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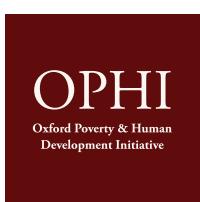
NEPAL

# Multidimensional Poverty Index

ANALYSIS TOWARDS ACTION

2021

In partnership with



Empowered lives.  
Resilient nations.







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Nepal Multidimensional Poverty Index:  
Analysis Towards Action

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Central Bureau of Statistics (CBS), Nepal with  
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# Preface

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It gives me an immense pleasure to present Nepal's second Multidimensional Poverty Index (MPI) report – an update to the 2018 report applying revised global MPI methodology. The Multidimensional Poverty Index examines poverty from more than an income perspective – it includes nutrition, child mortality, years of schooling, housing, and assets. It is an academically validated, transparent and trusted measure of poverty and is globally comparable. The global MPI addresses a key subset of SDG-poverty related indicators, which include the most pressing poverty issues. Nepal opted to produce a National MPI to enable it to compare its national MPI with the level and trends of other countries, which is important in helping to adjust and incentivize Nepal's own progress.

This MPI Report 2021 is based on the Nepal Multiple Indicator Cluster Survey Report (NMICS) 2019. The MPI covers a subset of priorities articulated in the current 15th Plan, Sustainable Development Goals: Status and Roadmap 2016-2030 Report and Constitution of Nepal 2015. I am happy to note that Nepal has made substantive progress in reducing MPI from 30.1 percent to 17.4 percent over the timeframe of five years. This report reaffirms that Nepal is heading in the right direction in its commitment to Agenda 2030 and in attaining its aspiration of '*Prosperous Nepal - Happy Nepali*'. Since the report uses a 2019 dataset, this rate might have been changed in the COVID-19 pandemic context. The pandemic has already negatively impacted the socio-economic sectors of our economy and has slowed the country's promising economic growth rate achieved since 2015.

The MPI report also contains a detailed analysis of provincial MPIs. This empirical and analytical study on multidimensional poverty will be useful for provincial and local governments, enabling them to accelerate poverty reduction by seeing the different forms it takes in each province. This report will be equally useful for other policy circles and academia.

I would like to thank honourable members of the National Planning Commission (NPC), member-secretary and officials of the NPC and Central Bureau of Statistics (CBS) for their rigorous and hard work during the preparation of this MPI report. I am particularly grateful to Sabina Alkire, the Director of the Oxford Poverty and Human Development Initiative, and her team, for their professional support and guidance in this important endeavour, and to the UNDP and UNICEF country offices for their generous technical support in preparing this MPI report.

This MPI report justifies our home-grown efforts in poverty alleviation and I urge all national and international stakeholders to continue cooperation in our endeavour for Nepal's growth and development, and an inclusive, resilient and sustainable economy.



**Prof. Dr. Puspa Raj Kadel**  
Vice-Chair  
National Planning Commission  
June 2021

# Forewords

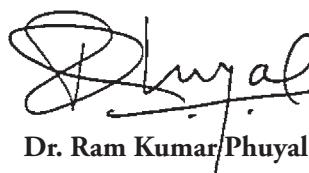
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It is a pleasure that the National Planning Commission is presenting second iteration of "Nepal Multidimensional Poverty Index (MPI Report 2021)". Multi-dimensional Poverty Index is both a technically rigorous measure of poverty and a measure of national and provincial policy priorities towards poverty reduction. This report reveals that the multi-dimensional poverty has been reduced significantly in Nepal as the country has achieved significant progress in health, education and housing. According to strictly harmonized data, Nepal has been able to reduce multidimensional poverty from 30.1 percent to 17.4 percent in between 2014 and 2019. This change in MPI is driven by statistically significant reduction in each of the 10 component indicators. The findings of the report show that Child Mortality rate has been reduced significantly and Access to Electricity and Basic Drinking Water has been increased sharply among the 10 indicators. Across provinces, Province 2 has the highest MPI followed by Karnali Province despite their fastest poverty reduction over the period.

In an era of the SDGs, Nepal's effort to use the global MPI structure, showing the level and composition both nationally and disaggregated by groups such as provinces and age cohorts – may be of interest to other countries that are designing their national MPIs using similar datasets. Nepal's second national MPI does not contain all aspects relevant to poverty in Nepal due to some data constraints. But

this powerful policy tool still provides meaningful information to guide more effective policies and monitor progress. This report presents not only the level of and trends in poverty but also its composition by dimensions. From the perspective of planning and policy design, this information from the MPI can be used to target poor people and social groups, allocate resources to have the largest poverty impact, coordinate multispectral policies, and to manage interventions and make evidence-based policy adjustments.

In spite of short duration amidst the COVID-19 pandemic, the CBS team has performed an appreciable task. As a member of the National Planning Commission and focal for statistics, I would like to extend my sincere thanks to the entire family of NPC, staff of CBS and Sabina Alkine, Director of OPHI for their valuable efforts to prepare this report. I equally thank UNDP and UNICEF for their technical support and all persons who contributed directly and indirectly in this endeavor.



**Dr. Ram Kumar Phuyal**  
Member  
National Planning Commission

# Message

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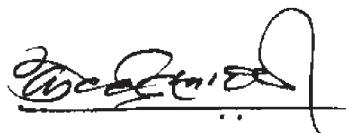
This report presents not only the level of, and trends in, poverty, but also its composition by dimension. The report shows that Nepal has made significant progress in reducing MPI. In terms of poverty trends, the incidence of multidimensional poverty nationally fell from 30.1 percent in 2014 to 17.4 percent in 2019. In 2019, the MPI was 0.074. This means that 3.1 million people left poverty in five years. The intensity of multidimensional poverty also significantly decreased from 44.2 percent to 42.5 percent. Across indicators, the highest number of people are deprived in housing materials, clean cooking fuel, years of schooling, assets and nutrition. Considering the indicator weights, years of schooling and nutritional deprivations contribute most to ongoing multidimensional poverty in Nepal.

The report highlights that 28 percent of rural dwellers are MPI poor as compared with 12.3 percent in urban areas. Over half of Nepal's poor population live in rural areas. Moreover, across provinces, Karnali Province has the highest MPI poor (39.5 percent of people) and followed by 25.3 percent in Sudurpashchim Province, and 24.2 percent in Province 2. In Gandaki Province 9.6 percent of people are multidimensionally poor, while in Bagmati Province it is only 7.0 percent.

From the perspective of planning and policy design, the MPI information can be used for evidence-based policy adjustments to target poor people and groups, allocate resources accordingly to have the biggest poverty impact and accelerate impact on poverty reduction.

As the data used in this report date from before the COVID-19 pandemic, some new information may be required to update the impact of COVID-19.

I am grateful to all the team members, particularly Sabina Alkire, the Director of the Oxford Poverty and Human Development Initiative, and her team, who were engaged in producing this report. I would also like to thank the UNDP and UNICEF country offices for their technical support for this report.



**Kewal Prasad Bhandari**  
Secretary  
National Planning Commission

# Message

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Nepal has made remarkable progress to lift millions of men, women and children out of poverty over the past decades. In more recent years, joint poverty eradication efforts have been informed by a multidimensional approach to measuring poverty to better inform prioritization and targeting and related resource allocations to achieve the goal to end poverty in Nepal. UNDP and UNICEF are pleased to have been by Nepal's side working closely with Government counterparts at all levels under the leadership/ coordination of the National Planning Commission on our common overarching goal to leave no one behind in Nepal.

There are at least three reasons to use a multidimensional approach to measuring poverty. First, poverty and well-being are multidimensional. This reality has been increasingly accepted both nationally and internationally. A second important reason to use a multidimensional approach is the commitment to the Sustainable Development Goals (SDGs), in particular SDG 1, which aims to “end poverty in all its forms everywhere”. Under the goal, target 1.2 is to reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions. Progress on this target depends on regularly measuring and tracking the national multidimensional poverty index (MPI). A third reason for taking a multidimensional approach is to measure non-income deprivations, such as child mortality, primary school completion rates or undernourishment, that do not highly correlate with levels and trends of income poverty. The United Nations Development Programme (UNDP) and the Oxford Poverty and Human Development Initiative (OPHI) launched

the multidimensional poverty index (MPI) in the 2010 Human Development Report, allowing comparison across countries. Several countries have subsequently adapted the MPI to their national context considering their national priorities.

It is good to note that the concept of MPI has already been integrated in Nepal's national development discourse which is also manifested in its development plans. For example, the current 15th Development Plan aims to reduce MPI to 11.5% from 28.6%. This report, second in series, also shows strong commitment by the government of Nepal. It is indeed promising that Nepal succeeded to reduce the MPI from 30.1% in 2014 to 17.4% in 2019, a 42% reduction in just five years. However, significant disparities between rural and urban, between age groups as well as among provinces remain a matter of concern. The MPI in rural areas is still more than two times higher than in urban areas. Karnali Province's MPI is more than five times higher than that of Bagmati Province. The MPI poor thus are concentrated in Karnali Province, Sudurpashim Province and Province 2. From the age perspective, children represent the poorest sub-group since more than one in five children are multidimensionally poor (nearly 22%). This figure implies that nearly 2.2 million children are poor in Nepal. Thus, children who form 35% of the population constitute 44% of the multidimensionally poor.

Moreover, this report also aims to analyse the MPI in the context of the COVID-19 pandemic to help identify priority populations for social protection measures aimed at assisting the poorest/most de-

prived households to cope with the devastating secondary impact of the pandemic especially the loss and/or further reduction of household income and associated difficulties to pay for livelihood needs and to access health, nutrition, and education services.

This report will provide useful data and analysis not only in identifying overlapping deprivations, and developing evidence based multi-sectoral poverty interventions, but also to strengthen the rationale

for resource allocation and for targeting. UNDP and UNICEF remain committed to working with all three tiers of the Government of Nepal, particularly through the National Planning Commission and province governments in applying this report and its findings to identify the most vulnerable and prioritize them in planning and resource allocation, lifting people out of existing multidimensional vulnerabilities as well as curtailing inequality to reach the goal to leave no one behind.



**Elke Wisch**  
Representative  
United Nations Children's Fund Nepal



**Ayshanee Medagangoda-Labé**  
Resident Representative  
United Nations Development Program



Photo: UNDP Nepal

# Acknowledgements

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This report was prepared under the direction of Prof. Dr. Puspa Raj Kadel, Honourable Vice-Chairman of the National Planning Commission (NPC) of the Government of Nepal in cooperation with the Oxford Poverty and Human Development Initiative (OPHI) at the University of Oxford.

We are grateful for the guidance and support from Dr. Ram Kumar Phuyal, Honourable Member, NPC. We express our gratitude to all other Members of NPC, Member-Secretary Kewal Prasad Bhandari and Mr Khomraj Koirala, Joint Secretary, Economic Management Division for their incisive and substantive contributions to this joint initiative. The technical work was performed by the Central Bureau of Statistics (CBS), led by Director General Nebin Lal Shrestha, with the support of Deputy Director General Hem Raj Regmi, Suresh Basnyat, Krishna Tuladhar, and Dilli Raj Joshi in collaboration with Hector Moreno and Sophie Scharlin-Pettee, Jakob Dirksen, Monica Pinilla and Sabina Alkire of OPHI.

We also thank to Dr. Narayan Raj Poudel and Dr. Chakra Pani Acharya, Programme Directors at NPC and Accelerating Implementation of Sustainable Development Goals in Nepal (AISN) project team members Pushpa Lal Shakya, NPM, Padam Bhusal, Dr. Menuka Karki and Keshav Dawadi, Policy Specialists, for their support in shaping this report. We are also grateful to others whose inputs and insights improved this report, including Dharma Swarnakar, Kalpana Sarkar, and Deputy Resident Representative Bernardo Cocco, and Resident Representative Ayshanie Medagangoda-Labé of UNDP Nepal; and Thakur Dhakal, Chief of Social Policy, Evidence and Evaluation Usha Mishra, and Representative Elke Wisch of UNICEF Nepal. We would like to thank UNDP and UNICEF Nepal office for providing the financial support to publish this report.

# Executive Summary

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This report provides the first update to Nepal's official national Multidimensional Poverty Index (MPI). While the first MPI used 2014 data from the Nepal Multiple Indicator Cluster Survey (NMICS), the updated MPI in this report uses 2019 data from the same NMICS report. In this report, minor adjustments were made to five indicators in 2021 in line with Nepal's national policy aspirations and to align with the global MPI and Sustainable Development Goals (SDGs) to allow for ongoing international comparability. The five indicators were nutrition, child mortality, years of schooling, housing, and assets. The main findings using the previous definition are also transparently presented in the appendix. The results from both measures are similar in terms of the scope of poverty and patterns of its reduction.

In 2019, 17.4 percent of Nepalis are multidimensionally poor – just under five million persons, and the MPI is 0.074. Across indicators, the highest number of people are deprived in housing materials, clean cooking fuel, years of schooling, assets, and nutrition. Considering the indicator weights, years of schooling and nutritional deprivations contribute most to ongoing multidimensional poverty in Nepal.

Disparities exist: for example, 28 percent of rural dwellers are MPI poor, compared with 12.3 percent in urban areas (using the updated definitions of rural and urban zones), and over half of Nepal's poor population live in rural areas. Across provinces, 39.5 percent of people in Karnali Province are MPI poor – by far the highest – followed by 25.3 percent in Sudurpashchim Province and 24.2 percent in Province 2. In contrast, in Gandaki Province 9.6 percent of people are multidimensionally poor, while this falls to 7.0 percent in Bagmati Province. However,

in terms of number of poor, the largest number live in Province 2, followed by Lumbini Province and Province 1. Children are the poorest – 21.8 percent of children under 18 years of age are MPI poor compared with 15.1 percent of adults. Furthermore, 44 percent of poor people are children under the age of 18, making this group pivotally important for policy. And if the household includes a member with a disability, overall poverty rises to 18.3 percent, versus 17.4 percent otherwise.

In terms of poverty trends, results show strong and equalizing progress in MPI since 2014. Using the new MPI, the incidence of multidimensional poverty nationally fell from 30.1 percent in 2014 to 17.4 percent, and MPI dropped from 0.133 to 0.074, nearing being cut by nearly half in a mere five years. This is a remarkable result, given that the SDG aim is to cut multidimensional poverty by half in fifteen years. In human terms, it means that 3.1 million people left poverty in a mere five years, with only 5 million left to exit. The intensity of multidimensional poverty also significantly decreased from 44.2 percent to 42.5 percent. Nepal's results are also striking on the international stage in comparison to other countries; according to the 2020 global MPI trend data, no country with a similar starting level of poverty reduced MPI or its incidence faster than Nepal.

How did this change happen? Progress was strong and balanced, in that each of the 10 MPI indicators significantly reduced in that period, with the largest absolute reductions in cooking fuel, sanitation housing, years of schooling, and nutrition. While reductions in cooking fuel and housing deprivations were consistent across all provinces, patterns varied across provinces. For example, Karnali Province

showed strong reductions in water deprivations, whereas Provinces 1, 2, and Lumbini Province had outstanding progress in improving sanitation, and Province 2 also made great strides in improving child school attendance and nutrition.

Across provinces and age groups, the patterns of poverty reduction tended to be pro-poor and equalizing. In 2014, Province 2 was the poorest province, whereas by 2019 it was the third poorest. Karnali Province, the second poorest province in 2014, had the second fastest reduction of MPI, followed by Lumbini Province. Across age groups, children reduced poverty faster than adults. Thus, it seems that from 2014 to 2019, the poorest groups were not being left behind but rather were catching up – a positive finding.

Looking forward, it is salutary that in 2019, 60 percent of all poor people would need to reduce just 1-2 deprivations in order to exit poverty, suggesting that further swift reductions would be possible. However, for moving forward, the findings of the analysis of COVID-19 related deprivations in this report are crucial: First of all, more than half of Nepal's population (63.5 percent) experience at least one of the COVID-19 related deprivations (Nutrition, Water, Cooking Fuel). Secondly, MPI poor people are more affected by additional COVID-19 related deprivation (overcrowding, internet access, handwashing facilities). Thus, on top of their experiences of overlapping deprivations which already puts them at a disadvantage, the situation of the poor may be more exposed and susceptible to COVID-19 and its consequences.

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Photo: UNDP Nepal

# Abbreviations and Acronyms

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CBS	Central Bureau of Statistics
COVID-19	Coronavirus Disease – 2019
MDGs	Millennium Development Goals
MICS	Multiple Indicator Cluster Survey
MoF	Ministry of Finance
MPI	Multidimensional Poverty Index
NMICS	Nepal Multiple Indicator Cluster Survey
NPC	National Planning Commission
OPHI	Oxford Poverty and Human Development Initiative
p.p.	Percentage Points
PSU	Primary Sampling Unit
SDG	Sustainable Development Goal
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
WHO	World Health Organization



## CHAPTER 1:

# Introduction

In 2018, the Government of Nepal published its first national Multidimensional Poverty Index (MPI) report. The MPI report shed a light on the provincial poverty profiles, highlighting especially high levels of poverty in Province 2 and in Karnali Province (formerly Province 6). It showed the composition of poverty according to each of the 10 included indicators, showcasing the need for different policy strategies across provinces based on the poverty contexts of each province. Given the interest sparked, the MPI informed policy decisions including planning, budget allocation, and program formulation. The MPI was then explicitly included in the National Development Plan, with a clear goal set to reduce MPI incidence to 11.5 percent by 2024. Another landmark step was that Nepal reported its national MPI in the global Sustainable Development Goals (SDGs) database as indicator 1.2.2, and its 2020 Voluntary National Review showcased its work on multidimensional poverty.

As is evident, the 2019 NMICS report, and hence the analysis in this report, provides a fine-grained overview of multidimensional poverty levels and trends in Nepal before the COVID-19 pandemic. However, it is almost certain that the pandemic will have affected the national profile of poverty in multiple ways. Some persons may be newly impoverished; some may have exited poverty; some may have migrated back to Nepal from abroad, or internally in search of livelihoods. Furthermore, some necessary pandemic policies may have interrupted

child schooling, with a disproportionate effect on the poorest children both because of limited phone or online learning and home tutoring options, and because of a potential shortening of their overall school life expectancy. Yet other poverty policies during the pandemic will have had positive impacts, countering or preventing potential deprivations from occurring, or potentially further reducing MPI. The NMICS 2019 dataset provides information required for a detailed analysis of poverty in 2019 but cannot include changes after that period. However, this report seeks to provide a discussion of COVID-19 related deprivations (of as well as additional to the deprivations included in the MPI) to identify people at risk and evaluate heightened vulnerabilities among the poor as well as the entire population in Nepal.

This report marks the first update of Nepal's national MPI since it was launched, and tracks trends over time in multidimensional poverty 2014-2019, finding strong reductions. In this chapter and the next minor adjustments are made to some indicators used in 2018 to better align the new MPI with the SDGs and with the global MPI, permitting ongoing international comparisons alongside national insights. In the interest of transparency, all estimations using the un-adjusted structure of the MPI of 2018 are provided in detail in the appendix, and they show similar patterns.

The Government of Nepal took the path breaking decision to use the global MPI as the basis for the design of its national MPI. This choice built on far-reaching international knowledge on multidimensional poverty and inherits the best practices set in place in the global MPI in the selection of dimensions, indicators, deprivation, and poverty cut-offs. Although there were several reasons, both technical and normative, for this choice, there were three major motivations. First, the 10 indicators that make up the global MPI also were a good match for existing government priorities in terms of nutrition and health, education, access to services, and infrastructure. Second, having a measure that permitted both intra-national and international comparisons “enabled Nepal to compare its national MPI with the level and trends of other countries” (National Planning Commission, 2018). Third, the Nepal MPI, like the global MPI, uses the NMICS, which is implemented by the Central Bureau of Statistics with the support of UNICEF, and the 2014 NMICS was disaggregated by the newly defined provincial structure, shedding immediate light on poverty by province. Since 2018, the MPI has been used to inform the national development plan, shape budget allocation, and monitor multidimensional poverty and other national goals taking worldwide standards as the reference.

The global MPI developed by Oxford Poverty and Human Development Initiative (OPHI) and released by the United Nations Development Programme (UNDP) in the Human Development Report since 2010<sup>1</sup>, is a powerful measure for policy analysis, dialogue, and monitoring worldwide. In 2018, OPHI and UNDP jointly undertook a comprehensive revision of the global MPI, drawing upon and subsum-

ing the best of the previous MPIs by adjusting five of its ten indicators (Alkire, Kanagaratnam, & Suppa, 2018). With this revision the global MPI now better aligns with the SDGs. The global MPIs uses a measurement approach developed at OPHI by Alkire and Foster, which is described in detail in Annex 1.

In 2021, in consultation with the National Planning Commission, the Central Bureau of Statistics decided to adjust the national MPI to match the revised global MPI. Ordinarily, a national poverty statistic is only changed after a minimum of 10 years. However, the changes are minor, and furthermore, they were in the direction of improvement that had already been considered during the MPI design process. In addition, alignment with the SDGs is a national priority. Furthermore, the inclusion of ‘roof’ in the housing indicator was already demanded by and introduced in Nepal’s national MPI; the global MPI now followed this adjustment, and also added information on wall materials. Furthermore, the global MPI now includes child stunting, and the inclusion of stunting had also been considered by NPC previously. So, the indicator changes in the global MPI resonated with the national context as well. Furthermore, by moving to the revised global MPI structure, Nepal continues to be a pioneering country in that its national MPI can be used for both intra-national and international comparisons.

The next chapter sets out the indicator modifications, and subsequent chapters describe in detail the 2019 MPI, its disaggregation by provinces, rural/urban and other priority groups, including children, and how it has changed since 2014. The final chapter will offer the analysis of COVID-19 related deprivations.

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<sup>1</sup> Alkire, S. & Santos, M.E. (2010). Multidimensional Poverty Index: OPHI Policy Briefing 01. OPHI: Oxford, UK. <https://www.ophi.org.uk/wp-content/uploads/OPHI-MPI-Brief.pdf>.



Photo: UNDP Nepal



## CHAPTER 2:

# Methodological Improvements: Better Indicators for Greater Challenges

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## 2.1 INTRODUCTION

Since its inception, Nepal built a national MPI to reflect national priorities and also permit international comparisons (see National Planning Commission, 2018). The internationally comparable global MPI was modified in 2018 to better align with the SDGs. After due consideration Nepal chose to adjust its national MPI accordingly. This chapter introduces these minor improvements in the indicators of multidimensional poverty.

The main structure of the revised MPI – its dimensions, choice of indicators, poverty cut-off, etc. – is identical to the version published in 2018 with revisions apparent in select indicator definitions. Both consider the same three equally weighted dimensions with 10 individual indicators in total: two indicators for health, two for education and six indicators in the dimension of living standards. Similarly, each component indicator remains equally weighted within its respective dimension.<sup>2</sup> Finally, the poverty cut-off is still set at one-third of the weighted sum of indicators; that is, a person who is deprived in 33.33 percent or more of the weighted sum of

indicators is identified as multidimensionally poor. Thus, the overall structure in terms of dimensions, indicators, and weights has not changed.

The adjusted indicators do not alter the outstanding progress of Nepal in terms of MPI reduction – both the original and revised MPIs show strong reductions (all computations using the previous MPI structure are transparently included in Statistical Appendix I and II). These results confirm the pattern and distribution of poverty reduction over time.

## 2.2 NEPAL'S REVISED NATIONAL MPI

Figure 2.1 and Table 2.1 describe the dimensions and indicators included in the revised national MPI for Nepal. The new structure uses the same three original dimensions, 10 indicators, the same weighting structure and poverty cut-off. There are adjustments in five indicators: Nutrition, Child Mortality, Years of Schooling, Housing, and Assets. These improvements run in parallel with Nepal's aspirations. For instance, in the case of Nutrition, previously, this indicator only considered nutritional deprivations based on children's weight for age (underweight).

<sup>2</sup> The individual indicators in the dimensions of Health and Education accrue a weight of one-sixth while those in the Living Standards indicators receive a weight of one-eighteenth in both methodologies.

The new indicator now considers both underweight and stunting for children.

The new Child Mortality indicator now focuses on the unfortunate death of children if they were under 18 years of age. Furthermore, the indicator now only considers deaths that occurred in the last 5 years only. Previously, this indicator captured the historic records of child mortality for children under 5 at any time – even if the death occurred 20 years ago. In the case of Years of Schooling, the new indicator is now higher to reflect the idea of educational achievements for the new generations and the deprivation cut-off changed from five to six years of schooling.

The changes in the Housing indicator of the global MPI actually built upon Nepal's own adaptation of that indicator in 2018 and considers a person to be deprived if there are deprivations in any of the floor, roof, or walls of household dwelling – in contrast to the previous indicator which only considered floor

and roof material. Finally, the list of assets now includes computer and animal cart.

Notes: a. Children under 5 years (60 months and younger) are considered undernourished if their z-score of either height-for-age (stunting) or weight-for-age (underweight) is below minus two standard deviations from the median of the reference population.

b. The child mortality indicator of the global MPI is based on birth history data provided by mothers aged 15 to 49. The “under 18” condition refers to the age of the child who has unfortunately died – thereby using the international legal definition of a child, rather than capturing the deaths of any “child” of a mother (e.g., a son or daughter who was 30 years old and died, reported by a mother who was 60 years old in the household).

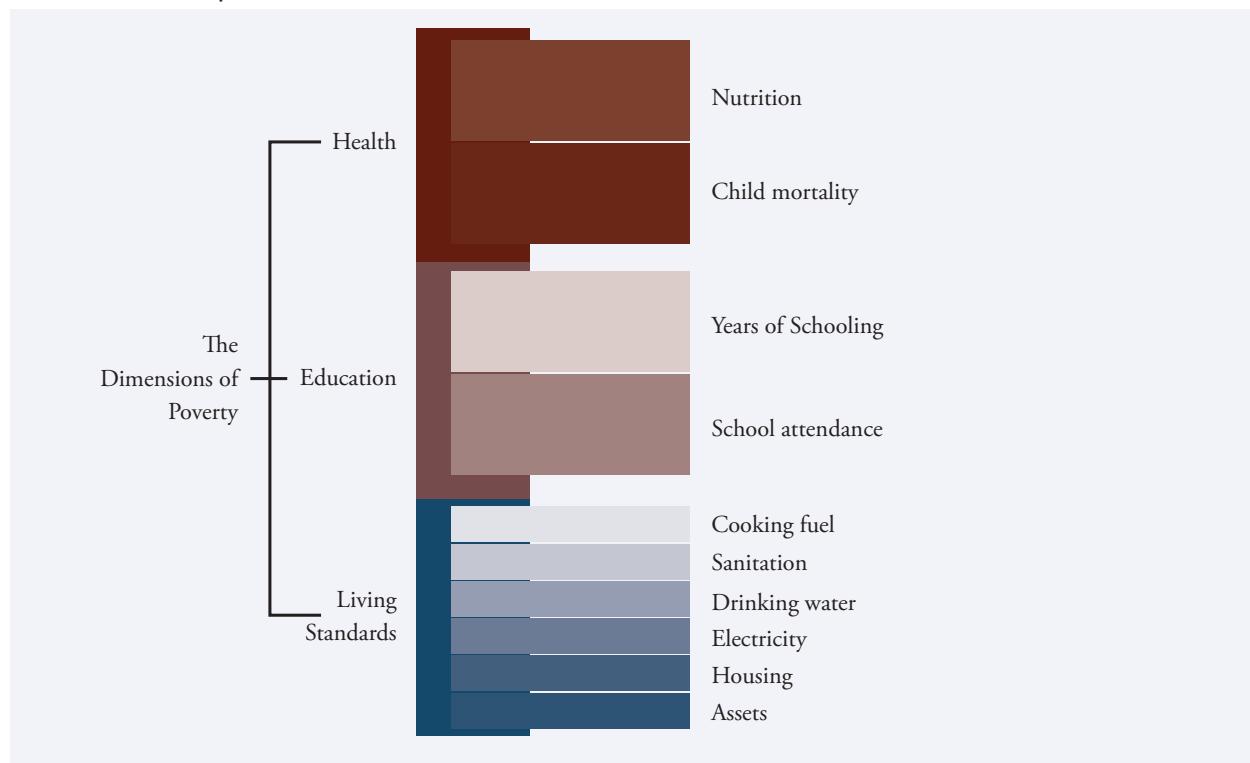
c. A household is considered to have access to improved sanitation if it has some type of flush toilet or latrine, or ventilated improved pit or composting toilet, if they are not shared.

d. A household has access to clean drinking water if the water source is any of the following types: piped water, public tap, borehole, or pump, protected well, protected spring or rainwater, and it is within 30 minutes' walk (roundtrip).

e. A household has inadequate housing materials if the household has a dirt, sand, dung or other floor; if the walls are made of natural or rudimentary materials; or if the roof is made of natural or rudimentary materials.

