

BHUTAN

Multidimensional Poverty Index 2022



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National Statistics Bureau (NSB),
Royal Government of Bhutan

Oxford Poverty and Human Development Initiative (OPHI),
University of Oxford



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Foreword

In 2022, we developed and estimated a national Moderate Multidimensional Poverty Index (hereafter referred to as Moderate MPI) for the first time in order to capture an accurate picture of poverty that considers individuals and households who may not be acutely poor but are still experiencing multiple deprivations. Bhutan's Moderate MPI is based on the data from the Bhutan Living Standards Survey (BLSS) 2022, conducted by the National Statistics Bureau (NSB) funded by the Royal Government of Bhutan. The original national MPI – which in 2017 identified 5.8% of people as poor – is also updated, and changes since 2017 are presented. In the five years since the previous update, Bhutan's original MPI has become a strong instrument for resource allocation, targeting, and policy design, complementing Bhutan's monetary poverty measure. It is hoped that the Moderate MPI will guide poverty policies going forward.

In 2022, the Moderate MPI value is 0.076, indicating that poor people in Bhutan experience only 7.6% of the deprivations that could be experienced if all Bhutanese were deprived in all indicators. The incidence of moderate multidimensional poverty stands at 17.8% of the population, with urban and rural poverty rates of 8.2% and 23.9%, respectively. The Moderate MPI complements Bhutan's monetary poverty measure. As in 2017, we find that the people who are monetarily poor are not nec-

essarily multidimensionally poor – in fact, while 17.8% of people are poor according to the Moderate MPI and 12.4% are monetary poor, the same *Dzongkhags* are not the poorest. Both measures are therefore needed to adequately illuminate poverty in its many forms and dimensions. An innovation in this report is an added chapter on child poverty, which disaggregates the Moderate MPI by age groups and shows how the composition of poverty varies by age cohort. These findings show that 20.7% of children under the age of eighteen are poor by the Moderate MPI.

The report also covers the change in the original national MPI over a five-year period from 2017 to 2022. The original MPI measures a more extreme level of poverty which we term 'acute' multidimensional poverty. Hereafter in this report we will use the terms 'original' and 'acute' interchangeably to refer to the same measure. This intertemporal analysis uses indicators with strictly comparable definitions and analyses changes nationally and by *Dzongkhag* and area. Overall, the 2022 original MPI paints a picture of ongoing fast progress. The original MPI shows the incidence of acute MPI reducing by more than half since 2017, from 5.8% to 2.1%, with the poorest groups, such as rural areas and children, progressing the fastest, and a strongly pro-poor pattern of progress across *Dzongkhags*. There are some complexities – for

example, internal migration is also a part of the urban story, leading to small increases in acute MPI in some urbanised *Dzongkhags*. Nevertheless, the original MPI shows positive achievements in acute poverty reduction that occurred – despite the pandemic period.

Bhutan’s original MPI – which reflected acute poverty – proved to be a useful input into the formulation of plans and policies during its first decade. Our hope is that the Moderate MPI presented here will guide the 13th Five Year Development Plan and poverty policies and programmes going forward, catalysing an ongoing reduction in moderate poverty, as is appropriate in present times.



Mr. Phub Sangay
Executive Specialist and Officiating
Director

Executive Summary

MODERATE MULTIDIMENSIONAL POVERTY: MOTIVATION AND STRUCTURE

It is common for poverty measures to be adjusted every decade or so. Hence the 2022 BLSS, published 10 years from the first BLSS-based MPI, offers an opportunity to design a Moderate MPI that better reflects the aspirations of Bhutanese people and the government. Hence this report presents the Moderate MPI for Bhutan. Built on extensive consultations over several years with policy and civil society actors, as well as technical exercises with planners and statisticians in Bhutan, the Moderate MPI takes a large step forward. Ambitions of equity are reflected, for example in gendered indicators of education. Bhutan's interest in digital inclusion is evident in requirements such as technological assets and internet access. The prominent national priority of water means that water must be piped into the dwelling, it therefore has been assigned a higher weight (than it had in the original MPI) and enters the health domain alongside access to health care. A cross-cutting commitment to high standards of service is evident in requirements such as private flush toilets, electricity supplies without major interruptions, and access to tarred roads. Indicators such as land and livestock are also updated to reflect current standards. Thus, Bhutan's new Moderate MPI raises the bar considerably in order to accurately reflect the aspi-

rations of the present generations of both citizens and policy actors. The Moderate MPI will thus be updated and now used as the official national MPI of Bhutan throughout the coming decade.

Chapter 5 of this report presents trends from 2017–2022 in the original, acute MPI which identified 5.8% of Bhutanese as poor in 2017. These comparative trends provide transparency and completeness, so that readers know how the original MPI changed in the intervening five years. Results show strong and significant and pro-poor reductions nationally (from 5.8% to 2.1%) and by key groups – urban and rural areas, children and adults, and *Dzongkhags*.

MODERATE MPI: LEVEL AND COMPOSITION

In 2022, the moderate multidimensional poverty rate, or incidence, is estimated at 17.8% of the population. The intensity of deprivation, which is the average deprivation score across all poor persons, is 42.8%. The MPI, which is the product of the incidence of poor people and the intensity of poverty, has a value of 0.076. This indicates that poor people in Bhutan experience 7.6% of the deprivations that would be experienced if all people were deprived in all indicators. The urban poverty rate is 8.2%, while rural poverty stands at 23.9% – and 61.4% of Bhutanese poor live in rural areas. In terms of the percentage

contribution of each of the 14 indicators of the Moderate MPI to overall poverty, the largest contributors to national poverty are deprivations in access to health (18.0%), followed by water and school attendance (15.7%) and female years of schooling (15.3%). When aggregating by dimensions, the largest contributor is the education dimension (45.0%). Even though the indicators of the dimensions of living standards and health were changed to reflect higher aspirations for the population, they still contribute 21.3% and 33.6% respectively to overall poverty.

MODERATE MPI ACROSS DZONGKHAGS

Across *Dzongkhags*, there is only a partial ranking due to overlapping confidence intervals. What is clear is that Samtse appears to be the poorest and is certainly poorer than 13 other *Dzongkhags*. Paro and Thimphu are less poor than 14 other *Dzongkhags*. Considering the poverty level together with population is very important. Samtse houses the largest number of multidimensionally poor (17.7%) followed by Thimphu (8.5%) and Chhukha (8.4%). Gasa (1.0%) has the lowest share of poor people in Bhutan.

MODERATE MPI AMONG CHILDREN AND ACROSS SOCIAL GROUPS

Across age cohorts, multidimensional poverty is highest for children with 20.7% of all children living in poverty. Children aged

10–17 years are the poorest age group, of whom nearly 25% are poor. These findings show that children aged 10–17 years are especially vulnerable – a common pattern in other countries – highlighting the need to analyse child poverty further and invest explicitly in its reduction.

When comparing households whose head is male with those where the head is female, there is no difference in the level of multidimensional poverty. As expected, the educational level and literacy status of the household head play an important role. The higher the level of educational attainment of the household head, the lower the poverty rate. Across households of different sizes, there is not much variation in the level of poverty.

MODERATE MPI AND MONETARY POVERTY

This report found that MPI complements the measure of monetary poverty. 12.4% of Bhutanese are monetary poor according to the 2022 BLSS dataset, and 17.8% are MPI poor by the Moderate MPI. So one might assume that all monetary poor people are also MPI poor. However that is not the case. Actually only 4.7% of Bhutanese were both monetary poor and multidimensionally poor in the 2022 BLSS. So were there only one poverty measure, many persons' difficult material conditions would be overlooked.

The report also sorted people who were MPI poor by monetary quintile. It is expected that those who are MPI poor would be in the poorest 20% or at least the poorest 40% of the population, but again there is a mis-match, and 31.3% of those who are MPI poor are not among the poorest 40% in monetary terms.

MULTIDIMENSIONAL POVERTY REDUCTION ACCORDING TO THE ORIGINAL MPI

The original national MPI, which measured acute poverty, identified 5.8% of Bhutanese as poor in 2017. Updated results show strong and significant and pro-poor reductions nationally (from 5.8% to 2.1%), with statistically significant reductions in every indicator as well as in MPI value, incidence and intensity. It is noteworthy that the SDG Target 1.2 is to reduce by half the incidence of MPI from 2015 to 2030. Bhutan halved the incidence of its official MPI in merely five years from 2017 to 2022 – thus meeting SDG target 1.2 ahead of schedule. MPI fell from 0.023 to 0.008, and intensity also declined.

Across groups, rural areas were the poorest and had the fastest reduction – from 8.1% to 3.1%. Similarly, the poorest age group, children, had the fastest reduction. However, in urban areas, while incidence fell, intensity rose, so there was no significant re-

duction in MPI in urban areas. Furthermore, the urban population share increased from 35.5 to 40.3%. Therefore, while urban areas are still far less poor than rural areas, there remains a need to ensure that urban poverty is reduced going forward. In terms of *Dzongkhags*, Gasa was poorest and showed the fastest absolute reduction. In general, the poorest *Dzongkhags* reduced poverty the fastest, so were not being left behind – which is promising for equity, as well as fulfilling the SDG goal of leaving no one behind.

ACTION AREAS

The MPI provides a detailed information platform on the levels of poverty, the number of poor people, and the deprivations that have to be addressed to reduce MPI. Hence the MPI is and should be a tool for action – as the economist Sir Tony Atkinson wrote, it is this ‘link to action’ that distinguishes a successful poverty measure.

The findings of this report, and particularly, going forward, the Moderate MPI, should be used to:

- Track and monitor progress in poverty reduction;
- Identify high-poverty areas to target poverty reduction programmes or interventions;

-
- Direct poverty reduction schemes to the poorest subgroups, such as children;
 - Tailor responses to the precise deprivations required by each of the poorest subgroups;
 - Integrate MPI into the Resource Allocation Formula (RAF);
 - Integrate MPI questions into other household surveys for more frequent updates;
 - Use the MPI to coordinate multi-sectoral policies for high-efficiency results;
 - Inform and empower poor people and communities as allies in poverty reduction.



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I. Introduction

This chapter serves as an introduction to the report on the Multidimensional Poverty Index (MPI) of Bhutan and has the following sections:

- 1.1 History of Multidimensional Poverty Measurement
- 1.2 Context and Framework
- 1.3 Process of designing a Moderate MPI
- 1.4 Purpose of Bhutan's Original and Moderate National MPIs

1.1. HISTORY OF MULTIDIMENSIONAL POVERTY MEASUREMENT

Bhutan's first official MPI was released in 2010 using the Bhutan Multiple Indicator Cluster Survey (MICS). As the first country in the world to publish a national MPI based strictly on the Alkire–Foster method, Bhutan was a true pioneer in creating and using a national MPI for policy purposes. Now many countries are doing likewise – for example Colombia launched its national MPI in 2011, and national MPIs are reported as SDG Indicator 1.2.2. Over 60 countries participate in a South-South Multidimensional Poverty Peer Network (MPPN), with many using or designing national MPIs as official permanent statistics and as monitoring and policy tools that localize the SDGs.

Bhutan's national MPI was re-estimated in 2012 using the BLSS survey with slight modifications in indicators to reflect the data present in that dataset – the same dataset used for monetary poverty measurement. Back-estimations were performed using the 2007 BLSS dataset to explore changes over time (NSB 2012). Subsequently Bhutan's MPI was updated using the 2017 BLSS dataset, showing significant and rapid progress in poverty reduction (NSB 2017). By 2017, multidimensional poverty affected only 5.8% of the population. Thus from 2017 a conversation began about how to add a second measure, a Moderate MPI, in 2022. The Moderate MPI would capture current expectations and aspirations of Bhutanese citizens and planners going forward – by incorporating a gender lens; using higher cut-offs for identifying deprivations, such as drinking water piped into the house and flush toilets; and, adding more demanding educational indicators that mirror structures used in other middle income countries, such as examining school lag for children.

1.2 CONTEXT AND FRAMEWORK

In Bhutan, poverty reduction is accorded a high priority at the national and *Dzongkhag* level. The 10th Five Year Plan had poverty reduction as its overarching and cross-cutting objective. According to the 11th Five Year Plan, presented in the National

Assembly in 2013, by the end of the Plan in 2018 both monetary and multidimensional poverty should be sharply reduced. This means Bhutan should have more people who not only have a better income, but also have better achievements in health and education and enjoy a decent standard of living. Thus, the priority for the 12th Plan was to target the poor, to monitor poverty reduction in a multidimensional manner, and advance informed and clear policies to redress it. Building on earlier work the 12th FYP aims to:

improve living conditions of the general population and narrow the gap between the rich and the poor. It aims to eradicate poverty in all its forms through improvements in health, education and living standards. It also aims to create an inclusive society by reducing various forms of inequality of income and consumption and unequal access to critical services such as health and education (p.44, 12th FYP).

Bhutan's national plans may have been prescient, for in 2015 when the world gathered to affirm the Sustainable Development Goals (SDGs) and Agenda 2030, the greatest global challenge was recognised to be ending poverty 'in all its forms and dimensions'. This objective is embodied in SDG Goal 1 and given priority throughout the associated documents. Target 1.2 aims to halve multidimensional poverty. Bhutan's national original MPI, thus, is likewise a headline indicator in the SDGs – and one that reflects deprivations that are interlinked in the lives of poor men, women, and children. It is a statistic whose analysis

– as this report, as well as Bhutan's experience, more widely illustrates – can inform integrated and multisectoral policy making at national and local levels. And the disaggregated analysis of MPI over time illuminates who is poorest and is used to monitor whether they are catching up with less poor groups.

The MPI accords well with Bhutan's internationally renowned objective of expanding Gross National Happiness (GNH). GNH is itself a multidimensional wellbeing concept, and three of the nine domains of GNH overlap with the dimensions of multidimensional poverty. The MPI could also be framed using the concept of capability. Nobel Laureate Amartya Sen proposed that anti-poverty policies should aim to expand capabilities – the freedoms that people have to pursue activities and states of being that they value and have reason to value. Poverty in this framework is 'capability failure' – people's lack of the capabilities to enjoy key 'beings and doings' that are basic to human life. For Sen too, poverty is inherently multidimensional.

1.3 PROCESS OF DESIGNING A MODERATE MPI

With the end of the 12th Five Year Plan and commencement of the 13th Five Year Plan, it was recognised that there was a need to revise the cut-off, or threshold, used to identify poverty to inform budget allocation. The original MPI aimed to measure acute multidimensional poverty, where indicators and the cut-off were designed to capture grave deprivations. Therefore, to complement the original MPI, a moder-

ate MPI was needed. To generate this report, the National Statistics Bureau, Gross National Happiness Commission, United Nations Children’s Fund with the Oxford Poverty and Human Development Initiative held a series of meetings to discuss how to generate a Moderate MPI.

During these meetings, a trial MPI was developed using the 2017 BLSS dataset. The preliminary findings using the 2017 BLSS were submitted and presented to the GNHC. Based on scrutiny of the preliminary findings of NSB, GNHC, and participants from various other ministries and agencies, the dimensions and indicators of the anticipated Moderate MPI were finalised. The Moderate MPI presented here builds on that process. The anticipated Moderate MPI agreed by extensive consultations included employment as a fourth dimension, but the 2022 BLSS dropped employment, so it was only possible to implement improvements on the original three dimensions. Some other minor changes in indicators were agreed after reception of the final 2022 BLSS dataset, but the structure of the Moderate MPI builds directly on inputs from the extensive consultations.

1.4 PURPOSE OF BHUTAN’S ORIGINAL AND MODERATE NATIONAL MPIS

Bhutan’s national MPI indicators were selected – both originally and in this year’s Moderate MPI – in order to provide a clearer way of designing programmes that deliberately target the poor and eradicate multidimensional poverty. The MPI is used in monitoring and evaluating plans and programmes. This requires comparing *Dzong-*

khags and other population groups in terms of MPI poverty, so that government and other stakeholders are able to direct services and policies accordingly. Poverty reduction can thus be achieved more efficiently given a limited fiscal envelope.

The 2012 MPI was given policy prominence and visibility. It shaped *Dzongkhag* allocations, and informed the targeting of poor households, as well as sectoral policies. The 2017 MPI was used to monitor progress in reducing poverty over the intervening five years, and inform subsequent policies. This 2022 Moderate MPI introduces a new set of indicators that reflect moderate rather than acute levels of multidimensional poverty. It can thus help the Royal Government of Bhutan to assess how various policies have affected the poor. At the same time, Chapter 5 of this report provides trends using the original MPI from 2017–2022, so that the trends can be transparently compared using the same definition as was used in 2012 and 2017. This is particularly important as these trends shine a light on the state of acute multidimensional poverty after the pandemic.



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II. Data and Methodology

Bhutan's MPI is estimated using the Alkire-Foster (AF) method. This chapter presents the AF method in general terms along with the Moderate MPI measurement design, the original MPI specifications, and the 2022 BLSS dataset used; the appendix has a more formal treatment. This chapter covers:

- 2.1 Alkire-Foster Method,
- 2.2 Bhutan Moderate MPI: Dimensions Indicators and Weights
- 2.3 Bhutan's Original MPI: Dimensions Indicators and Weights
- 2.4 Data for Analysis: 2022 BLSS.

2.1 ALKIRE-FOSTER METHOD

Bhutan's Moderate MPI and its original MPI uses the AF method – the same methodology that underlies Bhutan's innovative GNH Index. First, a poverty profile is constructed for each person. The profile shows the indicators in which a person is deprived according to national definitions. Next, the deprivations are aggregated for each person or household into a weighted deprivation score. The weights reflect normative judgements and give equal importance to each of the three dimensions of health, education, and living standards. Each person is then identified as poor or non-poor, depending on whether their deprivation score is less than a poverty cut-off (non-poor), or meets or exceeds the poverty cut-off

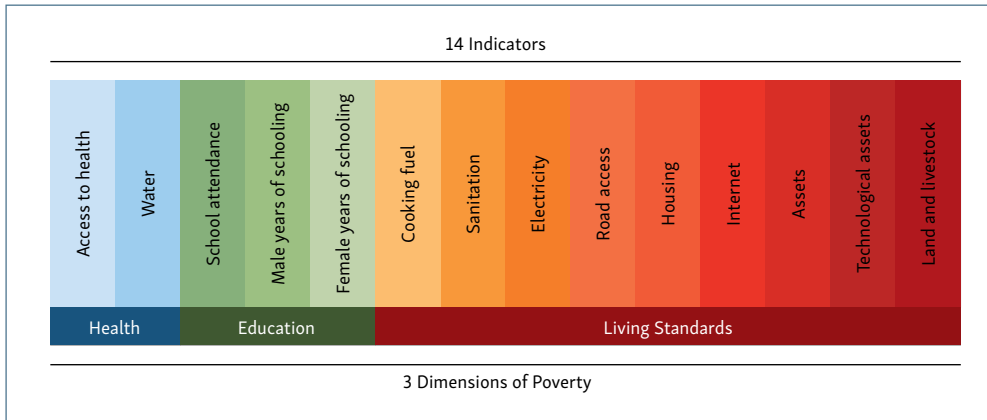
(poor). The cut-off for the original MPI is 4/13 or 30.7% of the weighted indicators. In the Moderate MPI, the cut-off is set higher at 33% or one-third of the weighted indicators.

