitation	The household has **unimproved** or **no** sanitation **facility** or it is improved but **shared** with other households. (6)	SDG 6	1/18
Living standards	Drinking water	The household's source of **drinking water** is **not safe** or safe drinking water is a **30-minute** or **longer walk** from home (round trip). (7)	SDG 6	1/18
Living standards	Electricity	The household has **no electricity**. (8)	SDG 7	1/18
Living standards	Housing	The household has **inadequate** housing materials in **any** of the three components: **floor**, **roof**, or **walls**. (9)	SDG 11	1/18
Living standards	Assets	The household does **not own more than one** of these **assets**: radio, TV, telephone, computer, animal cart, bicycle, motorbike, or refrigerator, and does not own a car or truck.	SDG 1	1/18

Notes: The global MPI is related to the following SDGs: No Poverty (SDG 1), Zero Hunger (SDG 2), Good Health and Well-being (SDG 3), Quality Education (SDG 4), Clean Water and Sanitation (SDG 6), Affordable and Clean Energy (SDG 7), and Sustainable Cities and

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Communities (SDG 11) (1). Children under 5 years (60 months and younger) are considered undernourished if their z-score of either height-for-age (stunting) or weight-for-age (underweight) is below minus two standard deviations from the median of the reference population. Children 5–19 years (61–228 months) are identified as deprived if their age-specific BMI cutoff is below minus two standard deviations. Adults aged 20 to 70 years (229–840 months) are considered undernourished if their body mass index (BMI) is below 18.5 kg/m² (2). The child mortality indicator of the global MPI is based on birth history data provided by mothers aged 15 to 49. In most surveys, men have provided information on child mortality as well, but this lacks the date of birth and death of the child. Hence, the indicator is constructed solely from mothers' data. However, if the data from the mother are missing, and if the male in the household reported no child mortality, then we identify no child mortality in the household (3). If all individuals in the household are in an age group where they should have formally completed six or more years of schooling, but none has this achievement, then the household is deprived. However, if any individuals aged 10 years and older reports six years or more of schooling, the household is not deprived (4). Data source for the age children start compulsory primary school: DHS or MICS survey reports, and http://data.uis.unesco.org (5). If the survey report uses other definitions of solid fuel, we follow the survey report (6). A household is considered non-deprived in sanitation if it has some type of flush toilet or latrine, or ventilated improved pit or composting toilet, provided that the facility is not shared. If the survey report uses other definitions of improved sanitation, we follow the survey report (7). A household is considered non-deprived in drinking water if the water source is any of the following types: piped water, public tap, borehole or pump, protected well, protected spring, or rainwater. It must also be within a 30-minute round trip walk. If the survey report uses other definitions of improved drinking water, we follow the survey report (8). A small number of countries do not collect data on electricity because they have 100 per cent coverage. In such cases, we identify all households in the country as non-deprived in electricity (9). Deprived if the floor is made of natural materials (mud/clay/earth, sand or dung) or if the dwelling has no roof or walls, or if either the roof or walls are constructed using natural or rudimentary materials, such as carton, plastic/polythene sheeting, bamboo with mud/stone with mud, loosely packed stones, uncovered adobe, raw/reused wood, plywood, cardboard, unburnt brick or canvas/tent. The definition of natural and rudimentary materials follows the classification used in country-specific DHS or MICS questionnaires.

Source: Alkire et al. (2023a).

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count of each person is then compared against the multidimensional poverty cutoff. The global MPI considers a person as multidimensionally poor if they experience at least 33 per cent (1/3) of the weighted deprivations.