Source: Adaptation of Alkire, Kanagaratnam, and Suppa (2020)

**FIGURE 2.1: Nepal's Revised MPI Matches the Global MPI Structure**



**TABLE 2.1:** Nepal's Revised National MPI

Dimension	Indicator	Household is deprived if...	Weight
Health	Nutrition	Any child for whom there is nutritional information is undernourished in terms of weight for age (underweight) or height-for-age (stunting). (a)	1/6
	Child Mortality	A child under 18 has died in the household in the five-year period preceding the survey. (b)	1/6
Education	Years of Schooling	No household member aged 11 years or older has completed 6 years of schooling.	1/6
	School Attendance	Any school-aged child is not attending school up to the age at which he /she would complete class 8.	1/6
Living Standard	Cooking Fuel	The household cooks with dung, wood, or charcoal	1/18
	Improved Sanitation	The household's sanitation facility is not improved, or it is improved but shared with other households. (c)	1/18
	Improved drinking water	The household does not have access to improved drinking water or safe drinking water is at least a 30-minute walk from home, roundtrip. (d)	1/18
	Electricity	The household has no electricity.	1/18
	Housing	The household has inadequate housing materials in any of the three components: floor, roof, or walls.	1/18
	Assets ownership	The household does not own more than one of these assets: radio, TV, telephone, computer, animal cart, bicycle, motorbike, or refrigerator, and does not own a car or truck.	1/18

### 2.3 DATA SOURCE: NMICS 2019

The NMICS 2019 was selected as the most appropriate dataset to analyze the levels of multidimensional poverty in Nepal. This is a recent nationally representative dataset, containing all the relevant indicators considered in the national MPI for Nepal plus many SDG indicators, and was implemented by the Central Bureau of Statistics with support from UNICEF in 2019. The NMICS report provides one of the main sources of information to track the poverty-related SDGs in the country, as it includes questions on demographic characteristics, education, health, employment, household assets, household amenities, water supply, and sanitation, among others. It is representative by rural-urban areas and by province and can be compared to the province level – in line with the previous NMICS (2014) survey. Thus, the NMICS dataset was chosen as it is nationally representative, contains all the indicators in the national MPI and which reflect

many SDG indicators, and the surveys are implemented by Nepal's Central Bureau of Statistics with support of UNICEF and provides one of the main sources of information to track the poverty-related SDGs in the country.

The sample frame of NMICS 2019 is the National Population and Housing Census 2011, as this is the most recent census conducted in Nepal.<sup>3</sup> The survey contains six questionnaires: Household, Women (age 15-49), Men (age 15-49), Children under five, Children age 5-17, and Water Quality Testing. The fieldwork occurred during May-November 2019 and collected information on 12,800 households with a 99.7 percent response rate. Very importantly, the sample was designed to particularly provide estimates for a large number of indicators on the situation of children and women at the national level, for urban and rural areas, and of Nepal's seven provinces (CBS, 2020).

<sup>3</sup> For more information on the sampling design of the NMICS 2019 survey, please refer to the Appendix A: Sample Design (starting on p.532) of the NMICS 2019 report, available online: <https://mics.unicef.org/surveys>. According to the UN Population Division (Department of Economic and Social Affairs) in the world population prospect, the estimates of the total population for Nepal in 2019 was 28, 609 thousand.



## CHAPTER 3:

# Multidimensional Poverty in 2019 in Nepal

This chapter presents the results of the national MPI for Nepal using the NMICS 2019). It first describes who is poor and provides the national MPI as well as the incidence (H) and intensity (A) among the poor. Disaggregated results are then discussed by rural and urban areas, provinces, and other individual and household characteristics.

## 3.1 NEPAL'S NATIONAL MPI - KEY RESULTS

Table 3.1 presents Nepal's MPI for 2019, 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 in, A). As can be seen in the table, the incidence of multidimensional poverty (H) is 17.4 percent. Since this estimate is based on a

sample, it has a margin of error. Thus, the 95 percent confidence interval is also presented in the table, which can be interpreted as with a 95 percent confidence level that the true multidimensional poverty headcount ratio is between 15.8 percent and 19.1 percent of the population. The average intensity of poverty (A), which reflects the share of deprivations each poor person experiences on average, is estimated at 42.5 percent. That is, each poor person is, on average, deprived in less than half of the weighted indicators. The MPI, which is the product of the incidence (H) and intensity (A), amounts to 0.074. This indicates that multidimensionally poor people in Nepal experience 7.4 percent of the total deprivations that would be experienced if all people in Nepal were poor and deprived in all indicators. The MPI is the official statistic of poverty used to declare whether poverty has fallen or risen over time, because it considers improvements in both the incidence and intensity of poverty.

**TABLE 3.1:** Incidence (H), Intensity (A) and Multidimensional Poverty Index (MPI), Nepal 2019

Poverty Cut-off (k)	Index	Value	Confidence Interval (95%)		Number of Poor (Millions)	Total Population (Millions)
			0.067	0.082		
k value=33%	MPI	0.074	0.067	0.082	4.98	28.61
	Headcount ratio (H, %)	17.4	15.8	19.1		
	Intensity (A, %)	42.5	41.8	43.2		

Source: Calculations based on data from NMICS 2019. Population figures from UNDESA (2021). Own calculations based on MPI results and population projection from 2019. This was computed by multiplying the headcount by population of 2019 and rounding to the nearest thousand.

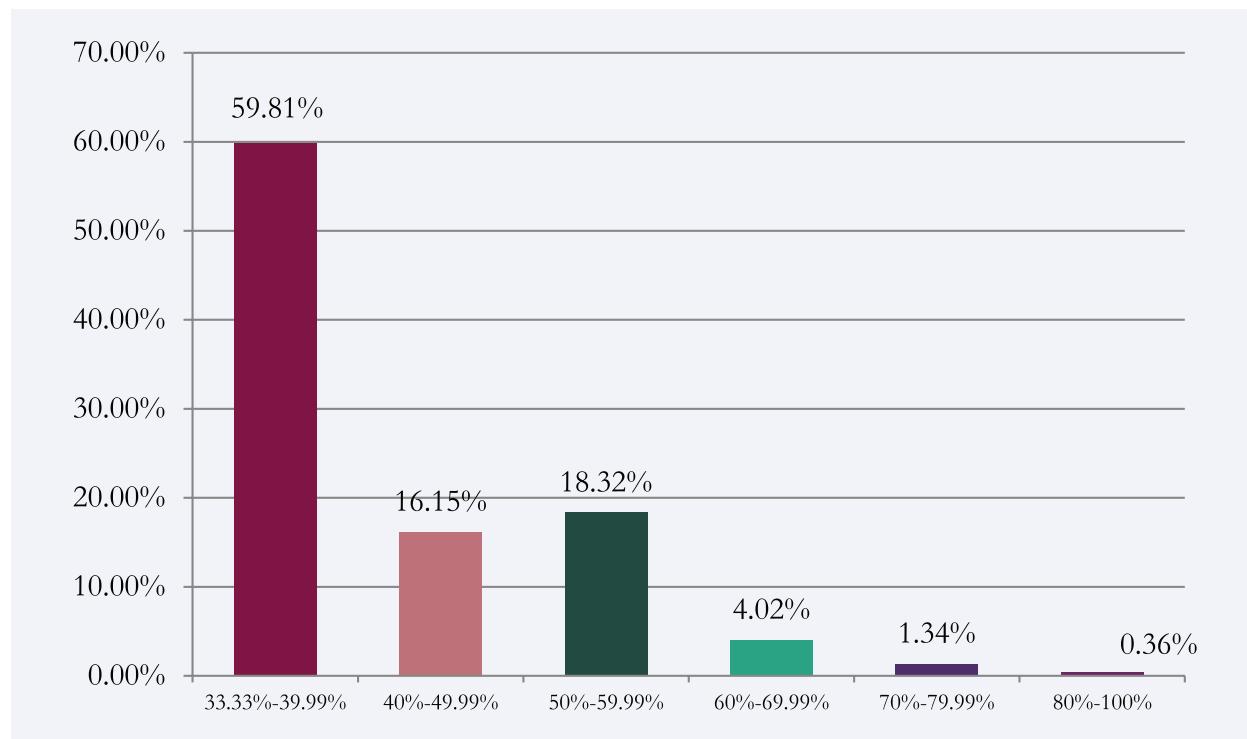
Figures 3.1 and 3.2 depict the distribution of the intensity of poverty among the poor by different deprivation score ranges. A deprivation score refers to the individual's sum of weighted deprivations – that is, how many of the weighted indicators they are deprived in – and is used to identify whether the individual is considered multidimensionally poor, as in, if they are deprived in at least 1/3 of the weighted indicators.

The majority (60 percent) of all poor people in Nepal experience deprivations in the lowest intensity band, which means their deprivation score is between 33.33 percent and 39.99 percent of all weighted indicators. About 16 percent of the poor experience the next higher gradient of intensity (40-

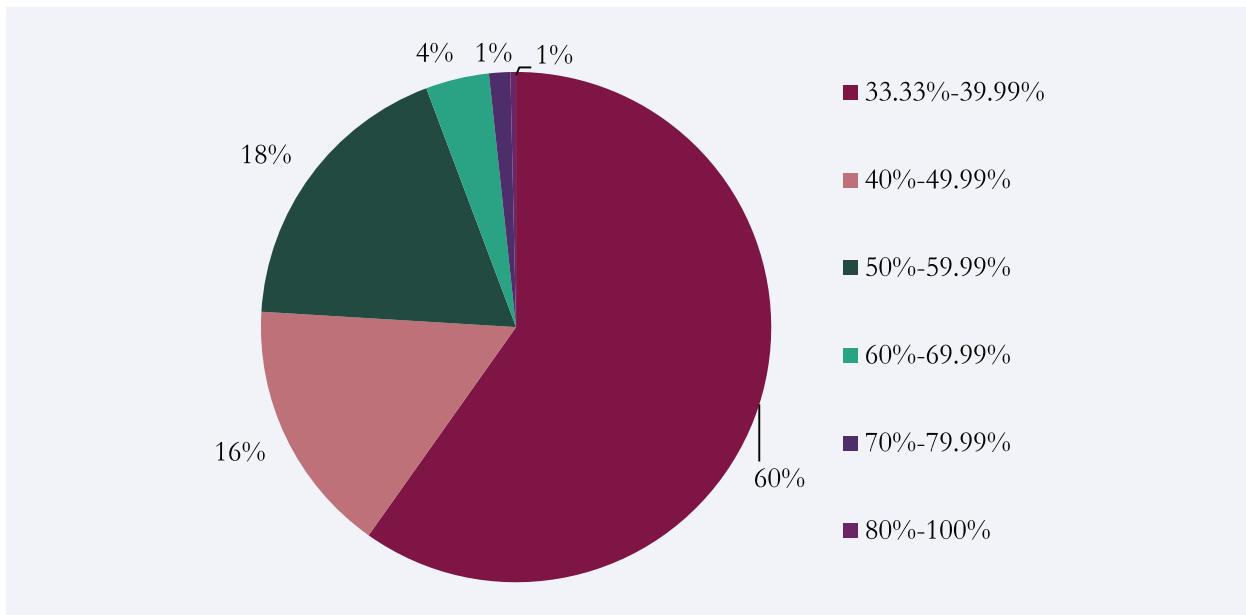
49.9 percent). Nearly one in four of the poor in Nepal, about 24 percent, face an intensity of poverty beyond 50 percent of the weighted indicators.

In a global comparison, Nepal's 2019 MPI value of 0.074 is below Bangladesh's 2019 MPI of 0.104, which is also computed from a NMICS survey, and is lower than the MPI values for all South Asian countries except the Maldives. Nepal's MPI matches the MPI of Botswana (2015-16), which is among the least poor countries in Sub-Saharan Africa, is similar to that of Nicaragua (2011-12) in Latin America, and just a little less poor than Kiribati (2018-19 NMICS) in East Asia and Pacific region.

**FIGURE 3.1: Intensity Gradient among the Poor, 2019**



Source: Calculations based on data from NMICS (2019).

**FIGURE 3.2:** Intensity Gradient among the Poor, 2019

Source: Calculations based on data from NMICS (2019).

### 3.2 MPI ACROSS RURAL AND URBAN AREAS

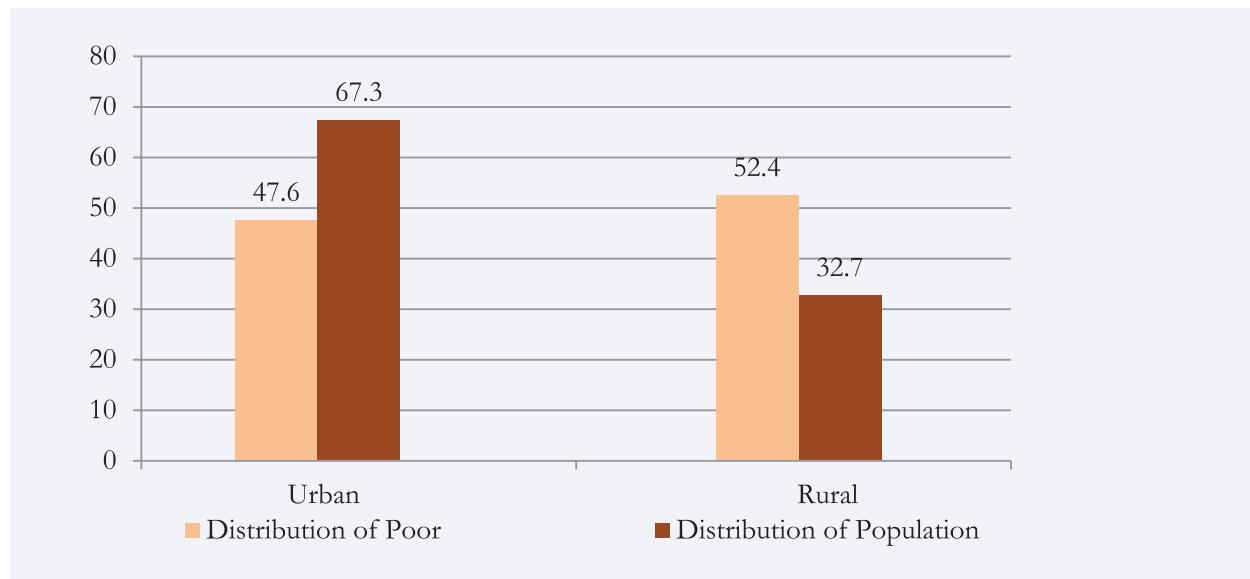
**IMPORTANT NOTE:** The national definition of rural and urban areas in Nepal changed between 2014 and 2019. The 2019 NMICS uses the new definition of rural and urban areas. According to this new definition, two-thirds of Nepalis live in urban areas and one-third in rural areas. Readers will observe that this redefinition is significant, so findings cannot be compared with previous results for rural and urban areas. Applying the property of subgroup decomposability, we investigate the levels of poverty by rural and urban areas, and by provinces. In Table 3.2, the MPI, the incidence (H), and the

intensity (A) of poverty are presented by urban and rural areas. As can be seen in the table, the incidence of rural poverty is higher than the one for urban areas – 28.0 percent and 12.3 percent, respectively. It is worth noticing that about two-thirds of Nepal's population of 28.6 million now live within urban areas. Figure 3.3 compares the distribution of the poor and general population by area. Although only one of every three Nepalese (32.7 percent) resides in rural areas, nearly half of the multidimensionally poor live there (this is 52 percent). Therefore, rural areas still have a disproportionately large share of population that is multidimensionally poor when the share of total population is taken as a reference.

**TABLE 3.2:** Multidimensional Poverty by Rural/Urban Areas, 2019

Index	Urban			Rural			
	Population Share (%)	Value	Confidence Interval (95%)	Population Share (%)	Value	Confidence Interval (95%)	
MPI		0.053	0.044 0.061		0.119	0.106	0.132
Headcount ratio (H, %)	67.3	12.3	10.5 14.2	32.7	28.0	25.3	30.7
Intensity (A, %)		42.6	41.6 43.7		42.4	41.4	43.4

Source: Calculations based on data from NMICS (2019).

**FIGURE 3.3: Distribution of Poor and Population by Rural/Urban Areas, 2019**

Source: Calculations based on data from NMICS (2019).

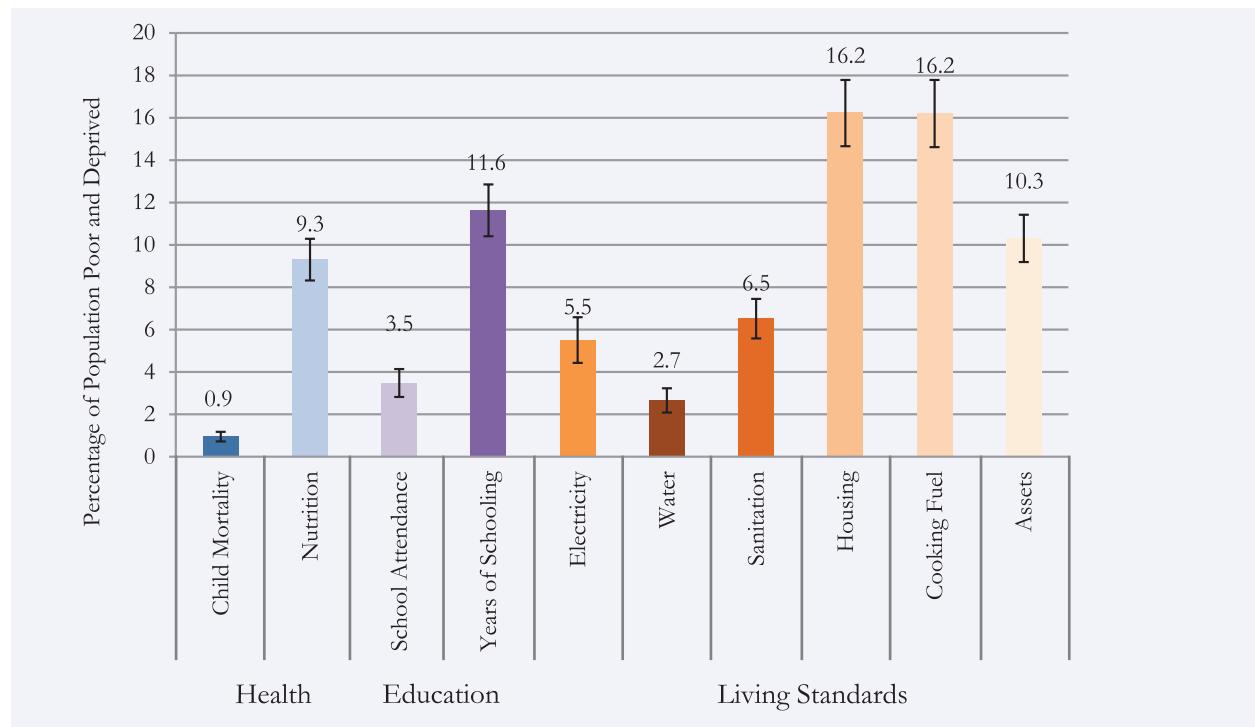
### 3.3 THE COMPOSITION OF MPI BY INDICATOR

What deprivations create multidimensional poverty in Nepal? To answer these questions, the MPI is broken down by indicators and its composition is examined, by looking the censored headcount ratio and the weighted contribution of each indicator to the MPI. The censored headcount ratio of an indicator represents the proportion of the population that is multidimensionally poor and deprived in that indicator. The MPI can also be computed as the sum of the weighted censored headcount ratios. So, reducing any of the censored headcount ratios will reduce poverty.

Figure 3.4 shows that the largest censored headcount ratios are found in the indicators of Housing and Cooking Fuel. In 2019, 16.2 percent of the population is multidimensionally poor are deprived in housing and live in households that cook with dung, wood or charcoal. Over 11.6 percent of people live in households that have no member who has completed six years of schooling and also are multidimensionally poor, and nearly 10.3 percent live in households that are deprived in assets and are poor. Note that less than 1 percent of individuals in Nepal are poor and live in a household deprived in Child Mortality (0.9 percent), that is, in a household where a child under the age of 18 years has died in the five years preceding the survey.

**FIGURE 3.4:** National 'Censored Headcount Ratios', 2019

*Censored Headcount Ratios are the proportion of the population who are both MPI poor and are deprived in each of the indicators.*

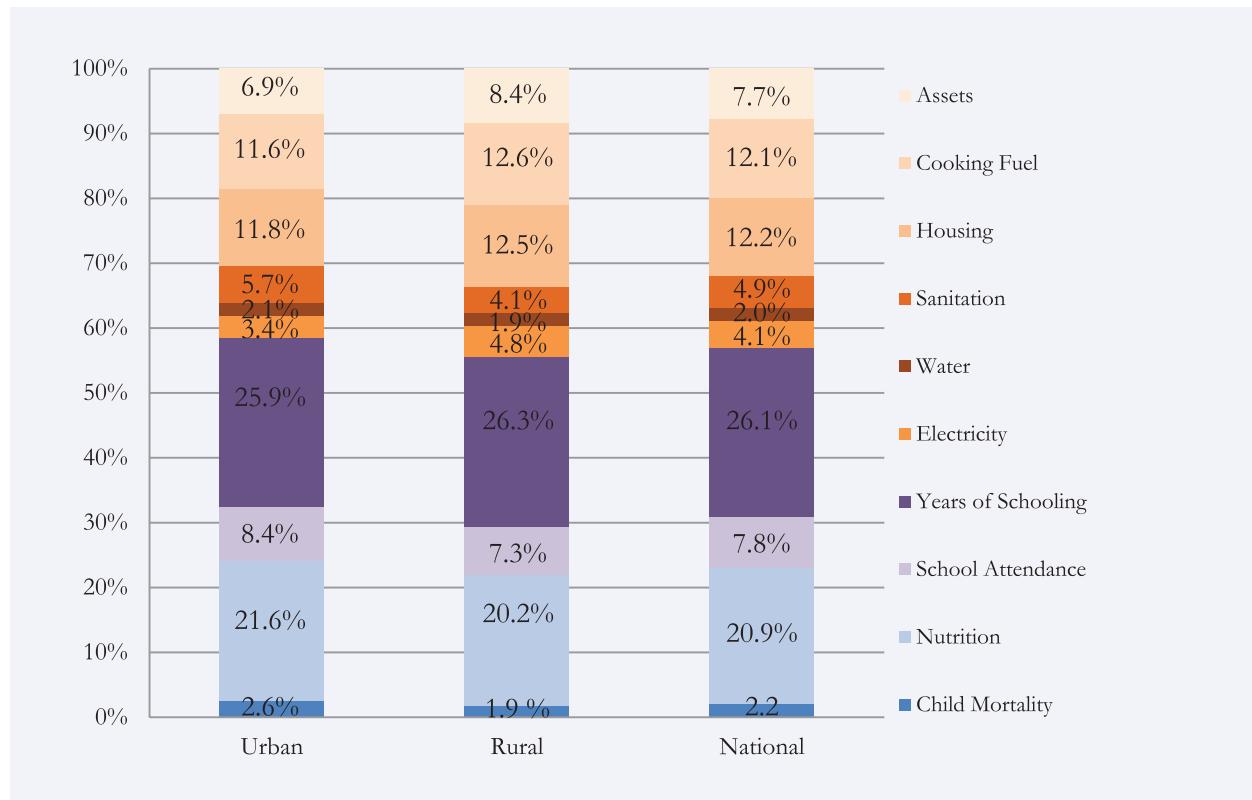


Source: Calculations based on data from NMICS (2019).

For a more in-depth view on multidimensional poverty, it is useful to see the percentage contribution of each of the 10 indicators for the overall multidimensional poverty in both rural and urban areas of Nepal. Figure 3.5 illustrates the composition of multidimensional poverty by showing the weighted percentage contribution of each indicator. Recall that the weights of the indicators in the Health and Education dimensions are higher than those included in the dimension of Living Standard, therefore it is expected that indicators in these two dimensions are more likely to have a higher contribution to the MPI.

In Nepal, the deprivations in Years of Schooling and Nutrition have the largest contribution to overall multidimensional poverty (recall that contribution considers deprivation levels and indicator weights).

A similar pattern is observed in both urban and rural areas with some nuances. Figure 3.5 confirms that the highest contribution to urban or rural poverty are the deprivations of years of schooling, followed by the deprivation of nutrition. Overall, the dimension of Living Standards has the largest contribution to poverty (at the national level as well as in rural and urban areas). The aggregate contribution of all Living Standard indicators to overall poverty is around 43 percent. The dimension of Education is the second largest contributor to multidimensional poverty, with a contribution of 33 percent. Finally, the dimension of Health has the lowest contribution to overall poverty given the low incidence of Child Mortality among the poor. Here, Nepal reflects the decline in global rates of infant and child mortality over the last half century.

**FIGURE 3.5:** Percentage Contribution of Each Indicator to Rural and Urban MPI, 2019

Source: Calculations based on data from NMICS (2019).

### 3.4 MPI ACROSS PROVINCES

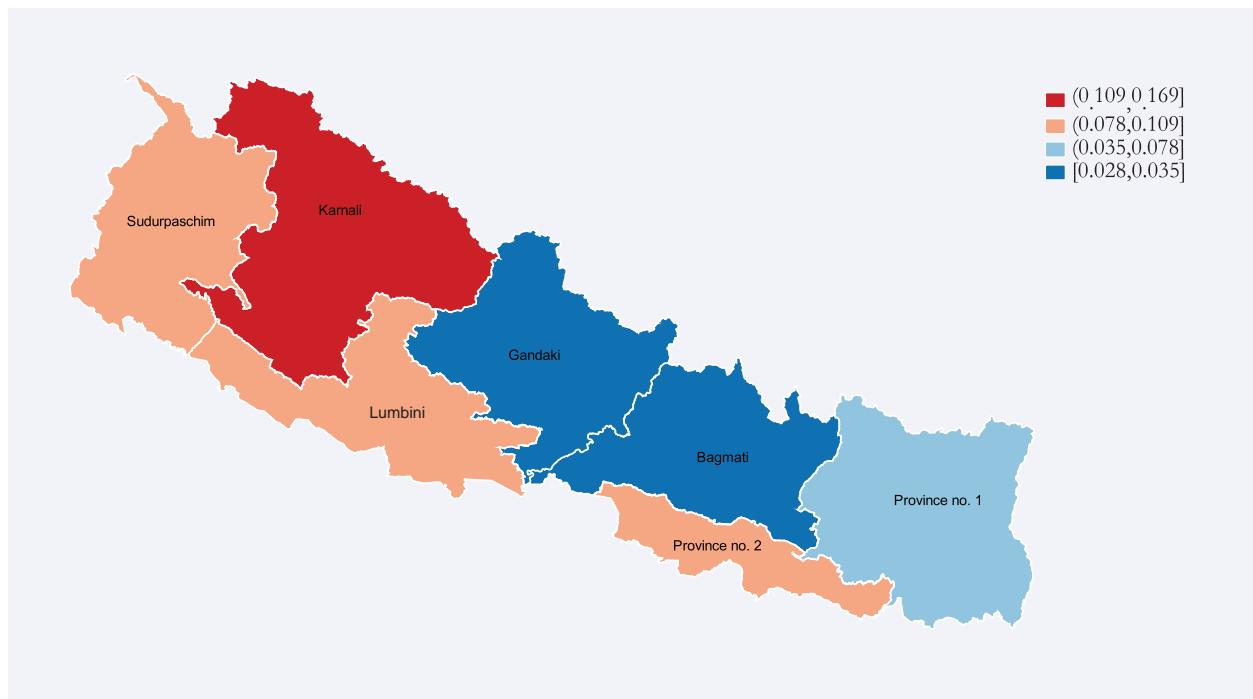
Table 3.3 presents the sub-national and national estimates for the MPI, the incidence (H), and the intensity of poverty (A). As shown in Map 1 and visualised in Figure 3.6, Karnali Province has the highest levels of multidimensional poverty with an MPI of 0.169. In Karnali Province, four out of 10 individuals are multidimensionally poor. Thus, the incidence of poverty is nearly 40 percent. Province 2 and Sudurpashchim Province ranks second and third in terms of multidimensional poverty although the differences between these two provinces are not significant. There are, however, some differences in terms of incidence and intensity between these two regions. As shown in Map 2, the incidence is greater in Sudurpashchim Province but the intensity of poverty, shown in Map 3, is significantly higher in Province 2.