Key Statistics and Terms: Three statistics are used to report the level of multidimensional poverty. These are defined as follows:

- The **Incidence** or '**headcount ratio**' of poverty (also sometimes written as 'H') is the poverty rate, or the percentage of people who are multidimensionally poor.
- The **Intensity** of poverty (also sometimes written as 'A'), is the average deprivation score among the poor, or the average share of weighted deprivations that poor people experience.
- The **MPI** or '**adjusted headcount ratio**' is calculated as the product of H and A. That is, $MPI = H \times A$. The MPI value shows the percentage of possible deprivations that poor people experience.

For policy purposes, it is also important to understand that the MPI value simply adds up all weighted deprivations of all poor people. This means that any policy will reduce MPI if it reduces any deprivation of any poor person. To make this information easy to use, the information platform of

Figure 2.1 Structure of the Bhutan Moderate MPI, 2022



the MPI is broken down in two convenient ways to shape policy:

- The **censored headcount ratios** show the percentage of the population who are both MPI poor and are deprived in each indicator.
- The weighted **contribution of indicators** to MPI shows which indicators contribute most to poverty.

The censored headcount ratios are used to understand the number of people who are poor and deprived in each indicator – for example, for budgeting purposes. The weighted contributions show which deprivations to prioritise in order to reduce poverty the most.

The Moderate MPI is now one of the official statistics of poverty in Bhutan because it takes into account changes in incidence and intensity. It also provides incentives to ‘Leave No One Behind’ by making visible progress among the poorest. In reporting poverty statistics, incidence is typically

used by government for both multidimensional and monetary poverty; it is therefore the familiar poverty rate. Until 2022, the original MPI was the only official poverty statistic for multidimensional poverty nationally. From 2022, Bhutan has an official original MPI for acute multidimensional poverty and an official Moderate MPI.

2.2 MODERATE MPI 2022: STRUCTURE

Bhutan’s Moderate MPI, like its original national MPI, utilizes a set of dimensions, indicators, and cut-offs that reflect its priorities as expressed in the national plans, key result areas, and development goals.

As Figure 2.1 shows, Bhutan’s Moderate MPI has three dimensions and 14 indicators, whose definitions reflect the new level of aspirations that have emerged since 2017, insofar as these could be measured using the 2022 BLSS.¹

2.2.1 Selecting the Dimensions, Indicators, and Cut-offs

Bhutan's original and moderate MPIs each have three dimensions of health, education, and living standards. The indicator choice was shaped by the BLSS datasets. During the discussions with stakeholders, far more than 14 potential indicators were discussed and proposed. However, when the 2022 dataset came in, some indicators had to be revised due to the positive finding of very low levels of deprivation in some of the anticipated indicators. Food security and child mortality, under the health dimension, were dropped since the percentage of deprived persons was too low for a moderate measure that should guide policies for the next decade. Due to the national priority given to water access, the Moderate MPI transferred a more ambitious water indicator from the living standard dimension to the health dimension because of the relationship of water to health. The self-reported ranking of health among household priorities was explored as another indicator under the health dimension but not selected due to the subjective and relative nature of the underlying data. The Moderate MPI includes both internet and technological assets – and as Appendix 2 shows, both overlap extensively, and are the only highly redundant indicator pair. However technological assets was retained considering the priority given to digital technology in the country. The final Moderate MPI includes 14 indicators spanning three dimensions.

The cut-offs used for each indicator have been made more ambitious hence more appropriate for a middle income country than the cut-offs used in the original MPI

which focused on acute poverty. For example, under the school attendance indicator, the cut-off increased from class eight to class ten. For years of schooling, a gender angle was introduced with different indicators for female schooling and male schooling. Table 2.1 presents the detailed cut-offs for each indicator.

2.2.2 Moderate MPI Weights

The Moderate MPI uses equal nested weights for the dimensions, assigning a weight of 1/3 to each of the three dimensions of education, health, and living standards. This is illustrated in Table 2.1. Within health, each of the two indicators are equally weighted (1/6). Within education, school attendance is assigned with 1/6 and the other two indicators; male years of schooling and female years of schooling are assigned 1/12 so that together they comprise the other half of the education dimension. Within the living standards dimension, one-seventh of the weight (1/21) is assigned to six indicators: cooking fuel, sanitation, electricity, road access, housing and internet. The remaining one-seventh of the weight is equally distributed among assets, technological assets, and land and livestock ownership, giving a weight of 1/63 each. It is important to note that while the name of some indicators are the same for the original and Moderate MPI, the definitions differ. For example, the Moderate MPI requires flush toilets that are not shared, electricity without considerable interruptions, and access to a tarred road, whereas the original MPI indicator standards were less ambitious.

BHUTAN MULTIDIMENSIONAL POVERTY INDEX 2022

Table 2.1 Dimensions, Indicators, and Weights of Moderate MPI

Dimension	Indicator	Deprived living in a household where ...	Weight (%)	Notes	% Deprived
Health	Access to health	the closest health facility is a 30-minute or longer walk from home	16.67	Health facilities considered for this indicator are hospital/PHC/Satellite clinic/subpost and out reach clinic; and 30 minutes refers to time needed to walk one way	13.28
	Water	the household does not have safe drinking water on the premises, or drinking water is not accessible 24 hours a day	16.67	Safe drinking water refers to piped drinking water in the household's dwelling which is accessible for 24 hours	18.61
Education	School attendance	any school-aged child in the household is not attending school up to the age at which they would complete class ten or they are lagging in school	16.67	School attendance is considered deprived if a school-aged child is between 5 and 16 years of age and is not attending school up to the age they should complete class ten, or they are lagging two grades for their age	12.69
	Male years of schooling	no male household member has completed the minimum years of schooling	8.33	Covers all household members aged 16 to 60. Minimum years of schooling is defined as at least ten years of education for people going into class eight in 2008; or, at least six years of schooling otherwise	36.60
	Female years of schooling	no female household member has completed the minimum years of schooling	8.33	Covers all household members aged 16 to 60. Minimum years of schooling is defined as at least ten years of education for people going into class eight in 2008; or, at least six years of schooling otherwise	43.65
Living Standards	Cooking fuel	a household cooks with wood, coal, kerosene, dung cake, bio gas, or other fuels.	4.76	A household is considered not deprived only if it cooks with electricity or gas (LPG)	12.13
	Sanitation	the household has unimproved, or no flush toilet, or it is flushed, but shared with other households	4.76	All flush toilets (to piped sewer system, septic tank, pit, or any other place) are categorised as improved sanitation, while unimproved refers to ventilated improved pit, pit latrine with and without slab, and no facility/bush/field	10.11
	Electricity	there is no electricity and it is not by choice, or there is no electricity, or the household experiences four or more hours of blackouts in 12 months	4.76	There are four or more hours of blackouts in the past 12 months	10.66
	Road access	the household is more than a 15-minute walk from the road head	4.76	Access to tarred road. 15 minutes refers to time spent to walk one way	10.92
	Housing	the household has inadequate housing materials in any of the three components: floor, walls, roof	4.76	Inadequate housing materials refer to earthen/clay, bamboo and wood logs for floor; other than bricks and stone with mud or cement, rammed earth, and concrete for walls; and other than metal sheets, concrete/cement, tiles/slate for roof.	24.19
	Internet	the household does not have access to good internet	4.76	Good internet refers to internet that is assessed as being 'very strong' by survey participants (in contrast to 'weak')	32.93
	Assets	the household does not own more than two small assets and does not own one large asset	1.59	Small assets refer to stove, TV, rice cooker, sewing machine, sofa, microwave oven, or bicycle. Large assets include car, computer, washing machine, power tiller, powerchain, refrigerator, seshghokira, motorbike, or jewellery	13.53
	Technological assets	the household does not own any technological asset	1.59	Technological assets include smart phone or computer	5.53
	Land and livestock	a rural household owns less than one acre of land and less than one livestock animal	1.59	Urban households are considered not deprived. Land includes all types (dry, wet, orchards). Livestock includes pigs, horses, cattle, sheep, yaks, goats, buffalo, poultry or fishpond	19.78

2.2.3 Poverty and Deprivation Cut-offs

With the Alkire-Foster method, upon which both the Moderate and original MPI are based, two kinds of thresholds are used to decide whether a person is deprived in an indicator and whether they are multidimensionally poor overall: (a) an indicator-specific poverty cut-off (deprivation cut-off), where a person is considered deprived in each indicator if their achievement falls below the cut-off, and (b) a cross-indicator cut-off (or poverty cut-off), which sets the minimum share of deprivations (or deprivation score) needed for a person to be considered poor.

In 2022, the Moderate MPI poverty cut-off was set at 33% or one-third. As the moderate MPI has 14 indicators, any person who is deprived in one-third or more of the weighted indicators is identified as multidimensionally poor.

2.3 ORIGINAL MPI STRUCTURE

Bhutan's original MPI, which measures acute multidimensional poverty, used equal nested weights across 13 indicators, and assigned a weight of 1/3 to each of the three dimensions of education, health, and living standards (Table 2.2). Eight indicators in the original MPI were the same indicators that were used in the original global MPI,² while five were tailored to the context and specific priorities of Bhutan.³

Within the health and education dimensions, each of the two indicators were again equally weighted (1/6). Within the living standards dimension, nine indicators were used. One-seventh of the weight (1/21) was assigned to six indicators: elec-

tricity, sanitation, water, housing material, cooking fuel, and road access, and the remaining one-seventh of the weight was equally distributed among assets, land ownership, and livestock ownership, with a weight of 1/63 each.

Table 2.2 presents the dimensions, indicators and weights of Bhutan's original or acute MPI. In the original MPI, the poverty cut-off was set at 30.7%, or just under one-third of indicators. A person who is deprived in 4/13 of the weighted indicators (30.7% of the dimensions) is considered multidimensionally poor.

2.4 DATA

The data used for the national poverty measure is the 2022 BLSS, which is the latest and fifth in a series of national household surveys that have been conducted by the NSB. The survey followed the World Bank's Living Standard Measurement Study methodology. For comparison purposes, and specifically to show trends over time for the original MPI, the report also used data from 2017 BLSS.

The 2022 BLSS surveyed 13,416 households across the country and 52,822 individuals from a planned sample size of 13,340 households, which corresponds to a response rate of 99.4%. The 2022 BLSS is representative for the twenty *Dzongkhags* in both rural and urban areas, and for the four major *Thromdes* (Thimphu, Phuentsholing, Gelephu and Samdrup Jongkhar).

BHUTAN MULTIDIMENSIONAL POVERTY INDEX 2022

Table 2.2 Dimensions, Indicators, and Weights of Bhutan's original MPI

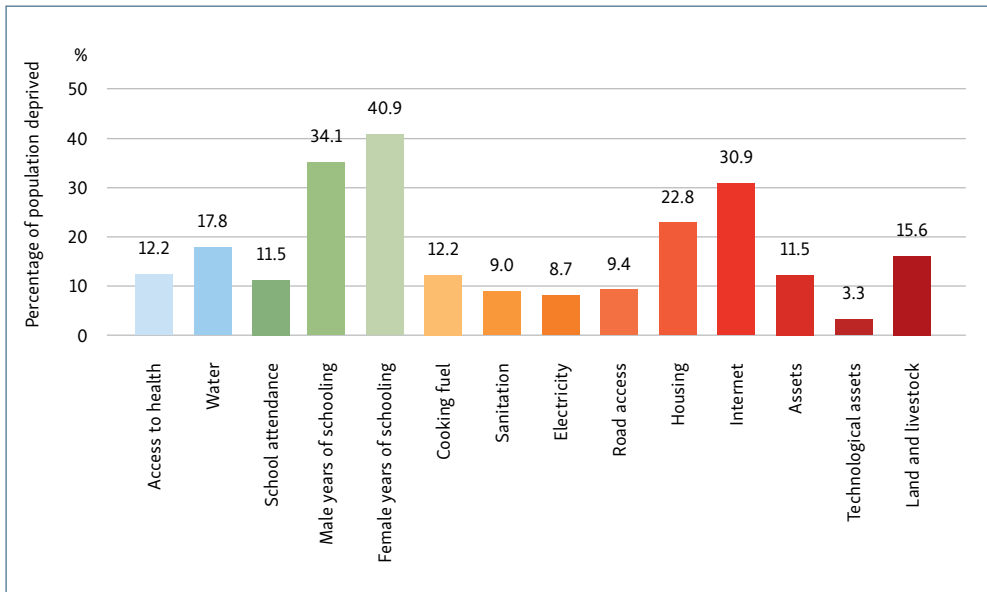
Dimension	Indicator	Deprived living in a household where ...	Weight (%)	Notes	% Deprived 2017	% Deprived 2022
Health	Child mortality	a child has passed away in the household	16.67	A household is considered deprived if a child of any age died in the household in the life time	10.22	8.45
	Food security	the household suffers a shortage of food in the last 12 months	16.67	A household is considered deprived if the hh has suffered a shortage of food in the last 12 months	2.51	1.46
Education	Schooling	no household member has completed five years of schooling	16.67	A household is considered deprived if there is no one in the hhs who have completed 5 years of schooling	6.56	7.57
	School attendance	any school-aged (6-14) in the household is not attending school up to class eight	16.67	A household is considered deprived if atleast one school going age is not attending school	4.03	4.89
Living Standards	Cooking fuel	the household mainly cooks with wood, coal and dung cake	4.76	A household is considered not deprived only if it cooks with electricity or gas (LPG).	19.35	12.13
	Sanitation	the household's sanitation facility is not improved or it is shared with other households	4.76	All flush toilets (to piped sewer system, septic tank, pit, any other, or ventilated improved pit, pit latrine with slab) are categorised as improved sanitation, while unimproved refers to pit latrine without slab, long drop, bucket and no facility/bush/field.	10.11	8.43
	Electricity	the household has no access to electricity	4.76	A household is considered deprived if the household has no electricity	0.75	0.25
	Water	the household does not have access to safe drinking water or safe water is 30 or more minute of round trip walk	4.76	A household is considered deprived if the household doesn't have access to safe drinking water: unprotected, tanker water and surface water, and 30 or more mins of round trip walk	0.81	0.13
	Road access	the household is more than 30 minutes walk from the tarred road, or a feeder road or a farm road	4.76	A household is considered deprived if the household have spent more than 30 minutes to walk one-way from the road head.	11.49	6.07
	Housing	the household does not have adequate materials in any two of: floor, roof and walls	4.76	Inadequate housing materials refer to earthen/clay, bamboo and wood logs for floor; other than bricks and stone with mud or cement, rammed earth, and concrete for walls; and other than metal sheets, concrete/cement, tiles/slate for roof.	6.72	3.49
	Land ownership	the rural household does not own one acre or more land. Urban households are treated as non-deprived	1.59	Urban households are considered not deprived. Land includes all types (dry, wet, orchards).	17.52	25.32
	Assets	the household owns 2 or more small assets and own one large asset	1.59	Small assets refer to television, mobile phone, rice cooker, sewing machine, sofa, or bicycle. Large assets include car, computer, washing machine, power tiller, refrigerator, sheshoghokira, motorbike, or jewelry.	2.99	1.71
	Livestock	the rural household does not own more than three animals of: cattle, horses, sheep, goat, chicken, pigs, buffalo and yaks. Urban households are treated as non-deprived	1.59	Livestock includes pigs, horses, cattle, sheep, yaks, goats, buffalo, or poultry.	27.07	36.35

2.5 NATIONAL UNCENSORED HEADCOUNT RATIOS OF THE MODERATE MPI INDICATORS

The uncensored headcount ratio of each indicator represents the proportion of the population who are deprived in each indicator, irrespective of their poverty status. As Figure 2.2 shows, the highest deprivations are found in female years of schooling (with 40.9% of the population living with a female who has not completed the minimum years of schooling), male years of schooling (34.1%), internet (30.9%), housing (22.8%), and access to health, water, school attendance, cooking fuel, assets, and land and livestock (all having rates higher than 10%). On the other hand, some

indicators show much lower rates of deprivation. Deprivations are the lowest for technological assets (3.3%), electricity (8.7%), sanitation (9.0%), and road access (9.4%).

Figure 2.2 National Uncensored Headcount Ratios, 2022



Source: Authors' calculations based on data from 2022 BLSS.



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III. 2022 Moderate MPI Results

This chapter presents the national Moderate MPI results for Bhutan using the 2022 BLSS. We first present the national statistics including the poverty rate and intensity among the poor. We then present disaggregated results by geographic areas, and subsequently by age groups and household characteristics. The closing section compares monetary and multidimensional poverty at the individual level and by *Dzongkhag*. This chapter has the following sections:

- 3.1 Bhutan's National MPI – Key Results;
- 3.2 Disaggregation by Urban and Rural Areas, *Dzongkhag*, and *Thromdes*;
- 3.3 Performance across Age Groups and Household Characteristics;
- 3.4 Multidimensional Poverty and Monetary Poverty.

3.1 BHUTAN'S MODERATE MPI – KEY RESULTS

Table 3.1 shows Bhutan's Moderate MPI for 2022, as well as its partial indices: the incidence of poverty (or the proportion of people identified as multidimensionally poor, H) and the intensity of poverty (or the average proportion of weighted indicators in which the poor are deprived, A). As can be seen in the table, nationally the incidence of moderate multidimensional poverty is 17.8%. Since this estimate is based on a sample, it has a margin of error. Thus, the 95% confidence interval is also presented in the table. This means that we can say with 95% confidence that the true multidimensional poverty headcount ratio of the population is between 16.6% and 19.1%.

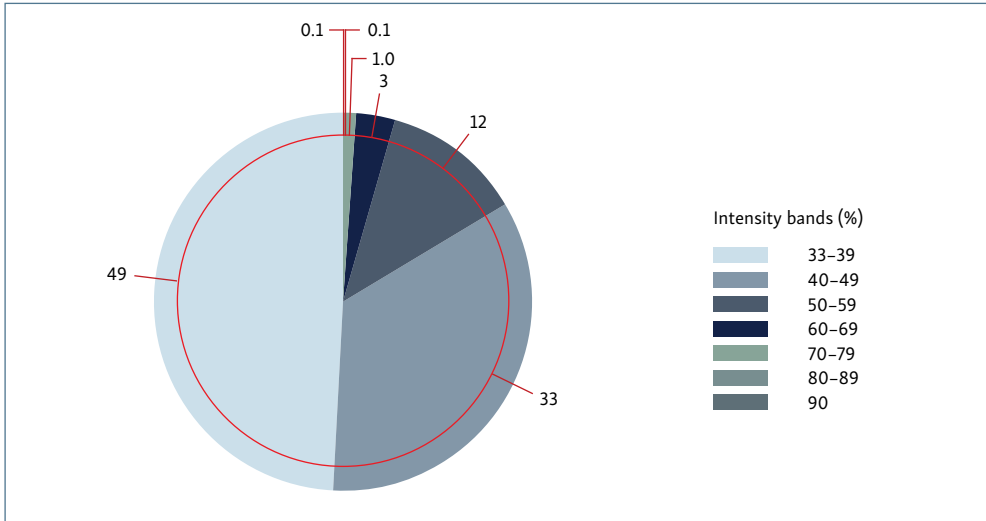
The average intensity of poverty, which reflects the share of deprivations that each poor

Table 3.1 Incidence, Intensity and Multidimensional Poverty Index (MPI) for Moderate MPI, 2022

Poverty cut-off	Index	Value	Confidence interval (95%)	
	MPI	0.076	0.071	0.082
k value = 33%	Incidence, H (%)	17.8%	16.6%	19.1%
	Intensity, A (%)	42.8%	42.3%	43.3%

Source: Authors' calculations based on data from 2022 BLSS.

Figure 3.1 Intensity Gradient among the Poor, Moderate MPI 2022



Source: Authors’ calculations based on data from 2022 BLSS.

person experiences on average, is 42.8%. Each poor person is, on average, deprived in nearly half of the weighted indicators.