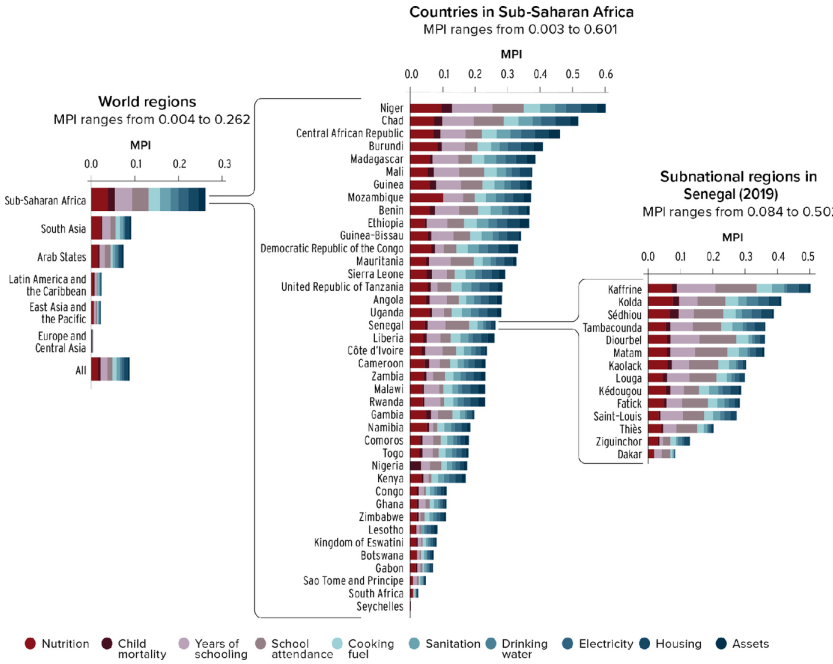
3. THE POWER OF DISAGGREGATION: UNPACKING THE GEOGRAPHY OF MULTIDIMENSIONAL POVERTY AROUND THE WORLD

According to the 2023 global MPI (UNDP and OPHI, 2023), 1.1 billion out of 6.1 billion people (just over 18 per cent) across 110 countries and 1,281 subnational regions live in acute multidimensional poverty. On average, these poor people experience 48.5 per cent of the possible weighted deprivations. These aggregate figures mask considerable differences across continents and countries, as well as within countries. However, by the subgroup decomposability axiom fulfilled by the global MPI, it is possible to recover these disaggregations relevant to understanding more nuanced geographic patterns of poverty.

The MPI values range from 0.004 to 0.262 across the considered world regions, with countries in sub-Saharan Africa being the ones carrying the largest burden (see Figure 11.2). This world region is home to over 48 per cent of all multidimensionally poor people, while less than 1 per cent live in Europe and Central Asia. This is a picture similar to that evident in the regional distribution of monetary poverty (see e.g. Sala-i-Martin, 2006; Moatsos, 2024) and non-monetary deprivations, such as lack of access to technology (Imran, 2023) or health services (Hosseinpoor et al., 2023). However, the global MPI can show what other poverty statistics cannot: where a critical load of overlapping deprivations is found in the same household. In this respect, too, there are important geographical disparities. The average poor person in sub-Saharan Africa lives with almost 50 per cent of the weighted deprivations included in the index, while their counterpart in Europe and Central Asia lives with less than 37 per cent of the weighted deprivations. This sheds light on another important aspect of the geography of poverty, which can be uncovered here using the dimensional breakdown and subgroup decomposition properties of the MPI – not only are people of different countries and regions unequally likely to live in multidimensional poverty, but how poor they are (intensity) and how they are poor (composition of MPI by indicator) is markedly different, too (Figure 11.2).

Taking a closer look at patterns within continents (Figure 11.2), the global MPI shows stark inequalities between countries. Not only is South Asia the continent with one of the highest proportions of poor people (22.35 per cent, only second to sub-Saharan Africa), but it is also one of the continents with the highest standard deviation around that population-weighted mean. The poverty headcount ratio ranges from 0.77 per cent in the Maldives to 55.91 per cent