The lowest level (MPI: 0.028) and incidence (H: 7%) of poverty are found in Bagmati Province, with an incidence of nearly only one sixth of the incidence in Karnali Province. However, the lowest number of poor people is to be found in Gandaki Province—the second least populated region. A more detailed characterization of multidimensional poverty is shown in individual sections for Provinces.

**TABLE 3.3: Multidimensional Poverty by Provinces, 2019**

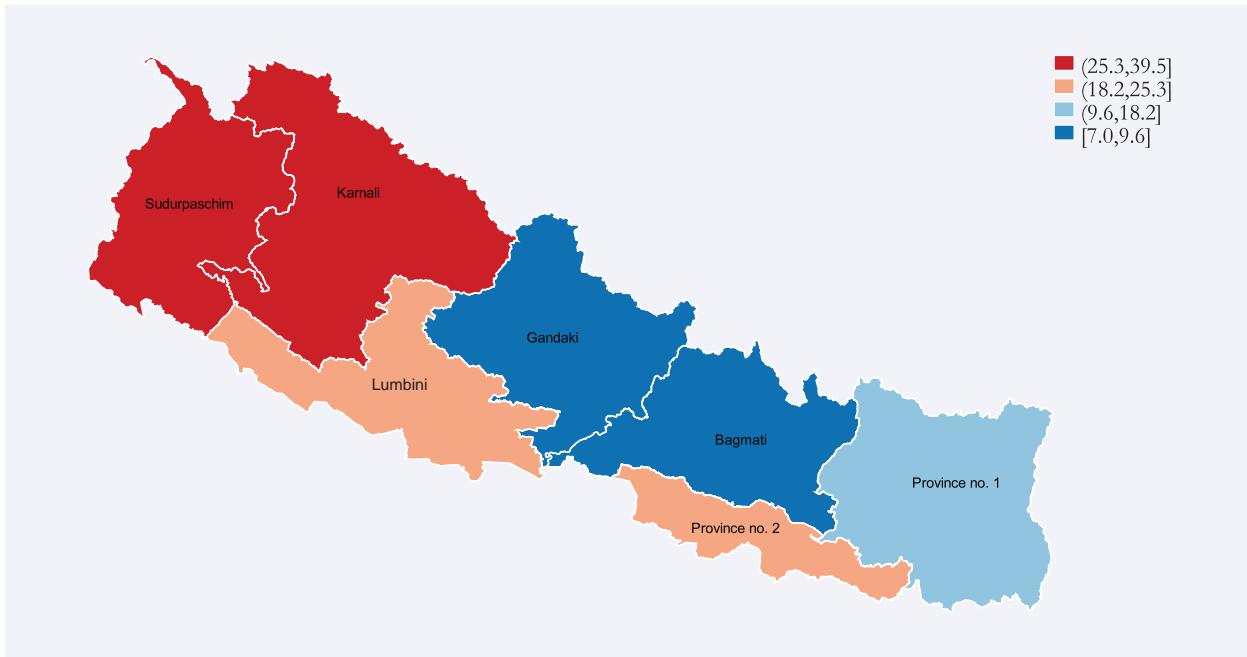
Province	Population Share (%)	MPI		Incidence (H, %)			Intensity (A, %)			Poor (thousand)
		Value	Confidence Interval (95%)	Value	Confidence Interval (95%)	Value	Confidence Interval (95%)	Value	Confidence Interval (95%)	
Karnali	5.6	0.169	0.144 - 0.195	39.5	33.9 - 45.1	42.9	41.7 - 44.1	636		
Province 2	18.7	0.109	0.085 - 0.132	24.2	19.1 - 29.3	45.0	43.3 - 46.6	1,296		
Sudurpaschim	8.7	0.105	0.083 - 0.126	25.3	20.4 - 30.3	41.3	40.1 - 42.5	631		
Lumbini	18.4	0.078	0.059 - 0.098	18.2	14.1 - 22.2	43.1	41.0 - 45.2	958		
Province 1	17.0	0.066	0.050 - 0.082	15.9	12.3 - 19.5	41.4	39.6 - 43.3	773		
Gandaki	8.2	0.035	0.027 - 0.044	9.6	7.3 - 11.9	36.4	35.7 - 37.2	227		
Bagmati	23.3	0.028	0.018 - 0.038	7.0	4.8 - 9.3	40.3	38.6 - 42.0	470		
National	100.0	0.074	0.067 - 0.082	17.4	15.8 - 19.1	42.5	41.8 - 43.2	4,980		

Source: Calculations based on data from NMICS (2019). Provinces ordinarily ranked by the MPI.

**Map 3.1 Multidimensional Poverty Index (MPI) Map by Province, 2019**

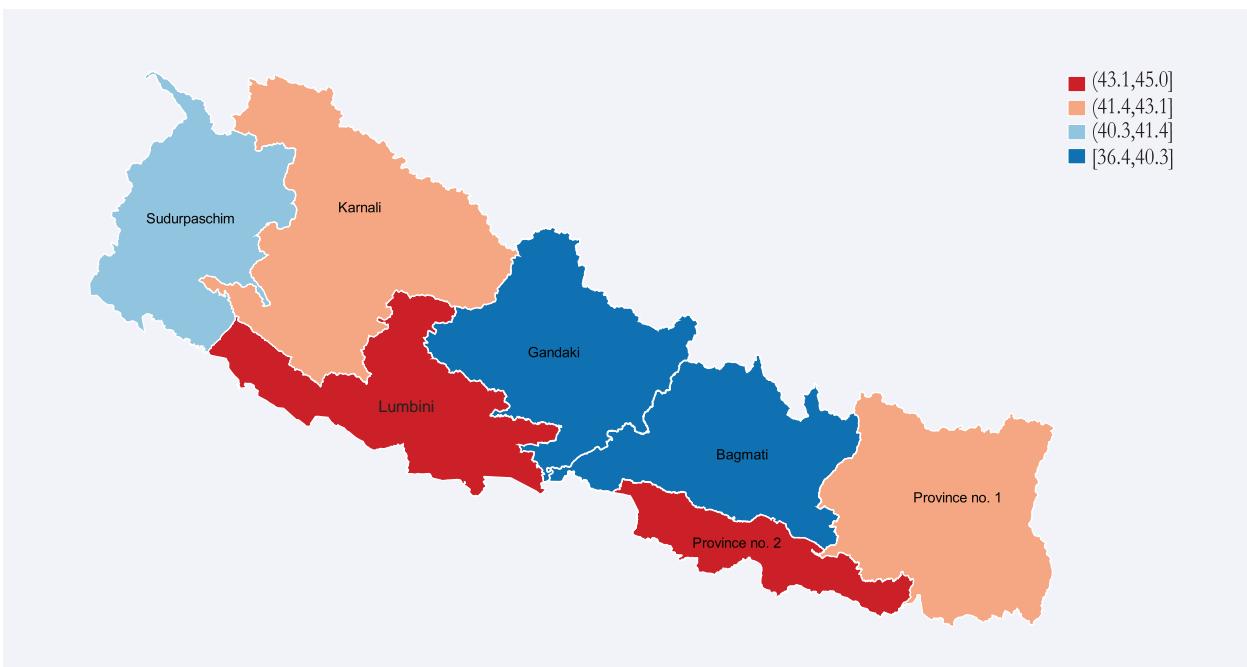
Source: Calculations based on data from NMICS (2019).

### Map 3.2 Poverty Incidence (H) Map by Province, 2019

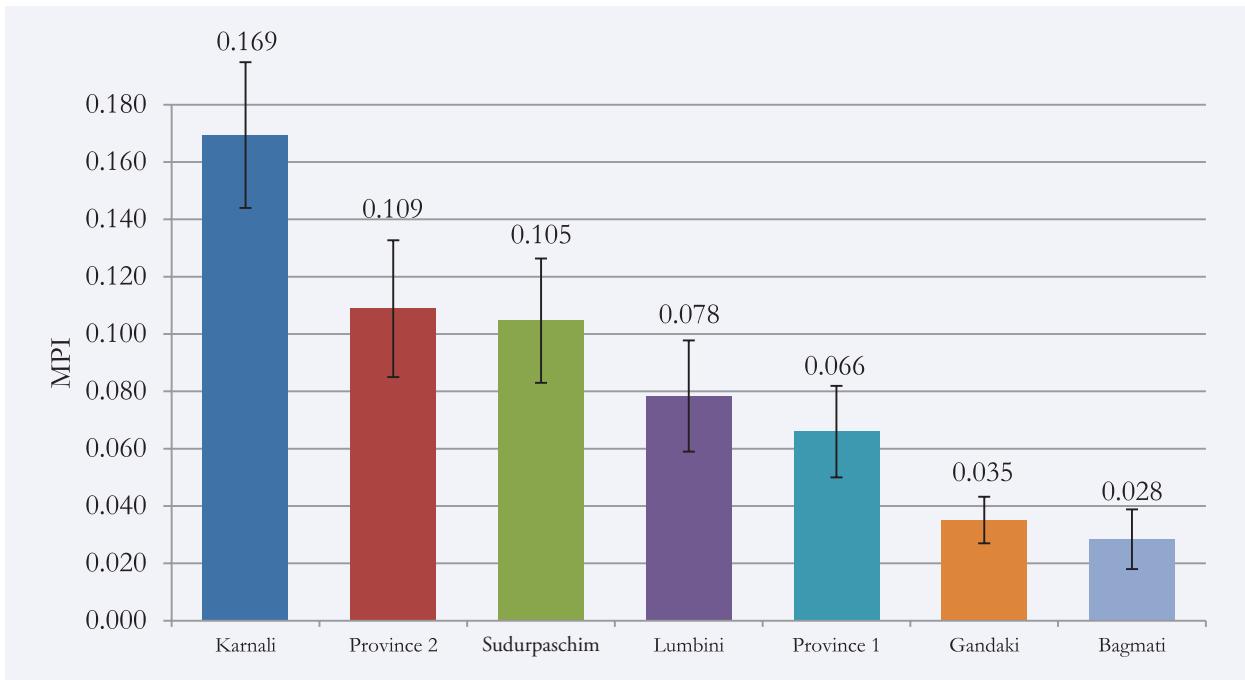


Source: Calculations based on data from NMICS (2019).

### Map 3.3 Poverty Intensity (A) Map by Province, 2019

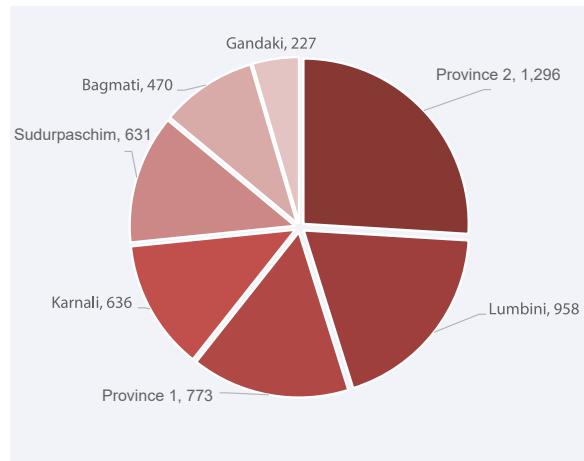


Source: Calculations based on data from NMICS (2019).

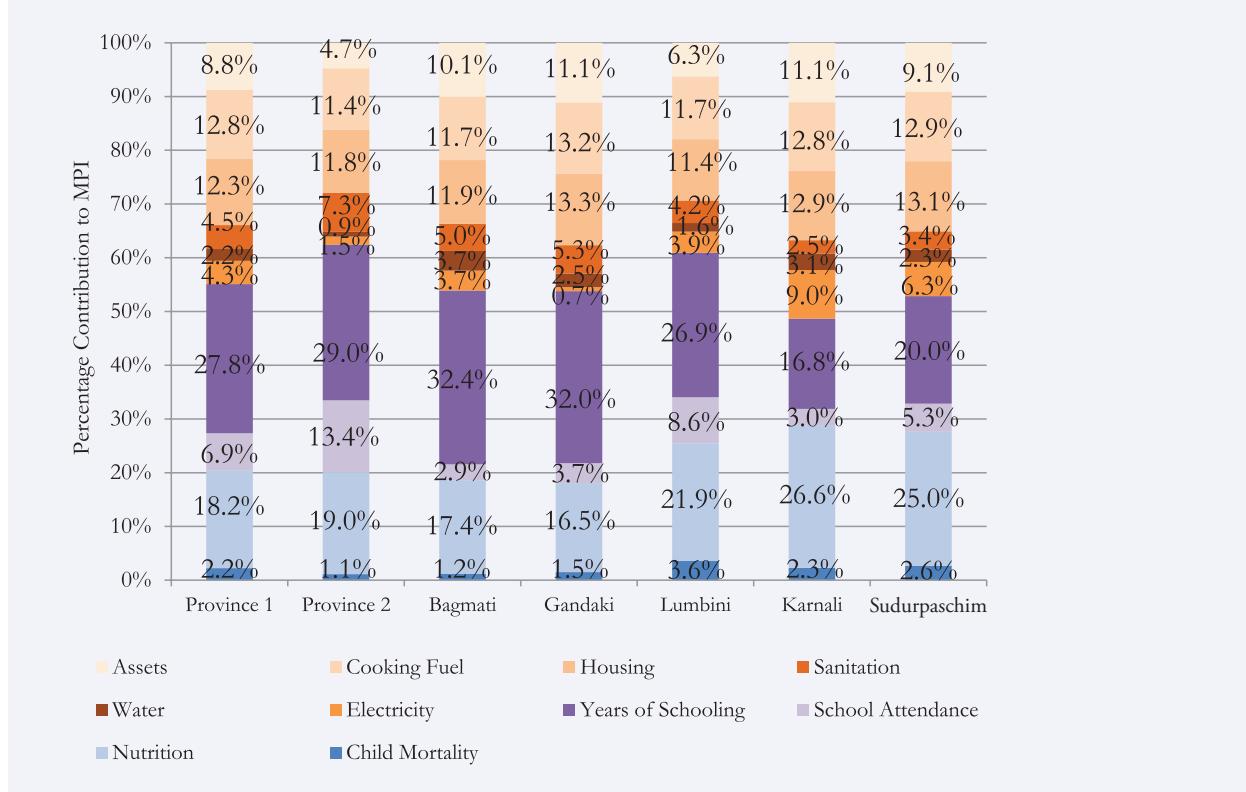
**FIGURE 3.6:** MPI by Province, 2019

Source: Calculations based on data from NMICS (2019), with 95% confidence intervals shown.

While the level of poverty is very important to consider, it provides an incomplete guide to policies, such as budget allocation, because the population shares of the provinces vary. The figure 3.7 below shows where the poor live. It shows that Province 2 unambiguously houses the largest number of multidimensionally poor – more than two of the poorest provinces, Karnali and Sudurpaschim Provinces, combined. Of the 5 million poor people in Nepal 2019, just under 1.3 million live in Province 2. Furthermore, almost one million live in Lumbini Province, and over 770,000 in Province 1. Thus, while Province 1 has a much lower level of MPI than Karnali Province or Sudurpaschim Province, it has the third highest number of poor due to its much larger population. This must be considered in designing anti-poverty policies across the provinces.

**FIGURE 3.7:** Where the Poor Live (2019) (thousands)

Source: Calculations based on data from NMICS (2019).

**FIGURE 3.8:** Percentage Contributions of Each Indicator to Provinces' MPI, 2019

Source: Calculations based on data from NMICS (2019).

Since the Alkire-Foster method allows for sub-group decomposability and dimensional breakdown, it is possible to explore the dimensional composition of the MPI not only at the national and urban/rural level but also at the provincial level. Figure 3.8 illustrates the percentage contribution of each indicator to multidimensional poverty for each province. This figure shows that multidimensional poverty varies substantially across provinces with some general patterns. For instance, Years of Schooling has the largest contribution in all provinces. The contribution of this indicator to overall poverty, however, varies between 17 percent in Karnali Province to nearly 32.5 percent in Bagmati Province. The deprivation in Nutrition has the second largest contributor ranging 16 percent – 26 percent in Gandaki Province and Karnali Province, respectively. The

contribution of Child Mortality is remarkably low in all the Nepalese territory. In all cases, its percentage contribution is smaller than the analytical weight attached to this indicator which confirms the modest contribution of this indicator to overall poverty in Nepal.

### 3.5 DISAGGREGATION OF THE MPI BY AGE AND DISABILITY STATUS OF HOUSEHOLD MEMBERS

In this section, the variation of multidimensional poverty is examined according to household characteristics. This section shows the MPI by age group and households with at least one member with disability.

### 3.5.1 MPI by Age Group

Table 3.4 presents the MPI disaggregated by two age groups: children (0-17), and adult population (18+). The table also includes the incidence and the intensity of poverty. As visualised in Figure 3.9, the children (0-17 years of age) are the poorest since almost one in five children are multidimensionally poor (nearly 22 percent). This means that nearly 2.2 million children are poor.

As Nepal's MPI is constructed at the household level, the information by age group is not as precise as an individual child or adult MPI would be. There are also some design issues: because the survey only obtains information on undernutrition for children under the age of five, and also has school attendance

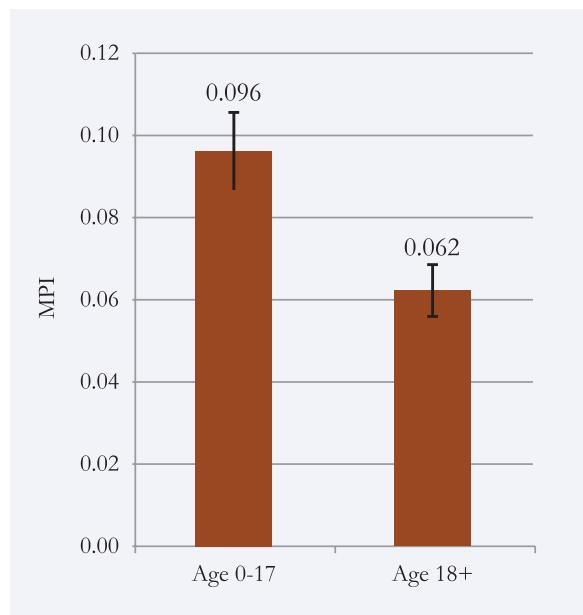
in it, households without children will automatically be non-deprived in these indicators. Still, given this MPI structure it, is clear that children are disproportionately affected by multidimensional poverty. In Nepal, children represent nearly 35 percent of the population. The differences in multidimensional poverty between the two age groups – children aged 0-17 years; and adults, anyone aged 18 or over – are, in any case, significant, with 21.8 percent of all children living in multidimensional poverty compared to 15.1 percent of the adult population. In international comparison, the situation is similar: across the 5.9 billion people covered by the global MPI, half of the poor people are children. Thus, the need to focus on the plight of children is echoed across the world.

**TABLE 3.4:** Multidimensional Poverty Index by Age, 2019

Age-group	Population Share (%)	MPI			Incidence (H, %)		Intensity (A, %)			Poor (thousand)	
		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		
Age 0-17	35.2	0.096	0.087	0.106	21.8	19.9	23.8	44.0	43.2	44.8	2,202
Age 18+	64.8	0.062	0.056	0.069	15.1	13.6	16.5	41.3	40.7	42.0	2,790

Source: Calculations based on data from MICS (2019).

**FIGURE 3.9:** MPI by Age, 2019

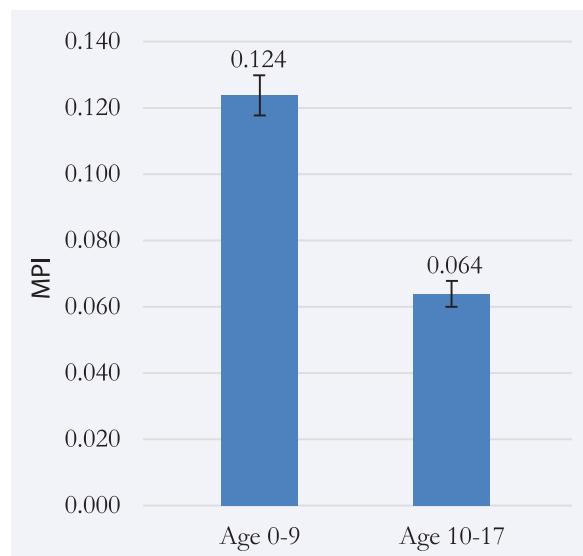


Source: Calculations based on data from NMICS (2019).

**TABLE 3.5:** MPI, Incidence and Intensity for Children, 2019

Age-group	Population Share <sup>4</sup> (%)	MPI			Incidence (H, %)			Intensity (A, %)			Poor Number (thousand)
		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		
Age 0-9	53.9	0.124	0.112	0.136	27.8	25.4	30.3	44.5	43.6	45.3	1,187
Age 10-17	46.1	0.064	0.056	0.072	14.9	13.2	16.5	43.0	42.0	44.0	1,015

Source: Calculations based on data from NMICS (2019).

**FIGURE 3.10:** MPI by Children, 2019

Source: Calculations based on data from NMICS (2019).

### 3.5.2 Child Poverty with the MPI

This section provides a more detailed analysis of children, considered as those aged between 0 and 17 years. This age category can be broken down into two further categories: early childhood (aged 0-9 years) and adolescence (aged 10-17 years). Table 3.5 shows that of the households living with a child – a household member aged under 18 years – nearly 54 percent of this population live in a household where the child is under 10 years. The MPI for these households is 0.124, with an incidence of poverty (H) of 27.8 percent, and an intensity (A) of 44.5 percent. By contrast, the MPI for households living with an adolescent is 0.064, with an incidence of poverty of

14.9 percent, and an intensity of 43.0 percent. The differences in MPI and the incidence (H) are statistically significant between these two age groups, although the difference in intensity (A) is insignificant. That younger children are themselves more often deprived is an important finding for policy strategies aiming to eradicate child poverty.

### 3.5.3 MPI among Households with a Member with Disabilities

The analysis now turns to households in which a member experiences some disability. Individuals aged 15-49 are considered to have a disability if they report a very high level of difficulty in the following domains: visual; hearing, walking or climbing steps; remembering or concentrating; self-care, and in communication. If at least one household member has any of these difficulties, the household is categorised as having a member with disabilities.

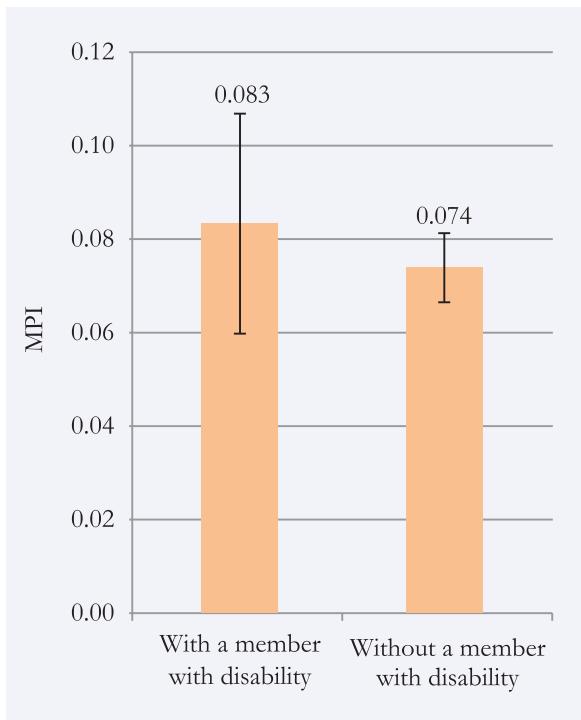
Table 3.6 shows the MPI estimates for households with a member with disability and compares these results with those obtained for households without members with disability. The table shows that nearly 3.2 percent of the population live in a household where one of its members reports a disability. The MPI for these households is 0.083, with an incidence (H) of poverty of 18.3 percent, and an intensity (A) of 45.5 percent. Although these figures are larger than those observed in households with no members experiencing any disability, the results are not statistically different given the sample size – see Figure 3.11. These results however reveal an important pattern which suggest that these households may indeed experience larger levels of deprivations.

<sup>4</sup> These shares sum to 100 percent for the overall child population 0-17. The population shares, in terms of the whole population, are 19.0 percent and 16.2 percent for children aged 0-9 and 10-17 years, respectively.

**TABLE 3.6: MPI, Incidence (H) and Intensity (A) by Disability Status of Household Members, 2019**

Households in which a person experiences disability	Population Share (%)	MPI		Incidence (H, %)		Intensity (A, %)		Poor Number (thousand)
		Value	Confidence Interval (95%)	Value	Confidence Interval (95%)	Value	Confidence Interval (95%)	
With a member with disability	3.2	0.083	0.060 0.107	18.3	13.4 23.2	45.5	42.2 48.7	166
Without a member with disability	96.8	0.074	0.066 0.081	17.4	15.8 19.0	42.4	41.7 43.1	4,826

Source: Calculations based on data from NMICS (2019). Refers to population living in households with a member (aged 15-49) is experiencing at least one of the following difficulties: difficulty seeing, even if wearing glasses or contact lenses; difficulty hearing, even if using a hearing aid; difficulty walking or climbing steps; difficulty remembering or concentrating; difficulty with self-care, such as washing all over or dressing; difficulty communicating.

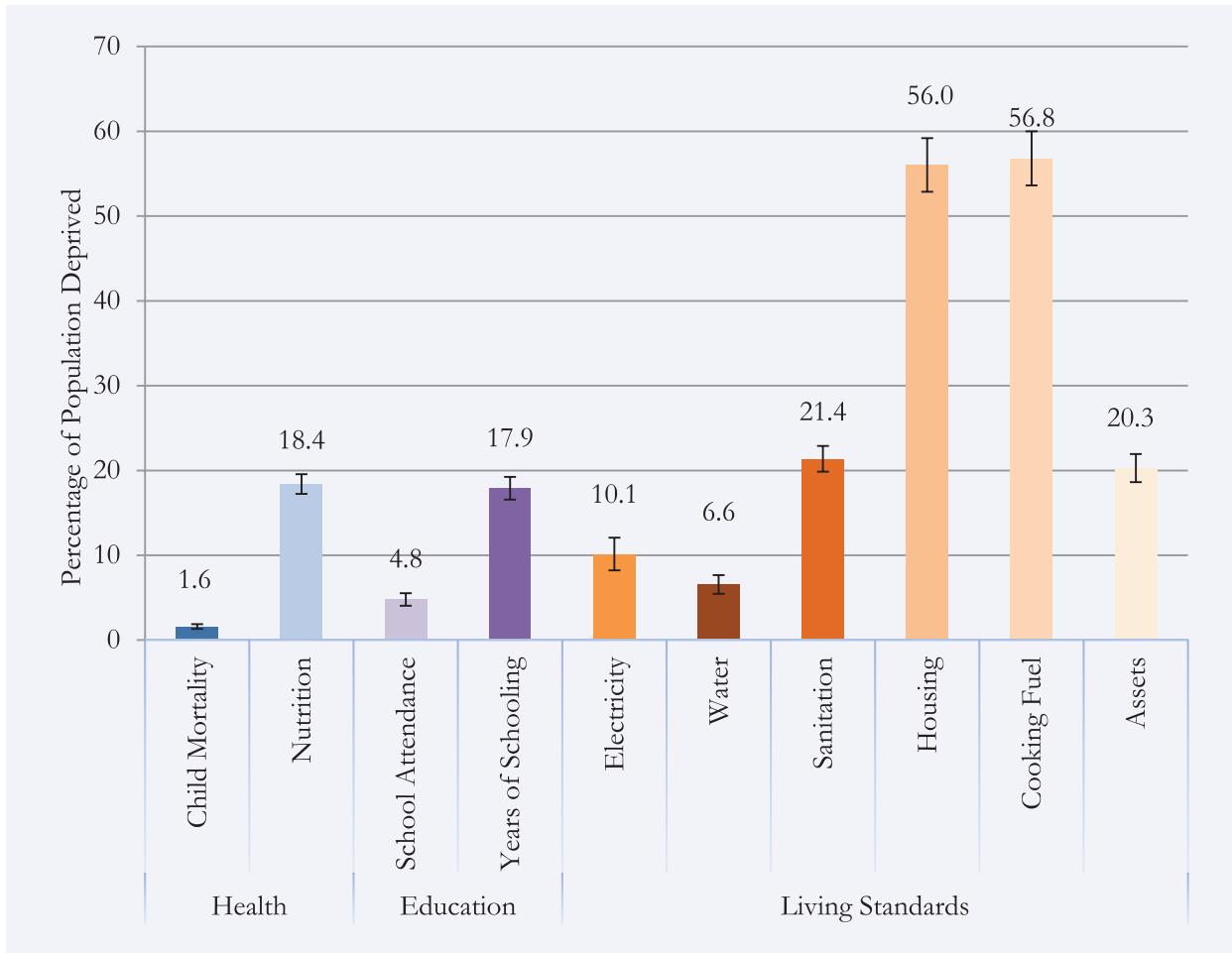
**FIGURE 3.11: MPI among Households with a Member with Disability, 2019**

Source: Calculations based on data from NMICS (2019).