The MPI, which is the product of H and A, has the value of 0.076. This means that multidimensionally poor people in Bhutan experience 7.6% of the total deprivations that would be experienced if all people were deprived in all indicators. The original MPI (presented in Chapter 5) and this Moderate MPI are the official statistics of poverty used to declare where poverty is highest and lowest in Bhutan, and whether poverty has fallen or risen over time. They take into account progress at two levels – H and A. There are situations in which only one statistic goes down over time and not the other – yet both are important. If we used only the headcount ratio, for example, we might have a rise in poverty some years,

whereas if we used MPI the fuller picture would see a fall if there was a sufficiently large decrease in A.

Figure 3.1 depicts the distribution of the intensity of poverty among the poor. The intensity gradient shows that a large proportion of the population are close to the cut-off of poverty in Bhutan requiring fewer interventions to address poverty. Almost half of all poor people in Bhutan (49.1%) are in the lowest intensity band, which is less than 40% of weighted indicators (deprivation scores ranging from 33% to 39.9%). However one in eight poor people experience intensities as high as 50–59.9%, and 4.4% have even higher intensities, requiring focused attention.

3.2 DISAGGREGATION BY RURAL AND URBAN AREAS, DZONGKHAGS, AND THROMDES

Table 3.2 disaggregates the levels of moderate poverty by rural and urban areas. The rural poverty headcount ratio (23.9%) is much higher than that for urban (8.2%) areas.

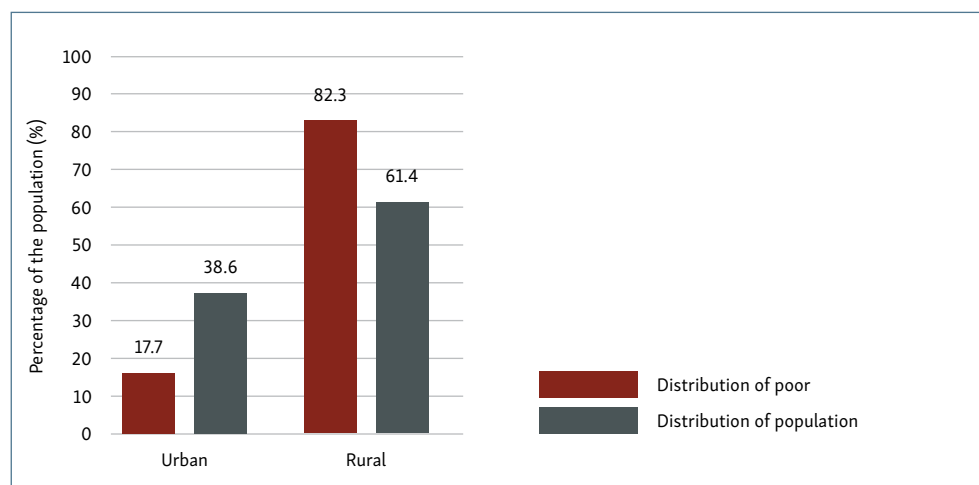
Figure 3.2 compares the distribution of the poor and general population by area. Although only 61.4% of the population reside in rural areas, more than 82% of the multidimensionally poor people live in rural areas. Only 17.7% of the country's multidimensionally poor people reside in urban areas.

Table 3.2 Multidimensional Poverty by Rural and Urban Areas, Moderate MPI 2022

Index	Urban			Rural		
	Population share (%)	Value	Confidence interval (95%)	Population share (%)	Value	Confidence interval (95%)
MPI		0.033	0.025 0.041		0.103	0.096 0.111
Incidence (H, %)	38.6	8.2%	6.2% 10.1%	61.4	23.9	22.3% 25.5%
Intensity (A, %)		40.8%	39.5% 42.0%		43.2	42.7% 43.8%

Source: Authors' calculations based on data from 2022 BLSS.

Figure 3.2 Distribution of Poor and Population by Rural and Urban Areas for Moderate MPI, 2022



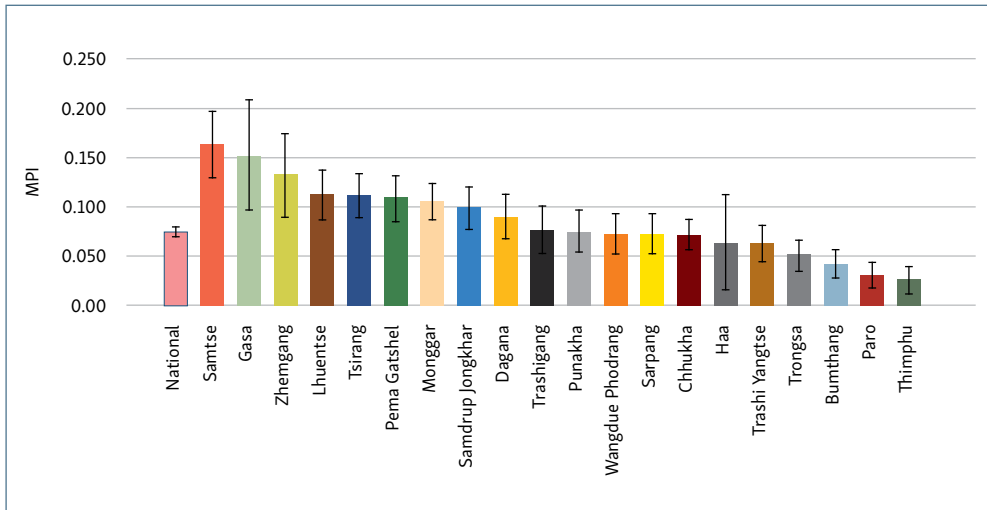
Source: Authors' calculations based on data from 2022 BLSS.

Table 3.3 (overleaf) shows the *Dzongkhag*-level estimates for MPI, incidence, and intensity of poverty. Samtse has the highest levels of MPI (0.165) and incidence (36.9%), and also houses the largest share (17.7%) of multidimensionally poor people (see Figure 3.4). *Dzongkhags* are ranked by the level of Moderate MPI in each *Dzongkhag*. Results show that Samtse (36.9%), Gasa (33.9%), Zhemgang (29.7%), Lhuentse (25.9%), Tsirang (25.6%) and Pema Gatshel (25.7%) have higher levels of poverty than

the other *Dzongkhags*. The lowest levels of moderate poverty are found in Thimphu (6.8%), Paro (8.1%) and Bumthang (10.5%).

One feature of the 2022 BLSS, as with the 2017 BLSS, is that the sampling errors on the survey are still relatively high. There is also relative equity. Hence, as Figure 3.3 shows, it is not possible to rank all *Dzongkhags* in terms of MPI because their confidence intervals often overlap.

Figure 3.3 MPI value by *Dzongkhag* for Moderate MPI, 2022



Source: Authors’ calculations based on data from 2022 BLSS. Confidence intervals overlap and so a clear ranking of relative MPI poverty is not possible.

Table 3.3 Multidimensional Poverty by Sub-National Region

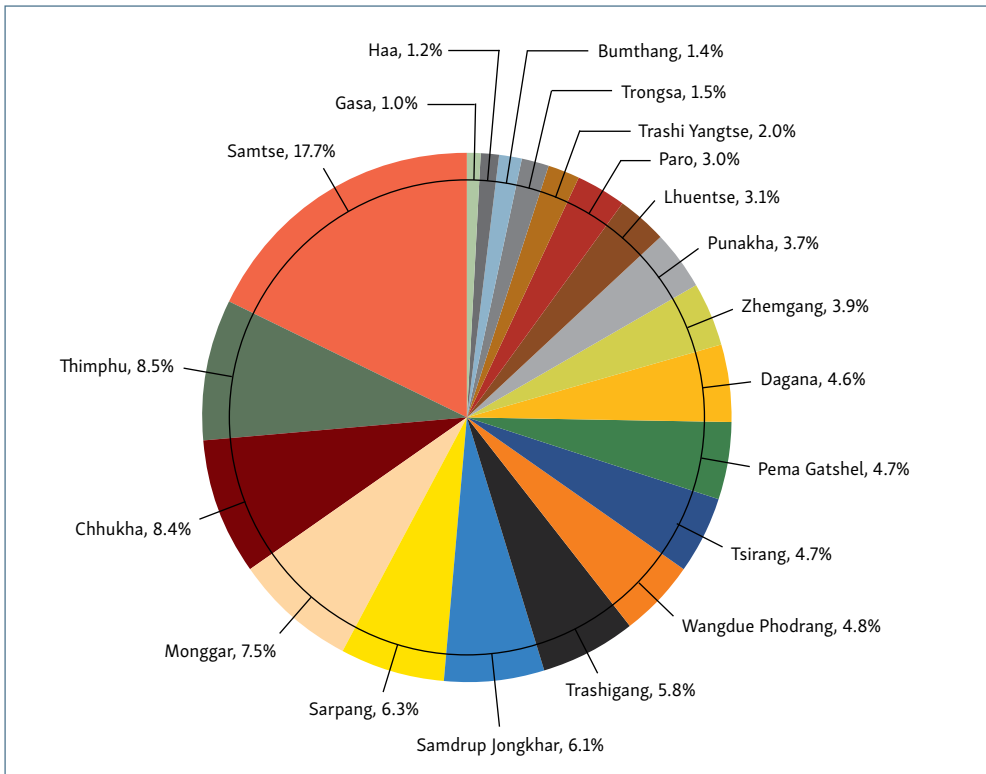
Index k value=33%	Sub-National Region	MPI			Incidence (H, %)			Intensity (A, %)		
		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)	
	National	0.076	0.071	0.082	17.8%	16.6%	19.1%	42.8%	42.3%	43.3%
1	Bumthang	0.044	0.029	0.059	10.5%	7.1%	13.9%	41.5%	38.3%	44.7%
2	Chhukha	0.073	0.058	0.088	17.6%	14.1%	21.1%	41.4%	39.7%	43.2%
3	Dagana	0.092	0.070	0.113	21.3%	16.4%	26.3%	42.9%	41.2%	44.5%
4	Gasa	0.154	0.098	0.209	33.9%	22.7%	45.0%	45.4%	42.8%	47.9%
5	Haa	0.066	0.018	0.113	14.2%	4.3%	24.1%	46.3%	43.9%	48.6%
6	Lhuentse	0.114	0.089	0.139	25.9%	20.4%	31.3%	44.0%	42.0%	46.0%
7	Monggar	0.107	0.089	0.125	24.9%	20.9%	28.9%	42.9%	40.9%	44.9%
8	Paro	0.032	0.019	0.044	8.1%	5.1%	11.0%	39.4%	37.0%	41.8%
9	Pema Gatshel	0.110	0.087	0.133	25.7%	20.6%	30.7%	42.8%	41.1%	44.4%
10	Punakha	0.077	0.057	0.098	18.8%	14.1%	23.4%	41.2%	39.2%	43.2%
11	Samdrup Jongkhar	0.100	0.080	0.120	23.3%	18.7%	27.8%	43.1%	42.0%	44.2%
12	Samtse	0.165	0.131	0.198	36.9%	30.0%	43.9%	44.6%	43.2%	46.0%
13	Sarpang	0.074	0.054	0.094	17.7%	13.4%	22.0%	41.9%	39.9%	43.8%
14	Thimphu	0.028	0.015	0.041	6.8%	3.7%	9.9%	40.9%	38.8%	43.1%
15	Trashigang	0.079	0.055	0.102	18.1%	13.2%	23.1%	43.3%	41.2%	45.5%
16	Trashi Yangtse	0.065	0.046	0.084	16.1%	11.3%	20.9%	40.1%	38.6%	41.6%
17	Trongsa	0.053	0.038	0.068	13.2%	9.5%	16.9%	40.0%	38.5%	41.6%
18	Tsirang	0.112	0.091	0.134	25.6%	21.1%	30.2%	43.9%	42.2%	45.5%
19	Wangdue Phodrang	0.075	0.054	0.095	17.7%	13.3%	22.2%	42.1%	40.0%	44.2%
20	Zhemgang	0.133	0.091	0.175	29.7%	21.4%	38.0%	44.9%	42.0%	47.8%

Source: Authors' calculations based on data from 2022 BLSS.

Figure 3.4 shows where the MPI-poor people live by *Dzongkhag*. Samtse houses the largest number of multidimensionally poor (17.7%) followed by Thimphu (8.5%), Chhukha (8.4%), and Monggar (7.5%). Gasa (1.0%) has the lowest share of poor people in Bhutan. This is important to study because due to population differences some *Dzongkhags* with lower levels of poverty house more poor people than the poorest *Dzongkhags*. Such findings have implications for resource allocation and targeted interventions.

The 2022 BLSS includes data for four particular cities or *Thromde*. Table 3.4 shows the *Thromde*-wise estimates for MPI, incidence, and intensity of poverty. Samdrup Jongkhar *Thromde* has the highest levels of MPI (0.077) and incidence (19.1%), while Thimphu *Thromde* has the lowest level (0.024 and 5.8%), but houses the largest (58.7%) share of multidimensionally poor people (see Figure 3.5).

Figure 3.4 Where the MPI Poor live by *Dzongkhag* for Moderate MPI, 2022

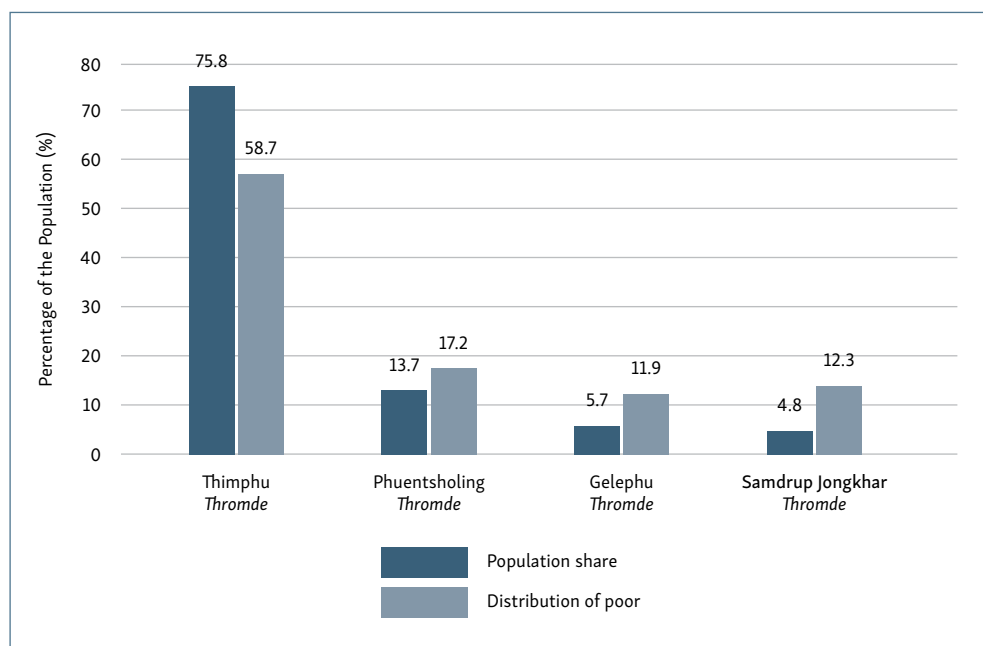


Source: Authors' calculations based on data from 2022 BLSS.

Table 3.4 Multidimensional Poverty by *Thromde* according to Moderate MPI, 2022

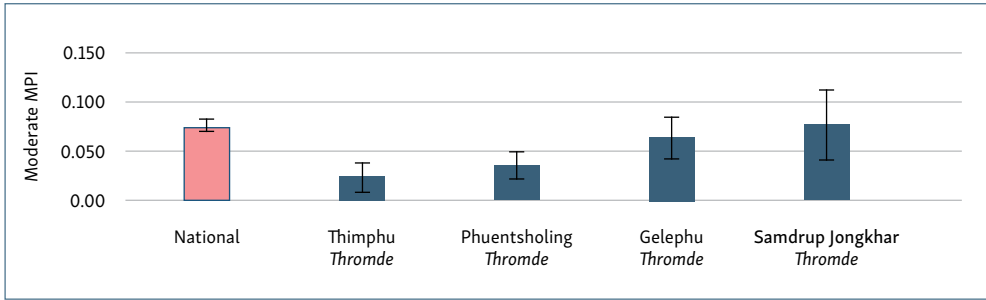
Sub-National Region	Pop. Share (%)	MPI			Incidence (H, %)			Intensity (A, %)			Number of Poor	Distribution of poor
		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)			
National	100.0	0.076	0.071	0.082	17.8%	16.6%	19.1%	42.8%	42.3%	43.3%	115,965	
Thimphu <i>Thromde</i>	75.8	0.024	0.009	0.039	5.8%	2.3%	9.3%	40.7%	37.8%	43.6%	7,111	58.7
Phuentsholing <i>Thromde</i>	13.7	0.036	0.022	0.049	9.4%	6.0%	12.9%	38.0%	36.2%	39.7%	2,084	17.2
Gelephu <i>Thromde</i>	5.7	0.063	0.041	0.085	15.6%	10.3%	20.9%	40.5%	39.0%	41.9%	1,437	11.9
Samdrup Jongkhar <i>Thromde</i>	4.8	0.077	0.043	0.112	19.1%	10.8%	27.5%	40.3%	38.8%	41.7%	1,490	12.3

Source: Authors' calculations based on data from 2022 BLSS.

 Figure 3.5 Share of Poor people living in each *Thromde* compared to that *Thromde's* overall population share, Moderate MPI 2022


Source: Authors' calculations based on data from 2022 BLSS.

Figure 3.6 MPI by Thromde for Moderate MPI, 2022

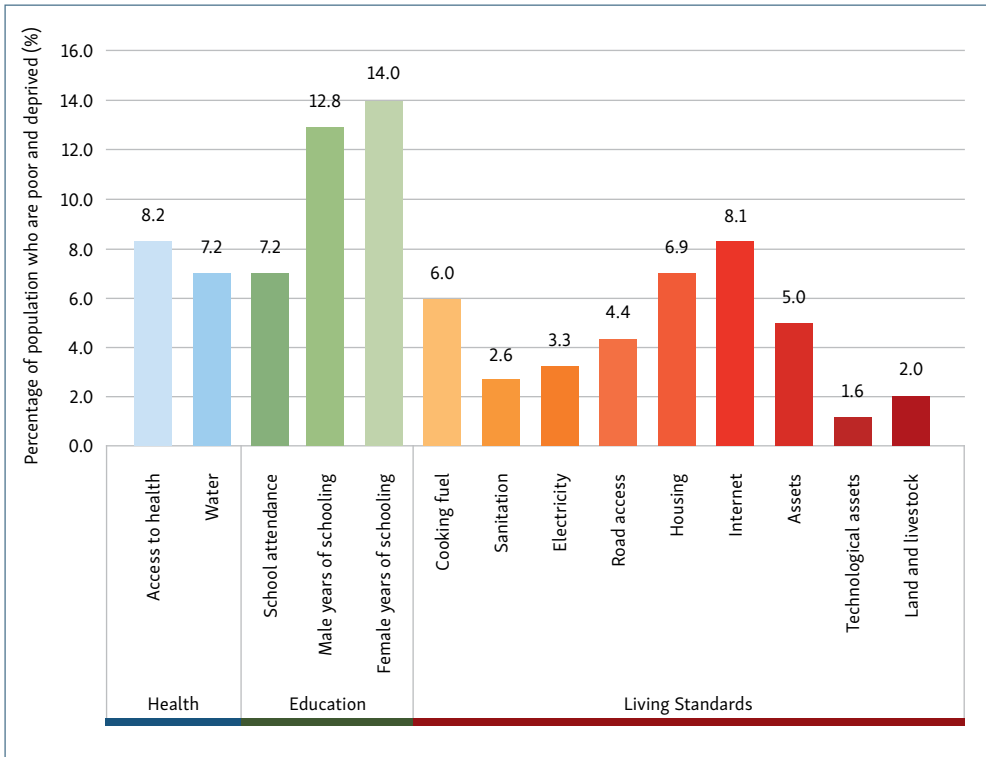


Source: Authors' calculations based on data from 2022 BLSS.