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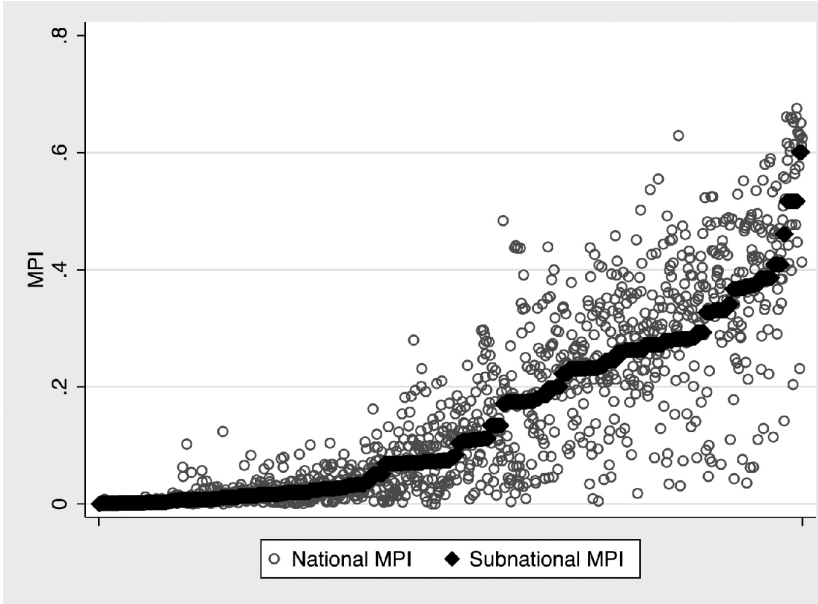
Note: The bars are divided into segments that show the absolute contribution of each indicator to the MPI value.
Source: UNDP and OPHI (2023, p. 12) as well as Alkire et al. (2023a). Copyright © 2023 UNDP and OPHI.

Figure 11.2 *MPI values and indicator composition vary widely across world regions, countries, and subnational regions*

in Afghanistan. Considerable inequalities in global MPI and differences in the composition of multidimensional poverty are also observed in other continents, such as sub-Saharan Africa, with MPI values ranging from 0.003 in the Seychelles to 0.601 in Niger (see Figure 11.2) and across subnational regions within countries, e.g. in Senegal from 0.084 in Dakar to 0.502 in Kaffrine (see Figures 11.2 and 11.3).

Understanding how different regions are unequally affected by overlapping deprivation is an important tool in the operationalisation of regional strategies against poverty. There may be common elements that need to be addressed by many regions within countries, but the evidence suggests that context-specific, place-based strategies may inform more effective and more efficient actions. Indeed, our data show that there are important disparities across subnational

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Note: Subnational regions within the same country fall on the same line on the horizontal axis.
Source: Authors' own calculations using data from Alkire et al. (2023a).

Figure 11.3 National and subnational 2023 global MPI values

regions in the same country, and these disparities are considerably larger for the poorer countries. For instance, in Indonesia (with a country-level MPI value of 0.014) the MPI values are under 0.008 in several subnational regions, including Jakarta, Bali, and West Java, while reaching 0.083 in Papua. In Chad (country-level MPI of 0.517) the subnational MPI value is under 0.400 only in N'Djamena and Moyen-Chari, and is highest in Wadi Fira and Kanem (0.667 and 0.676, respectively). This shows a clear need for anti-poverty policies tailored to subnational contexts, taking account of the heterogeneity of poverty incidence, intensity, and composition, as well as the numbers of poor and deprived people in each subnational region or country.

3.1 Urban–Rural

In the literature on poverty and geography, it is well-established that, globally, people living in rural areas are overrepresented among the poor (see e.g.

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Luca et al., 2023, for a recent discussion on this matter; see also FAO and OPHI, 2022). However, poverty incidence between urban and rural areas varies greatly across countries and continents. Among countries included in the 2023 global MPI, poverty incidence in urban areas is regularly under 20 per cent – with exceptions in sub-Saharan Africa – and it is never over 40 per cent. In rural areas, poverty incidence is regularly over 40 per cent – with the rural areas in the sub-Saharan African countries of Central African Republic, Chad, and Niger reaching incidence levels of over 90 per cent. A similar pattern is visible when looking at multidimensional poverty intensity. Globally, the average intensity of acute multidimensional poverty is below 50 per cent. However, poverty intensity in rural areas is markedly higher than the average, and particularly higher than in urban areas: multidimensionally poor people in rural areas face, on average, more than 60 per cent of the weighted global MPI deprivations. In many sub-Saharan African countries, intensity is over 50 per cent (including the aforementioned countries), meaning that poor people there are deprived in over half of the weighted indicators that make up the global MPI.