### 3.6 INDICATOR DEPRIVATIONS AT THE NATIONAL LEVEL

The uncensored headcount ratio of each indicator is defined as the proportion of people who are deprived in that particular indicator across the total population (including people who are poor and non-poor). Figure 3.12 presents these rates based on the NMICS (2019) dataset. The highest levels of deprivations are found in Cooking Fuel (56.8 percent of the population is deprived in this indicator), and Housing (56.0 percent), followed by deprivations in Sanitation (21.4 percent and 20.3 (18.4 percent). Some indicators, however, show far lower rates of deprivation. In particular, the uncensored headcount ratios are the lowest for Child Mortality (1.6 percent) and Access to Water (6.6 percent).

**FIGURE 3.12:** National Uncensored Headcount Ratios, Nepal 2019



Source: Calculations based on data from NMICS (2019).



Photo: unsplash.com



## CHAPTER 4:

# Multidimensional Poverty Reduction over Time

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To monitor and track Nepal's progress in achieving the SDG targets by 2030 and its national development priorities, this chapter analyses trends in multidimensional poverty between 2014 and 2019. The NMICS 2014 and 2019 datasets are used to create a strictly harmonized MPI to compare it and its sub-indices across these two periods. As mentioned in the methodology section, the NMICS for 2014 and 2019 share a common survey design and questionnaire. This allows for the creation of the same indicators and MPI structure for each year to make robust comparisons across time. All indicator definitions, weights, and poverty cut-offs used in the 2014 to 2019 comparisons follow the same structure presented in Chapter 2. Such analysis allows an inference of broad poverty alleviation trends over time, to investigate the contributions and levels of poverty by each indicator, and to focus on poverty reduction broken down by province and age group. Statistical Appendix II presents these same results according to the previous methodology, finding that the changes are similar.

## 4.1 KEY RESULTS: NATIONAL AND PROVINCIAL LEVELS 2014-2019

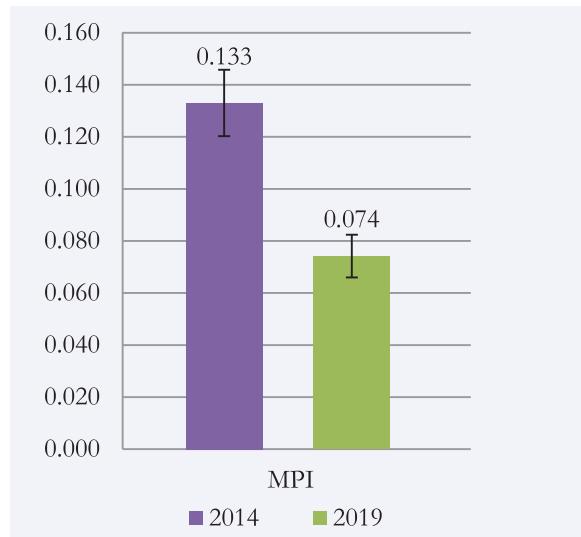
All three key statistics of the MPI – the MPI, the headcount ratio or incidence (H), and intensity (A) – decreased between 2014 and 2019, and the changes were statistically significant at the 99 percent level (Table 4.1). For example, the MPI dropped sharply from 0.133 to 0.074. The incidence (H) reduced from 30.1 percent<sup>5</sup> to 17.4 percent, the intensity also declined significantly, from 44.2 percent to 42.5 percent. Thus, in a five-year period, 12.7 percent of the population of Nepal, a total of 3.1 million people, left poverty. In addition, the reduction in intensity signifies that those who live in multidimensional poverty in 2019 face fewer deprivations, on average, than the multidimensionally poor population in 2014, which is an important achievement (Figures 1a-1c).

<sup>5</sup> This percentage is based on the new methodology of calculation. It was 28.6 percent from the methodology used in MPI 2018.

**TABLE 4.1:** Changes in MPI, H, and A at the National Level, 2014-2019

Index	Poverty across time		Changes			Population (million)	
	2014	2019	Absolute	Relative	significance	Year 1	Year 2
MPI	0.133	0.074	-0.059	-44.2%	***	26.91	28.61
H	30.1%	17.4%	-12.6	-42.0%	***	Poor people (million)	
A	44.2%	42.5%	-1.7	-3.9%	***	8.10	5.00

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$ .

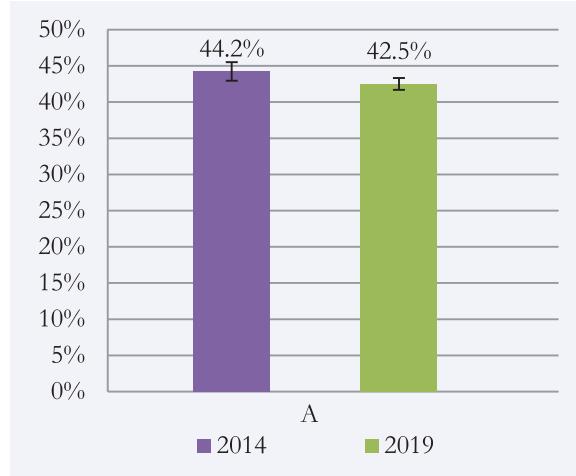
**FIGURE 4.1A:** MPI Nepal, 2014-2019

Source: Calculations using the NMICS 2014 and NMICS 2019.

**FIGURE 4.1B:** Incidence (H) of Multidimensional Poverty in Nepal, 2014-2019**FIGURE 4.1B:** Incidence (H) of Multidimensional Poverty in Nepal, 2014-2019

Source: Calculations using the NMICS 2014 and NMICS 2019.

International comparisons can be useful to put Nepal's trends into context. Considering the 32 other countries whose MPI values ranged from zero to 0.350 according to NMICS surveys covered in the 2020 global MPI (recall that Nepal's MPI value in 2006 was 0.350, so they are in this range), only one country – eSwatini 2010-2014 – matched Nepal's annualized rate of MPI reduction. In terms of the absolute reduction of the headcount ratio, of all countries considered in the 2020 global MPI trends with a starting incidence of 33 percent or less, Nepal's rate of reduction was only matched by eSwatini. The others were slower. As might be expected, some countries with much higher levels of poverty had higher rates of absolute reduction, but among the natural comparison group for Nepal, its performance was commendable.



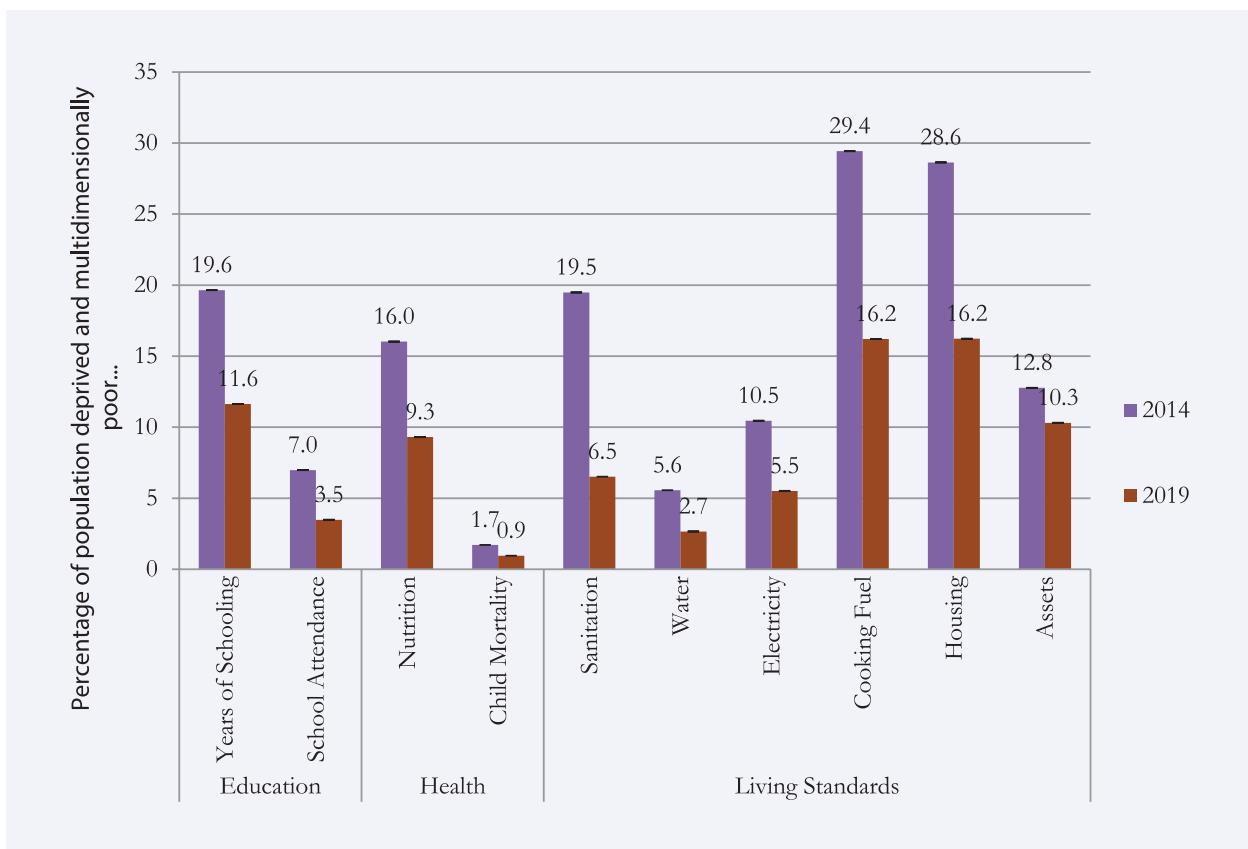
Source: Calculations using the NMICS 2014 and NMICS 2019.

To understand what drove poverty reduction in Nepal, we look to Figure 4.2, which depicts the censored headcount ratios of the 10 indicators – the percentage of people who are MPI poor and deprived in a given indicator of the total population for both 2014 and 2019. We can see that the indicators with the highest deprivation levels among the multidimensionally poor in 2014 and 2019 are Cooking Fuel (29.4 percent and 16.2 percent, respectively), Housing (28.6 percent and 16.2 percent, respectively), and Years of Schooling (19.6 percent and 11.6 percent, respectively). Furthermore, the Child Mortality indicator observed the fewest deprivations among the multidimensionally poor, with 1.7 percent in 2014 and only 0.9 percent in 2019 of the multidimensional poor deprived in child mortality. To refine the story of substantial reduction in

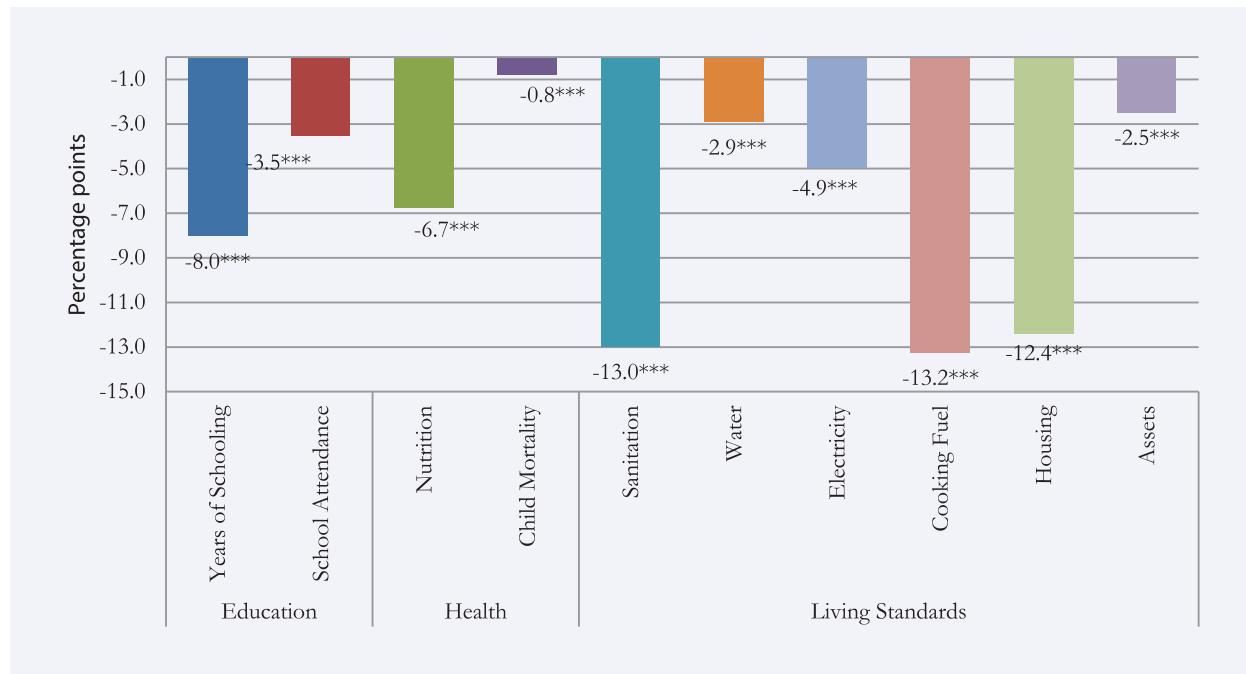
multidimensional poverty over time, we turn to Figure 3, which depicts the absolute changes in these censored headcount ratios. Between 2014 and 2019, all indicators reduced significantly in Nepal at the 99 percent confidence interval, with the greatest absolute reductions in Cooking Fuel (-13.2 p.p.), Sanitation (-13.0 p.p.), and Housing (-12.4 p.p.).

In comparison to other countries included in the 2020 MPI trend analysis, three-quarters of the countries did not manage to achieve this balanced result. Nepal is, therefore, among the 20 countries including Bangladesh and India in South Asia with a significant reduction in all 10 indicators. Three-quarters of the countries with trend data did not manage to achieve this balanced result.

**FIGURE 4.2:** National Censored Headcount Ratios in Nepal, 2014-2019



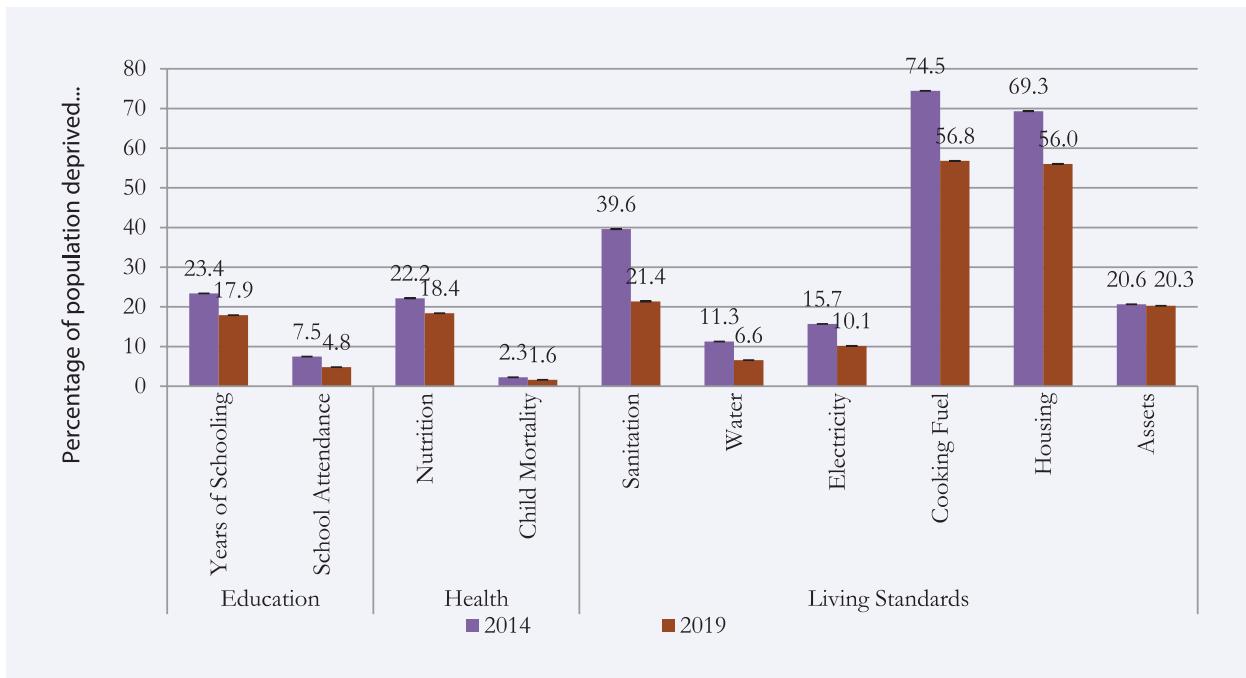
Source: Calculations using the NMICS 2014 and NMICS 2019.

**FIGURE 4.3:** Absolute Reduction in Censored Headcount Ratios, 2014-2019

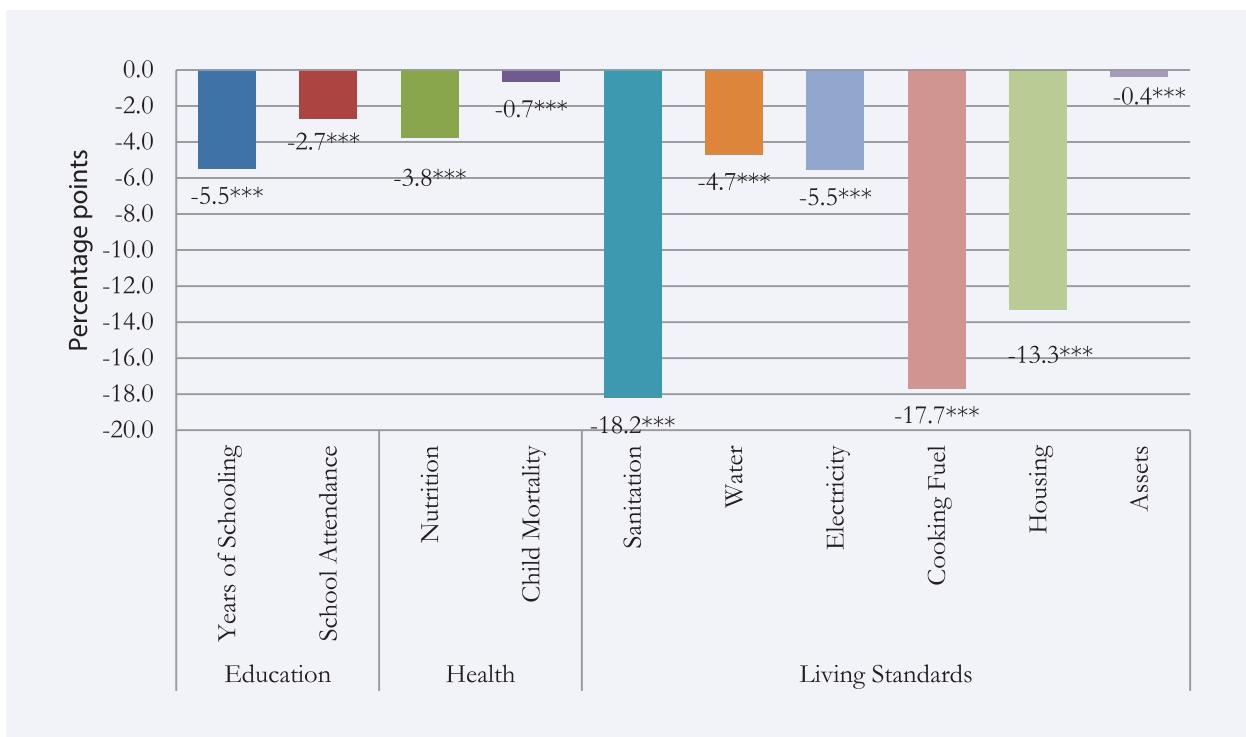
Source: Calculations using the NMICS 2014 and NMICS 2019.

The population-wide trends in each indicator included in the MPI can be analysed alongside the trends in deprivations of the poor. Figure 4.4 presents the uncensored headcount ratios which means the proportion of the population deprived in each of the 10 indicators used in the national MPI for Nepal. The figure shows that nine of the 10 indicators have registered statistically significant improvements over time. The only reduction which was not

significant was in Assets. Figure 4.5 displays the absolute change in the uncensored headcount ratios and their statistical significance between 2014 and 2019. This figure shows that Sanitation, Cooking Fuel, and Housing are the indicators showing the largest absolute reductions (-18.2 and -17.7 and -13.3 percentage points, respectively). These population-wide trends therefore mirror the trends of the multidimensionally poor.

**FIGURE 4.4:** National Uncensored Headcounts Ratios in Nepal, 2014-2019

Source: Calculations using the NMICS 2014 and NMICS 2019.

**FIGURE 4.5:** Absolute Change in Uncensored Headcount Ratios, 2014-2019

Source: Calculations using the NMICS 2014 and NMICS 2019.

Another way to unpack the drivers of poverty reduction in Nepal is to focus on the contribution of each of the 10 indicators of the MPI. As the general composition of the MPI stays relatively unchanged between 2014 and 2019, one can conclude that the multidimensional poverty profile of the poor in Nepal remains largely the same across time. In both years, an insufficient number of Years of schooling contributes most strongly to poverty, followed by Nutrition. The good news is that the contribution of Sanitation decreased, although the Assets indicator's contribution saw a sizeable increase. Other indicators' weighted contribution is smaller than these.

Although poverty at the urban and rural level in 2019 is presented in Chapter 3, the changes in urban and rural poverty levels 2014 - 2019 is not presented here, due to redrawing of administrative boundaries between the surveys. Appendix A of the NMICS 2019 report (p.532) states that, “[t]here have been substantial changes in the administrative structure of Nepal. Most notable is the extensive reclassification of geographical locations from rural to urban at the ward level. New municipalities have been declared and old municipalities have either been upgraded to sub-metro city or been extended in area by merging several old wards.”<sup>6</sup> This reclassification at the urban and rural levels prevents strictly harmonized comparisons for multidimensional poverty over time.

## 4.2 CHANGES IN MULTIDIMENSIONAL POVERTY AT PROVINCIAL LEVELS

Another key feature of the poverty reduction trends in Nepal is the disaggregation of the MPI and its associated statistics by province. Table 4.2 breaks down the levels and changes of MPI, the incidence (H), and the intensity (A) between 2014 and 2019 for the seven provinces of Nepal. Six of the seven provinces see a statistically significant reduction at the 99 percent level in MPI and incidence. Three provinces, Gandaki, Karnali, and Sudurpashchim, significantly reduced the intensity of poverty – thus driving the national average reduction in intensity. This suggests that these three provinces had meaningful improvements in the lives of the multidimensionally poor population, reducing on average the number of deprivations per household, during the five-year period.

Province 2, which was the second poorest province in 2014, observes the largest reduction in both the MPI and incidence of multidimensional poverty, nearly halving its MPI and incidence between the two time periods. Notably, as its total population remains largely the same between the two years, poverty eradication measures may have led to these improvements. Furthermore, Province 2 also has the largest population share of the provinces in the initial year, so its poverty reduction – in which 800,000 people moved out of poverty – is a remarkable feat.

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<sup>6</sup> Central Bureau of Statistics (CBS) (2020). Nepal Multiple Indicator Cluster Survey 2019, Survey Findings Report. Kathmandu, Nepal: Central Bureau of Statistics and UNICEF Nepal.