Figure 3.6 confirms that due to overlapping confidence intervals, it is not possible to rank all four *Thromdes* in terms of poverty,

but Thimphu is significantly less poor than Gelephu or Samdrup Jongkhar.

Figure 3.7 National Censored Headcount Ratios for Moderate MPI, 2022



Source: Authors' calculations based on data from 2022 BLSS.

Which deprivations constitute this poverty – and how can they be reduced? To answer these questions, we break the MPI down by indicator and examine its composition. The censored headcount ratio of an indicator represents the proportion of the population that is multidimensionally *poor* and also *deprived* in that indicator. The MPI can also be computed as the sum of the weighted censored headcount ratios. Reducing any of the censored headcount ratios by reducing any deprivation of any poor person reduces the MPI.

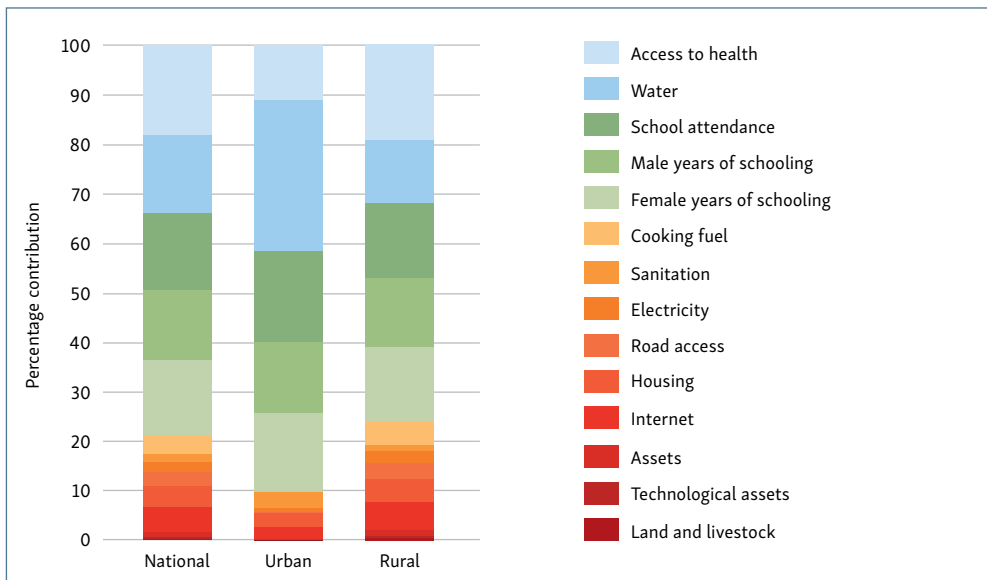
Figure 3.7 shows that nationally the largest deprivation is in female schooling – which affects people living in households in which no female household member has completed the minimum years of school-

ing (14.0%). This is followed by deprivations in male schooling – when no male household member has completed the minimum years of schooling (12.8%). The lowest deprivation is for people living in a household in which the household does not own any technological asset (1.6%).

For a more actionable view on multidimensional poverty, it is useful to see the percentage contribution of each of the indicators to overall multidimensional poverty nationally, in both urban and rural areas and subsequently districts of Bhutan. Each region can focus on the indicators that contribute most to MPI.

In Figure 3.8, the weighted percentage contribution of each indicator is depicted to show the composition of multidimensional

Figure 3.8 Percentage Contribution of Each Indicator to National, Urban and Rural Moderate MPI, 2022



Source: Authors' calculations based on data from 2022 BLSS.

poverty in urban and rural areas.⁴ Each dimension is equally weighted. But because there are fewer health and education indicators, their weights per indicator are higher than those for the living standard indicators. So indicators in education and health are expected to contribute relatively more than the individual living standard indicators.

In terms of the percentage contribution of each of the 14 indicators to overall multidimensional poverty, the largest contributors to national poverty are deprivations in access to health, followed by water, school attendance and female years of schooling. In terms of dimensions, the largest contributor nationally is the education dimension (45.0%). The living standards and health dimensions contribute 21.3% and 33.6%, respectively, to overall poverty.

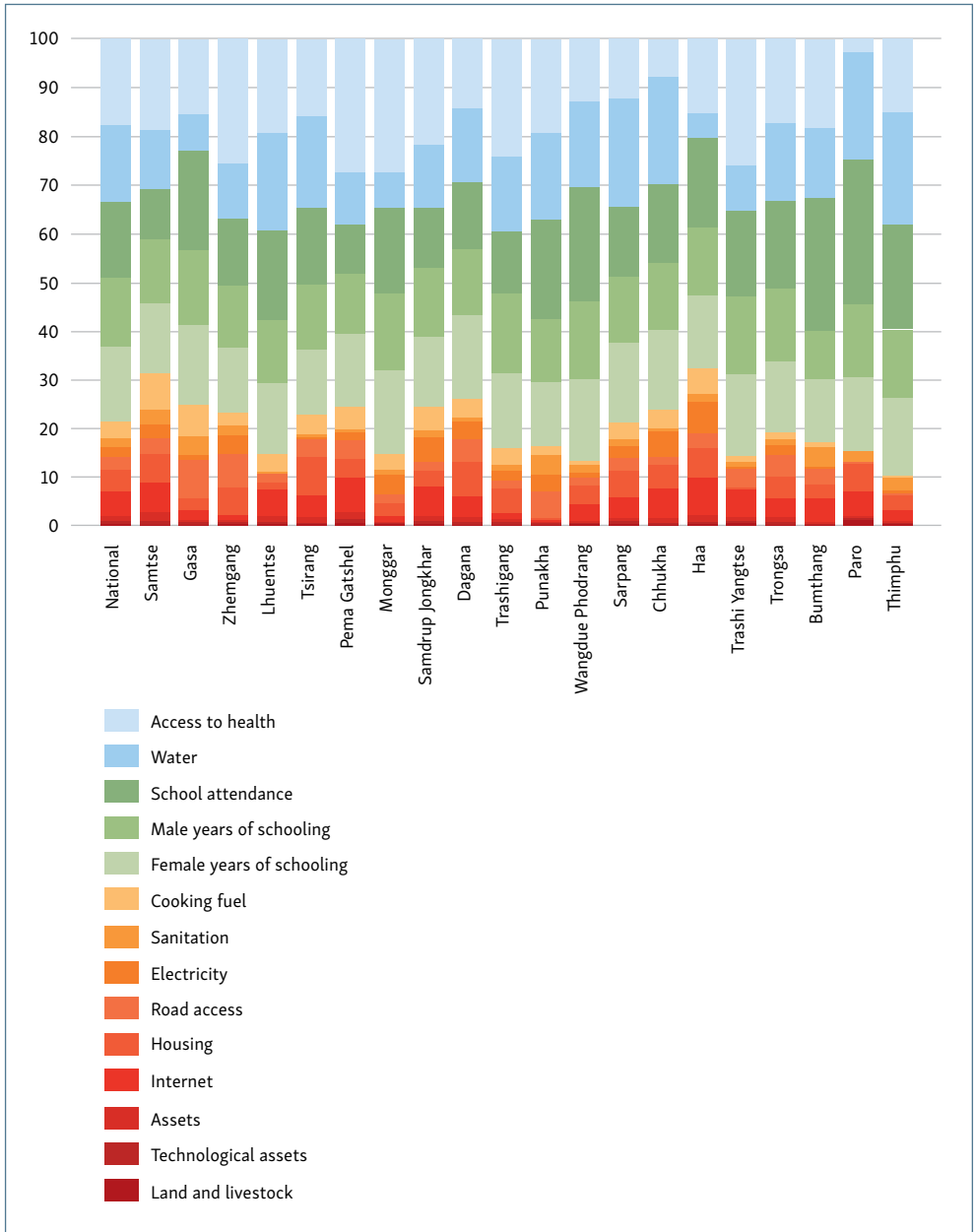
The figure shows that the largest contributor to urban poverty is water, followed by school attendance and female years of schooling. In both areas, the education is the largest contributor to multidimensional poverty with 48.4% in urban and 44.3% in rural areas. The lowest contribution in urban areas is living standards with 10.0% and in rural areas with 23.6%.

Rural multidimensional poverty is largely influenced by deprivations in access to health, which contributes disproportionately to rural MPI. The second and third largest contributors to rural poverty are school attendance and female years of schooling, followed by male years of schooling. Across dimensions, education contributes

the most to rural poverty (44.3%). The dimension of health and living standards contribute 32.0% and 23.6% each, respectively.

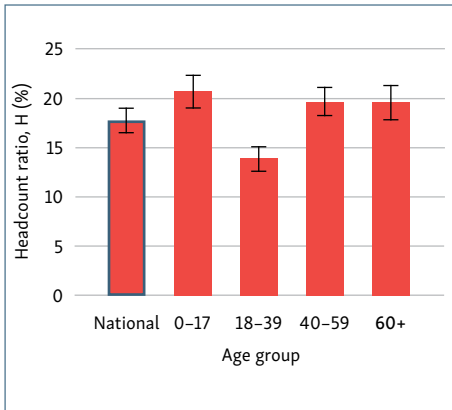
At the level of the *Dzongkhag*, unpacking the MPI by indicator reveals how substantially multidimensional poverty varies across Bhutan. Figure 3.9 illustrates the percentage contribution of each indicator to multidimensional poverty for each *Dzongkhag*. At first glance, it is clear that the composition of multidimensional poverty varies somewhat across *Dzongkhag*. The most stable are the male and female schooling indicators in the education dimension. In *Dzongkhags* such as Paro and Wangdue Phodrang, the education dimension contributes more than 55% to overall poverty, primarily due to larger deprivations in school attendance. There is striking variation in health: water deprivations are extremely low in Haa, whereas access to health contributes far less in Paro and even Chhukha. Finally, living standards varies greatly, contributing the most to MPI in Haa and Samtse, but with quite varying profiles. For example, in Haa electricity deprivations are far higher than in Samtse; in Gasa housing deprivations contribute far less than in Tsirang.

Figure 3.9 Percentage Contributions of Each Indicator to Dzongkhags' MPI for Moderate MPI, 2022



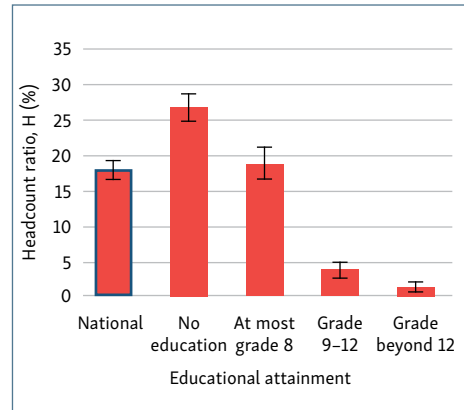
Source: Authors' calculations based on data from 2022 BLSS.

Figure 3.10 Incidence of Multidimensional Poverty by Age Group for Moderate MPI, 2022



Source: Authors’ calculations based on data from 2022 BLSS.

Figure 3.11 Incidence of Multidimensional Poverty by Household Head’s Educational Attainment for Moderate MPI, 2022



Source: Authors’ calculations based on data from 2022 BLSS.

3.3 DISAGGREGATION BY AGE GROUP AND LEVEL OF EDUCATION OF THE HOUSEHOLD HEAD

This section examines how the incidence of multidimensional poverty varies among the following population groups: age cohort, and level of education of the household head.

Disaggregating by age reveals intergenerational disparities. According to Figure 3.10, children aged 0–17 are the poorest; 20.7% of children were poor in 2022. The incidence of poverty is not significantly different between children and people aged 40 and above, but the age group 18–39 has the lowest incidence of multidimensional poverty (13.9%). These findings are discussed in Chapter 4, which is dedicated to analysing MPI for different age cohorts.

Figure 3.11 shows the incidence of multidimensional poverty by educational attainment of the household head and it is clear from the figure that confidence intervals do not overlap. Therefore, we can establish that a household head with no education has the highest incidence of poverty with 26.7% followed by a household head with a qualification up to class eight with 18.8%. The lowest incidence of poverty is experienced by a household head with education beyond class twelve (1.2%).

3.4 MULTIDIMENSIONAL POVERTY AND MONETARY POVERTY

Table 3.5 presents the magnitudes of matches and mismatches in the incidence or poverty headcount ratio between multidimensional and monetary poverty, using the 2022 monetary poverty headcount ratio. Note that this has been re-based and

Table 3.5 Monetary and Multidimensional Poverty, 2022: Who is Poor in Both?

Monetary poor	Multidimensionally		
	Non-poor (%)	Poor (%)	Total (%)
Non-poor	74.5	13.2	87.6
Poor	7.7	4.7	12.4
Total	82.2	17.8	100

Source: Authors' calculations based on data from 2022 BLSS.

is not comparable to the 2017 monetary poverty headcount ratio.

The incidence of multidimensional poverty and monetary poverty is significantly different and important differences are found between the poor and non-poor headcount ratio. Among the 12.4% of monetary poor, 7.7% are not multidimensionally poor. Similarly, from the 17.8% of the multidimensionally poor, 13.2% are not also monetary

poor. Indeed, only 4.7% of the Bhutanese population are both multidimensionally poor and consumption poor at the same time. The large mismatch between the two measures illustrates the vital importance of using both measures to inform policy and planning, as they convey information about people who are poor in different ways and inform different policy interventions.



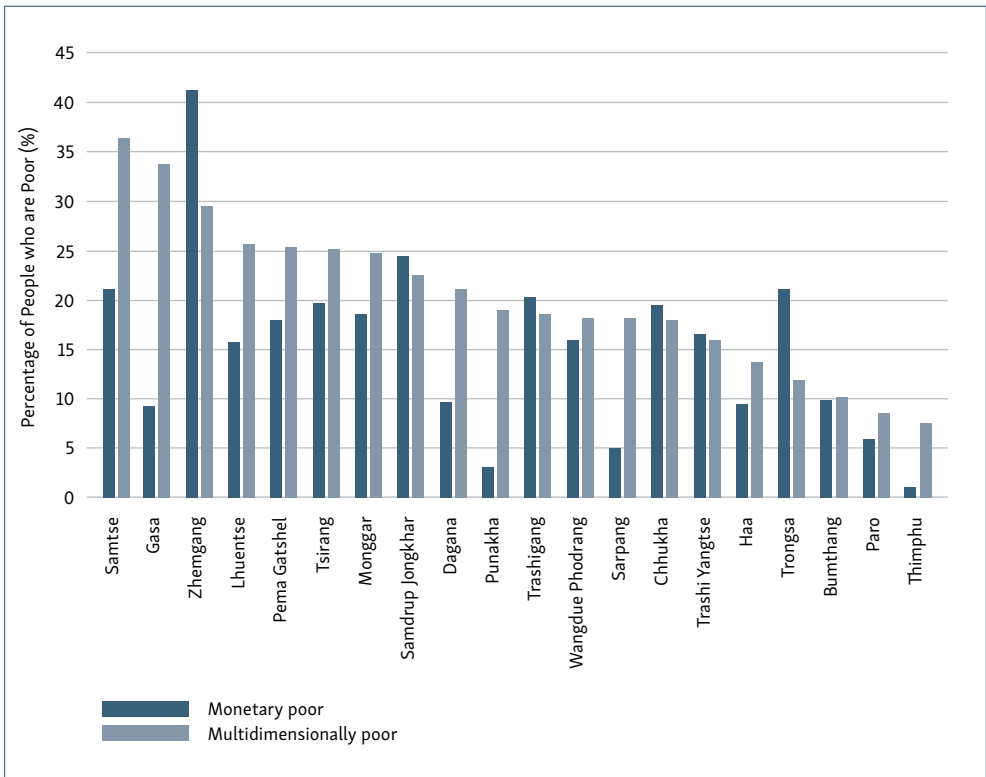
S. Sherpa UNICEF Bhutan

Figure 3.12 compares the rate of monetary poverty and multidimensional poverty by *Dzongkhag*. It shows that in the majority of the *Dzongkhags*, the two measures do not walk in tandem. Zhemgang is by far the poorest in monetary terms, but third poorest by MPI. Samdrup Jongkhar, the second poorest by monetary is a middle MPI area – the eighth poorest. Trongsa, the third poorest in monetary terms is the fourth least-poor by MPI. But Punakha, which has negligible monetary poverty is tenth poorest by MPI. Both measures agree that

Thimphu is least poor. This again demonstrates the value-added in having both measures available to policy makers for planning and allocation purposes.

Table 3.6 displays multidimensional poverty by consumption quintiles subnationally. The questions these answer are clear: for the 17.8% of the population who are multidimensionally poor, are their consumption levels among the bottom 20% of all households, as might be expected? The data show that this is not the case. Again there is a mismatch, and nearly one-third

Figure 3.12 Incidence of Multidimensional Poverty and Income Poverty by *Dzongkhag*, 2022



Source: Authors’ calculations based on data from 2022 BLSS.

of all MPI poor people (31.3%) are not in the poorest 40%. Rather they have incomes in top 60% in monetary terms. 16.1% of poor people - one in six - have consumption levels in the middle quintile. 9.7% of poor people have consumption levels in the next-richest quintile, and 5.4% of poor people - one in twenty - are in the top consumption bracket. This comparison may be partly affected by items having short recall periods in the household consumption aggregate, and by seasonality of con-

sumption. Yet were there only one poverty measure, the difficult material conditions of many people would be overlooked.

The report also sorted people who were MPI poor by monetary quintile. It is expected that those who are MPI poor would be in the poorest 20% or at least the poorest 40% of the population, but again there is a mismatch, and nearly one third of all MPI poor people (31.3%) have incomes in the top 60% in monetary terms.

Table 3.12 Multidimensional Poverty by Consumption Quintile, 2017

Index	Consumption quintile				
	Poorest	Second	Third	Fourth	Richest
MPI	0.152	0.102	0.066	0.041	0.021
Headcount ratio, H (%)	33.9	23.9	16.2	9.7	5.4
Intensity, A (%)	44.7	42.8	40.4	41.9	39.5

Source: Authors' calculations based on data from 2022 BLSS.





OPHI 2017

IV. Moderate MPI among Children and other Age Groups

This chapter disaggregates the Moderate MPI by age cohorts. For that purpose, we compare multidimensional poverty levels across six groups: 0–9 years, 10–17 years, 18–24 years, 25–35 years, 36–49 years, and 50+ years. At the same time, we analyse urban and rural differences across these subgroups.

This chapter has the following sections:

- 4.1 Moderate Multidimensional Poverty (H, A, and MPI) by age group;
- 4.2 Indicator Deprivations in Moderate MPI by age group;
- 4.3 Indicator Composition of Moderate MPI by age group;
- 4.4 Urban and rural differences by age group;
- 4.5 Uncensored headcount ratios across age groups.