Countries in Latin America and the Caribbean show the widest gaps in terms of poverty incidence between urban and rural areas – with rural incidence being at least 10 times higher than that in urban areas in Nicaragua, Bolivia, Peru, and Colombia, with the most pronounced gap of 22.1 percentage points in Haiti. This represents additional evidence in support of the long-documented, persistent geographic inequalities in the region (Sánchez-Ancochea, 2020).

4. TRENDS AND POVERTY CHANGES OVER TIME

Next, we consider recent trends in multidimensional poverty around the world. In this section, we focus on 84 countries for which we had at least two waves of harmonised global MPI results in 2023. This allows us to offer empirical results on the trends in the spatial distribution of multidimensional poverty around the world. Results are, necessarily, also impacted by changes to demographic make-ups of subnational regions, including e.g. their relative population shares, migration patterns, and household size and composition.

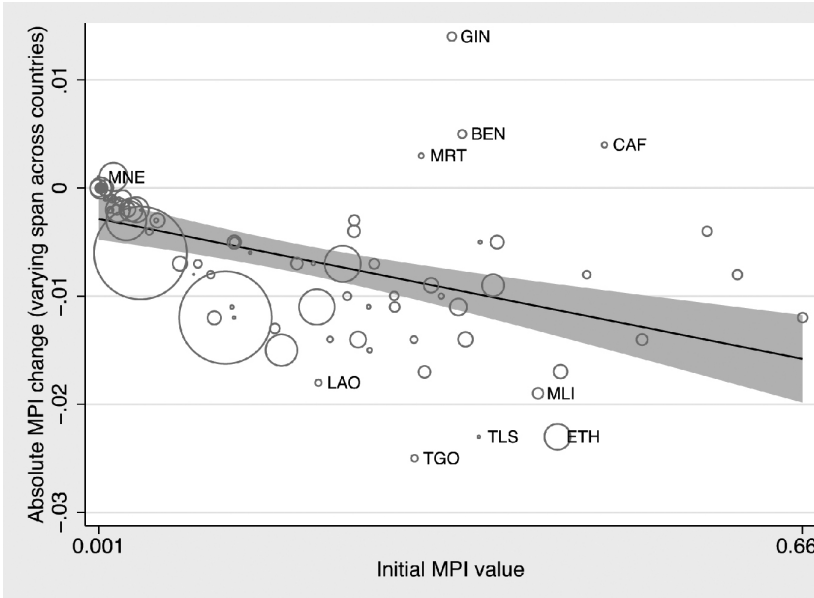
Analysing changes over time through the disaggregated results of the global MPI allows the identification of regions, countries, or subnational areas and population subgroups that are being left behind – with regard to poverty incidence, intensity, or in terms of the reduction of particular deprivations. This, in turn, too, helps inform targeted interventions.

The time spans covered by each country vary as they are based on data from household surveys that were conducted at different frequencies and intervals across countries. Focusing first on MPI changes over time, we find that there are patterns of absolute convergence across the 84 considered countries

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in that there is a statistically significant relation (at 1 per cent significance level) between the observed annual rate of change and the initial MPI level (see Figure 11.4). Countries with higher initial multidimensional poverty levels tend to see greater reductions. Countries significantly below the regression line in Figure 11.4 are particularly good performers, in that they managed to reduce multidimensional poverty at a faster pace than the typical country in our dataset. Notably, they include African countries such as Ethiopia, Mali, and Timor Leste. However, other countries reduced poverty at a slower pace than most of the rest. These include Thailand, Tunisia, and Jordan, among others. Their pace was slower either because poverty is already low, meaning that it is difficult to have such a fast rate of reduction (as in these three countries), or because poverty reduction has stagnated. Moreover, in some of these countries, poverty actually increased in the observed span; these are mostly sub-Saharan countries, including Guinea, Central African Republic, and Mauritania.