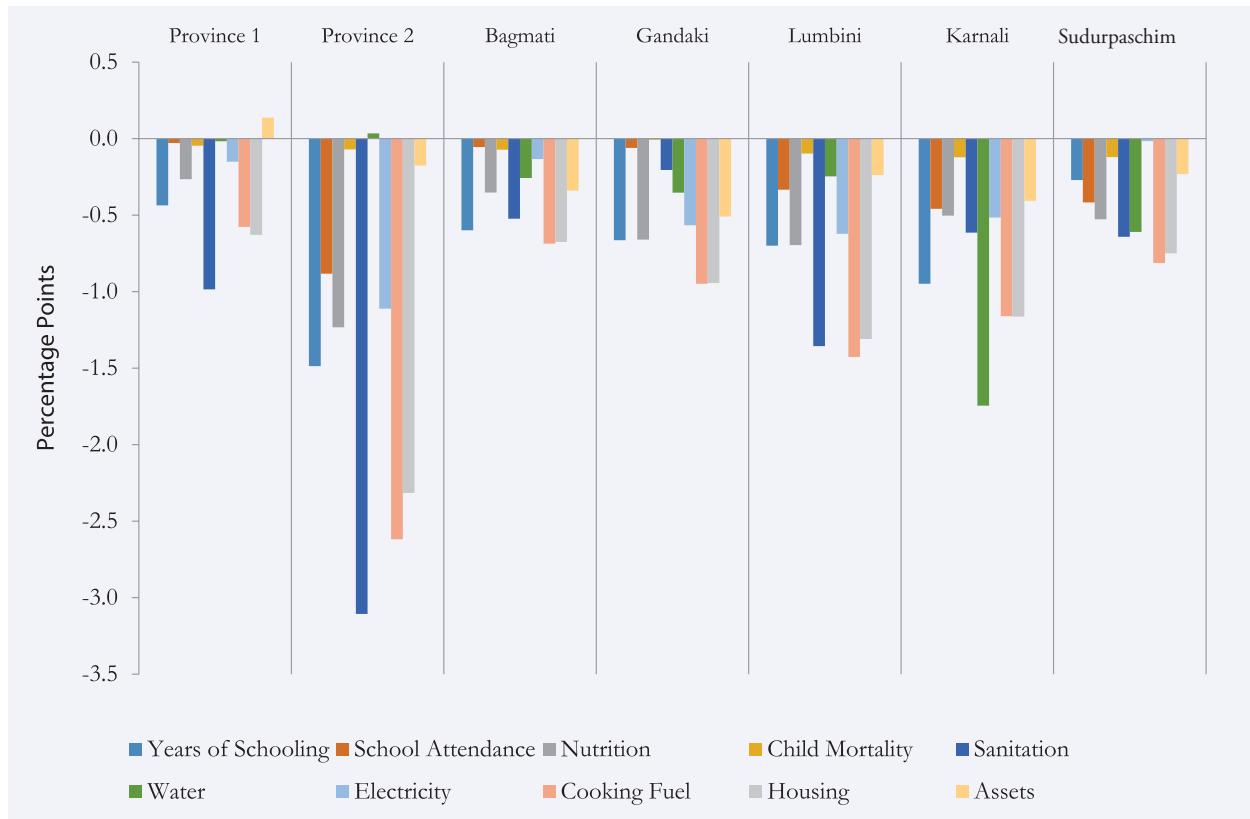
**TABLE 4.2:** Changes in MPI, Incidence (H), and Intensity (A) at the Provincial Level, 2014-19

Province	MPI		Changes <sup>7</sup>			Total Population (thousands)	
	2014	2019	Absolute (p.p.)	Relative (%)		2014	2019
Province 1	0.091	0.066	-0.025	-27.7	*	4,446	4,860
Province 2	0.222	0.109	-0.113	-50.9	***	5,554	5,355
Bagmati	0.061	0.028	-0.033	-53.4	***	5,243	6,673
Gandaki	0.078	0.035	-0.043	-54.9	***	2,565	2,353
Lumbini	0.138	0.078	-0.059	-43.1	***	4,854	5,266
Karnali	0.234	0.169	-0.065	-27.7	***	1,585	1,611
Sudurpaschim	0.144	0.105	-0.039	-27.3	***	2,659	2,491
National	0.133	0.074	-0.059	-44.2	***	26,910	28,610
Province	H (%)		Changes			Population Share	
	2014	2019	Absolute (p.p.)	Relative (%)		2014	2019
Province 1	21.3	15.9	-5.4	-25.4	*	16.5%	17.0%
Province 2	49.1	24.2	-24.9	-50.7	***	20.6%	18.7%
Bagmati	14.4	7.0	-7.4	-51.1	***	19.5%	23.3%
Gandaki	18.5	9.6	-8.8	-47.8	***	9.5%	8.2%
Lumbini	31.2	18.2	-13.0	-41.7	***	18.0%	18.4%
Karnali	50.9	39.5	-11.4	-22.4	***	5.9%	5.6%
Sudurpashchim	32.5	25.3	-7.1	-22.0	**	9.9%	8.7%
National	30.1	17.4	-12.6	-42.0	***	100.0%	100.0%
Province	A (%)		Changes			Number of Poor (thousands)	
	2014	2019	Absolute (p.p.)	Relative (%)		2014	2019
Province 1	42.8	41.4	-1.3	-3.1		948	773
Province 2	45.1	45.0	-0.2	-0.3		2,729	1,296
Bagmati	42.3	40.3	-2.0	-4.6		755	470
Gandaki	42.2	36.4	-5.7	-13.6	***	474	227
Lumbini	44.1	43.1	-1.0	-2.3		1,515	958
Karnali	46.1	42.9	-3.2	-6.9	***	807	636
Sudurpashchim	44.3	41.3	-3.0	-6.8	***	864	631
National	44.2	42.5	-1.7	-3.9	***	8,100	5,000

To dig deeper into the provincial level story, let us look to the absolute changes in censored head-count ratios by province showcased in Figure 4.6. Although no province saw significant reductions in all 10 indicators, Province 2 observed significant reductions in all indicators except Child Mortality, Water, and Assets. Of the seven indicators, it had the fastest reductions among the provinces in Years of Schooling (-1.5 p.p.), School Attendance (-0.9 p.p.), Nutrition (-1.2 p.p.), Sanitation (-3.1 p.p.),

Electricity (-1.1 p.p.), Cooking Fuel (-2.6 p.p.), and Housing (-2.3 p.p.). Bagmati Province led the provinces in significant reductions in deprivations among the poor and deprived in Child Mortality (-0.1 p.p.) and Assets (-0.3 p.p.). Karnali achieved the fastest significant reductions in Water deprivations among the poor (-1.7 p.p.). Moreover, all provinces saw significant reductions among the poor and deprived in Cooking Fuel and Housing. That said, with attention paid to the administrative re-district-

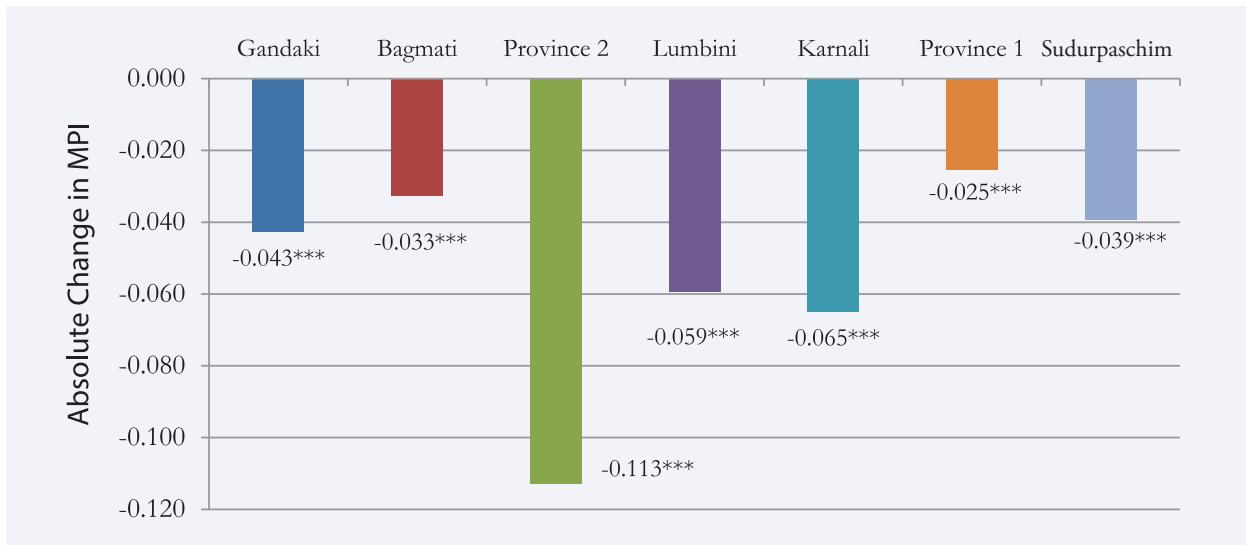
<sup>7</sup> Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$ .

**FIGURE 4.6: Absolute Changes in Censored Headcount Ratios by Province**

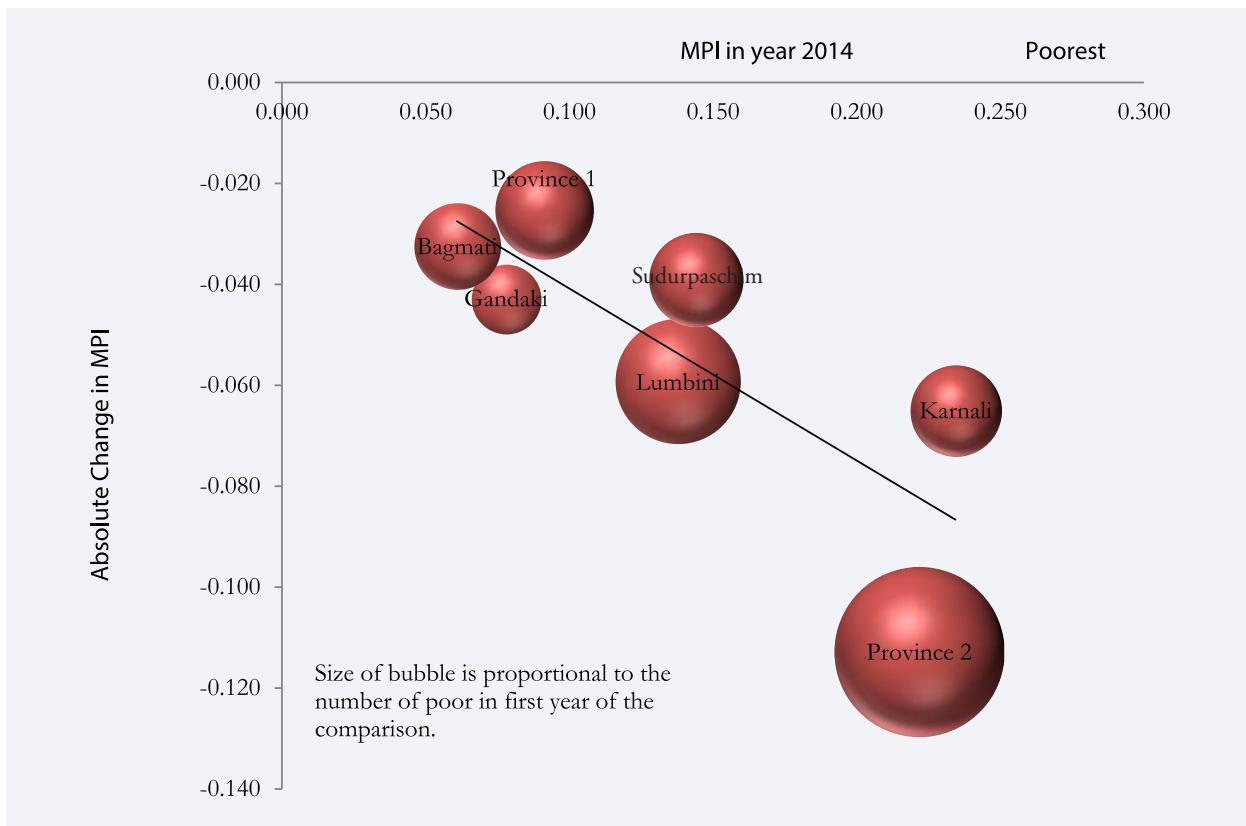
Source: Calculations using the NMICS 2014 and NMICS 2019.

ing, harmonized comparisons at the provincial level were possible by merging the appropriate districts. Figure 4.7 shows the absolute changes in MPI by province. Karnali Province and Lumbini Province, at -0.065 and -0.059, respectively, followed Province 2 in fastest reductions rates. Karnali Province was the poorest province in 2014, and Lumbini Province the third poorest. Furthermore, Province 2, Karnali Province, and Lumbini Province outperformed the national average. Province 1 only saw a significant MPI reduction at the 90 percent significance level, but it did see a drop in the number of poor by around 175,000 people despite overall population growth in the province.

Figure 4.8 plots the starting level of MPI poverty on the horizontal axis, with the poorest provinces, Province 2 and Karnali Province, furthest to the right. The vertical axis is the pace of reduction of MPI, with the lower bubbles showing fastest absolute poverty reduction. This dramatic figure showcases a pro-poor reduction among the provinces in Nepal, with the poorest provinces, led by Province 2, having faster rates of MPI reduction. This means that there is an important story to tell at the provincial level in Nepal about its pro-poor poverty eradication between 2014 and 2019. This provincial story is the focus of the next chapter.

**FIGURE 4.7:** Absolute Changes in MPI by Province, 2014-2019

Source: Calculations using the NMICS 2014 and NMICS 2019.

**FIGURE 4.8:** Absolute Changes in MPI across Provinces, 2014-2019

Source: Calculations using the NMICS 2014 and NMICS 2019.

### 4.3 CHANGES IN MULTIDIMENSIONAL POVERTY BY AGE GROUP

Table 4.3 shows the levels and changes of MPI, the incidence, and intensity of multidimensional poverty between 2014 and 2019 for the children and adult population. In 2014, nearly 36 percent of children were multidimensionally. By 2019, only

22 percent of all the children remained in poverty which implies a reduction of 14 percentage points. These figures imply that nearly 1.7 million children left multidimensional poverty in Nepal between 2014 and 2019 in comparison to nearly 1.4 million of adults.

**TABLE 4.3:** Changes in MPI, Incidence (H), and Intensity (A) for Age Groups, 2014-2019

Age group	MPI		Change 2014 - 2019			Total Population (millions)	
	2014	2019	Absolute	Relative	significance	2014	2019
Age 0-17	0.164	0.096	-0.067	-41.2%	***	10.8	10.1
Age 18+	0.112	0.062	-0.050	-44.7%	***	16.1	18.5
Age group	H		Change 2014 - 2019			Population Share (%)	
	2014	2019	Absolute	Relative	significance	2014	2019
Age 0-17	35.9	21.8	-14.1	-39.2%	***	40.2	35.2
Age 18+	26.1	15.1	-11.1	-42.4%	***	59.8	64.8
Age group	A		Change 2014 - 2019			Number of Poor (million)	
	2014	2019	Absolute	Relative	significance	2014	2019
Age 0-17	45.5	44.0	-1.5	-3.3%	**	3.89	2.20
Age 18+	43.1	41.3	-1.7	-4.0%	***	4.20	2.79



Photo: UNDP Nepal



## CHAPTER 5:

# Provincial Analysis of Multidimensional Poverty

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**IMPORTANT NOTE:** This chapter delves into the provincial analysis of the MPI in Nepal. The first part of the provincial analysis is devoted to the most recent information with NMICS (2019). The first section presents the most recent figures of multidimensional poverty in terms of the incidence, the intensity of poverty and the MPI overall. To provide specific guidance of potential policy interventions, the chapter includes a detailed analysis of the censored headcount ratio (the percentage population that is multidimensionally poor and deprived in each indicator) and the percentage contribution of each indicator. The last section examines the changes over time between 2014 and 2019 in provinces.

It is worth noting that the provinces did not exist as their own territories in 2014. Sampling clusters were used by CBS in the prior MPI – and in the NMICS 2014 report – and so the data are taken from the PSUs that comprise provinces in the harmonized time-series analysis.

**The composition of MPI in provinces is described in the following terms:**

What deprivations create multidimensional poverty in provinces and how can they be reduced? To answer these questions, the MPI is broken down by indicator and its composition is examined. The censored headcount ratio of an indicator represents

the proportion of the population that is multidimensionally poor and also deprived in that specific indicator. The MPI can also be computed as the sum of the weighted censored headcount ratios. So reducing any of the censored headcount ratios will reduce poverty.

To analyse the contribution that each indicator makes to the MPI and understand the composition of poverty in each region, the percentage contribution per indicator is computed. It is important to highlight that two indicators may have the same censored headcount ratios but different contributions to overall poverty, because the contribution depends both on the censored headcount ratio and on the weight assigned to each indicator. This means that the largest reductions in multidimensional poverty can be obtained by tackling the deprivations with the largest contributions. The percentage contribution of each indicator to overall multidimensional poverty is therefore a valuable supplementary information to the censored headcount ratio.

## 5.1 PROVINCE 1

### 5.1.1 Multidimensional Poverty in Province 1, 2019

Province 1 has the third lowest MPI of all provinces, at 0.066. Table 5.1.1 shows that the headcount ratio of multidimensional poverty in Province 1 is 15.9 percent. This is below the national multidimensional poverty rate of 17.4 percent and substantially lower than that of Karnali Province, the poorest province, where nearly 40 percent of the population is identified as poor. The intensity of poverty in Province 1 is 41.4 percent, which means that those who are identified as multidimensionally poor are deprived, on average, in 41.4 percent of the weighted sum of indicators. Nationally, the poor in Nepal are deprived in 42.5 percent of indicators, so the intensity of deprivation is lower in this province than nationally. Province 1 is home to 17 percent of Nepal's population. This implies that in 2019 there were approximately 7,735,000 MPI poor people in Province 1.

**TABLE 5.1.1:** Incidence, Intensity and Multidimensional Poverty Index (MPI) in Province 1, 2019

Poverty Cut-off (k)	Index	Value	Confidence Interval (95%)	
k value = 33%	MPI	0.066	0.050	0.082
	Incidence (H, %)	15.9	12.3	19.5
	Intensity (A, %)	41.4	39.6	43.3

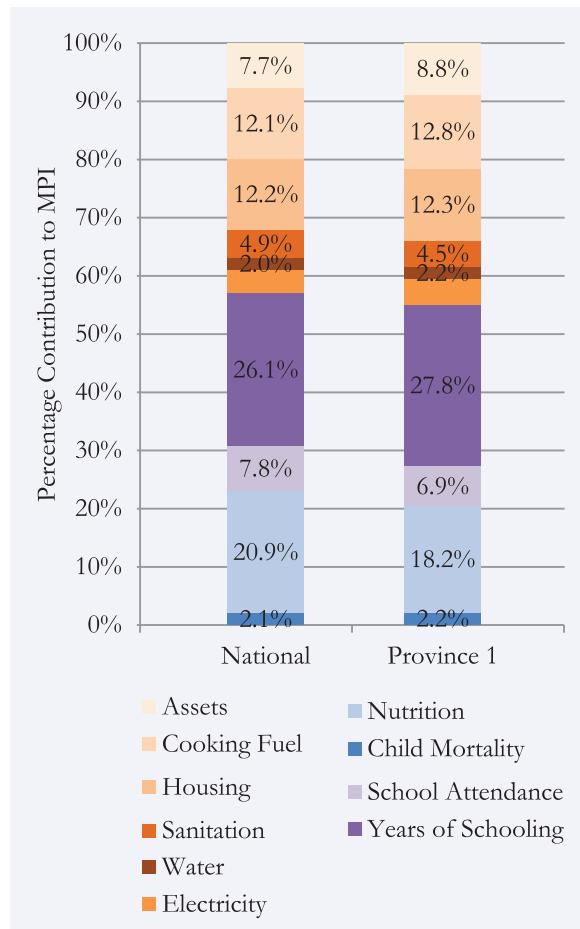
Source: Calculations based on data from NMICS (2019).

### 5.1.2 Composition of MPI by Indicator in Province 1

Table 5.1.3 shows that the largest censored headcount ratio is found in the indicator of cooking fuel. In 2019, 15.2 percent of the population is multidimensionally poor and deprived in this indicator. The second largest deprivation experienced by the poor in Province 1 is housing (14.7 percent).

The bar graph in Figure 5.1.1 shows the percentage contribution of each indicator in Province 1. The height of each bar denotes the percentage contribution of each indicator to the overall MPI. All bars

**FIGURE 5.1.1:** Percentage Contribution to MPI in Province 1



Source: Calculations based on data from NMICS (2019).

add up to 100 percent. The figure also shows the contribution at the national level which allows for an immediate visual comparison. The indicator that contributes the most to the MPI in Province 1 is Years of Schooling (27.8 percent), which is followed by Nutrition (18.2 percent). These two indicators account for nearly half of the total contributions to overall multidimensional poverty (46 percent) in Province 1.

### 5.1.3 Changes over time in Province 1, 2014-2019

Between 2014 and 2019, this province reduced the proportion of MPI poor people by nearly -5.4 percentage points, from 21.3 percent in 2014 to 15.9

**TABLE 5.1.2:** Changes in MPI, H and A in Province 1

Index	Poverty across time		Change 2014 – 2019			Population (thousands)	
	2014	2019	Absolute	Relative	significance	Year 2014	Year 2019
MPI	0.091	0.066	-0.025	-27.7%	*	444,603.7	485,995.5
H	21.3%	15.9%	-5.4%	-25.4%	*	Poor people (thousands)	
A	42.8%	41.4%	-1.3%	-3.1%		948.2	773.5

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$ .

Source: Calculations based on data from NMICS (2019).

percent in 2019. This reduction is statistically significant with a 90 percent confidence level. This represents a move out of poverty for nearly 174.7 thousand people in this province. Furthermore, Table 5.1.2 shows that there was also a statistically significant reduction in the MPI (with a 90 percent confidence level), as well as a reduction in the intensity of poverty (not statistically significant).

To conclude the analysis of multidimensional poverty in Province 1, the change in the censored headcount ratio – the proportion of the population that is multidimensionally poor and deprived in each respective indicator – is presented. Province 1 managed to reduce the censored headcount ratio in most of the indicators (Table 5.1.3). The largest

change was observed in Sanitation with an absolute reduction of 9.9 percent points in absolute terms. In relative terms (this is, as a percentage of the value observed in 2014) Sanitation was also the indicator with the largest reduction (-65 percent).

All these trends and figures are encouraging as they confirm a consistent trend in poverty reduction over this five-year period. A similar level of commitment is needed to maintain this progress in the coming years. This is particularly the case for the indicator of Assets that showed the smallest variation, a slight increase of 1.4 percentage points in absolute terms, during this period.

**TABLE 5.1.3:** Changes in Censored Headcount Ratio in Province 1

Indicator	Value (percent)		Changes		
	2014	2019	Absolute (p.p.)	Relative (%)	significance
Child Mortality	1.3	0.9	-0.5	-34.1%	
Nutrition	9.9	7.2	-2.7	-26.9%	
School Attendance	3.0	2.7	-0.3	-9.6%	
Years of Schooling	15.3	11.0	-4.4	-28.4%	*
Electricity	6.6	5.1	-1.5	-22.7%	
Water	2.8	2.6	-0.2	-6.1%	
Sanitation	15.2	5.3	-9.9	-65.0%	***
Housing	20.9	14.7	-6.3	-30.0%	**
Cooking Fuel	21.0	15.2	-5.8	-27.5%	**
Assets	9.0	10.4	1.4	15.1%	

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$ .

Source: Calculations based on data from NMICS (2019).

**TABLE 5.1.4:** Headcount Ratios in Province 1, 2019

Dimension	Indicator	Headcount ratios	
		Uncensored	Censored
Health	Child Mortality	1.2%	0.9%
	Nutrition	13.7%	7.2%
Education	School Attendance	3.9%	2.7%
	Years of Schooling	17.4%	11.0%
Living Standards	Electricity	11.6%	5.1%
	Water	5.7%	2.6%
	Sanitation	15.4%	5.3%
	Housing	67.7%	14.7%
	Cooking Fuel	67.1%	15.2%
	Assets	21.7%	10.4%

Source: Calculations based on data from NMICS (2019).

#### 5.1.4 Uncensored Headcount Ratios

The analysis of poverty in Province 1 closes by presenting the uncensored (population wide) headcount ratio of deprivations for each of the 10 indicators in 2019. This represents the proportion of the population who are deprived in a particular indicator, irrespective of their poverty status. This information is useful to identify the main patterns

of deprivation. Table 5.1.4 presents these rates using NMICS (2019). In Province 1, the highest deprivation levels are found in Housing (67.7 percent of the population is deprived in this indicator) and Cooking Fuel (67.1 percent) indicators show lower rates of deprivation. The lowest deprivation is found in Child Mortality indicator (1.2 percent).



Photo: unsplash.com

## 5.2 PROVINCE 2

### 5.2.1 Multidimensional Poverty in Province 2

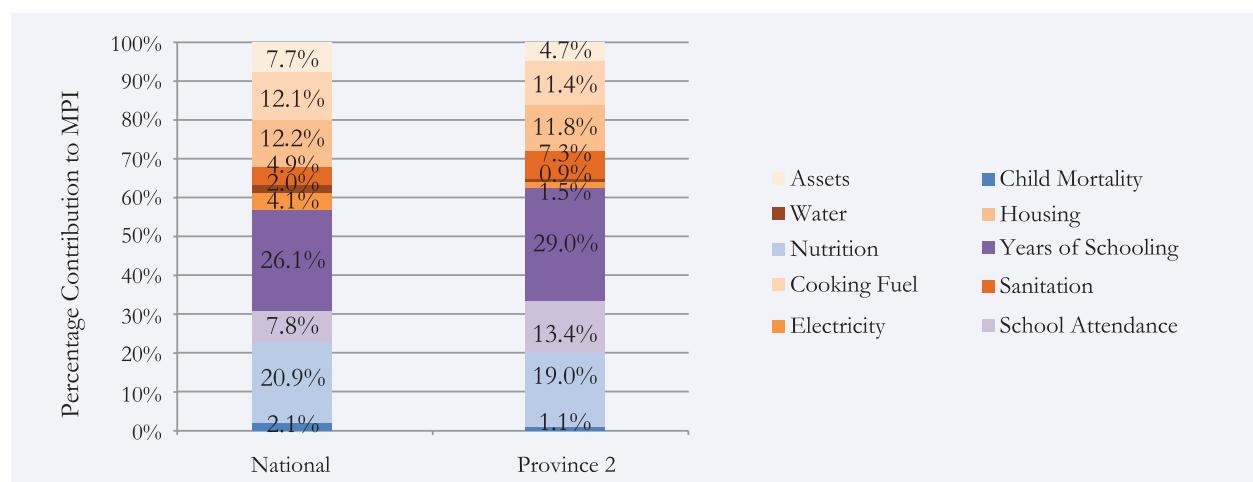
Province 2 has the second highest MPI of any province in Nepal, at 0.109. This is above the national MPI of 0.074. Table 5.2.1 shows that the incidence of multidimensional poverty in Province 2 is 24.2 percent. Thus, the proportion of multidimensionally poor in Province 2 is higher than the national incidence of multidimensional poverty of 17.4 percent but substantially lower than that of Karnali Province, the poorest province, where nearly 40 percent of the population is identified as poor. Province 2 houses 18.7 percent of the population in Nepal. So in 2019 there were approximately 1.2 million MPI poor people in Province 2. The intensity of poverty in Province 2 is 45 percent, which means that those who are identified as multidimensionally poor are deprived, on average, in 45 percent of the weighted indicators. Nationally, the poor in Nepal are deprived in 42.5 percent of indicators, so the intensity of deprivation is higher in this province than nationally.

**TABLE 5.2.1:** Incidence, Intensity and Multidimensional Poverty Index (MPI) in Province 2

Poverty Cut-off (k)	Index	Value	Confidence Interval (95%)	
k value = 33.33%	MPI	0.109	0.085	0.132
	Incidence (H, %)	24.2	19.1	29.3
	Intensity (A, %)	45.0	43.3	46.6

Source: Calculations based on data from NMICS (2019).

**FIGURE 5.2.1:** Percentage Contribution to MPI in Province 2



Source: Calculations based on data from NMICS (2019).

### 5.2.2 Composition of MPI by Indicator in Province 2

Table 5.2.3 shows that the largest censored headcount ratio is found in the indicator of Housing. In 2019, 23.1 percent of the population is multidimensionally poor and deprived in this indicator. The second most-widespread deprivation among the poor in Province 2 is Cooking Fuel (11 percent).

Figure 5.2.1 shows the percentage contribution of each indicator in Province 2. The height of each bar denotes the percentage contribution of each indicator to the overall MPI. The figure shows the contribution at the national level which allow for an immediate visual comparison. The indicator that contributes the most to the MPI in Province 2 is Years of Schooling (29 percent), which is followed by Nutrition (19 percent). These two indicators account for nearly half of the total contributions to overall multidimensional poverty (48 percent) in Province 2.

**TABLE 5.2.2:** Changes in Multidimensional Poverty Index (MPI), Incidence and Intensity in Province 2

Index	Poverty across time		Change 2014 - 2019			Population (thousands)	
	2014	2019	Absolute	Relative	significance	Year 2014	Year 2019
MPI	0.222	0.109	-0.113	-50.9%	***	555,434	535,457
H	49.1%	24.2%	-24.9%	-50.7%	***	Poor people (thousands)	
A	45.1%	45.0%	-0.2%	-0.3%		2728.8	1296.2

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$ .

Source: Calculations based on data from NMICS (2019).

### 5.2.3 Changes Over time in Province 2, 2014-2019

Between 2014 and 2019, this province reduced the proportion of MPI poor people by nearly -24.9 percentage points, from 49.1 percent in 2014 to 24.2 percent in 2019. This reduction is statistically significant with a 99 percent confidence level. This represents a move out of poverty for nearly 1.4 million people in this province. Furthermore, Table 5.2.2 shows that there was also a statistically significant reduction in the MPI (with a 99 percent confidence level level), as well as a reduction in the intensity of poverty (not statistically significant).

To conclude the analysis of multidimensional poverty in Province 2 the analysis turns to the change in the censored headcount ratio – the proportion of the population that is multidimensionally poor and de-

prived in each respective indicator. Province 2 managed to reduce the censored headcount ratio for most of the indicators (Table 5.2.3). The greatest change was observed in Sanitation with an absolute reduction of 31.1 percentage points in absolute terms. In relative terms (this is, as a percentage of the value observed in 2014) the indicator with the largest reduction was Electricity (79.2 percent).

All these trends and figures are encouraging as they confirm a consistent trend in poverty reduction over this five-year period. A similar level of commitment is needed to maintain this progress in the coming years. This is particularly the case for the indicator of Access to Clean Water that showed a slight increase of 0.3 percentage points in absolute terms during this period.

**TABLE 5.2.3:** Changes in Censored Headcount Ratio in Province 2

Indicator	Value (percent)		Changes		
	2014	2019	Absolute (p.p.)	Relative (%)	significance
Child Mortality	1.4	0.7	-0.7	-49.0%	
Nutrition	24.7	12.4	-12.3	-49.8%	***
School Attendance	17.5	8.7	-8.8	-50.3%	***
Years of Schooling	33.8	18.9	-14.9	-44.0%	***
Electricity	14.0	2.9	-11.1	-79.2%	***
Water	1.4	1.7	0.3	24.8%	
Sanitation	45.3	14.3	-31.1	-68.5%	***
Housing	46.2	23.1	-23.2	-50.1%	***
Cooking Fuel	48.5	22.3	-26.2	-54.0%	***
Assets	11.0	9.3	-1.8	-16.0%	

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$ .