4.1 MODERATE MULTIDIMENSIONAL POVERTY (H, A, AND MPI) BY AGE GROUP

As presented in Chapter 3, when MPI is disaggregated by age group, children are the poorest age group. As can be seen in Figure 4.1, the lowest MPI is seen in the

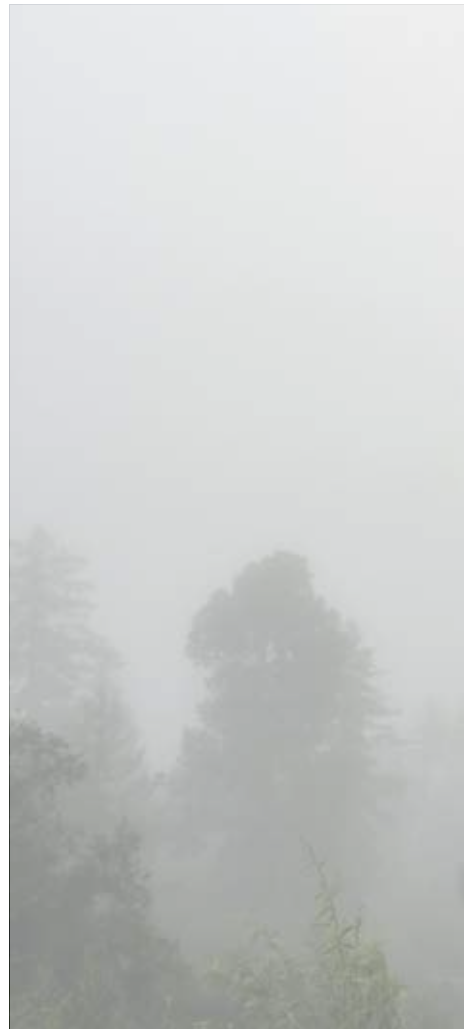
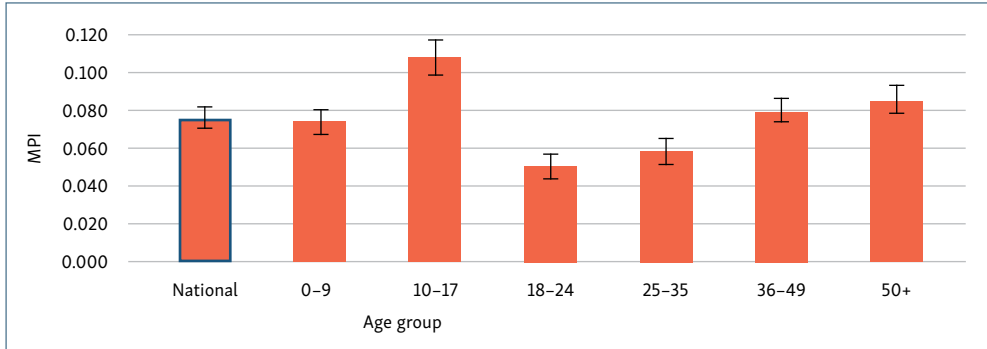
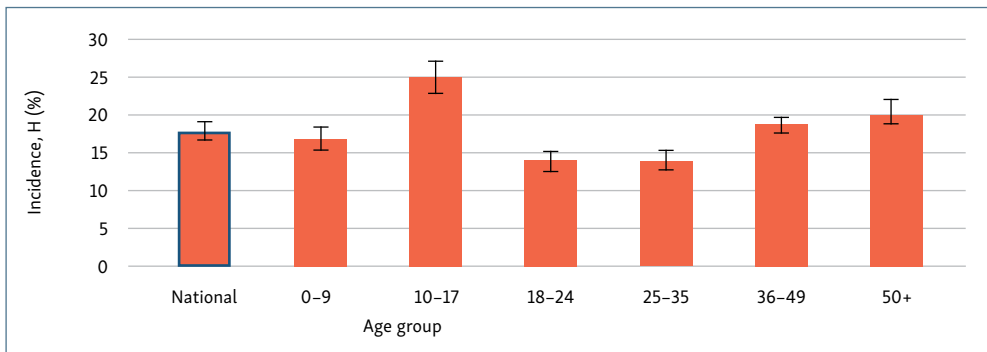


Figure 4.1 MPI by Age Group, Moderate MPI 2022



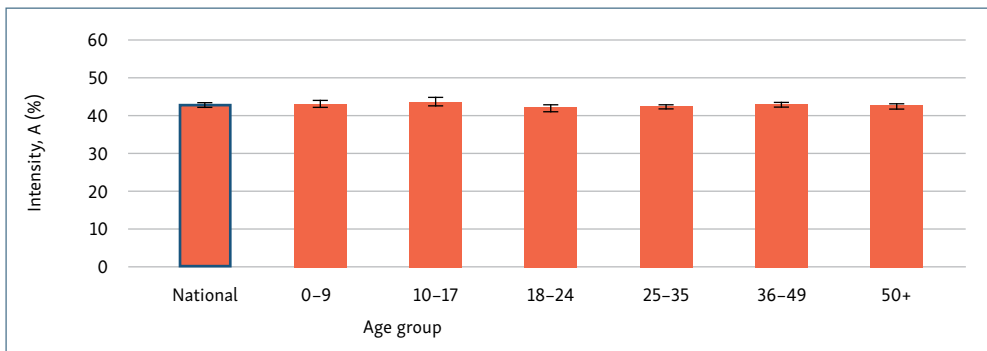
Source: Authors' calculations based on data from 2022 BLSS.

Figure 4.2 Incidence of poverty of Multidimensional Poverty by Age Group, Moderate MPI 2022



Source: Authors' calculations based on data from 2022 BLSS.

Figure 4.3 Intensity of Multidimensional Poverty by Age Group, Moderate MPI 2022



Source: Authors' calculations based on data from 2022 BLSS.

age group (18–24) with 0.050, after which there is an increasing trend with the oldest groups being the next poorest.

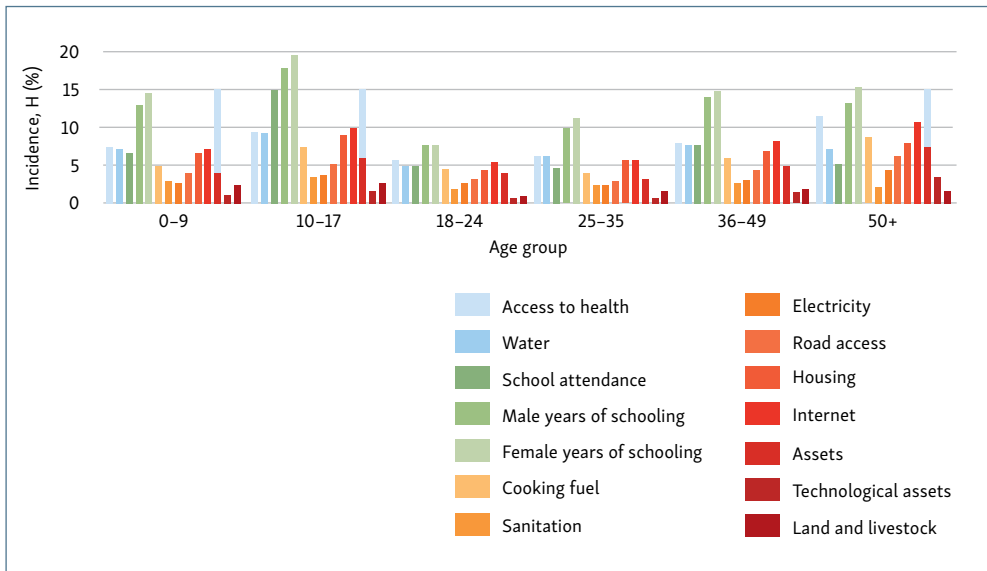
Similarly, as Figure 4.2 shows, the incidence of multidimensional poverty is highest for children belonging to the age group (10–17) years (24.7%), followed by adults 50 years or older (20.1%) and individuals aged 36–49 years (18.4%). The least poor age group are those aged 18–24 years (12.1%).

Figure 4.3 shows that there are no important differences in the intensity of multidimensional poverty between age groups; indeed, the six groups face an intensity of poverty of just over 41%.

4.2 INDICATOR DEPRIVATIONS IN MODERATE MPI BY AGE GROUP

Figure 4.4 presents the censored headcount ratios by age group. The highest censored headcount ratios across all age groups are found in the male and female years of schooling indicator, which is more than 10% except for the age group 18–24 years with 7.6% and 7.8% respectively. The lowest censored headcount ratios across all age groups are in technological assets with roughly 1% across all age cohorts except for the age groups 18–24 and 25–35 years with 0.6%. School attendance deprivations are by far the highest in the age cohort 10–17.

Figure 4.4 Censored Headcount Ratios by Age Group, Moderate MPI 2022



Source: Authors’ calculations based on data from 2022 BLSS.

4.3 INDICATOR COMPOSITION OF MODERATE MPI BY AGE GROUP

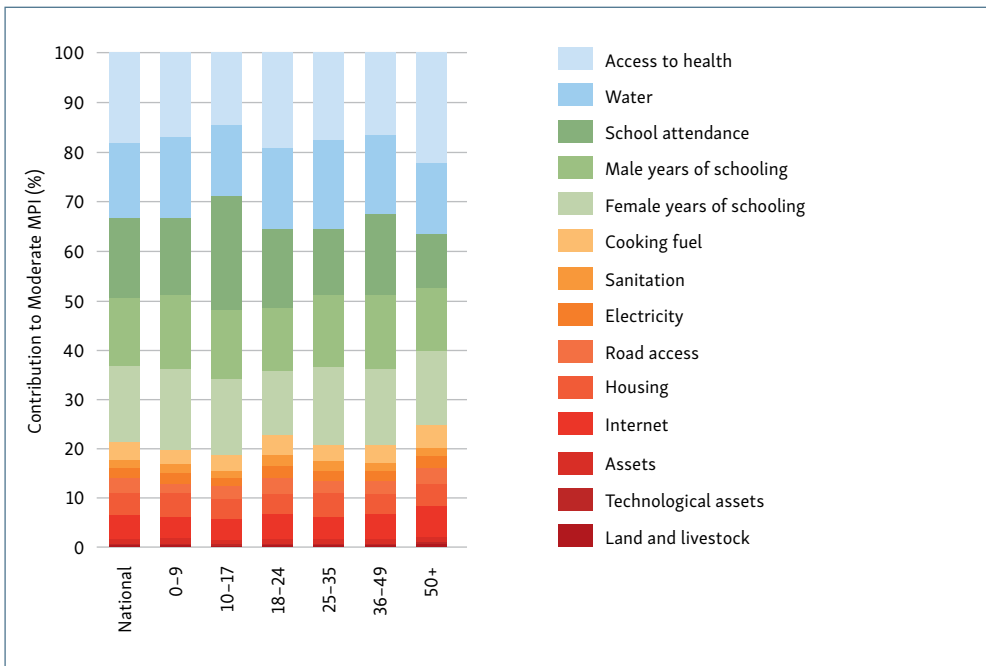
Figure 4.5 illustrates the percentage contribution of each indicator to multidimensional poverty by each age group. Evidently the composition of multidimensional poverty is fairly similar across groups. For instance, the education dimension contributes more than 40% to overall poverty in most age groups, with the exception of the 50+ age group, where the contribution is 38.3%. The health dimension contributes more than 29% to overall poverty in all age groups and the living standards dimension contributes more than 18% to overall poverty in all age cohorts. Again school attendance contrib-

utes relatively more to poverty among children 10–17 years of age.

4.4 URBAN AND RURAL DIFFERENCES BY AGE GROUP

Finally, we analyse the levels of multidimensional poverty for each age group living in urban and rural areas. As is presented in Table 4.1, there are significant differences between the incidence and intensity of multidimensional poverty of people from different age groups living in urban and rural areas. In the case of urban areas, the percentage of the population across age groups who are multidimensionally poor is less than in rural areas. The incidence of

Figure 4.5 Percentage Contributions to Moderate MPI of Each Indicator by Age Group, 2022



Source: Authors’ calculations based on data from 2022 BLSS.

MPI in urban areas across all age groups is less than 10% except for the age group (10–17) years with 14.3%, while MPI in rural areas across all age groups is more than 20% except for the age group (18–24) years which is 17.5%.

In both areas (urban and rural), children in age group (10–17) years are the poorest, with higher levels of multidimensional poverty, with 5.9% and 13.7% respectively.

Table 4.1 Moderate MPI value, Incidence and Intensity by Age Group and Urban and Rural Areas, 2022

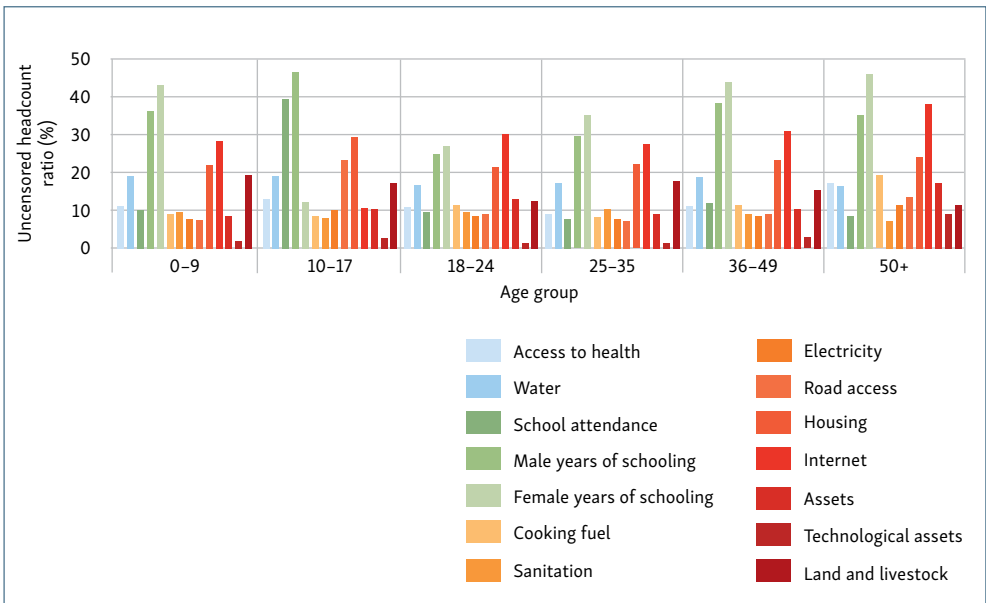
Age Groups/ Area of Residence	Pop. Share (%)	MPI			Incidence (H, %)			Intensity (A, %)		
		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)	
Urban										
0–9	17.2%	0.033	0.025	0.041	8.0%	6.0%	9.9%	41.3%	39.8%	42.8%
10–17	13.9%	0.059	0.043	0.075	14.3%	10.5%	18.0%	41.5%	39.8%	43.3%
18–24	12.9%	0.021	0.012	0.030	5.3%	3.2%	7.4%	39.6%	37.6%	41.7%
25–35	24.8%	0.024	0.017	0.031	6.0%	4.3%	7.7%	40.2%	38.5%	41.9%
36–49	19.2%	0.037	0.029	0.046	9.2%	7.3%	11.2%	40.6%	39.3%	41.9%
50+	12.0%	0.029	0.019	0.039	7.1%	4.6%	9.7%	40.3%	38.3%	42.3%
Rural										
0–9	15.2%	0.103	0.093	0.112	23.7%	21.7%	25.7%	43.4%	42.7%	44.2%
10–17	14.6%	0.137	0.126	0.147	30.9%	28.6%	33.2%	44.2%	43.4%	44.9%
18–24	10.1%	0.074	0.065	0.083	17.5%	15.5%	19.4%	42.4%	41.5%	43.2%
25–35	16.5%	0.091	0.082	0.099	21.2%	19.3%	23.1%	42.8%	42.0%	43.6%
36–49	18.1%	0.107	0.098	0.116	24.6%	22.7%	26.5%	43.5%	42.8%	44.2%
50+	25.5%	0.102	0.094	0.110	23.9%	22.2%	25.7%	42.6%	42.0%	43.2%

Source: Authors' calculations based on data from 2022 BLSS.

4.5 UNCENSORED HEADCOUNT RATIOS ACROSS AGE GROUPS

First, we analyse the uncensored headcount ratios by age group. As can be seen in Figure 4.6, each age cohort faces different types of deprivations. The highest uncensored headcount ratios across all age groups are found in the female years of schooling indicator which is more than 35% except for the age group (18–24) years with 27.1%. Similarly, the male years of schooling indicator is more than 25% across all age groups except for the age group (18–24) years with 24.8%.

Figure 4.6 Uncensored Headcount Ratios by Age Group, Moderate MPI 2022



Source: Authors’ calculations based on data from 2022 BLSS.



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V. Reduction of the Original MPI over Time, 2017–2022

A key question is how multidimensional poverty has changed in Bhutan from 2017 to 2022 according to the original MPI. This chapter presents the national and subnational trends in the original MPI for incidence and intensity, and also shows which indicator improvements drove the positive trend. We do not yet have trends for the Moderate MPI so this chapter focuses exclusively on the original acute MPI.

Overall, multidimensional poverty decreased strongly and significantly from 2017–2022. The MPI value and the incidence both fell to under half their original value within a five-year period, and this reduction was significant at the 99% confidence interval. According to the original MPI, Bhutan has already met the goal of SDG Target 1.2, which is to reduce by half the incidence of national MPI by 2030. This finding is all the more salutary because this period included the pandemic with its associated lockdowns, job and income loss due to pandemic measures and the cessation of tourism and international trade. While many lives were deeply affected by the pandemic and its economic repercussions, these findings also point out that

Bhutan put in place effective social safety nets that did not leave the poorest deeply impoverished.

In 2017, according to the original MPI, 5.8% of the population were poor. This means that 5.8% of the population were identified as living in acute multidimensional poverty according to the original indicators and cutoffs. This report finds that the incidence of poverty fell from 5.8% to 2.1% in 2022 – a reduction of 3.7 percentage points. The original MPI value fell from 0.023 to 0.008 – an even steeper reduction. Rural areas were the poorest in both time periods, but had the fastest reduction, falling from 8.1% to 3.1% in five years. Urban poverty, although lower, had no statistically significant change in MPI because, while incidence fell, intensity increased. Across *Dzongkhags*, Gasa, the poorest, had the fastest absolute reduction and there was a strongly pro-poor pattern of MPI reduction. However, due to sample size limitations and the low starting levels of MPI, only half of the *Dzongkhags* had statistically significant reductions at 95% confidence. Across age groups, children were the poorest, and reduced MPI the fastest, from 6.3% to 2.2%. Nationally, the

indicators that showed the strongest reduction among the poor were gains in years of schooling and clean cooking fuel.

After introducing the datasets used, this chapter presents changes over time in the following order:

- 5.1 Multidimensional Poverty of Original MPI (H, A, and MPI);
- 5.2 Censored and Uncensored Headcount Ratios of Original MPI;
- 5.3 Percentage Contribution of Each Indicator to the Original MPI;
- 5.4 Changes in the Levels and Composition of Original MPI by *Dzongkhag*;
- 5.5 Changes in the Levels and Composition of Original MPI by Rural–Urban areas and Age Group;
- 5.6 Multidimensional Poverty with Different Poverty Cut-offs.

We used data from the BLSS surveys for both years and calculated the MPI and its sub-indices for different regions. This helps us understand how poverty has improved or worsened over time. We focused on changes in different areas and *Dzongkhags* over time.

The surveys used the same design and questions for both years, so we could make fair comparisons between them. However, we made a small adjustment to one of the indicators in the 2017 survey so that it had the same definition as the 2022 survey. This ensures that our comparisons are accurate. All the indicators, weights, and poverty cut-offs used for the 2017–2022 comparison are the same as those used in both the 2017 and 2022 versions of the MPI.