Thus, we observe that, overall, countries with higher initial MPI values have reduced poverty faster than countries with lower initial values; they are catching up. This convergence of MPI values is a reflection of two important facts



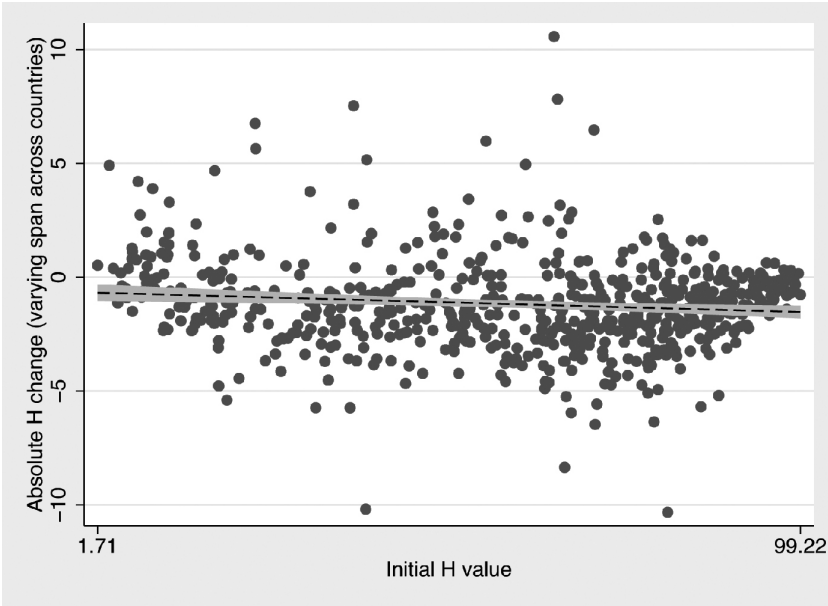
Source: Authors' own calculations using data from Alkire et al. (2023b).

Figure 11.4 Annualised absolute global MPI change across 84 countries

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that reinforce each other. On the one hand, there is statistically significant evidence (at 1 per cent significance) of absolute convergence in terms of poverty incidence (H) across the 84 considered countries. Countries that initially had high proportions of people living in multidimensional poverty are generally the ones for which we observe the fastest reduction of this proportion over time. On the other hand, there is also statistically significant evidence of convergence in terms of poverty intensity. This means that, in general, countries where, initially, the poor faced a large share of weighted deprivations are the ones where poverty intensity reduced the fastest. The best state of affairs is one where both intensity and incidence are reduced, and where these reductions are the fastest for the poorest groups.

Importantly, if we extend our analysis to the entire set of subnational regions in the countries covered by this analysis of poverty changes over time, the convergence pattern still holds, but is considerably weaker (see Figure 11.5



Note: Each dot represents the difference for two successive points in time across 814 subnational regions. Subnational regions have observations for between two and four points in time.
Source: Authors' own calculations using data from Alkire et al. (2023b).

Figure 11.5 Annualised absolute change in multidimensional poverty incidence across 814 subnational regions

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for multidimensional poverty incidence, where the linear trend is slightly but significantly decreasing at a 5 per cent significance level). This result is in line with Sala-i-Martin (2006), who made a strong case for convergence across many countries, and it shows that some of the poorer regions are, indeed, catching up. In an analysis of convergence within world regions, there is also evidence of hope for reduced subnational inequalities in the long run in all six world regions covered by the global MPI (South Asia, Europe and Central Asia, sub-Saharan Africa, East Asia and the Pacific, Latin America and the Caribbean, and the Arab States).

However, despite an overall positive trend, some subnational regions are clearly being left behind. Most notably, 77 subnational regions show dynamics by which poverty incidence has increased during the observed span – 72 of them in sub-Saharan Africa.