Source: Calculations based on data from NMICS (2019).

### 5.2.4 Uncensored Headcount Ratios

Finally, this section presents key findings based on the uncensored (population-wide) headcount ratio of deprivations for each of the 10 indicators in Province 2. This statistic represents the proportion of people who are deprived in that particular indicator, irrespective of their poverty status. This information is useful to identify the main pockets of depriva-

tion. Table 5.2.4 presents these rates using NMICS (2019). In Province 2, the highest deprivation levels are found in Cooking Fuel, with 65.4 percent of the population is deprived in this indicator, and Housing (62.7 percent). However, some indicators show lower rates of deprivation. The lowest deprivation is found in Child Mortality indicator (1.7 percent).

**TABLE 5.2.4:** Headcount Ratios in Province 2, 2019

Dimension	Indicator	Headcount ratios	
		Uncensored	Censored
Health	Child Mortality	1.7%	0.7%
	Nutrition	26.6%	12.4%
Education	School Attendance	11.6%	8.7%
	Years of Schooling	27.3%	18.9%
Living Standards	Electricity	3.7%	2.9%
	Water	3.3%	1.7%
	Sanitation	27.4%	14.3%
	Housing	62.7%	23.1%
	Cooking Fuel	65.4%	22.3%
	Assets	12.6%	9.3%

Source: Calculation based on data from NMICS (2019).



Photo: unsplash.com

## 5.3 BAGMATI PROVINCE

### 5.3.1 Multidimensional Poverty in Bagmati Province

Bagmati Province has the lowest MPI of any province in Nepal, at 0.028. This is below the national MPI of 0.074. Table 5.3.1 shows that the headcount ratio of multidimensional poverty in Bagmati Province is 7 percent. This figure is below the national incidence of multidimensional poverty of 17.4 percent, and substantially lower than that of Karnali Province, the poorest province, where nearly 40 percent of the population is identified as poor. Bagmati Province houses 23.3 % of the population in Nepal. This implies that in 2019 there were approximately 470, 400 MPI poor people in Bagmati. The intensity of poverty in Bagmati Province is 40.3 percent, which means that those identified as multidimensionally poor are deprived, on average, in 40.3 percent of the weighted indicators. Nationally, the poor in Nepal are deprived in 42.5 percent of indicators, so the intensity of deprivation is lower in this province than it is nationally.

**TABLE 5.3.1:** Incidence, Intensity and Multidimensional Poverty Index (MPI) in Bagmati Province

Poverty Cut-off (k)	Index	Value	Confidence Interval (95%)	
k value = 33.33%	MPI	0.028	0.018	0.038
	Incidence (H, %)	7.0	4.8	9.3
	Intensity (A, %)	40.3	38.6	42.0

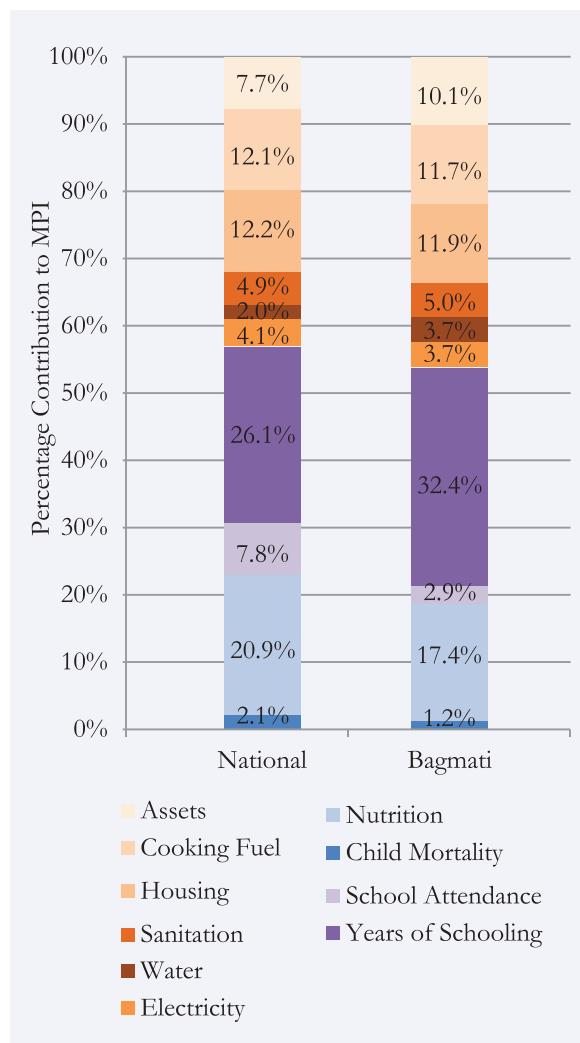
Source: Calculations based on data from NMICS (2019).

### 5.3.2 Composition of MPI by Indicator in Bagmati

Table 5.3.1 shows that the largest censored headcount ratio is found in the indicator of Housing. In 2019, 6.1% of the population is multidimensionally poor and deprived in this indicator. The second most-widespread deprivation among the poor in Bagmati is Cooking Fuel (6 percent).

Figure 5.3.1 shows the percentage contribution of each indicator in Bagmati. The height of each bar denotes the percentage contribution of each indicator to the overall MPI. The figure also shows the contribution at the national level which allow for an immediate visual comparison. The indicator that contributes the most to the MPI in Bagmati Province is Years of Schooling (32.4 percent), which is followed by Nutrition (17.4 percent). These two indicators account for nearly half of the total contributions to overall multidimensional poverty (49.7 percent) in Bagmati Province.

**FIGURE 5.3.1:** Percentage Contribution to MPI in Bagmati Province



Source: Calculations based on data from NMICS (2019).

**TABLE 5.3.2:** Changes in Multidimensional Poverty Index (MPI), Incidence and Intensity in Bagmati Province

Index	Poverty across time		Change 2014 - 2019			Population (thousands)	
	2014	2019	Absolute	Relative	significance	Year 2014	Year 2019
MPI	0.061	0.028	-0.033	-53.4%	***	524,277.7	667,356.6
H	14.4%	7.0%	-7.4%	-51.1%	***	Poor people (thousands)	
A	42.3%	40.3%	-2.0%	-4.6%		755.5	470.4

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$ .

Source: Calculations based on data from NMICS (2019).

### 5.3.3 Changes over time in Bagmati Province, 2014-2019

Between 2014 and 2019, this province reduced the proportion of MPI poor people by -7.4 percentage points, from 14.4 percent in 2014 to 7 percent in 2019. This reduction is statistically significant with a 99 percent confidence level. This represents a move out of poverty for nearly 285,100 people in this province. Furthermore, Table 5.3.2 shows that there was also a statistically significant reduction in the MPI (with a 99 percent confidence level), as well as in the intensity of poverty (not statistically significant).

To conclude the analysis of multidimensional poverty in Bagmati Province the analysis turns to the change in the censored headcount ratio – the proportion of the population that is multidimensionally poor and deprived in each respective indicator. As

seen in Table 5.3.3, there was a statistically significant reduction (at 95% confidence interval) of the censored headcount ratio in seven indicators. The largest change was observed in Cooking Fuel with an absolute reduction of 6.9 percentage points in absolute terms. In relative terms (this is, as a percentage of the value observed in 2014), the indicator with the largest reduction was Child Mortality (77.7 percent).

All these trends and figures are encouraging as they confirm a consistent trend in poverty reduction over this five-year period. A similar level of commitment is needed to maintain this progress in the coming years. This is particularly the case for the indicator of School Attendance that showed the smallest change – a slight reduction of 0.6 percentage points in absolute terms – during this period.

**TABLE 5.3.3:** Changes in Censored Headcount Ratio in Bagmati Province

Indicator	Percentage		Changes		
	2014	2019	Absolute (p.p.)	Relative (%)	significance
Child Mortality	0.9	0.2	-0.7	-77.7%	**
Nutrition	6.5	3.0	-3.5	-54.3%	***
School Attendance	1.1	0.5	-0.6	-52.3%	
Years of Schooling	11.5	5.5	-6.0	-52.1%	***
Electricity	3.2	1.9	-1.3	-41.5%	
Water	4.5	1.9	-2.6	-57.7%	*
Sanitation	7.8	2.6	-5.2	-67.0%	***
Housing	12.8	6.1	-6.8	-52.7%	***
Cooking Fuel	12.9	6.0	-6.9	-53.3%	***
Assets	8.6	5.2	-3.4	-39.7%	**

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$ .

Source: Calculations based on data from NMICS (2019).

### 5.3.4 Uncensored Headcount Ratios 2019

Finally, this section highlights the key findings based on the uncensored (population-wide) headcount ratio of deprivations for each of the 10 indicators in Bagmati Province. This indicator represents the proportion of people who are deprived in that particular indicator, irrespective of their poverty status. This information is useful to identify the main

pockets of deprivation. Table 5.3.4 presents these rates using NMICS (2019). In Bagmati Province the highest deprivation levels are found in Sanitation (29.5 percent of the population is deprived in this indicator) and Housing (24.9 percent). However, some indicators show lower rates of deprivation. The lowest deprivation is found in Child Mortality (0.5 percent).

**TABLE 5.3.4:** Headcount Ratios in Bagmati Province, 2019

Dimension	Indicator	Headcount ratios	
		Uncensored	Censored
Health	Child Mortality	0.5%	0.2%
	Nutrition	8.8%	3.0%
Education	School Attendance	1.5%	0.5%
	Years of Schooling	12.4%	5.5%
Living Standards	Electricity	2.7%	1.9%
	Water	6.2%	1.9%
	Sanitation	29.5%	2.6%
	Housing	24.9%	6.1%
	Cooking Fuel	24.7%	6.0%
	Assets	13.0%	5.2%

Source: Calculations based on data from NMICS (2019).



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## 5.4 GANDAKI PROVINCE

### 5.4.1 Multidimensional Poverty in Gandaki Province

Gandaki Province has the second lowest MPI of any province in Nepal, at 0.035. This is below the national MPI of 0.074. Table 5.4.1 shows that the headcount ratio of multidimensional poverty in Gandaki Province is 9.6 percent. This figure is below the national incidence of multidimensional poverty rate of 17.4 percent, and substantially lower than that of Karnali Province, the poorest province, where nearly 40 percent the population is identified as poor. Gandaki houses 8.2 percent of the population in Nepal, so in 2019, there were approximately 226.7 thousand MPI poor people in Gandaki Province. The intensity of poverty in Gandaki Province is 36.4 percent, which means that those who are identified as multidimensionally poor are deprived, on average, in 36.4 percent of the weighted indicators. Nationally, the poor in Nepal are deprived in 42.5 percent of indicators, so the intensity of deprivation is lower in this province than nationally.

**TABLE 5.4.1:** Incidence, Intensity and Multidimensional Poverty Index (MPI) in Gandaki Province

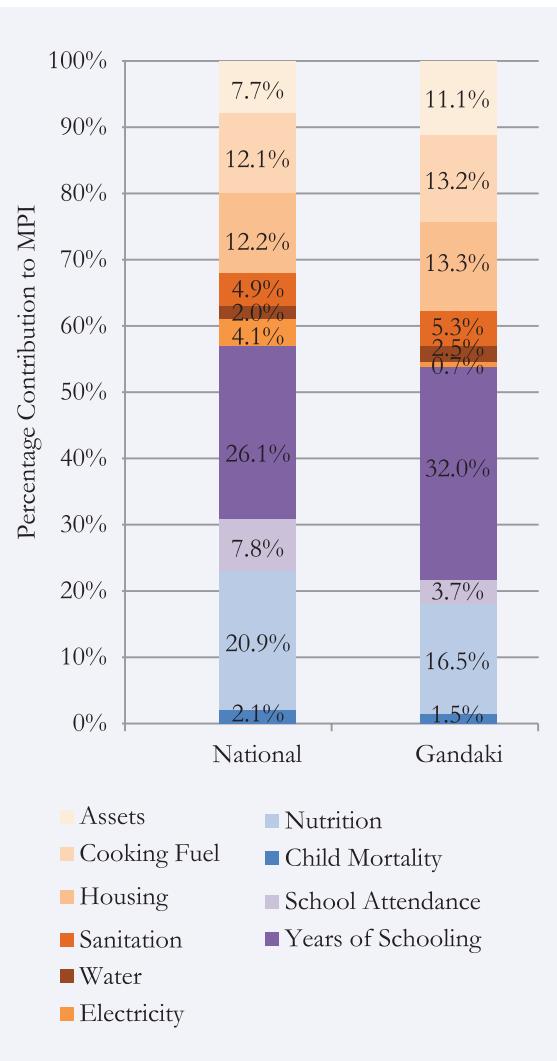
Poverty Cut-off (k)	Index	Value	Confidence Interval (95%)	
k value = 33.33%	MPI	0.035	0.027	0.044
	Incidence (H, %)	9.6	7.3	11.9
	Intensity (A, %)	36.4	35.7	37.2

Source: Calculations based on data from NMICS (2019).

### 5.4.2 Composition of MPI by Indicator in Gandaki Province, 2019

Table 5.4.3 shows that the largest censored headcount ratios are found in the indicator of Housing and Cooking Fuel. In 2019, 8.4 percent of the population is multidimensionally poor and deprived in these indicators, respectively. The next most-widespread deprivation among the poor in Gandaki Province is Assets (7 percent).

**FIGURE 5.4.1:** Percentage Contribution to MPI in Gandaki Province



Source: Calculations based on data from NMICS (2019).

Figure 5.4.1 shows the percentage contribution of each indicator in Gandaki Province. The height of each bar denotes the percentage contribution of each indicator to the overall MPI. The figure also shows the contribution at the national level which allow for an immediate visual comparison. The indicator that contributes the most to the MPI in Gandaki Province is years of schooling (32 percent), which is followed by Nutrition (16.5 percent). These two indicators account for nearly half of the total contributions to overall multidimensional poverty (48.5 percent) in Gandaki Province.

**TABLE 5.4.2:** Changes in MPI, H and A in Gandaki Province

Index	Poverty across time		Change 2014 - 2019			Population (thousands)	
	2014	2019	Absolute	Relative	significance	Year 2014	Year 2019
MPI	0.078	0.035	-0.043	-54.9%	***	256,479.7	235,259.3
H	18.5%	9.6%	-8.8%	-47.8%	***	Poor people (thousands)	
A	42.2%	36.4%	-5.7%	-13.6%	***	473.6	226.7

Source: Calculations based on data from NMICS (2019).

### 5.4.3 Changes in MPI over time in Gandaki Province 2014-2019

Between 2014 and 2019, this province reduced the proportion of poor people by nearly 8.8 percentage points, from 18.5 percent in 2014 to 9.6 percent in 2019. This reduction is statistically significant with a 99 percent confidence level. This represents a move out of poverty for nearly 246,900 people in this province. Furthermore, Table 5.4.2 shows that there was a statistically significant reduction in the MPI as well as in the intensity of poverty – both with a 99 percent confidence level. This significant reduction in intensity of poverty is a great achievement, considering that four of the seven provinces did not see a significant decrease in the average share of deprivations experienced by multidimensionally poor households. As in Sudurpashchim and Karnali Provinces, poverty reduction efforts in Gandaki Province between 2014 and 2019 offer lessons for other provinces and their poverty eradication strategies in the race to leave no one behind.

To continue the analysis of multidimensional poverty in Gandaki Province, the analysis turns to the change in the censored headcount ratio – the proportion of the population that is multidimensionally poor and deprived in each respective indicator. Gandaki Province managed to reduce censored headcount ratios in most of the indicators (Table 5.4.3). The largest change was observed in Cooking Fuel with an absolute reduction of 9.5 percentage points in absolute terms. In relative terms (this is, as a percentage of the value observed in 2014) the indicator with the largest reduction was Electricity (92.4 percent).

All these trends and figures are encouraging as they confirm a consistent trend in poverty reduction over this five-year period. A similar level of commitment is needed to maintain this progress in the coming years. This is particularly the case for the indicator of Child Mortality that showed the smallest change – a slight reduction of 0.1 percentage points in absolute terms – during this period. It is worth mentioning that the value of this indicator was already low in 2014.

**TABLE 5.4.3:** Changes in Censored Headcount Ratio in Gandaki Province

Indicator	Value (percent)		Changes		
	2014	2019	Absolute (p.p.)	Relative (%)	significance
Child Mortality	0.4	0.3	-0.1	-19.4%	
Nutrition	10.1	3.5	-6.6	-65.4%	***
School Attendance	1.4	0.8	-0.6	-43.8%	
Years of Schooling	13.4	6.7	-6.6	-49.6%	**
Electricity	6.1	0.5	-5.7	-92.4%	**
Water	5.1	1.6	-3.5	-69.1%	**
Sanitation	5.4	3.4	-2.0	-37.9%	*
Housing	17.8	8.4	-9.4	-52.8%	***
Cooking Fuel	17.9	8.4	-9.5	-53.1%	***
Assets	12.1	7.0	-5.1	-42.0%	*

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$ .

Source: Calculations based on data from NMICS (2019).

#### 5.4.4 Uncensored Headcount Ratios 2019

Finally, this section highlights the key findings based on the uncensored (population-wide) headcount ratio of deprivations in all the 10 indicators in Gandaki Province. This indicator represents the proportion of people who are deprived in that particular indicator, irrespective of their poverty status. This information is useful to identify the main

pockets of deprivation. In Gandaki Province, the highest deprivation levels are found in Cooking Fuel (49.8 percent of the population is deprived in this indicator) and Housing (46 percent) (Table 5.4.4). However, some indicators show lower rates of deprivation. The lowest deprivation is found in Electricity (1 percent).

**TABLE 5.4.4:** Headcount Ratios in Gandaki Province, 2019

Dimension	Indicator	Headcount ratios	
		Uncensored	Censored
Health	Child Mortality	1.4%	0.3%
	Nutrition	11.0%	3.5%
Education	School Attendance	1.8%	0.8%
	Years of Schooling	15.8%	6.7%
Living Standards	Electricity	1.0%	0.5%
	Water	8.6%	1.6%
	Sanitation	17.7%	3.4%
	Housing	46.0%	8.4%
	Cooking Fuel	49.8%	8.4%
	Assets	19.0%	7.0%

Source: Calculations based on data from NMICS (2019).

## 5.5 LUMBINI PROVINCE

### 5.5.1 Multidimensional Poverty in Lumbini Province

Lumbini Province has the fourth highest MPI of any province in Nepal, at 0.078. This is above the national MPI of 0.074. Table 5.5.1 shows that the headcount ratio of multidimensional poverty in Lumbini Province is 18.2 percent. This means that in 2019 there were approximately 957,700 MPI poor people in Lumbini. In comparison to the national incidence of multidimensional poverty of 17.4 percent, Lumbini's incidence is higher, but yet, it is substantially lower than that of Karnali province, where nearly 40 percent of the population is identified as poor. The intensity of poverty in Lumbini Province is 43.1 percent, which means that those who are identified as multidimensionally poor are deprived, on average, in 43.1 percent of the weighted indicators. Nationally, the poor in Nepal are deprived in 42.5 percent of indicators, so the intensity of deprivation is higher in this province than it is nationally.

**TABLE 5.5.1:** Incidence, Intensity and Multidimensional Poverty Index (MPI) in Lumbini Province

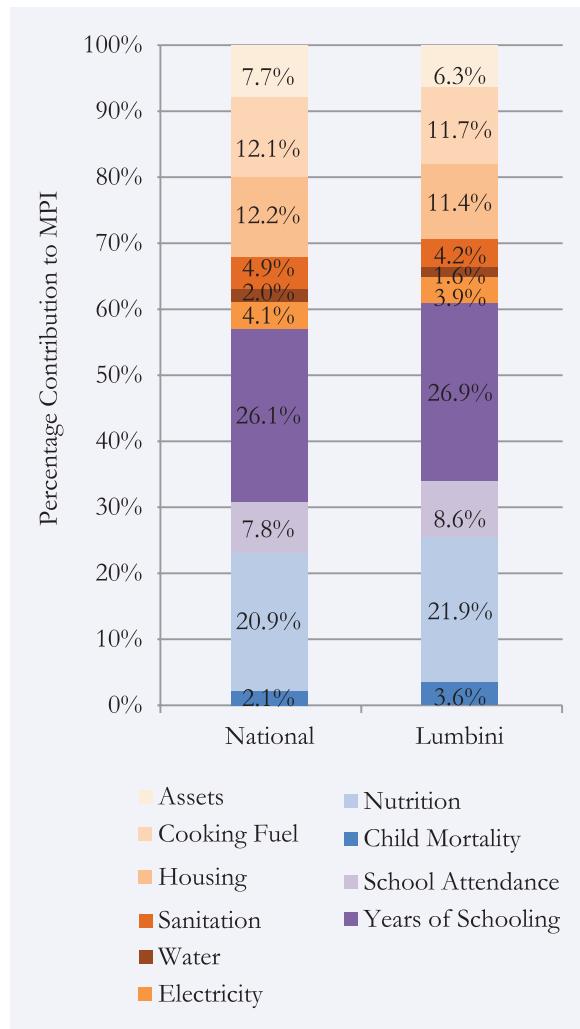
Poverty Cut-off (k)	Index	Value	Confidence Interval (95%)	
	MPI	0.078	0.059	0.098
k value = 33.33%	Incidence (H, %)	18.2	14.1	22.2
	Intensity (A, %)	43.1	41.0	45.2

Source: Calculations based on data from NMICS (2019).

### 5.5.2 Composition of MPI by Indicator in Lumbini Province

Table 5.5.3 shows that the largest censored headcount ratio is found in the indicator of Cooking Fuel. In 2019, 16.5% of the population is multidimensionally poor and deprived in this indicator. The second most-widespread deprivation among the poor in Lumbini is Housing (16.1percent).

**FIGURE 5.5.1:** Percentage Contribution to MPI in Lumbini Province



Source: Calculations based on data from NMICS (2019).

Figure 5.5.1 shows the percentage contribution of each indicator in Lumbini. The height of each bar denotes the percentage contribution of each indicator to the overall MPI. The figure also shows the contribution at the national level which allow for an immediate visual comparison. The indicator that contributes the most to the MPI in Lumbini is Years of Schooling (26.9 percent), followed by Nutrition (21.9 percent). These two indicators account for nearly half of the total contributions to overall multidimensional poverty (48.8 percent) in Lumbini Province.

**TABLE 5.5.2:** Changes in Multidimensional Poverty (MPI), Incidence and Intensity in Lumbini Province

Index	Poverty across time		Change 2014 - 2019			Population (thousands)	
	2014	2019	Absolute	Relative	significance	Year 2014	Year 2019
MPI	0.138	0.078	-0.059	-43.1%	***	485,375.6	526,571.8
H	31.2%	18.2%	-13.0%	-41.7%	***	Poor people (thousands)	
A	44.1%	43.1%	-1.0%	-2.3%		1515.1	957.7

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$

Source: Calculations based on data from NMICS (2019).

### 5.5.3 Changes over time in Lumbini Province, 2014-2019

Between 2014 and 2019, this province reduced the proportion of MPI poor people by -13 percentage points, from 31.2 percent in 2014 to 18.2 percent in 2019. This reduction is statistically significant with a 99 percent confidence level. This represents a move out of poverty for nearly 557,400 people in this province. Furthermore, Table 5.5.2 shows that there was a statistically significant reduction in the MPI (with a 99 percent confidence level), as well as in the intensity of poverty (not statistically significant).

The analysis then turns to the change in the censored headcount ratio – the proportion of the population that is multidimensionally poor and deprived in each respective indicator. Lumbini Province managed to

reduce the censored headcount ratio in most of the indicators (Table 5.5.3). The largest change was observed in Cooking Fuel with an absolute reduction of 14.3 percentage points in absolute terms. In relative terms (this is, as a percentage of the value observed in 2014) the indicator with the largest reduction was Sanitation (69.6 percent).

These trends and figures are encouraging, as they confirm a consistent trend in poverty reduction over this five-year period. A similar level of commitment is needed to maintain this progress in the coming years. This is particularly the case for the indicator of Child Mortality that showed the smallest variation, a slight reduction of 1 percentage points in absolute terms, during this period. It is worth mentioning that the value of this indicator was already low in 2014.

**TABLE 5.5.3:** Changes in Censored Headcount Ratio in Lumbini Province

Indicator	Value (percent)		Changes		
	2014	2019	Absolute (p.p.)	Relative (%)	significance
Child Mortality	2.7	1.7	-1.0	-36.7%	
Nutrition	17.2	10.3	-7.0	-40.4%	***
School Attendance	7.4	4.0	-3.3	-45.3%	*
Years of Schooling	19.6	12.6	-7.0	-35.6%	***
Electricity	11.8	5.5	-6.2	-52.9%	***
Water	4.7	2.2	-2.5	-52.3%	*
Sanitation	19.5	5.9	-13.6	-69.6%	***
Housing	29.2	16.1	-13.1	-44.8%	***
Cooking Fuel	30.7	16.5	-14.3	-46.4%	***
Assets	11.2	8.8	-2.4	-21.2%	

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$ .

Source: Calculations based on data from NMICS (2019).

#### 5.5.4 Uncensored Headcount Ratios 2019

Finally, this section highlights the key findings based on the uncensored (population-wide) headcount ratio of deprivations in all the 10 indicators in Lumbini Province. This indicator represents the proportion of people who are deprived in that particular indicator, irrespective of their poverty status. This information is useful to identify the main pockets of deprivation.

Table 5.5.4 presents these rates using NMICS (2019). In Lumbini the highest deprivations levels are found in Cooking Fuel (61.6 percent of the population is deprived in this indicator) and Housing (61.2 percent). Some indicators, meanwhile, show lower rates of deprivation. The lowest deprivation is found in Child Mortality indicator (2.8 percent).

**TABLE 5.5.4:** Headcount Ratios in Lumbini Province, 2019

Dimension	Indicator	Headcount ratios	
		Uncensored	Censored
Health	Child Mortality	2.8%	1.7%
	Nutrition	22.7%	10.3%
Education	School Attendance	4.9%	4.0%
	Years of Schooling	17.4%	12.6%
Living Standards	Electricity	9.2%	5.5%
	Water	4.5%	2.2%
	Sanitation	16.8%	5.9%
	Housing	61.2%	16.1%
	Cooking Fuel	61.6%	16.5%
	Assets	16.0%	8.8%

Source: Calculations based on data from NMICS (2019).



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## 5.6 KARNALI PROVINCE

### 5.6.1 Multidimensional Poverty in Karnali Province

Karnali Province has the highest MPI of any province in Nepal, at 0.169. This is above the national MPI of 0.074. Table 5.6.1 shows that the headcount ratio of multidimensional poverty in Karnali province is 39.5 percent. This translates into approximately 636,200 MPI poor people in Karnali in 2019. The incidence of Karnali is the highest provincial incidence in Nepal and substantially higher than the national incidence multidimensional poverty of 17.4 percent. The intensity of poverty in Karnali Province is 42.9 percent, which means that those who are identified as multidimensionally poor are deprived, on average, in 42.9 percent of the weighted indicators. Nationally, the poor in Nepal are deprived in 42.5 percent of indicators, so the intensity of deprivation is higher in this province than it is nationally.