Adam Singer / Flickr CC BY-ND

5.1 MULTIDIMENSIONAL POVERTY OF ORIGINAL MPI (H, A, AND MPI)

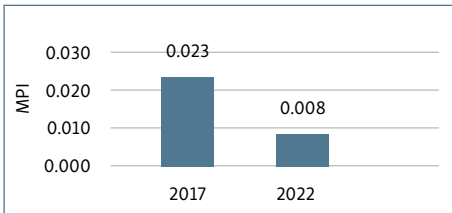
Turning now to the three key statistics of the MPI, Figures 5.1 to 5.3 show how the incidence of poverty, intensity of poverty, and the MPI have changed over the two points in time. It is evident that multidimensional poverty dropped between 2017 and 2022. The MPI decreased from 0.023 to 0.008 and the incidence or headcount ratio (H) fell from 5.8% to 2.1%; both reductions

are statistically significant (see Table 5.1). Note that these figures are harmonised for strict comparability.

5.2 CENSORED AND UNCENSORED HEADCOUNT RATIOS OF ORIGINAL MPI

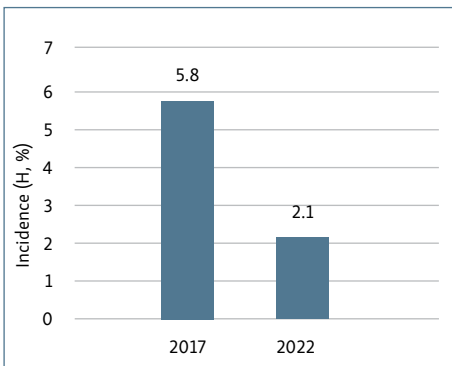
To understand how poverty has decreased over time, we unpack the changes in MPI by each of its component indicators (Figure 5.4). Censored headcount ratios – measuring the percentage of people who are poor and deprived in a given indicator – are shown for the two waves. All reductions in all indicators were significant over time. Within the dimensions of education and health, for instance, all indicators show statistically significant reductions (at 1% level of significance) between 2017 and 2022. Among indicators belonging to the living standards dimension, we see a large improvement in cooking fuel and san-

Figure 5.1 Multidimensional Poverty in Bhutan based on the Original MPI, 2017–2022



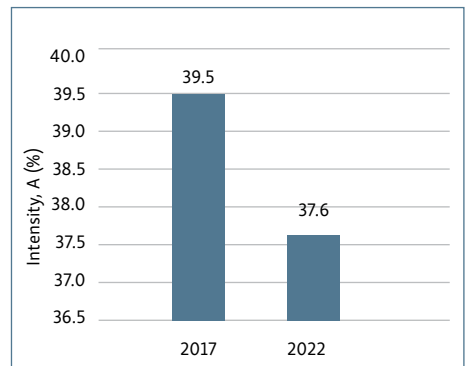
Source: Authors’ calculations based on data from 2022 BLSS.

Figure 5.2 Incidence Multidimensional Poverty in Bhutan based on the Original MPI, 2017–2022



Source: Authors’ calculations based on data from 2022 BLSS.

Figure 5.3 Intensity Multidimensional Poverty in Bhutan, 2017–2022



Source: Authors’ calculations based on data from 2022 BLSS.

Table 5.1 Change in H, A, and MPI between 2017 and 2022

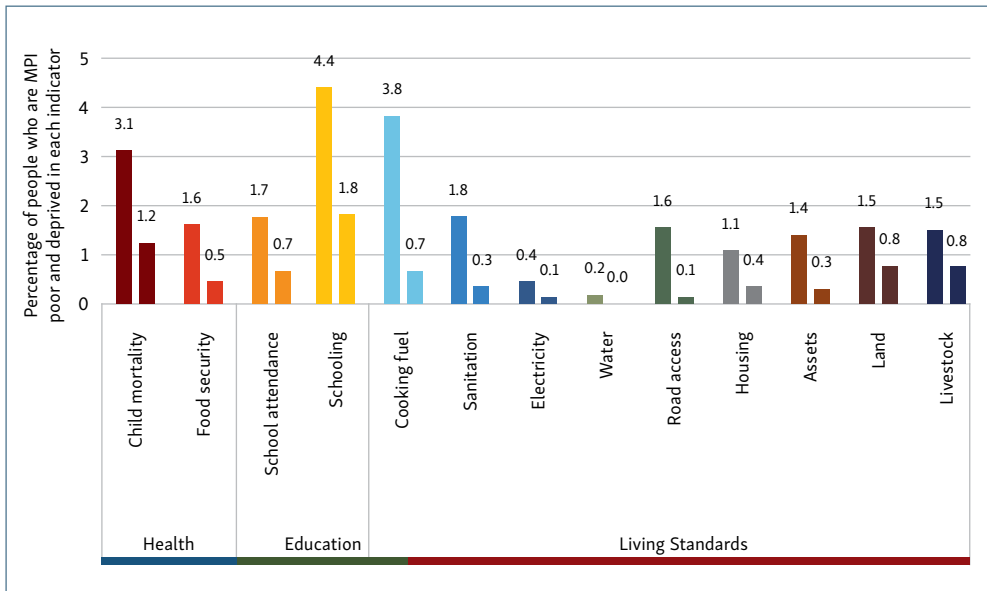
Index	Poverty across time		Change 2017–2022	
	2017	2022	Absolute	Relative
MPI	0.023	0.008	-0.015***	-0.651
Incidence (H)	0.058	0.021	-0.037***	-0.635
Intensity (A)	0.395	0.376	-0.019***	-0.049

Source: Authors’ calculations based on data from 2017 and 2022 BLSS
 Note: *** 1% level of significance, two-tailed tests.

itation. The censored headcount ratio for cooking fuel declined from 3.8% to 0.7%,⁵ and deprivation in sanitation⁶ dropped from 1.8% to 0.3%.

Figure 5.5 shows the absolute change in the censored headcount ratios between 2017 and 2022, in percentage points. Clearly, the improvements in cooking fuel, years of schooling, and child mortality are

Figure 5.4 National Censored Headcount Ratios, 2017–2022



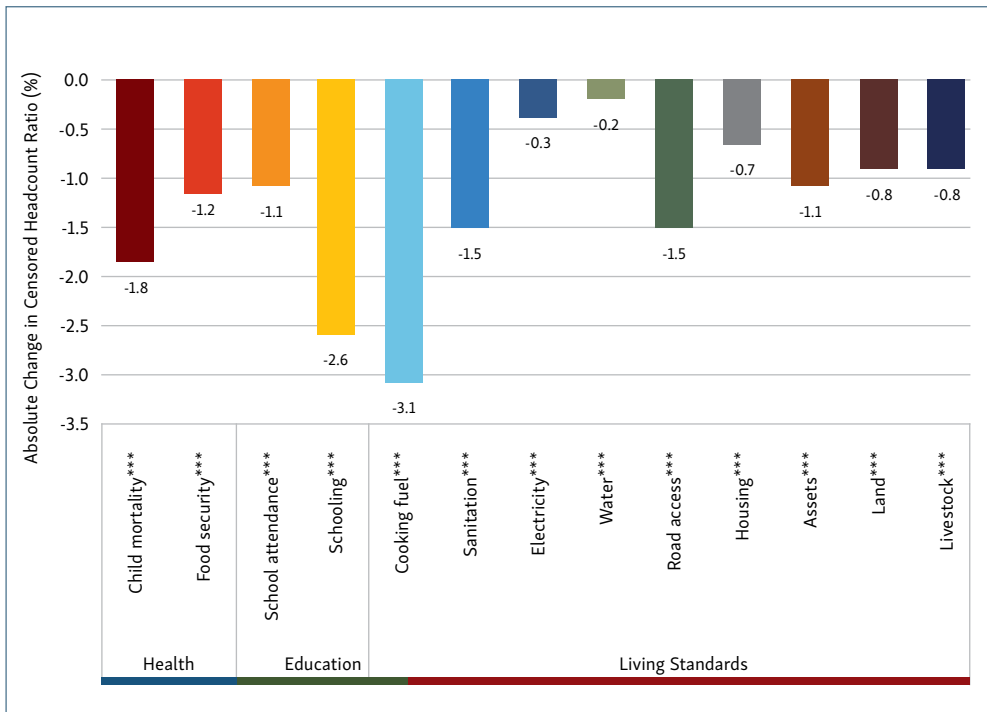
Source: Authors’ calculations based on data from 2017 and 2022 BLSS.
 Note: *** 1% level of significance, two-tailed tests.

the largest.⁷ Similarly, there are important reductions in the censored headcount ratios of other indicators such as housing⁸, road access and sanitation. Deprivations in food security⁹, school attendance and assets also fell by more than one percentage point each.

It is useful to analyse population-wide trends in the MPI indicators alongside the trends in deprivations of the poor. By doing so we access a general, less poverty fo-

cused, view of national trends. Figure 5.6 presents the uncensored headcount ratio, which is the proportion of all people, both those who are multidimensionally poor and those who are not poor, who are deprived in each of the 13 indicators. The figure shows that more than 10 of the 13 indicators have significant improvements over time; that is, a reduction in the proportion of people deprived in these indicators. Figure 5.7 shows the absolute change in the uncensored headcount ratios between 2017 and 2022. Cooking fuel and

Figure 5.5 Absolute Change in Censored Headcount Ratios between 2017 and 2022 according to the Original MPI



Source: Authors' calculations based on data from 2017 and 2022 BLSS.

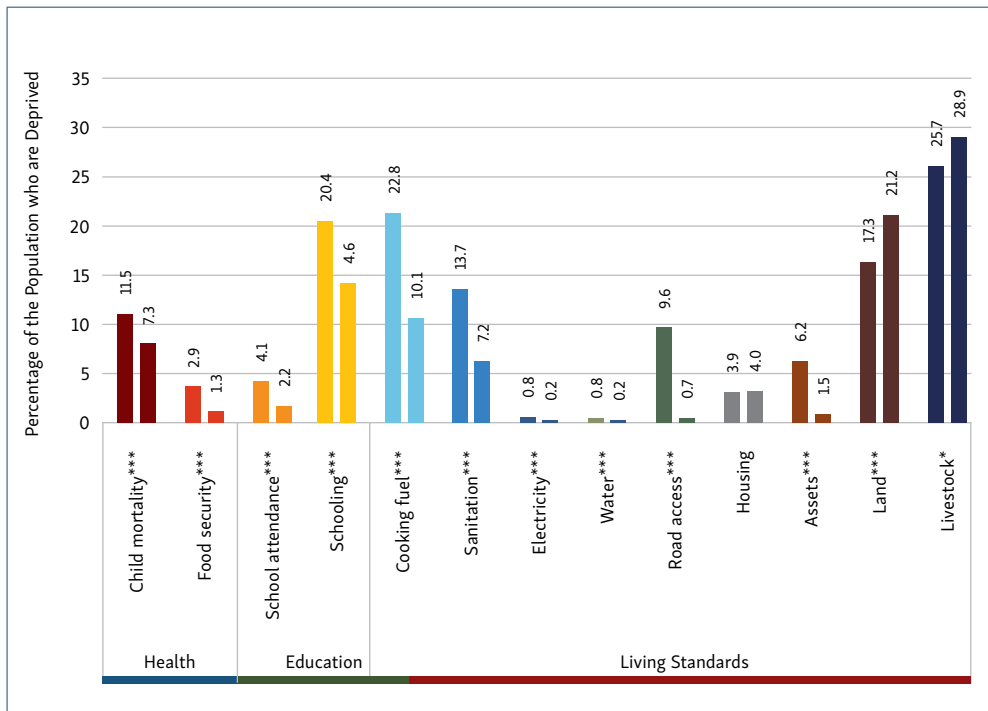
Note: *** 1% level of significance, two-tailed tests.

road access show the largest absolute reductions (-12.6 and -8.6 percentage points, respectively), followed by sanitation (-6.5) and years of schooling (-5.8). On the other hand, deprivations in land and livestock ownership worsened between 2017 and 2022 (by +4.0 and +3.2 percentage points, respectively), probably due to livelihood adjustments among the non-poor in rural areas, as well as rural-urban migration.

5.3 PERCENTAGE CONTRIBUTION OF EACH INDICATOR TO THE ORIGINAL MPI

Turning now to the contribution of each of the 13 indicators of the MPI, Figure 5.8 shows each indicator’s contribution to overall poverty in Bhutan for each of the two waves under study. It appears that the general composition of the MPI has changed over time due to the fast reduction in living standards indicators. In both years, not having any family member who

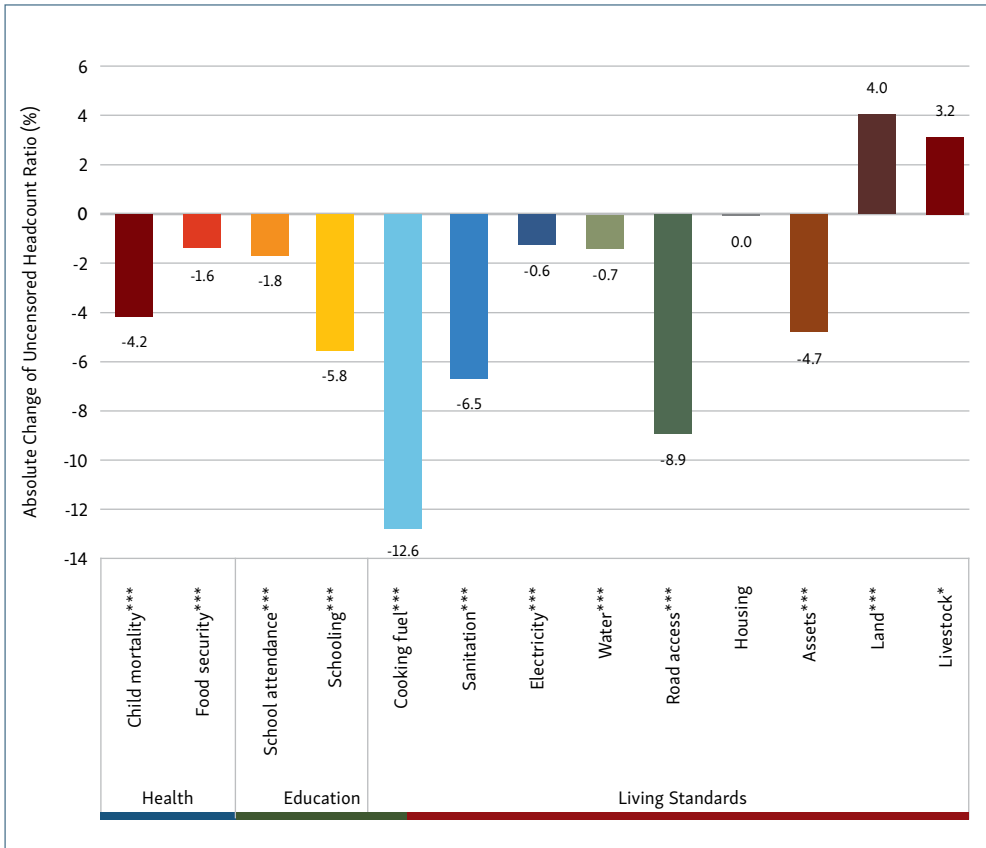
Figure 5.6 National Uncensored Headcount Ratios, 2017–2022, according to the Original MPI



Source: Authors’ calculations based on data from 2017 and 2022 BLSS.

Note: *** 1% level of significance; * 10% level of significance, two-tailed test.

Figure 5.7 Absolute Change in Uncensored Headcount Ratios 2017–2022 , according to the Original MPI



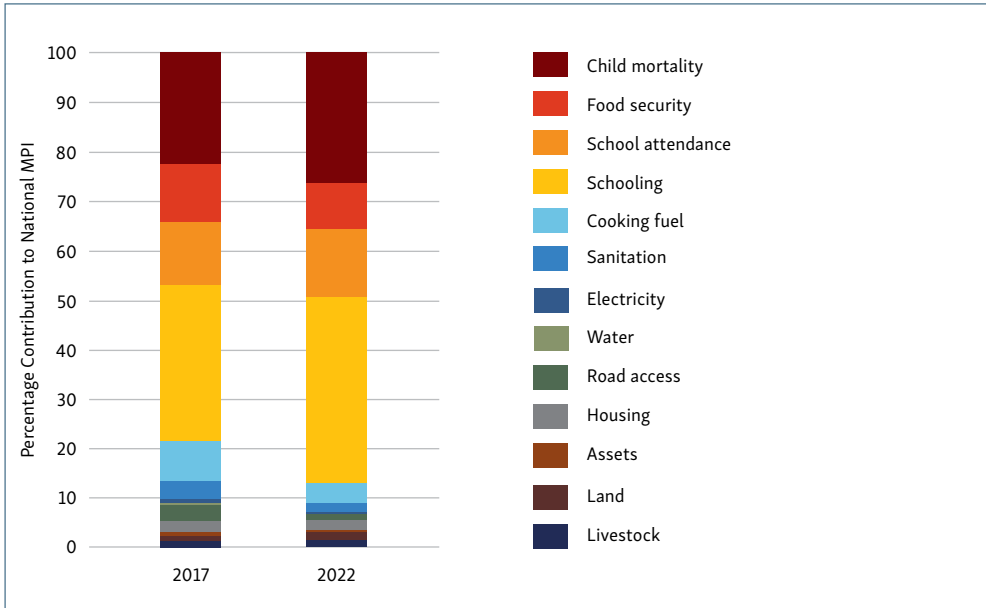
Source: Authors’ calculations based on data from 2017 and 2022 BLSS.

Note: *** 1% level of significance; * 10% level of significance, two-tailed test.

had completed at least five years of schooling was the indicator that contributed the most to poverty, followed by child mortality and the other health and education indicators. However, deprivations related to living standards indicators decreased sharply. Indeed, in 2022 all living standard indicators together contribute less than 1/8th to MPI.

In terms of dimensions, education contributes the most to overall poverty (around half) in 2022, and health slightly increased its contribution to overall poverty.

Figure 5.8 Contribution of Each Indicator to the Original MPI, 2017–2022



Source: Authors' calculations based on data from 2017 and 2022 BLSS.

5.4 CHANGES IN THE LEVELS AND COMPOSITION OF ORIGINAL MPI BY DZONGKHAG

Amongst the *Dzongkhags*, 11 *Dzongkhags* showed statistically significant reductions in MPI. Figure 5.9 and Table 5.2 provide regional trends in absolute changes over time of multidimensional poverty. As can be seen, Gasa shows the fastest absolute reduction in the MPI between 2017 and 2022 (-0.086 points of the MPI or falling from 29% to 9.5%), followed by Haa and Dagana.

Thimphu houses 23.1% of the total population of Bhutan, but only has an incidence of 0.5% in 2022. In contrast, Gasa is home to 0.5% of the country's population, 9.5% of whom are poor. So even though MPI is very low, its level varies significantly across regions.

To investigate if the reduction of multidimensional poverty across *Dzongkhags* is pro-poor or is leaving the poorest regions behind, Figure 5.10 plots the absolute change in MPI on the vertical axis against the 2017 MPI for all regions. The strong negative trend between the initial level of the MPI and the absolute change in the MPI shows a pro-poor pattern. The outlying region with the highest poverty and fastest reduction of poverty is Gasa.