5. OUTLOOK AND RESEARCH FRONTIERS

Throughout this chapter, we have focused chiefly on illustrating the spatial analysis of multidimensional poverty and associated statistics – to uncover and better understand the distribution of overlapping deprivations at the household level, and how this distribution constitutes populations in various spaces or geographic aggregations (world regions, countries, subnational regions, the urban–rural continuum) as differently poor. In doing so, we have used the global MPI as our primary example. However, earlier in the chapter, we also discussed other MPIs – including context-specific applications used by UN agencies, and national MPIs, which are permanent official statistics of poverty, as well as policy tools and SDG indicators at country level. To get the best possible picture of geographies of poverty, these are indispensable. For understanding the nuances of poverty from local to global level, we need both – including internationally comparable measures such as the global MPI, which apply one common yardstick everywhere. However, we also know that poverty is nuanced and contextualised. What exactly counts as a *basic capability*, or which indicators provide the best possible proxies to measure them, may vary across humans and from place to place. Thus, different multidimensional poverty measures may be appropriate in order to capture what constitutes deprivations in a given context as accurately as possible. Constraints that an internationally comparable measure like the global MPI operates within – such as comparable data on the global MPI indicators – are relaxed where the aim is measurement and policy guidance within a country, but not necessarily comparability with others. Therefore, national MPIs can (and do) often make

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use of other, often richer, household surveys, rather than measures aimed at international comparability.[3] Both are important.

We end with a brief discussion of research frontiers – as yet understudied areas that provide opportunities for researchers interested in contributing to the field. In this chapter, rather than attempting to cover the myriad of perspectives that the academic field of geography has on the subject matter, we limited our attention to the spatial analyses of (disaggregated) quantitative measures of multidimensional poverty. Much more could be said and done. We have not gone into the methods and empirics of economic geography to uncover causal mechanisms in multidimensional trends, nor have we addressed the often dynamic nature of deprivation and poverty as defined. We have not attempted to discuss all the intricacies of constructing, estimating, and analysing MPIs at the most granular levels, either. Needless to say, colleagues in area studies would have much to add on the nuances and different explanatory factors of spatial disparities in multidimensional poverty, rather fleetingly exemplified here. Furthermore, qualitative, place-based research remains an indispensable complement to quantitative analyses at any scale, in order to more fully appreciate the complexity of human experiences. The same goes for interactions between humans and their physical (and social) environments, on which a lot more could be said, too. Indeed, the influence of environments and events such as natural disasters or extreme weather events on deprivation and poverty opens up an array of pressing research questions around the prevention and mitigation of multidimensional poverty and deprivation in the face of exacerbating anthropogenic climate change (UNDP and OPHI, 2025). In addition to these important questions, we outline the following areas where geographic research can make valuable contributions to the quantitative measurement and analysis of multidimensional poverty. These generally focus on complementing evidence on multidimensional poverty with different kinds of geospatial data to better understand levels and trends of poverty and deprivation, including the prevalence of certain deprivation profiles or bundles, as well as the incidence and intensity of multidimensional poverty. Where these data can be linked to evidence on trends in poverty over time, they can help to not only identify correlates, but also causes and consequences of multidimensional poverty and deprivation.

[3] This does not mean that these are free of data limitations and all sorts of additional constraints, including resource shortages and strains on statistical capacity, for example.

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- Jointly analyse data on multidimensional poverty and *policies, programmes and interventions* to identify what works (and what does not) and inform poverty reduction strategies.[4]
- Extend *human and cultural geographic analysis* to multidimensional poverty: What is the relationship between formal and informal institutions, attitudes and behaviours (e.g. crime, trust, solidarity, nepotism, corruption), and multidimensional poverty, for example?
- Map the *physical socioeconomic infrastructure* – schools, clinics, roads, shops, economic hubs and centres, as well as public transport routes, etc. – onto granular mappings of poverty and deprivation to simultaneously show conditions of interest for analyses of problems and solutions.[5]
- Link disaggregated evidence on multidimensional poverty and poverty trends to information on the nature, occurrence, duration, and severity of *conflicts and disasters* (UNDP and OPHI, 2025).
- Complement multidimensional poverty analyses with topographical information, e.g. on terrain. For example, is there a relationship between overlapping deprivations and slopes (e.g. on mountain sides)?
- Augment evidence on multidimensional poverty with geospatial data on ecosystem services, climatic zones, air quality, precipitation, extreme weather events, and natural disasters to better understand the *environment–poverty nexus.*

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[4] E.g. as per Jalan and Ravallion (1998). Such analyses may also include assessments of which subnational regions drove aggregate poverty reduction trends.

[5] As in Chetty et al. (2014), e.g., on both this and the previous point.

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