**TABLE 5.6.1:** Incidence, Intensity and Multidimensional Poverty Index (MPI) in Karnali Province

Poverty Cut-off (k)	Index	Value	Confidence Interval (95%)	
	MPI	0.169	0.144	0.195
k value = 33.33%	Incidence (H, %)	39.5	33.9	45.1
	Intensity (A, %)	42.9	41.7	44.1

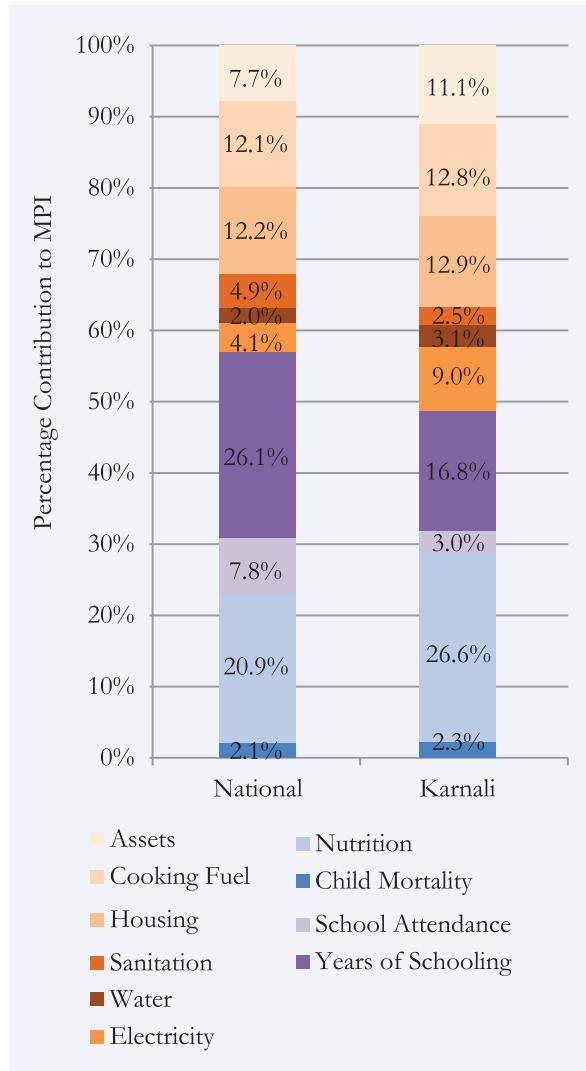
Source: Calculations based on data from NMICS (2019).

### 5.6.2 Composition of MPI by Indicator in Karnali Province

Table 5.6.3 shows that the largest censored headcount ratio is found in the indicator of Housing. In 2019, 39.2 percent of the population is multidimensionally poor and deprived in this indicator. The second most-widespread deprivation among the poor in Karnali is Cooking Fuel (39.1 percent).

Figure 5.6.1 shows the percentage contribution of each indicator in Karnali. The height of each bar denotes the percentage contribution of each indicator

**FIGURE 5.6.1:** Percentage Contribution to MPI in Karnali Province



Source: Calculations based on data from NMICS (2019).

to the overall MPI. The figure also shows the contribution at the national level which allow for an immediate visual comparison. The indicator that contributes the most to the MPI in Karnali Province is Nutrition (26.6 percent), which is followed by Years of Schooling (16.8 percent). These two indicators account for nearly half of the total contributions to overall multidimensional poverty (43.4 percent) in Karnali Province.

**TABLE 5.6.2:** Changes in MPI, H and A in Karnali Province

Index	Poverty across time		Change 2014 - 2019			Population (thousands)	
	2014	2019	Absolute	Relative	significance	Year 2014	Year 2019
MPI	0.234	0.169	-0.065	-27.7%	***	158,542.7	161,130.4
H	50.9%	39.5%	-11.4%	-22.4%	***	Poor people (thousands)	
A	46.1%	42.9%	-3.2%	-6.9%	***	806.8	636.2

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$ .

Source: Calculations based on data from NMICS (2019).

### 5.6.3 Changes over time in Karnali Province 2014-2019

Between 2014 and 2019, this province reduced the proportion of MPI poor people by 11.4 percentage points, from 50.9 percent in 2014 to 39.5 percent in 2019. This reduction is statistically significant with a 99 percent confidence level. This represents a move out of poverty for nearly 170,500 people in this province. Furthermore, Table 5.6.2 shows that there was also a statistically significant reduction in the MPI (with a 99 percent confidence level level), as well as in the intensity of poverty (99 percent confidence level). As in Gandaki and Sudurpashchim, Karnali's reduction in intensity should be celebrated and singled out as a pro-poor reduction among the provinces.

To continue the analysis of multidimensional poverty in Karnali, the analysis turns to the change in censored headcount ratio – the proportion of the popula-

tion that is multidimensionally poor and deprived in each respective indicator. Karnali Province managed to reduce censored deprivation in most of the indicators (Table 5.6.3). The largest change was observed in Access to Clean Water with an absolute reduction of 17.5 percentage points in absolute terms. In relative terms (this is, as a percentage of the value observed in 2014) the indicator with the largest reduction was Access to Clean Water (65 percent) as well.

All these trends and figures are encouraging as they confirm a consistent trend in poverty reduction over this five-year period. A similar level of commitment is needed to maintain this progress in the coming years. This is particularly the case for the indicator of Child Mortality that showed the smallest variation, a slight reduction of 1.2 percentage points in absolute terms, during this period. It is worth mentioning that the value of this indicator was already low in 2014.

**TABLE 5.6.3:** Changes in Censored Headcount Ratio in Karnali Province

Indicator	Value (percent)		Changes		
	2014	2019	Absolute (p.p.)	Relative (%)	significance
Child Mortality	3.5	2.3	-1.2	-34.3%	*
Nutrition	32.0	27.0	-5.0	-15.7%	
School Attendance	7.7	3.1	-4.6	-59.9%	***
Years of Schooling	26.6	17.1	-9.5	-35.7%	***
Electricity	32.7	27.6	-5.2	-15.7%	
Water	26.8	9.4	-17.5	-65.0%	***
Sanitation	13.7	7.5	-6.1	-44.9%	*
Housing	50.8	39.2	-11.6	-22.9%	***
Cooking Fuel	50.7	39.1	-11.6	-22.9%	***
Assets	37.8	33.7	-4.1	-10.8%	

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$ .

Source: Calculations based on data from NMICS (2019).

#### 5.6.4 Uncensored Headcount Ratios 2019

This analysis of poverty in Karnali Province closes by presenting the uncensored (population wide) headcount ratio of deprivations in all the 10 indicators in 2019. This uncensored headcount ratio represents the proportion of people who are deprived in an indicator, irrespective of their poverty status. This information is useful to identify the main pockets of deprivation. Table 5.6.4 presents these rates using NMICS (2019). In Karnali Province, the highest levels of deprivations are found in Housing (90.2 percent of the population is deprived in this indicator) and Cooking Fuel (89.4 percent). However, some indicators show lower rates of deprivation. The lowest deprivation is found in Child Mortality (2.5 percent).

**TABLE 5.6.4:** Headcount Ratios in Karnali Province, 2019

Dimension	Indicator	Headcount ratios	
		Uncensored	Censored
Health	Child Mortality	2.5%	2.3%
	Nutrition	30.1%	27.0%
Education	School Attendance	3.5%	3.1%
	Years of Schooling	18.3%	17.1%
Living Standards	Electricity	55.0%	27.6%
	Water	20.1%	9.4%
	Sanitation	14.8%	7.5%
	Housing	90.2%	39.2%
	Cooking Fuel	89.4%	39.1%
	Assets	67.4%	33.7%

Source: Calculations based on data from NMICS (2019).



Photo: UNDP Nepal

## 5.7 SUDURPASHCHIM PROVINCE

### 5.7.1 Multidimensional poverty in Sudurpashchim Province

Sudurpashchim Province has the third highest MPI of any province in Nepal, at 0.105. This is above the national MPI of 0.074. Table 5.7.1 shows that the headcount ratio of multidimensional poverty in Sudurpashchim Province is 25.3 percent which translates to approximately 631,400 MPI poor people in Sudurpashchim in 2019. The incidence in this province is higher than the national multidimensional poverty rate of 17.4 percent and substantially lower than that of Karnali Province, the poorest province, where nearly 40 percent the population is identified as poor. The intensity of poverty in Sudurpashchim Province is 41.3 percent, which means that those who are identified as multidimensionally poor are deprived, on average, in 41.3 percent of the weighted indicators. Nationally, the poor in Nepal are deprived in 42.5 percent of indicators, so the intensity of deprivation is lower in this province than it is nationally.

**TABLE 5.7.1:** Incidence, Intensity and Multidimensional Poverty Index (MPI), Sudurpashchim Province

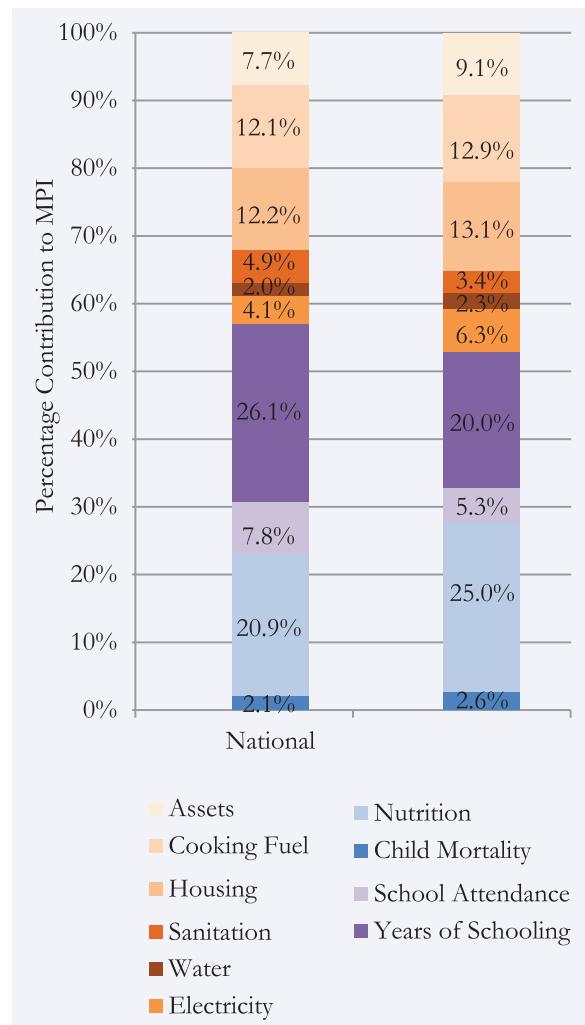
Poverty Cut-off (k)	Index	Value	Confidence Interval (95%)	
k value = 33.33%	MPI	0.105	0.083	0.126
	Incidence (H, %)	25.3	20.4	30.3
	Intensity (A, %)	41.3	40.1	42.5

Source: Calculations based on data from NMICS (2019).

### 5.7.2 Composition of MPI by Indicator in Sudurpashchim Province, 2019

Table 5.7.3 shows that the largest censored headcount ratio is found in the indicator of Housing. In 2019, 24.6 percent of the population is multidimensionally poor and deprived in this indicator. The second most-widespread deprivation among the poor in Bagmati is Cooking Fuel (24.3 percent).

**FIGURE 5.7.1:** Percentage Contribution to MPI in Sudurpashchim Province



Source: Calculations based on data from NMICS (2019).

Figure 5.7.1 shows the percentage contribution of each indicator in Sudurpashchim Province. The height of each bar denotes the percentage contribution of each indicator to the overall MPI. The figure also shows the contribution at the national level which allow for an immediate visual comparison. The indicator that contributes the most to the MPI in Sudurpashchim Province is Nutrition (25 percent), which is followed by Years of Schooling (20 percent). These two indicators account for nearly half of the total contributions to overall multidimensional poverty (45 percent) in Sudurpashchim Province.

**TABLE 5.7.2:** Changes in Multidimensional Poverty Index (MPI), Incidence, and Intensity in Sudurpashchim Province

Index	Poverty across time		Change 2014 - 2019			Population (thousands)	
	2014	2019	Absolute	Relative	significance	Year 2014	Year 2019
MPI	0.144	0.105	-0.039	-27.3%	***	265,886.7	249,129.4
H	32.5%	25.3%	-7.1%	-22.0%	**	Poor people (thousands)	
A	44.3%	41.3%	-3.0%	-6.8%	***	863.9	631.4

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$

Source: Calculations based on data from NMICS (2019).

### 5.7.3 Changes over time in Sudurpashchim Province, 2014-2019

Between 2014 and 2019, this province reduced the proportion of MPI poor people by nearly 7.1 percentage points, from 32.5 percent to 25.3 percent. This reduction is statistically significant with a 99 percent confidence level. This represents a move out of poverty for nearly 232,500 people in this province. Furthermore, Table 5.7.2 shows that there was also a statistically significant reduction in the MPI (with a 95 percent confidence level level), as well as in the intensity of poverty (99 percent confidence level). As in Gandaki and Karnali Provinces, the significant reduction in intensity touts a pro-poor reduction in Sudurpashchim Province, as on average, the multidimensionally poor saw a reduction in the share of deprivations they experienced.

To continue the analysis of multidimensional poverty in Sudurpashchim the analysis turns to the change

in the censored headcount ratio – the proportion of the population that is multidimensionally poor and deprived in each respective indicator. Sudurpashchim managed to reduce the censored headcount ratio in most of the indicators (Table 5.7.3). The largest change was observed in Cooking Fuel with an absolute reduction of 8.1 percentage points in absolute terms. In relative terms (this is, as a percentage of the value observed in 2014) the indicator with the largest reduction was Access to Clean Water (58.5 percent).

All these trends and figures are encouraging as they confirm a consistent trend in poverty reduction over this five-year period. A similar level of commitment is needed to maintain this progress in the coming years. This is particularly the case for the indicator of Electricity that showed the smallest variation – a slight reduction of 0.2 percentage points in absolute terms – during this period.

**TABLE 5.7.3:** Changes in Censored Headcount Ratio in Sudurpashchim Province

Indicator	Value (percent)		Changes		
	2014	2019	Absolute (p.p.)	Relative (%)	significance
Child Mortality	2.9	1.7	-1.2	-42.1%	*
Nutrition	21.0	15.7	-5.3	-25.2%	**
School Attendance	7.5	3.3	-4.2	-55.8%	***
Years of Schooling	15.3	12.6	-2.7	-17.7%	
Electricity	12.1	12.0	-0.2	-1.3%	
Water	10.4	4.3	-6.1	-58.5%	***
Sanitation	12.8	6.4	-6.4	-50.2%	***
Housing	32.1	24.6	-7.5	-23.4%	**
Cooking Fuel	32.4	24.3	-8.1	-25.1%	**
Assets	19.6	17.2	-2.3	-11.9%	

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$

Source: Calculations based on data from NMICS (2019).

#### 5.7.4 Uncensored Headcount Ratios 2019

This analysis of poverty in Sudurpashchim Province closes by presenting the uncensored (population wide) headcount ratio of deprivations for each of the 10 indicators in 2019. This indicator represents the proportion of people who are deprived in that particular indicator, irrespective of their poverty status. This information is useful to identify the main pock-

ets of deprivation. Table 5.7.4 presents these rates using NMICS (2019) datasets. In Sudurpashchim Province, the highest levels of deprivations are found in Cooking Fuel (79.6 percent of the population is deprived in this indicator) and Housing (78.8 percent). However, some indicators show lower rates of deprivation. The lowest deprivation is found in Child Mortality (2.2 percent).

**TABLE 5.7.4:** Headcount Ratios in Sudurpashchim Province, 2019

Dimension	Indicator	Headcount ratios	
		Uncensored	Censored
Health	Child Mortality	2.2%	1.7%
	Nutrition	26.0%	15.7%
Education	School Attendance	4.2%	3.3%
	Years of Schooling	16.3%	12.6%
Living Standards	Electricity	22.8%	12.0%
	Water	9.7%	4.3%
	Sanitation	15.6%	6.4%
	Housing	78.8%	24.6%
	Cooking Fuel	79.6%	24.3%
	Assets	33.2%	17.2%

Source: Calculations based on data from NMICS (2019).



Photo: UNDP Nepal

## CHAPTER 6:

# Multidimensional Poverty and COVID-19 in Nepal

The MPI for Nepal was constructed using 2019 NMICS data that pre-dated the pandemic, yet the pandemic will have affected the shape of poverty because of changes in both deprivation patterns and in demography. This chapter uses the same 2019 NMICS dataset to probe additional pandemic-related deprivations. It needs to be complemented by other analysis, which use more up-to-date data, or include additional indicators, such as access to health facilities, health systems capacity, employment-related aspects, and diagnosed underlying co-morbidities. As the global community reckons with the impacts of the pandemic on the everyday lives of people across the world, the focus must remain on the diverging experiences of the poor and their increased vulnerabilities due to pre-existing inequalities.

The first case of SARS-CoV-2 in Nepal was confirmed in January 2020 (Shrestha, 2020). Over one year later (as of June 17th, 2021), the pandemic has caused well more than half a million COVID-19 cases (615,984), and at least 8,597 confirmed COVID-19 related deaths in Nepal (John Hopkins University & Medicine, 2021).<sup>8</sup> The pandemic affects all provinces, districts, and population groups of Nepal (Ministry of Health and Population, 2021). However, its implications for health, so-

cio-economic realities, lives, and livelihoods, are unlikely evenly distributed across space and population groups within the country. Those already worse-off and affected by multiple, overlapping deprivations pre-pandemic are, in many ways, disproportionately vulnerable to the various impacts and implications of the COVID-19 health and socio-economic emergency. In particular, already disadvantaged populations may be:

- more exposed to disease and less able to practice disease prevention due to lack of handwashing facilities or overcrowding.
- more susceptible and severely affected by the disease due to weakened immune systems and co-morbidities, e.g. due to undernutrition, the effects of air pollution, or lack of safe drinking water.
- more strongly affected by socio-economic implications and disease prevention and control measures, e.g. due to lack of access to information and inability to participate in online education due to lack of internet access.

These additional deprivations, disadvantages, and struggles come on top of the already heavy deprivation load they may be experiencing across dimensions of human development/poverty (see also The Lancet, 2020 and Ahmad et al., 2020).

<sup>8</sup> Both confirmed cases and confirmed deaths may be subject to underreporting.

Using the same NMICS 2019 dataset as the MPI, two sets of variables are further explored. First, the overlaps between the following three deprivations are probed, that if present as pre-existing conditions, might affect the course of the disease.<sup>9</sup>

- **Undernutrition**, which is strongly associated with weakened immune systems, morbidity, and mortality – particularly among young children, the elderly, and people with acute respiratory infections (WHO, 2018; UNICEF-WHO-The World Bank, 2020).<sup>10</sup>
- **Unsafe drinking water**, which is associated with much of the global disease burden and weakened immune systems (WHO 2019; UNICEF-WHO 2017). The drinking water indicator in the Nepal-MPI captures individuals who do not have access to safe drinking water according to SDG standards.
- **Unclean cooking fuel**, which is associated with indoor air pollution and much of the global disease burden, including acute respiratory infections, implying an increased vulnerability to diseases such as COVID-19 (WHO 2018a; Gordon et al. 2014). The cooking fuel indicator in Nepal's MPI captures those who may be affected by indoor air pollution in their homes because of solid cooking fuels.

Then three, additionally relevant, indicators are explored that might affect the spread of the pandemic and children's experience:<sup>11</sup>

- **Lack of handwashing facility with soap on household premises.** Households without soap and handwashing facilities in their households face more difficulty practising some of the essential, hygiene-related disease prevention measures. This may lead to more frequent viral transmission and means that such households may be more exposed to virus and disease on their premises.

<sup>9</sup> Based on Alkire, Dirksen, Nogales, and Oldiges (2020a,b) who performed this analyses for all countries included in the global MPI 2020.

<sup>10</sup> The undernutrition indicator is, due to data limitations, limited to anthropometric information for children below the age of five.

<sup>11</sup> See Dirksen, Nogales, and Oldiges (2021) who further justify the exploration of these indicators.

- **Overcrowding.** People living in households that are 'overcrowded' – here defined as more than three persons per sleeping room in the household, in line with SDG 11.1.1. (UN Habitat, 2018) – may face additional difficulty to stop viral transmission in their households, as effective physical distancing to stop disease transmission may not be feasible.
- **Lack of access to the internet.** During periods of lockdown, internet access is an essential source of information for many households. And it can also be crucial for households with school-aged children to have internet access, to allow children to partake in online schooling. People living in households without internet, especially children or students, may thus be disadvantaged during lockdowns and periods of school closures.

These indicators are considered in combination with the global MPI results for Nepal, and are disaggregated by rural-urban areas and by provinces.

## 6.1 MULTIDIMENSIONAL POVERTY AND VULNERABILITY-TO-DISEASE IN NEPAL IN THE CONTEXT OF COVID-19

Table 6.1 presents the percentage and the number of people who were deprived in one or more of MPI indicators identified as indicating vulnerability to COVID-19: Nutrition, Water, and Cooking Fuel. Some 18 million people in Nepal – 63.5 percent – are affected by at least one of the identified vulnerability conditions. As more than half of Nepal's population experiences increased vulnerability, by facing at least one of the mentioned deprivation, the analysis also shows the clear added value of looking at deprivations one by one.

Furthermore, for targeted efforts that seek to prioritize the most vulnerable, considering overlaps of vulnerability-to-disease indicators is critical. In Nepal, 17.0 percent or 4.9 million people are increased vulnerable – affected by two out of the three vulner-

**TABLE 6.1:** Overlap between Deprivation in Nutrition, Water and Cooking Fuel

Vulnerability Gradient	Percent	Confidence Interval (95%)		Persons (thousand)
Highly vulnerable (all three deprivations)*	1.31%	1.0%	1.6%	374.8
Increased vulnerable (any two deprivations)	17.0%	15.5%	18.5%	4,863.5
Vulnerable (at least one deprivation)	63.5%	60.6%	66.3%	18,155.1

Source: Calculations based on data from NMICS (2019).

ability conditions. 375,000 (1.3 percent) are highly vulnerable, affected by all three deprivations at the same time. Arguably, these population subgroups are one priority subgroups for disease prevention measures. The analysis also shows the clear-value added of looking at deprivations one by one – where 18 million people have at least one of the vulnerability-to-disease deprivations considered here. When considering their overlap between deprivations, two subsets of vulnerable people emerge – i.e., the 4.9 million who are increasingly vulnerable and the 375 thousand who are highly vulnerable. For targeted efforts that seek to prioritize the most vulnerable, considering such overlaps of vulnerability-to-disease indicators is critical.

Table 6.2 presents the percentage of and number of people in Nepal who are multidimensionally poor and deprived in one, two, or three of the focal deprivations. As the results show, 17.2 percent (or 4.9 million of Nepal's population) are both multidimensionally poor and affected by at least one of these deprivations. 9.7 percent of the population or 2.8 million people in Nepal are both multidimensionally poor and deprived in two of them. 1.3 percent of Nepal's population, which is 369,100 of the 374,800 highly vulnerable people (or 98.5 percent), are also MPI-poor. These results show that nearly all of the highly vulnerable people are already MPI-poor and more than half (~57 percent) of those with two deprivations are also MPI poor, testifying that deprivations do indeed tend to cluster.

**TABLE 6.2:** Multidimensional Poverty and Deprivations in Nutrition, Water, and Solid Cooking Fuel

MPI and COVID-19 vulnerability in Nepal	Multidimensional Poor			
	Percent	Confidence Interval (95%)		Persons (thousand)
Highly vulnerable (all three deprivations)*	1.29%	1.0%	1.6%	369.1
Increased vulnerable (any two deprivations)	9.7%	8.6%	10.8%	2,780.8
Vulnerable (at least one deprivation)	17.2%	15.6%	18.7%	4,909.3

\*VI=Vulnerability Indicator

Source: Calculations based on data from NMICS (2019).

**TABLE 6.3:** Additional Deprivations and Multidimensional Poverty by Deprivation Status

	Deprivation Status	Overall Population		MPI-Poor	
		Per cent	Persons (thousands)	Per cent	Persons (thousands)
Overcrowding	Non-deprived	82.53	46,168.8	64.05	7,729.4
	Deprived	17.47	9,770.2	35.95	4,337.6
Internet Access	Deprived	47.20	26,387.7	80.02	9,647.1
	Non-Deprived	52.80	29,514.3	19.98	2,408.9
Handwashing	Non-deprived	61.81	34,577.3	34.84	4,203.7
	Deprived	38.19	21,361.7	65.16	7,863.3

Source: Calculations based on data from NMICS (2019).

## 6.2 MULTIDIMENSIONAL POVERTY AND ADDITIONAL DEPRIVATIONS IN NEPAL IN THE CONTEXT OF COVID-19

Table 6.3 shows that the multidimensionally poor in Nepal are, on top of their already high burden of overlapping deprivations, more likely to be affected by additional deprivations that make them exposed and susceptible to disease. Whilst 17.5 percent of the overall population are affected by overcrowded housing conditions that may impede effective disease prevention, 36.0 percent of multidimensionally poor people in Nepal live in crowded households. Similarly, whilst overall 38.2 percent of people in Nepal do not have access to a handwashing facility with soap on their household's premises, among the MPI poor this figure stands at 65.2 percent. Hence, those already worse-off may not only be more vulnerable to disease if contracting a disease, but they may also be less able to prevent disease transmission. Furthermore, on top of their already more significant overall disadvantage, multidimensionally poor people are also more likely not to have internet access. While 52.8 percent of the overall population of Nepal in 2019 could access the internet, only 20.0 percent of multidimensionally poor people had access. This means that they may face additional struggles in accessing important information during a health emergency and periods of lockdowns. Additionally, it may also mean that the students in

these households become educationally left behind because they cannot participate in online educational activities. This may exacerbate pre-existing disadvantages and inequalities.

Table 6.4 provides provincial and rural-urban disaggregations. Findings indicate that the three additionally considered deprivations are much more frequent among the multidimensionally poor than non-poor individuals in both urban and rural areas. For example, deprivation of internet access is more frequent among the MPI-poor than MPI-non-poor across urban and rural areas. In addition, the patterns here also confirm that the population in rural Nepal is suffering a greater deprivation load. Among both the poor and non-poor, rural Nepalis are more frequently affected by all three additional deprivations considered here than are their urban counterparts.

Table 6.4 also confirms spatial inequalities across Nepal's provinces for the additional set of relevant indicators considered here. Karnali Province has the highest proportion of people deprived of internet access and handwashing facilities, followed by Sudurpashchim Province. These are also the two provinces with the most prevalent overcrowding, topped only by Province 2. Across all provinces, the share of multidimensionally poor people deprived in these three indicators is higher than among the

**TABLE 6.4:** Additional Deprivations and Multidimensional Poverty in Nepal, Provinces and Areas

	Disaggregation	Population Share (%)	Overall Population				MPI-Poor			
			Value	SE	Confidence Interval (95%)		Value	SE	Confidence Interval (95%)	
Overcrowding	Province 1	17.0	14.7%	0.01	11.9%	17.5%	34.2%	0.03	28.6%	39.7%
	Province 2	18.7	23.5%	0.02	19.9%	27.0%	43.6%	0.03	36.7%	50.4%
	Bagmati Province	23.3	14.2%	0.01	11.7%	16.7%	35.1%	0.06	23.6%	46.5%
	Gandaki Province	8.2	11.3%	0.01	9.0%	13.7%	27.9%	0.04	20.2%	35.6%
	Lumbini Province	18.4	18.8%	0.02	15.1%	22.4%	33.8%	0.04	25.7%	41.8%
	Karnali Province	5.6	20.4%	0.02	16.1%	24.8%	28.5%	0.03	22.1%	34.9%
	Sudurpashchim Province	8.7	19.7%	0.02	16.1%	23.3%	36.8%	0.03	30.4%	43.3%
	Rural	32.7	22.6%	0.01	20.2%	24.9%	38.6%	0.02	34.4%	42.8%
	Urban	67.3	15.0%	0.01	13.5%	16.5%	33.0%	0.02	29.0%	37.1%
Internet	Province 1	17.0	45.2%	0.03	40.0%	50.4%	82.5%	0.03	77.5%	87.6%
	Province 2	18.7	53.3%	0.03	46.8%	59.8%	75.2%	0.02	71.2%	79.3%
	Bagmati Province	23.3	27.6%	0.02	24.3%	31.0%	80.1%	0.02	75.4%	84.7%
	Gandaki Province	8.2	37.8%	0.02	33.7%	42.0%	73.1%	0.04	65.0%	81.3%
	Lumbini Province	18.4	50.5%	0.02	46.0%	55.1%	76.9%	0.03	70.1%	83.6%
	Karnali Province	5.6	74.1%	0.03	69.0%	79.1%	87.6%	0.02	83.4%	91.9%
	Sudurpashchim Province	8.7	74.9%	0.02	71.0%	78.7%	86.2%	0.02	82.2%	90.3%
	Rural	32.7	63.5%	0.01	60.9%	66.1%	83.3%	0.01	80.9%	85.6%
	Urban	67.3	39.3%	0.01	36.7%	41.9%	76.4%	0.02	73.0%	79.9%
Handwashing	Province 1	17.0	23.5%	0.02	18.9%	28.2%	47.0%	0.04	38.8%	55.2%
	Province 2	18.7	37.2%	0.03	31.1%	43.3%	54.3%	0.04	46.8%	61.8%
	Bagmati Province	23.3	23.1%	0.02	19.3%	26.9%	69.4%	0.05	59.3%	79.5%
	Gandaki Province	8.2	38.3%	0.04	30.4%	46.2%	63.0%	0.05	53.6%	72.3%
	Lumbini Province	18.4	51.0%	0.03	44.4%	57.6%	73.3%	0.04	65.2%	81.4%
	Karnali Province	5.6	68.3%	0.03	61.4%	75.1%	81.4%	0.02	76.6%	86.3%
	Sudurpashchim Province	8.7	62.7%	0.03	57.1%	68.3%	78.5%	0.03	71.9%	85.2%
	Rural	32.7	54.1%	0.02	50.9%	57.3%	67.6%	0.02	63.7%	71.5%
	Urban	67.3	30.5%	0.02	27.5%	33.4%	62.5%	0.03	57.1%	67.9%

Source: Calculations based on data from NMICS (2019).

general population. This suggests that the clustering of deprivations of multidimensional poverty and COVID-19 vulnerabilities indeed affect those with an already high deprivation load more heavily in all seven provinces of Nepal.