Table 5.2 Change in MPI, H, A between 2017 and 2022 according to the Original MPI

	MPI					H				
	2017	2022	Absolute Change	Sig	Relative Change	2017	2022	Absolute Change	Sig	Relative Change
National (Bhutan)	0.023	0.008	-0.015	***	-65.2	5.8%	2.1%	-3.7%	***	-63.4
Bumthang	0.017	0.007	-0.010	*	-59.3	3.9%	2.1%	-1.8%		-47.2
Chhukha	0.031	0.008	-0.023	***	-74.7	7.9%	2.1%	-5.8%	***	-73.1
Dagana	0.037	0.006	-0.030	***	-83.0	8.8%	1.6%	-7.1%	***	-81.3
Gasa	0.126	0.040	-0.086	*	-68.2	29.0%	9.5%	-19.6%	*	-67.4
Haa	0.045	0.012	-0.033	*	-73.4	11.4%	3.3%	-8.1%	*	-71.4
Lhuentse	0.017	0.015	-0.003		-17.0	4.8%	3.8%	-1.0%		-20.1
Monggar	0.018	0.011	-0.007		-40.1	4.8%	3.0%	-1.9%		-38.8
Paro	0.008	0.012	0.005		58.7	2.1%	3.4%	1.3%		62.6
Pema Gatshel	0.007	0.011	0.005		69.4	1.7%	3.0%	1.2%		71.0
Punakha	0.021	0.006	-0.014		-69.4	5.2%	1.8%	-3.5%		-65.9
Samdrup Jongkhar	0.022	0.011	-0.011	**	-48.3	5.7%	3.2%	-2.6%	*	-44.7
Samtse	0.036	0.010	-0.025	***	-70.7	8.7%	2.7%	-6.0%	***	-68.5
Sarpang	0.027	0.006	-0.021	***	-76.9	7.2%	1.6%	-5.6%	***	-78.2
Thimphu	0.010	0.002	-0.008	***	-81.2	2.6%	0.5%	-2.1%	***	-81.7
Trashi Yangtse	0.029	0.010	-0.019	***	-66.6	7.2%	2.6%	-4.7%	**	-64.4
Trashigang	0.032	0.005	-0.028	***	-86.1	8.3%	1.2%	-7.1%	***	-85.4
Trongsa	0.027	0.005	-0.022	***	-80.5	6.8%	1.4%	-5.4%	***	-79.2
Tsirang	0.034	0.010	-0.024	**	-70.6	8.2%	2.5%	-5.7%	**	-69.6
Wangdue Phodrang	0.027	0.012	-0.014	*	-53.9	6.7%	3.1%	-3.5%	*	-53.0
Zhemgang	0.017	0.018	0.001		5.9	4.3%	4.7%	0.5%		10.4
Rural	0.032	0.012	-0.020	***	-63.499	8.1%	3.1%	-5.0%	***	-61.580
Urban	0.004	0.002	0.005		-45.288	1.2%	0.6%	-0.6%	**	-46.054
Children 0-17	0.025	0.008	-0.017	***	-66.362	6.3%	2.2%	-4.0%	***	-64.489
Adults 18+	0.022	0.008	-0.014	***	-64.403	5.6%	2.1%	-3.5%	***	-62.697

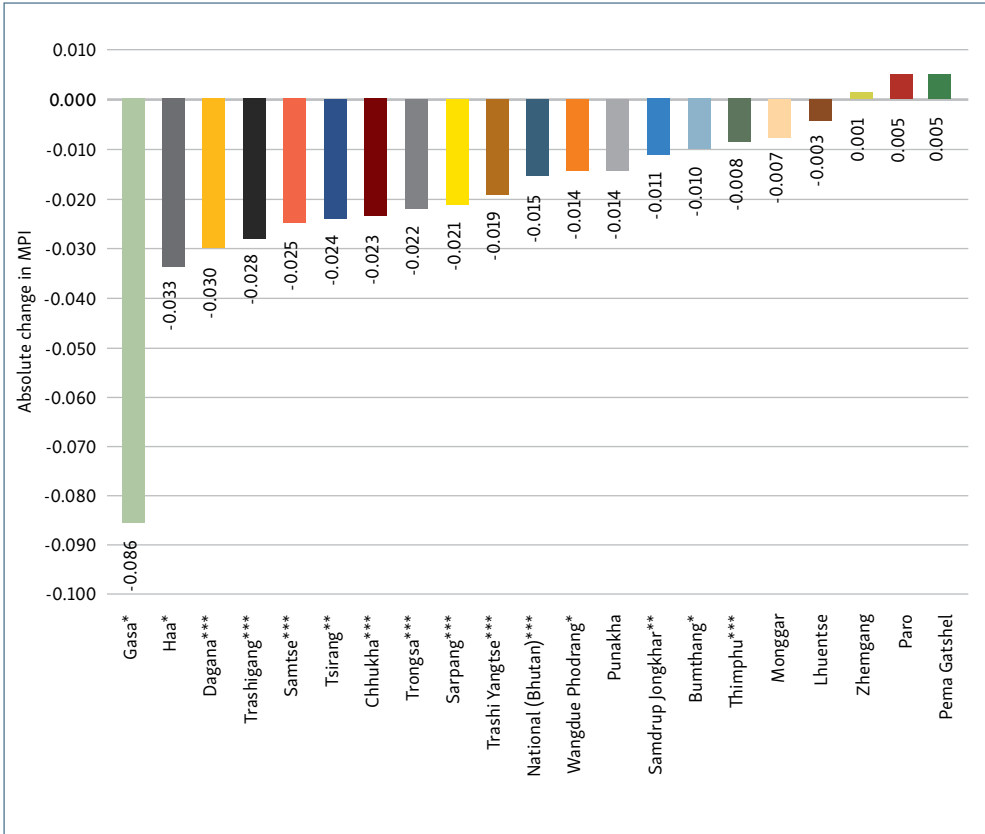
Source: Authors' calculations based on data from 2017 and 2022 BLSS

Table 5.2 Change in MPI, H, A between 2017 and 2022 according to the Original MPI, cont.

	A					Population					
	2017	2022	Absolute Change	Sig	Relative Change	share 2017	share 2022	# of pop 2017	# of pop 2022	# of poor 2017	# of poor 2022
National (Bhutan)	39.5%	37.6%	-1.9%	***	-4.9	100%	100%	727,145	763,246	42,247	16,181
Bumthang	44.6%	34.4%	-10.2%	***	-22.9	2.3%	2.3%	16,724.3	17,478	651	358
Chhukha	39.6%	37.3%	-2.4%	*	-5.9	9.1%	8.6%	66,461.1	65,944	5,250	1,398
Dagana	41.6%	37.9%	-3.8%	*	-9.1	3.4%	3.7%	24,577.5	28,087	2,153	461
Gasa	43.3%	42.3%	-1.0%		-2.4	0.5%	0.5%	3,781.2	3,816	1,097	361
Haa	39.1%	36.5%	-2.6%		-6.8	1.6%	1.4%	11,561.6	10,914	1,318	356
Lhuentse	36.6%	38.0%	1.4%		3.9	2.2%	1.9%	16,288.0	14,807	777	564
Monggar	38.3%	37.5%	-0.8%		-2.1	6.1%	5.0%	44,065.0	38,086	2,124	1,124
Paro	36.9%	36.0%	-0.9%		-2.4	5.2%	7.0%	38,102.4	53,122	785	1,785
Pema Gatshel	37.9%	37.6%	-0.3%		-0.9	4.0%	3.1%	29,013.1	23,661	502	698
Punakha	39.1%	35.1%	-4.0%	*	-10.2	3.9%	3.4%	28,067.8	25,721	1,471	460
Samdrup Jongkhar	38.6%	36.1%	-2.5%	**	-6.4	5.2%	4.7%	37,957.0	35,491	2,164	1,118
Samtse	40.8%	37.9%	-2.8%		-7.0	9.1%	8.6%	66,242.9	65,639	5,763	1,799
Sarpang	38.1%	40.4%	2.3%		6.0	6.0%	6.8%	43,265.1	51,824	3,093	808
Thimphu	36.9%	37.8%	0.9%		2.5	18.1%	23.1%	131,758.7	176,005	3,399	827
Trashii Yangtse	39.8%	37.4%	-2.5%		-6.2	6.8%	5.6%	49,445.9	42,360	3,570	1,089
Trashigang	38.9%	37.1%	-1.9%		-4.8	2.2%	2.1%	16,142.6	16,104	1,335	195
Trongsa	39.4%	36.9%	-2.5%		-6.5	2.6%	1.9%	18,614.9	14,807	1,273	210
Tsirang	41.4%	40.0%	-1.4%		-3.4	3.0%	3.3%	21,450.8	25,263	1,750	627
Wangdue Phodrang	39.7%	39.0%	-0.8%		-2.0	6.0%	4.9%	43,483.3	37,628	2,905	1,182
Zhemgang	39.0%	37.4%	-1.6%		-4.1	2.8%	2.2%	20,141.9	16,486	860	778
Rural	39.8%	37.8%	-2.0%	***	-4.996	66.5%	59.7%	483,842.3	455,505	39,336	14,212
Urban	35.3%	35.8%	0.5%	**	1.421	33.5%	40.3%	243,302.7	307,741	2,920	1,970
Children 0-17	39.9%	37.8%	-2.1%	***	-5.274	32.9%	28.3%	239,158.0	216,075	14,947	4,797
Adults 18+	39.3%	37.5%	-1.8%	***	-4.574	67.1%	71.7%	487,987.0	547,171	27,278	11,381

Source: Authors' calculations based on data from 2017 and 2022 BLSS.

Figure 5.9 Absolute Change in MPI by Dzongkhags' MPI, 2017–2022, according to the Original MPI



Source: Authors' calculations based on data from 2017 and 2022 BLSS.

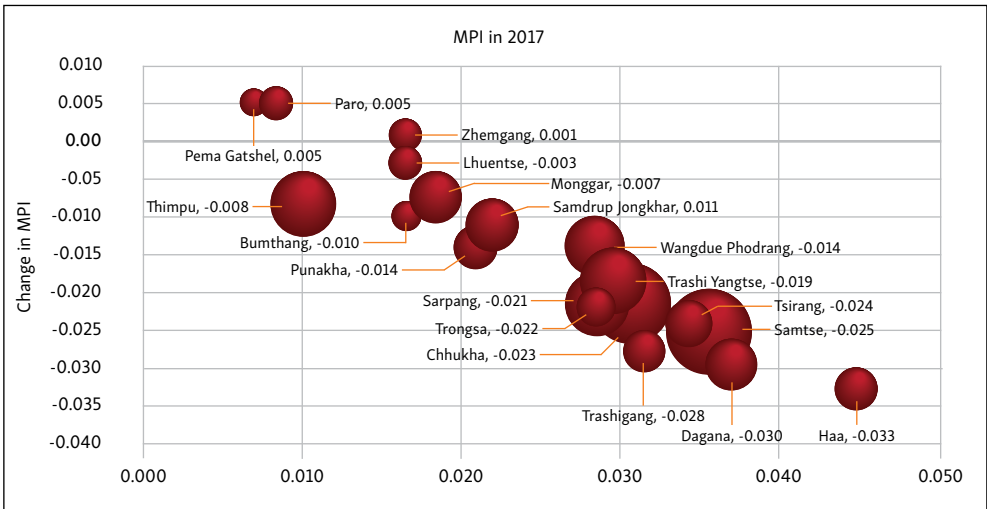
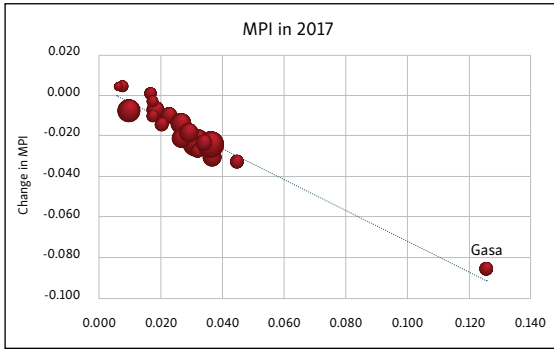
Note: *** 1% level of significance; ** 5% level of significance; * 10% level of significance, two-tailed test.

For clarity, the larger Figure 5.11 shows all *Dzongkhags* except Gasa. The poorer regions have tended to reduce poverty faster than less poor *Dzongkhags*, hence, far from being left behind, they are catching up. Regions with particularly good rates of poverty reduction for their level of poverty are below the line – such as Thimphu – whereas those that are a bit slower are higher up – like Zhemgang.

To further analyse improvements in each of the 20 *Dzongkhags* of Bhutan, Figure 5.12 highlights the changes in censored headcount ratios between 2017 and 2022. While there are clear improvements across most of the indicators in most regions, there are a few regions that have not shown reductions. Notably, there is an increase in the censored headcount ratio for most indicators in Paro and Pema Gatshel – two very different settings. In the case of

Figure 5.10 Poverty Reduction in Dzongkhags, 2017–2022 including Gasa

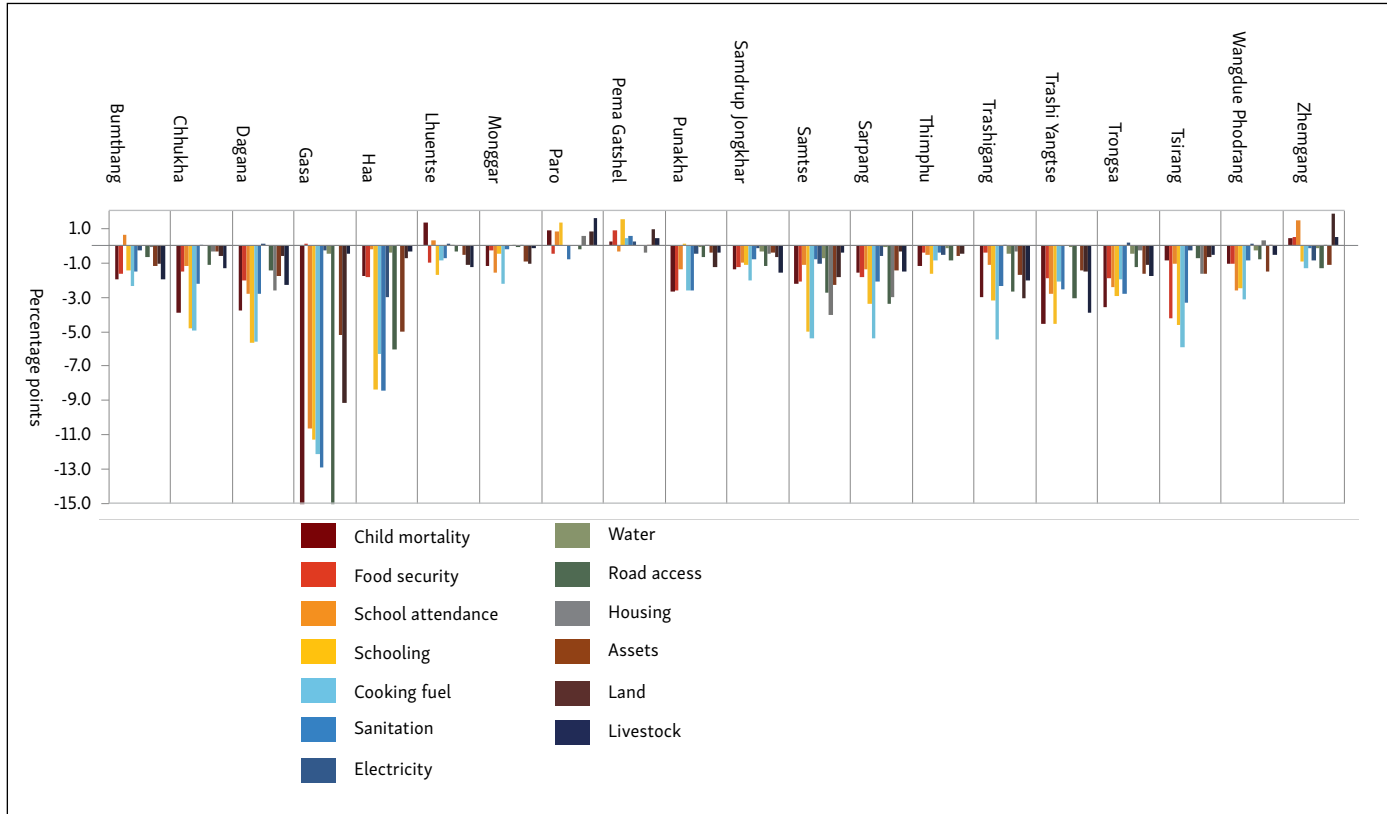
Figure 5.11 Absolute Poverty Reduction by level of poverty in Dzongkhags, 2017–2022 excluding Gasa based on Original MPI



Source: Authors' calculations based on data from 2017 and 2022 BLSS.

Gasa, there was a strong reduction in most indicators. Tsirang witnessed a very salutary decrease in food security.¹⁰

Figure 5.12 Absolute Change in Censored Headcount Ratios by Dzongkhag, 2017–2022



Source: Authors' calculations based on Data from BLSS, 2017 and 2022.

5.5 CHANGES IN THE LEVELS AND COMPOSITION OF ORIGINAL MPI BY RURAL–URBAN AREAS AND AGE GROUPS

Both the moderate MPI and the original MPI find that poverty rates are highest in rural areas and among children. How did MPI progress in rural and urban areas and for children? As Table 5.3 shows, there was strong and significant reduction across MPI in rural areas and among both children and adults – but there was no significant reduction in MPI in urban areas. In part, this is due to the small sample size and very low levels of poverty. Already in 2017, only 1.2% of urban dwellers lived in acute multidimensional poverty. Also, the urban population increased by five percentage points – so one in 20 Bhutanese moved from rural to urban areas during the period 2017–2022.

On the positive side, the incidence of rural multidimensional poverty fell from 8.1% to 3.1%, and rural MPI plummeted from 0.032 to 0.012. Of those who left poverty in this five-year period, 25,125 of the 26,066 persons leaving poverty lived in rural areas reflecting a period of rapid and salutary change.

Another positive finding is that the disparity between children and adults has been erased. The MPI of children fell from 0.025 to 0.008, and adult MPI in 2022 fell from 0.022 to the same value of 0.008. Whereas in 2017, 6.3% of children were poor compared to 5.6% of adults, both are now 2.1% and 2.2% respectively. This is a positive finding – however Bhutan's original MPI does not, since 2010, include stunting or being underweight or other child-specific deprivations that may still affect children's



Arian Zwegers / Flickr CC BY

Table 5.3 Absolute and Relative Change in MPI by Rural and Urban Area

	MPI					H				
	2017	2022	Absolute Change	Sig	Relative Change	2017	2022	Absolute Change	Sig	Relative Change
Rural	0.032	0.012	-0.020	***	-63.499	8.1%	3.1%	-5.0%	***	-61.580
Urban	0.004	0.002	0.005		-45.288	1.2%	0.6%	-0.6%	**	-46.054
Children 0-17	0.025	0.008	-0.017	***	-66.362	6.3%	2.2%	-4.0%	***	-64.489
Adults 18+	0.022	0.008	-0.014	***	-64.403	5.6%	2.1%	-3.5%	***	-62.697

	A					Population					
	2017	2022	Absolute Change	Sig	Relative Change	share 2017	share 2022	# of pop 2017	# of pop 2022	# of poor 2017	# of poor 2022
Rural	39.8%	37.8%	-2.0%	***	-4.996	66.5%	59.7%	483,842.3	455,505	39,336	14,212
Urban	35.3%	35.8%	0.5%	**	1.421	33.5%	40.3%	243,302.7	307,741	2,920	1,970
Children 0-17	39.9%	37.8%	-2.1%	***	-5.274	32.9%	28.3%	239,158.0	216,075	14,947	4,797
Adults 18+	39.3%	37.5%	-1.8%	***	-4.574	67.1%	71.7%	487,987.0	547,171	27,278	11,381

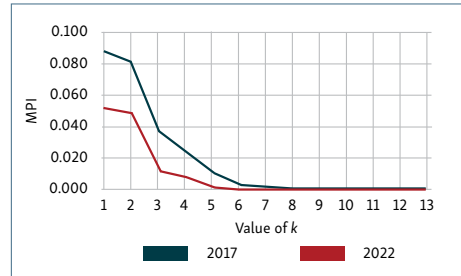
Source: Authors' calculations based on data from 2017 and 2022 BLSS.

lives and life courses. Ideally a linked child MPI could be built from the next BLSS or MICS survey, to further examine child-specific individual indicators.

5.6 MULTIDIMENSIONAL POVERTY WITH DIFFERENT POVERTY CUT-OFFS

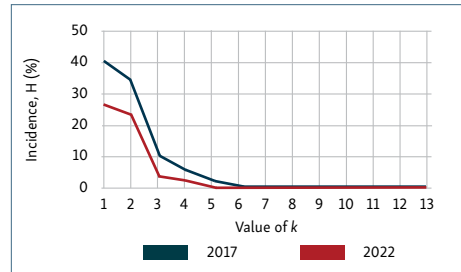
It is important to see how much MPI, H, and A have improved depending on the poverty cut-off, which is also known as the k-value. The graphs in Figures 5.13 to 5.15 show the values of these three measures for all possible k-values and for the two different years. If we compare the graphs for 2017 and 2022, we can see that for k-values less than 6, the curves for MPI and H are different, with the 2022 curves clearly being lower than the 2017 curves. However, no matter what k-value we choose, there is never an increase in poverty for any k value between 2017 and 2022.

Figure 5.13 MPI for Different Values of the Poverty Cut-off k based on Original MPI



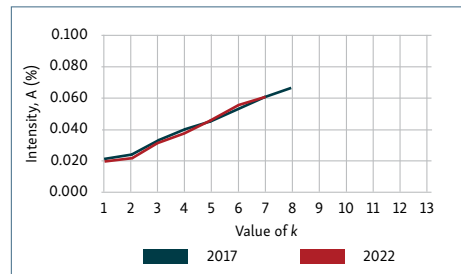
Source: Authors’ calculations based on data from 2017 and 2022 BLSS.

Figure 5.14 National Headcount Ratio (H) for Different Values of the Poverty Cut-off k based on Original MPI



Source: Authors’ calculations based on data from 2017 and 2022 BLSS.

Figure 5.15 National Intensity of Poverty (A) for Different Values of the Poverty Cut-off k based on Original MPI



Source: Authors’ calculations based on data from 2017 and 2022 BLSS.



VI. Action Areas

The MPI is a measure of poverty that tracks the overlapping deprivations that people are experiencing at the same time in health, education, and living standards. Since it provides a more nuanced understanding of poverty than traditional measures based solely on income, the MPI can be a useful tool for identifying districts where poverty is particularly high. It is important to stress that the MPI is and should be a tool for action – as the economist Sir Tony Atkinson wrote, it is this ‘link to action’ that distinguishes a successful poverty measure.

Both the original MPI – which measures acute poverty and has been used since 2010 – and the Moderate MPI – launched for the first time this year – can be used to guide policy in several ways, including:

Tracking and monitoring progress among the poor: MPI is used to track progress nationally as well as by *Dzongkhag*, rural-urban areas, age groups and other groups in reducing poverty over time. Policymakers can measure the success of their targeted actions and adapt them if required by tracking changes in poverty levels among different subgroups. Both the Moderate and original MPI have revealed a significant improvement in reducing poverty at the national level. Having regular updates on MPI measures allows us to see where the intended activities or policies are heading.

Identifying high-poverty areas to target poverty reduction programmes or interventions: MPI can be used to identify areas with a high level of poverty, so that poverty reduction programmes can then be aimed in areas with the highest MPI values. The moderate MPI results tell us that more than 82% of multidimensionally poor people in Bhutan live in rural areas. This is despite the fact that only 61.4% of the population reside in rural areas. Furthermore, a striking 93% of those who are still poor by the original MPI are rural dwellers. Only just over one-sixth (17.7%) of the country’s moderately multidimensionally poor people reside in urban areas. Interventions thus have to focus on the rural poor. Nevertheless, urban poverty, while less prevalent, persists and had no significant decline 2017–2022, which is a cause for concern.

District-level analysis of the changes in multidimensional poverty from 2017–2022 (according to the original MPI) highlights Gasa, Zhemgang and Lhuentse as the poorest. However, in both the Moderate and original MPI, Samtse houses the highest number of multidimensionally poor people followed by Chhukha and Thimphu. MPI can thus be used to identify the districts with the highest rates of poverty and also those with the biggest number of poor people. It is vital to remember that poverty

reduction activities and budgetary allocations must be sharpened by also considering the number of poor people affected.

Using the poorest subgroups as criteria to concentrate efforts on poverty reduction schemes: To find the poorest segments in a population, we disaggregate the MPI using various demographic features such as age and education. For example, MPI results reveal that children are more likely to be poor than other age groups, so policy makers can focus their efforts on this segment of population. When the 2022 Moderate MPI is disaggregated by age group, children aged 10–17 are the poorest age group, with an MPI of 0.108 in 2022. The lowest MPI is seen in the age group (18–24) with 0.050. Age categories could also be featured as criteria to concentrate efforts on the poorest. Likewise, as seen in the Moderate MPI results, those who were from households where the household head did not have any education were the poorest. Essentially, MPI results could aid in creating a set of household features that are representative of the poorest of the poor and could be used for household or group-based targeting.

Recognizing the unique needs of the poorest subgroups and addressing priority dimensions and indicators of poverty: The percentage contribution of MPI is used to identify the indicators in each *Dzongkhag* or group that contribute most to MPI, in order to invest in activities to reduce these. This report shows the types of poverty that are most widespread. For example, low levels of female and male schooling contribute greatly, so activities of lifelong

learning (and their inclusion in the next BLSS) remain priorities. Absolute changes in censored headcount ratios (according to the original MPI) indicate that the water indicator made the least improvement, further validating that water is indeed an apt priority going forward, especially in urban areas. The Moderate MPI underscores water's importance by elevating its weight and placing it in the health dimension.

Integrating MPI into the Resource Allocation Formula (RAF): As was done during the 11th FYP, Moderate MPI results are available at the *Dzongkhag* level and can be used as one of the criteria for the RAF. Including this would mean allocating resources based on the value of MPI in each *Dzongkhag* and urging *Dzongkhag* officials to direct such resources to the deprivations in their *Dzongkhag* that contribute most to MPI and hence demand the most attention.

Integrate MPI questions into other household surveys: Up to date data are important because they make it possible to monitor progress on MPI reduction, to see and celebrate success, and to identify priority areas for action. Other countries with national MPIs embed any missing questions required to construct the MPI into other surveys such as MICS or health or labour force surveys as well as local surveys and the decadal census. This helps them (if sampling designs permit) to update MPI more regularly and at local levels, which can energise policy responses across the whole country.

Policy advocacy and coordination: Results from both the Moderate and original MPIs can be used to foster coordination and advocacy for the required policy changes across several sectors and agencies. For example, if efforts were focussed on reducing water shortages in urban areas, MPI measures such as the censored head-count ratios of the water indicator and its contribution to the overall MPI could assist in bringing together the relevant sectors to coordinate and manage the overall outcome of improving water within an agreed-upon timeframe. It will help in both vertical coordination within the different levels of focal agencies as well as horizontal coordination within the focal sectors. Private sector actors in Bhutan can also explore how to reduce MPI among their staff and value chains. NGOs can link their activities to the priorities in the Moderate MPI. And those working at the local level might wish to consider aligning their activities with strategies to reduce multidimensional poverty in their area.

Informing and empowering poor people and communities: Finally, the fundamental key lever for poverty reduction is the agency, initiative and imagination of poor people and communities. Making MPI information available to them by lowering language and technology barriers can bear much fruit. In the end, poverty is dismantled and GNH advanced in the best possible way when their wisdom is sought, and their voices and visions as participants – indeed protagonists – of poverty reduction are recognised and engaged.

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Appendices

The Multidimensional Poverty Index: Methodology and Properties

APPENDIX 1 – THE MPI METHODOLOGY

Suppose at a particular point in time, there are n people in Bhutan and their wellbeing is evaluated by d indicators.¹¹ We denote the achievement of person i in indicator j by $x_{ij} \in \mathbb{R}$ for all $i = 1, \dots, n$ and $j = 1, \dots, d$. The achievements of n persons in d indicators are summarized by an $n \times d$ dimensional matrix X , where rows denote persons and columns denote indicators. Each indicator is assigned a weight based on the value of a deprivation relative to other deprivations. The relative weight attached to each indicator j is the same across all persons and is denoted by w_j , such that $w_j > 0$ and $\sum_{j=1}^d w_j = 1$.

In a single-dimensional analysis, people are identified as poor as long as they fail to meet a threshold called the ‘poverty line’ and non-poor, otherwise. In a multidimensional analysis based on a counting approach – as with the adjusted headcount ratio – a person is identified as poor or non-poor in two steps. In the first step, a person is identified as deprived or not in each indicator subject to a deprivation cut-off. We denote the *deprivation cut-off* for indicator j by z_j , and the deprivation cut-offs

are summarized by vector z . Any person i is deprived in any indicator j if $x_{ij} < z_j$ and non-deprived, otherwise. We assign a *deprivation status score* g_{ij} to each person in each dimension based on the deprivation status. If person i is deprived in indicator j , then $g_{ij} = 1$; and $g_{ij} = 0$, otherwise. The second step uses the weighted deprivation status scores of each person in all d indicators to identify the person as poor or not. An overall *deprivation score* $c_i \in [0, 1]$ is computed for each person by summing the deprivation status scores of all d indicators, each multiplied by their corresponding weights, such that $c_i = \sum_{j=1}^d w_j g_{ij}$. A person is identified as poor if $c_i \geq k$, where $k \in (0, 1]$, and non-poor, otherwise. The deprivation scores of all n persons are summarized by vector c .

After identifying the set of poor and their deprivation scores, we obtain the adjusted headcount ratio (M_p). Many countries refer to this as the MPI or Multidimensional Poverty Index.

The focus axiom requires that while measuring poverty the focus should remain only on those identified as poor.¹² This entitles us to obtain the censored deprivation score

vector $c(k)$ from \mathbf{c} , such that $c_i(\mathbf{k}) = c_i$ if $c_i \geq k$ and $c_i(\mathbf{k})=0$, otherwise. The MPI is equal to the average of the censored deprivation scores:

$$M_0 = MPI = \frac{1}{n} \sum_{i=1}^n c_i(\mathbf{k}).$$

PROPERTIES OF THE MPI

We now outline some of the features of MPI that are useful for policy analysis. The first is that MPI can be expressed as a product of two components: the share of the population who are multidimensionally poor, or multidimensional headcount ratio (H), and the average of the deprivation scores among the poor only, or intensity (A). Technically,

$$MPI = \frac{q}{n} \times \frac{1}{q} \sum_{i=1}^n c_i(\mathbf{k}) = H \times A;$$

Where q is the number of poor.¹³ This feature has an interesting policy implication for intertemporal analysis. A certain reduction in MPI may occur either by reducing H or by reducing A . This difference cannot be understood by merely looking at MPI . If a reduction in MPI occurs merely as the result of a reduction in the number of people who are marginally poor, then H decreases but A may not. On the other hand, if a reduction in MPI is the result of a reduction in the deprivation of the poorest of the poor, then A decreases, but H may not.

The second feature of MPI is that if the entire population is divided into m mutually exclusive and collectively exhaustive groups, then the overall MPI can be expressed as a weighted average of the MPI values of m subgroups, where the weights are the respective population shares. We

denote the achievement matrix, the population, and the adjusted headcount ratio of subgroup l by X^l , n^l , and $MPI(X^l)$, respectively. Then the overall MPI can be expressed as

$$MPI = \sum_{l=1}^m \frac{n^l}{n} MPI(X^l).$$

This feature is also known as *subgroup decomposability* and is useful for understanding the contribution of different subgroups to overall poverty levels.¹⁴ Note that the contribution of a subgroup to overall poverty depends both on the poverty level of that subgroup and that subgroup’s population share.

The third feature of MPI is that it can be expressed as an average of the censored headcount ratios of indicators weighted by their relative weight. The censored headcount ratio of an indicator is the proportion of the population that is multidimensionally poor and is simultaneously deprived in that indicator.

Let us denote the censored headcount ratio of indicator j by h_j . Then MPI can be expressed as

$$A = \frac{MPI}{H} = \sum_{j=1}^d w_j \frac{h_j}{jH} = \sum_{j=1}^d w_j h_j^p.$$

Breaking down poverty in this way allows an analysis of multidimensional poverty to depict clearly how different indicators contribute to poverty and how their contributions change over time. Let us denote the contribution of indicator j to MPI by Φ_j . Then, the contribution of indicator j to MPI is

$$\Phi_j = w_j \frac{h_j}{MPI} = w_j \frac{h_j^p}{A}$$

APPENDIX 2 – REDUNDANCY TEST OF UNCENSORED HEADCOUNT RATIOS

	Access to Health	Water	School Attendance	Male Years of Schooling	Female Years of Schooling	Cooking Fuel	Sanitation	Electricity	Road Access	Housing	Internet	Assets	Technological Assets	Land and Livestock
Access to Health	.													
Water	0.141	.												
School Attendance	0.175	0.178	.											
Male Years of Schooling	0.506	0.332	0.525	.										
Female Years of Schooling	0.581	0.427	0.586	0.603	.									
Cooking Fuel	0.306	0.138	0.204	0.561	0.658	.								
Sanitation	0.117	0.234	0.138	0.444	0.497	0.13	.							
Electricity	0.209	0.195	0.106	0.429	0.511	0.334	0.115	.						
Road Access	0.374	0.162	0.156	0.542	0.602	0.31	0.094	0.137	.					
Housing	0.293	0.214	0.278	0.441	0.507	0.43	0.459	0.344	0.323	.				
Internet	0.404	0.293	0.31	0.376	0.45	0.486	0.359	0.477	0.403	0.369	.			
Assets	0.286	0.16	0.167	0.54	0.609	0.54	0.22	0.244	0.25	0.465	0.454	.		
Technological Assets	0.316	0.155	0.128	0.483	0.582	0.552	0.125	0.202	0.24	0.457	0.932	0.599	.	
Land and Livestock	0.108	0.143	0.144	0.303	0.378	0.054	0.197	0.088	0.105	0.266	0.326	0.121	0.159	.
Uncensored Headcount Ratio	0.122	0.178	0.115	0.341	0.409	0.122	0.09	0.087	0.094	0.228	0.309	0.115	0.033	0.155

Source: Authors' calculations based on data from 2022 BLSS.

Endnotes

1. In particular, employment is a high priority and the moderate MPI trialled using 2017 data added a fourth dimension of work. However, the 2022 BLSS discontinued the collection of employment data so it was not feasible to include this dimension in the Moderate MPI.
2. The original global MPI was computed by OPHI and the Human Development Report Office of the United Nations Development Programme from 2010–2017; from 2018 the global MPI was revised to align with the SDGs.
3. Instead of the nutrition indicator (in the health dimension), food security is used in the original MPI. Four tailored indicators – access to roads, land ownership, livestock ownership, and a modified assets indicator (in the living standards dimension) – were included (as shown in Table 2.2).
4. The share of the population of rural areas is 61.4% and of urban areas is 38.6%.
5. Bhutanese households are switching to electric stoves for cooking. According to research conducted by the Department of Renewable Energy (DRE), using infrared electric cooking stoves saves more than half the cost of using liquefied petroleum gas (LPG) for family cooking. As a result, electric stoves may become more popular, making it easier for homes to transition from wood or charcoal to stoves. More information at [Kuensel website](#) and at the [BBS website](#).
6. In 2022, Bhutan was declared an Open Defecation Free (ODF) country. According to a press release from the Health Ministry, on November 19, 2022, 76 gewogs from remaining 12 Dzongkhags of Bumthang, Chukha, Gasa, Haa, Paro, Pemagatshel, Punakha, Samtse, Sarpang, Thimphu, Trashigang, and Zhemgang attained 100 percent ODF. Bhutan's ODF coverage became 100 percent in 2022. The government, in partnership with partners in the Rural Sanitation and Hygiene Programme, including local Civil Society Organisations (CSOs), has made a joint commitment to not only maintain, but also advance good sanitation for all. More at [UNICEF Bhutan website](#) and at [Kuensel website](#).
7. The Covid-19 outbreak in Bhutan severely hampered the delivery of critical health services. Despite the challenges posed by the pandemic, the Ministry of Health accelerated rigorous programmes to improve child health services to reduce child mortality and morbidity due to preventable childhood illnesses, such as respiratory

diseases, pneumonia, and diarrhoea. As with other illnesses, physical separation and the use of personal protective equipment had a positive impact on the prevention of many childhood illnesses. As per the 2022 Annual Health Bulletin, there was a linear decline in incidences of those two common prevalent diseases with high childhood morbidity burden: diarrhoea and pneumonia. See the [Annual Health Bulletin, 2022](#).

8. The Druk Gyalpo's Relief Kidu (DGRK) established in 2020 provided economic relief support to individuals and households facing pandemic-induced income and job losses. As per the [press releases from DGRK](#), the majority of the beneficiaries used the support to cover rental expenses.
9. The Covid-19 pandemic has renewed the agricultural industry in its pursuit of self-sufficiency and import substitution goals through increased domestic food production. During the pandemic, more acreage of land was cultivated to meet the domestic demand for vegetables. The urban and peri-urban agricultural programme in and around Thimphu involved several groups and members, who received land development services, vegetable seeds/seedlings, organic manure, electric fences, and farm instruments. The government also accelerated the implementation of 12th Plan activities and frontloaded investments wherever possible to increase food production during the pandemic. See more at [Kuensel website](#).
10. Tsirang *Dzongkhag* is one of the most productive and agriculturally rich districts in the country, thanks to favourable climatic conditions and fertile land. Following COVID-19-related import and border restrictions, the *dzongkhag* has seen an increase in the vegetable production. The *dzongkhag* noticed an upsurge in domestic demand and Tsirang farmers expanded their fields to meet it. It also led in more young people taking up farming. Perhaps, due to this food security improved in Tsirang. See more at [The Bhutanese website](#).
11. The meaning of the terms 'dimension' and 'indicator' are slightly different in Alkire and Foster (2014) and in Alkire and Santos (2010). In Alkire and Foster (2011), no distinction is made between these two terms. In Alkire and Santos (2010), however, the term 'dimension' refers to pillar of wellbeing and dimension may consist of several indicators.

Endnotes

12. In the multidimensional context, there are two types of focus axioms. One is a deprivation focus, which requires that any increase in already non-deprived achievements should not affect a poverty measure. The other is a poverty focus, which requires that any increase in the achievements of non-poor persons should not affect a poverty measure. See Bourguignon and Chakravarty (2003) and Alkire and Foster (2014).
13. This feature is analogous to that of the poverty gap ratio, which is similarly expressed as a product of the headcount ratio and the average income gap ratio among the poor.
14. See Foster, Greer and Thorbecke (1984) for a discussion of this property

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