### 6.3 DISCUSSION OF MPI AND COVID-19

The results in this section show how combining the MPI with information on deprivation patterns at the individual and household level can be used to identify priority populations for social protection and preventive public health interventions. They can also

guide vaccination prioritisation efforts to ensure an equitable roll-out that protects those most vulnerable first. Beyond this, the analysis and results are relevant for the context of the current global COVID-19 pandemic. Construction of the vulnerability-to-disease gradient is based on epidemiologically ascertained indicators that are not necessarily relevant only in the context of this disease. Hence, the results of this analysis can also be used to inform preventative measures that improve overall public health and alleviate vulnerabilities. Considering the overlapping deprivations or vulnerabilities that people face seems key to appropriately focusing on those most vulnerable and at risk of being left behind.



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## CHAPTER 7:

# Conclusion

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This report represents the first update since the launch of Nepal's MPI in 2018 (using NMICS 2014 report data) and provides a fine-grained overview of multidimensional poverty levels and trends in Nepal until the COVID-19 pandemic, using the most recent NMICS 2019 survey data as well as the NMICS 2014 survey.

The findings show that 17.4 percent or almost 5 million of the population of 28.6 million are poor – and this has reduced strongly since the 2014 level of 30.1 percent.<sup>12</sup> This means that in the five-year period 2014-2019, 12.7 percent of the population of Nepal, a total of 3.1 million people, left poverty. Thus, in 2019, Nepal was on track to reach its national target of 11.5 percent incidence of MPI by 2024. Furthermore, the MPI value of 0.074 – meaning that poor people experience 7.4 percent of the deprivations that could be experienced in everyone who was deprived in all indicators – showed a very strong decrease from the 2014 level of 0.133. And among the poor, the intensity of their poverty declined from 44.2 percent to 42.5 percent. So at a national level, the trends were strong and significant. The majority of multidimensional poor (59.8 percent) experience between 33.33-39.99 percent. Nearly one in four of the poor in Nepal, about 24 percent, experience an intensity of poverty above 50 percent of the weighted indicators. So while this could be a chance that 60 percent of the current poor could move out of poverty relatively easily, it is especially important not to leave the poorest, but

rather to continue the pro-poorest trends witnessed between 2014 and 2019.

In this report, minor adjustments were made to five indicators to align the Nepal's MPI with SDGs and with the global MPI, facilitating international comparability. The overall structure of the revised MPI remained the same, and the levels and trends of MPI using the previous definition are transparently documented in Appendix 1, which finds similar strong and pro-poor patterns of reduction between 2014 and 2019, and similar patterns of poverty in 2019. The remainder of this section summarise main findings and actions.

**Reductions of Deprivations experienced by the Poor:** Between 2014 and 2019, all indicators reduced significantly in Nepal at the 99 percent confidence interval, with the greatest absolute reductions in Cooking Fuel (-13.2 p.p.), Sanitation (-13.0 p.p.), and Housing (-12.4 p.p.).

**Children in Poverty:** In 2014, nearly 36 percent of children were multidimensionally poor. By 2019, 22 percent of all the children remained in poverty which implies a strong and positive reduction of 14 percentage points. However, over one in five children is still poor, and children are still the poorest age group. In numbers, this means that 2.2 million children are poor – so roughly 44 percent of all poor people in Nepal is a child, making this a vitally important group. While school attendance figures are strong in most regions, 3.5 percent of people are still poor and live with an out-of-school child.

<sup>12</sup> Following the revised methodology, otherwise it is 28.6 percent

Undernutrition in children aged 0 to 4 years also strongly contributes to national poverty, with nearly one in 10 persons living with a little child who is undernourished. This shows that it is crucial to prioritize families with children, and child nutrition, is of pivotal importance.

**Rural/Urban Divide:** Following a new definition for urban and rural areas, two-thirds of Nepalis live in urban areas and only one third in rural areas according to the 2019 NMICS. More multidimensionally poor people (52.4 percent) live in rural areas. This means that although one of every three Nepalese (32.7%) reside in rural areas, nearly half of the multidimensionally poor live there, so action in rural areas must continue to be a national priority.

**Sectoral Priorities:** In 2019, 16 percent of the population are multidimensionally poor and live in houses with substandard roof, wall or flooring, and the same number cook with dung, wood or charcoal. Over 11.6 percent people are MPI poor and live in households that do not have any member who has completed six years of schooling, while for Assets it's 10.3 percent, and for nutrition, 9.3 percent of the population. Note that less than 1 percent of individuals in Nepal are poor and live in a household deprived in Child Mortality (0.9 percent), that is, in a household where a child under the age of 18 years has died in the five years preceding the survey. In Nepal, the deprivations in Years of Schooling and Nutrition have the largest contribution to overall multidimensional poverty, and this sectoral composition of poverty does not vary between rural and urban areas. This leads to important policy recommendations to scale up efforts to address child undernutrition, lifelong learning, and housing. One-third of the poor people lack an electricity connection but many will suffer from electrical power cuts, a situation that must be addressed in order to sustainably reduce reliance on solid cooking fuels. While these deprivations are visible among the MPI poor, they are also experienced by others in the population who are not multidimensionally poor, sec-

toral efforts will therefore reduce both poverty and vulnerability across Nepal.

**Disability Status:** Nearly 3.2 percent of the population live in a household where one of its members has a disability (someone who reported very high level of difficulty in at least one domain: visual; hearing, walking, or climbing steps; remembering or concentrating; self-care, or in communication). The MPI for these households is slightly higher than the national average, at 0.083, with an incidence (H) of poverty of 18.3 percent, and an intensity (A) of 45.5 percent.

**Provinces:** In 2019, poverty levels were highest in Karnali Province, where 40 percent of people were poor, followed by Sudurpashchim Province. However, in terms of the number of poor persons, of the 5 million MPI poor persons, 1.3 million live in Province 2, followed by nearly one million in Lumbini Province, and over 770,000 in Province 1. Furthermore, Province 2 has the highest intensity, so must be a focus of policy attention in the coming period. When funds are allocated across provinces they must consider, first, the number of poor persons in each province, and, second, the level of intensity in each province. Some countries adjust subnational budgets according to the relative costs of reducing different indicators, but in Nepal, the overall composition of poverty by indicator does not vary greatly, so allocations based on the number of poor and their intensity may suffice.

**Equalizing Provincial trends:** Six of the seven provinces (except Province 1) had a statistically significant reduction in MPI and incidence, and three see a significant reduction in intensity, with all of these reductions at the 99 percent confidence level. There is clearly an important provincial level story to tell in Nepal about its pro-poor poverty eradication between 2014 and 2019. Province 2, which was the second poorest province in 2014, had the largest reduction in both MPI and the incidence of multidimensional poverty, nearly halving its MPI

and incidence in the period. Notably, its total population remains largely the same between the two years, so the reductions appear to be the result of poverty eradication measures rather than migration. Province 2 also has the largest population share of the provinces in the initial year, so its poverty reduction – in which 800,000 people moved out of poverty – is a remarkable feat. The next fastest MPI reduction was seen in Karnali Province (the poorest province in 2014) followed by Lumbini Province. With 1.3 million people remaining in poverty in 2019, these positive trends must be continued strongly in the next period.

**Progress by Indicators across Provinces:** No province saw significant reductions in all 10 indicators, although this is partly due to large standard errors. Province 2 had significant reductions in all indicators except Child Mortality, Water, and Assets. Of the seven indicators, it had the fastest reductions among the provinces in Years of Schooling (-1.5 p.p.), School Attendance (-0.9 p.p.), Nutrition (-1.2 p.p.), Sanitation (-3.1 p.p.), Electricity (-1.1 p.p.), Cooking Fuel (-2.6 p.p.), and Housing (-2.3 p.p.). Bagmati Province led the way in significantly reducing deprivations among the poor and deprived in Child Mortality (-0.1 p.p.) and Assets (-0.3 p.p.), and while Karnali Province led in significantly reducing Water deprivations among the poor (-1.7 p.p.).

Other provinces can learn from these successes, so it would be very beneficial if the success of Province 2 and Karnali Province at least is further studied, and lessons learned are published.

**Sectoral Priorities by Province:** This section offers some policy priorities within each province. However, as Figure 7 showed, it is striking that, broadly speaking, the policy actions required at provincial levels do not vary as much as they do in other countries. The patterns are relatively similar, in that deprivations in Years of Schooling and Child Nutrition contribute the most to MPI across all provinces, followed by Housing and Cooking Fuel.

Province 2 is distinctive in having a higher contribution from school attendance, while Karnali has the lowest relative contribution from years of schooling but the highest from child undernutrition and electricity deprivations. For convenience, particularities of each province are shared below.

In 2019, **Karnali Province** has the highest levels of multidimensional poverty where the MPI is 0.169. Four out of 10 individuals are multidimensional poor, as the incidence of poverty is nearly 40 percent. The sectoral priorities in **Karnali Province** are to improve child nutrition and supporting living standards: clean energy, high quality housing, electricity, and assets. Improvements in these five indicators alone could reduce MPI by 75 percent.

**Sudurpashchim Province** and **Province 2** rank second and third in terms of multidimensional poverty: approximately 1 in 4 people are poor.

In **Sudurpashchim Province**, half of the MPI value is due to deprivations in child nutrition, housing, solid cooking fuel and assets. So investments in these indicators, supported by investments in stable electricity supply and years of schooling, will lead to the fastest reduction of MPI.

In **Province 2**, the top priorities are improving years of schooling, through lifelong learning, and improving child school attendance and child nutrition. This is vital as deprivations in School attendance are high relative to other provinces. An integrated programme of nutrition and pre-primary education could be considered. Efforts to continue the very strong reductions in Sanitation should also continue.

In **Lumbini Province**, the next poorest province, nearly half of the MPI value is due to deprivations in years of schooling and child nutrition; these, then, are clear priorities, as is the provision of stable electricity and clean cooking fuel, and good quality housing materials.

**Province 1** has the third lowest MPI of all provinces, at 0.066. This is below the national MPI of 0.074. The incidence of MPI is 15.8 percent and this could be reduced by investments in years of schooling, and nutrition – which together create nearly half of the value of MPI, followed by improvements in housing materials, and programmes to support the use of clean cooking fuel, or good ventilation systems. Province 1 reduced MPI strongly, with particularly strong reductions in sanitation deprivations.

The heart of Nepal, where poverty is lowest, are the provinces of **Gandaki and Bagmati**, where 9.6 percent and 7 percent of their respective populations live in poverty. The profiles of poverty, hence the actions required to reduce poverty, are similar in both provinces, with investments in child nutrition, years of schooling being the most critical, as they constitute half of the value of MPI. These should be complemented by investments to improve housing materials, advocate clean cooking fuel and stable energy sources, adequate sanitation, and assets.

These actions should not be difficult, considering that **Bagmati Province**, which has the lowest MPI of all provinces in 2019, halved its MPI between 2014 and 2019 from 0.061 to 0.028 (reducing the incidence from 14.4 percent to 7 percent). Reduc-

tions in that period were driven by reductions in cooking fuel. **Gandaki Province** had a larger absolute decrease in MPI from 0.078 to 0.035 in the same period, with the incidence of MPI falling from 18.5 percent in 2014 to 9.6 percent in 2019 pre-dates the onset of the COVID-19 pandemic. As a result, it is not able to reflect the possible implication and consequences of the pandemic. However, the analysis of COVID-19 related deprivations (of as well as additional to the deprivations included in the MPI) show that a majority of Nepal's population is vulnerable to COVID-19 implications, as they are deprived in at least one of the COVID-19 related MPI deprivations (Nutrition, Water, Cooking Fuel). Almost five million (17 percent) experience increased vulnerability, and around 375 are highly considered to be highly vulnerable. Furthermore, considering additional COVID-19 related deprivation (overcrowding, internet access, handwashing facilities), we find that MPI poor people are more affected by these, making them particularly exposed and susceptible to COVID-19 and its consequences. Thus, on top of their experiences of overlapping deprivations which already puts them at a disadvantage, the situation of the poor may be exacerbated even further which accentuates the necessity to effective and targeted poverty policy.



Photo: UND Nepal

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# Annex 1: Methodology

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The analysis is based on the Alkire-Foster methodology. This chapter presents this methodology, a description of the MPI and its properties, along with the measurement design. It has three sections:

1. A Step-by-Step Application of the Alkire-Foster Method
2. Alkire-Foster Method – Technical Details
3. Measurement Design

## 2.1 A STEP-BY-STEP APPLICATION OF THE ALKIRE-FOSTER METHOD

Nepal's multidimensional poverty measure uses the Alkire-Foster method to count and identify the multidimensionally poor population of Nepal and its provinces. The Alkire-Foster method can be intuitively introduced in 12 steps. The first six steps are common to many multidimensional poverty measures; the remainder are specific to the Alkire-Foster method. This section introduces the methodology for non-technical audiences and is followed by a more comprehensive walk-through of the method for technical readers.<sup>13</sup>

**Step 1:** Choose Unit of Analysis. The unit of analysis is most commonly an individual or household but could also be a community, school, clinic, firm, district, or other unit.

**Step 2:** Choose Dimensions. The choice of dimensions is important but less haphazard than is often assumed. In practice, most researchers implicitly draw on five means of selection, either alone or in combination:

- Ongoing deliberative participatory exercises that elicit the values and perspectives of stakeholders. A variation of this method is to use survey data on people's perceived necessities.
- A list that has achieved a degree of legitimacy through public consensus, such as the Universal Declaration of Human Rights, the MDGs, or similar lists at national and local levels.
- Implicit or explicit assumptions about what people do value or should value. At times these assumptions are the informed guesses of the researcher; in other situations, they are drawn from convention, social or psychological theory, or philosophy.
- Convenience or a convention that is taken to be authoritative or used because these are the only data available that have the required characteristics.
- Empirical evidence regarding people's values, data on consumer preferences and behaviors, or studies of what values are most conducive to people's mental health or social benefit.

Clearly these processes overlap and are often used in tandem empirically; for example, nearly all exercises need to consider data availability or data issues, and often participation, or at least consensus, is required to give the dimensions public legitimacy.

<sup>13</sup> This section has been adapted from the OPHI research, "How to Apply the Alkire-Foster Method", available here: <https://ophi.org.uk/research/multidimensional-poverty/how-to-apply-alkire-foster/>.

**Step 3:** Choose Indicators. Indicators are chosen for each dimension on the principles of accuracy (using as many indicators as necessary so that analysis can properly guide policy) and parsimony (using as few indicators as possible to ensure ease of analysis for policy purposes and transparency). Statistical properties are often relevant—for example, when possible and reasonable, it is best to choose indicators that are not highly correlated.

**Step 4:** Set Deprivation Cut-off. A deprivation cut-off is set for each indicator. This step establishes the first cut-off in the methodology. Every person can then be identified as deprived or non-deprived with respect to each indicator. For example, if the indicator is Schooling ('How many years of schooling have you completed?'), '6 years or more' might identify non-deprivation, while '1-5 years' might identify deprivation in the indicator. Poverty thresholds can be tested for robustness, or multiple sets of thresholds can be used to clarify explicitly different categories of the poor (such as deprived and extremely deprived).

**Step 5:** Apply Deprivation Cut-offs. This step replaces the person's achievement with his or her status with respect to each cut-off; for example, if in a measure with the dimension of health, where the indicators are 'access to health clinic' and 'self-reported morbidity body mass index,' people are identified as being deprived or non-deprived for each indicator. The process is repeated for all indicators for all other dimensions.

**Step 6:** Set Weights. Identify the weighting scheme to be used by firstly choosing the relative weights of the dimensions (for example, in the global MPI, the three dimensions – health, education, and living standards – are all equally weighted as constituting 1/3 of the measure), and then dividing up the weight of that dimension among its indicators. These weighting decisions should be justified by normative or empirical arguments.

**Step 7:** Count the Number of Deprivations for Each Person. In this step, the number of deprivations (i.e., the number of indicators the person is deprived in) is counted up to create a summary score for each person. It is important when calculating this sum that the weight of each indicator is taken into account, so each deprivation reflects its relative importance to the overall deprivation score.

**Step 8:** Set the Poverty Cut-off. Assuming equal weights for simplicity, set a second identification cut-off,  $k$ , which gives the number of indicators in which a person must be deprived in order to be considered multidimensionally poor. In practice, it may be useful to calculate the measure for several values of  $k$ . Robustness checks can be performed across all values of  $k$ .

**Step 9:** Apply the Poverty Cut-off  $k$  to Obtain the Set of Poor Persons and Censor All Non-poor Data. The focus is now on the profile of the poor and the dimensions in which they are deprived. All information on the non-poor is replaced with zeros (0) in the deprivation matrix.

**Step 10:** Calculate the Incidence,  $H$  – also called the poverty rate or headcount ratio. Divide the number of poor people by the total number of people. The multidimensional headcount is a useful measure, but it does not increase if poor people become more deprived, nor can it be broken down by dimension to analyse how poverty differs among groups. For that reason, we need a different set of measures, described next.

**Step 11:** Calculate the Intensity,  $A$ . That is the average share of deprivations a poor person suffers. It is calculated by adding up the proportion of total deprivations each poor person suffers (deprivation score) and dividing by the number of poor people.

**Step 12:** Calculate the MPI. If the data are binary or ordinal, multidimensional poverty is measured by the adjusted headcount,  $M_0$  or MPI which is calcu-

lated as H times A. Headcount poverty is multiplied by the ‘average’ number of dimensions in which all poor people are deprived to reflect the breadth of deprivations.

## 2.2 ALKIRE-FOSTER METHOD - TECHNICAL DETAILS

The global MPI, which was developed by Alkire and Santos (2010, 2013) in collaboration with the UNDP, and first appeared in the 2010 *Human Development Report*, is one particular adaptation of the adjusted headcount ratio ( $M_0$  or MPI) proposed in Alkire and Foster (2019) and elaborated in Alkire, Foster, Seth, Santos, Roche, and Ballon (2015). This section outlines the methodology and relevant properties that are used in the subsequent sections to understand the change in Nepal’s multidimensional poverty.

Sabina Alkire and James Foster created a new method for measuring multidimensional poverty. It identifies who is poor by considering the intensity of deprivations they suffer, and includes an aggregation method. Mathematically, the MPI combines two aspects of poverty:

$$\text{MPI} = \mathbf{H} \times \mathbf{A}$$

- 1) Incidence ~ the percentage of people who are multidimensionally poor, or the headcount: H
- 2) Intensity of people’s poverty ~ the average percentage of dimensions in which poor people are deprived: A

### 2.2.1 The Multidimensional Poverty Index: An Adjusted Headcount Ratio

Suppose at a particular point in time, there are  $n$  people in Nepal and their wellbeing is evaluated by  $d$  indicators.<sup>14</sup> 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  $\mathbf{X}$ , 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  $\sum_{j=1}^d w_j = 1$ .

For a single-dimensional analysis, people are identified as poor as long as they fail to meet a threshold called the ‘poverty line’, and as 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  $\mathbf{z}$ . 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.<sup>15</sup> The deprivation scores of all  $n$  persons are summarized by vector  $\mathbf{c}$ .

<sup>14</sup> The meaning of the terms ‘dimension’ and ‘indicator’ are slightly different in Alkire and Foster (2019) and in Alkire and Santos (2010). In Alkire and Foster (2019), no distinction is made between these two terms. In Alkire and Santos (2010), however, the term ‘dimension’ refers to a pillar of wellbeing and a dimension may consist of several indicators.

<sup>15</sup> For  $k=100\%$ , the identification approach is referred to as the *intersection approach*; for  $0 < k \leq \min\{w_1, \dots, w_d\}$ , it is referred to as the *union approach* (Atkinson, 2003); and for  $\min\{w_1, \dots, w_d\} < k < 1$ , it is referred to as the *dual cut-off approach* by Alkire and Foster, or more generally as the *intermediate approach*.

After identifying the set of poor and their deprivation scores, we obtain the adjusted headcount ratio ( $M_0$ ). 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.<sup>16</sup> This entitles us to obtain the censored deprivation score vector  $c(k)$  from  $c$ , such that  $c_i(k)=c_i$  if  $c_i \geq k$  and  $c_i(k)=0$ , otherwise. The  $M_0$  is equal to the average of the censored deprivation scores:

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

## 2.2.2 Properties of the Multidimensional Poverty Index

We now outline some of the features of  $M_0$  that are useful for policy analysis. The first is that  $M_0$  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:

$$M_0 = MPI = \frac{q}{n} \times \frac{1}{q} \sum_{i=1}^n c_i(k) = H \times A;$$

where  $q$  is the number of poor.<sup>17</sup> This feature has an interesting policy implication for inter-temporal analysis. A certain reduction in  $M_0$  may occur either by reducing  $H$  or by reducing  $A$ . This difference cannot be understood by merely looking at  $M_0$ . If a reduction in  $M_0$  occurs by merely reducing the number of people who are marginally poor, then  $H$  decreases but  $A$  may not. On the other hand, if a reduction in  $M_0$  occurs by reducing the deprivation of the poorest of the poor, then  $A$  decreases, but  $H$  may not.<sup>18</sup>

<sup>16</sup> In the multidimensional context, there are two types of focus axioms. One is deprivation focus, which requires that any increase in already non-deprived achievements should not affect a poverty measure. The other is 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 (2019).

<sup>17</sup> 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.

<sup>18</sup> Apablaza and Yalonetzky (2019) have shown that the change in  $M_0$  can be expressed as  $\Delta M_0 = \Delta H + \Delta A + \Delta H \times \Delta A$ , where  $\Delta x$  is referred to as change in  $x$ .

<sup>19</sup> See Foster, Greer and Thorbecke (1984) for a discussion of this property.

The second feature of  $M_0$  is that if the entire population is divided into  $m$  mutually exclusive and collectively exhaustive groups, then the overall  $M_0$  can be expressed as a weighted average of the  $M_0$  values of  $m$  subgroups, where 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  $M_0(X^l)$ , respectively. Then the overall  $M_0$  can be expressed as:

$$M_0 = MPI = \sum_{\ell=1}^m \frac{n^\ell}{n} M_0(X^\ell).$$

This feature is also known as *subgroup decomposability* and is useful for understanding the contribution of different subgroups to overall poverty levels.<sup>19</sup> Note that the contribution of a subgroup to the overall poverty depends both on the poverty level of that subgroup and that subgroup's population share.

The third feature of  $M_0$  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  $M_0$  can be expressed as:

$$M_0 = MPI = \sum_{j=1}^d w_j h_j = \sum_{j=1}^d w_j \left[ \frac{1}{n} \sum_{i=1}^n g_{ij}(k) \right];$$

Where  $g_{ij}(k)=g_{ij}$  if  $c_i \geq k$  and  $g_{ij}(k)=0$ , otherwise. Similar relationships can be established between  $A$  and the deprivations among the poor. Let us denote the proportion of poor people deprived in indicator  $j$  by  $h_j^p$ . Then, dividing both sides of the above relationship by  $H$ , we find:

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

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  $M_o$  by  $\phi_j$ . Then, the contribution of indicator  $j$  to  $M_o$  is:

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

## 2.3 MEASUREMENT DESIGN

Nepal's national MPI utilizes a set of dimensions, indicators, and cut-offs that reflect its priorities as expressed in the national plans, and that can be implemented using the MICS (2019) dataset. This section describes these parameter choices.

### 2.3.1 Unit of Identification and Analysis

The unit of identification refers to the entity that is identified as poor or non-poor – usually the individual or the household. In the case of Nepal's MPI, the unit of identification is the household: the household members' information is considered together, and all household members receive the same deprivation score. This acknowledges intra-household caring and sharing – for example, educated household members reading for each other, and multiple household members being affected by someone's severe health conditions. In addition, it allows the measure to include indicators that are specific to certain age groups (as, for instance, school attendance). The unit of analysis, meaning how the results are reported and analysed, is the individual. This means that, for instance, the headcount ratio is the percentage of people who are identified as poor, rather than the percentage of households that are identified as poor.

### 2.3.2 Dimensions, Indicators and Deprivation Cut-offs

As described in Chapter 1, Nepal's MPI builds upon the global MPI, and retains the same three dimensions. In total, 10 indicators are used in this national index; all of them are the same as the international MPI. The selection of the dimensions, as well as the particular indicators, deprivation cut-offs, and weights were based in a thorough discussion with international organizations and experts in the field.

### 2.3.3 Weights

The weights used in this report assign one third of the total weight to each of the three dimensions of education, health and living standards.

### 2.3.4 Poverty Cut-off

Thresholds are used to decide whether a person is multidimensionally poor, using the Alkire and Foster method. It involves the following steps: (a) a indicator-specific 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) - where a person is considered to be poor if the weighted sum of their deprivations meets or exceeds the poverty cut-off. In line with the global MPI, in Nepal's MPI the poverty cut-off is chosen to be at one-third of all weighted indicators; that is, a person who is deprived in  $k \geq 33.33\%$  of the weighted indicators is considered multidimensionally poor.

# Statistical Appendix I.

## Nepal MPI using Previous Methodology.

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**TABLE 1.1:** Nepal's Previous MPI – Indicators, Deprivations Cut-offs, and Weights

Dimensions of Poverty	Indicator	Household is deprived if...	Weight
Health	Nutrition	Any child for whom there is nutritional information is undernourished (underweight) in terms of weight for age (a)	1/6
	Child Mortality	Any child has died in the family in the 5-year period preceding the survey	1/6
Education	Years of Schooling	No household member aged 10 years or older has completed 5 years of schooling	1/6
	School Attendance	Any school-aged child is not attending school up to the age at which he /she would complete class 8	1/6
Living Standard	Cooking Fuel	The household cooks with dung, wood, or charcoal	1/18
	Improved Sanitation	The household's sanitation facility is not improved (according to MDG guidelines) or it is improved but shared with other households (b)	1/18
	Improved drinking water	The household does not have access to improved drinking water (according to MDG guidelines) or safe drinking water is at least a 30-minute walk from home, roundtrip (c)	1/18
	Electricity	The household has no electricity	1/18
	Housing	The household has inadequate housing materials in any of the three components: floor and roof.	1/18
	Assets ownership	The household does not own more than one of these assets: radio, TV, telephone, bicycle, motorbike, or refrigerator, and does not own a car or truck	1/18

Source: TABLE 2.1 Nepal's National MPI in National Planning Commission (2018).

Notes:

- a. Children are considered malnourished if their z-score of weight-for-age is below minus two standard deviations from the median of the reference population. Nepal's MICS data only include child nutrition; the DHS data include both child and adult nutritional data.
- b. A household is considered to have access to improved sanitation if it has some type of flush toilet or latrine, or ventilated improved pit or composting toilet, provided that they are not shared.
- c. A household has access to clean drinking water if the water source is any of the following types: piped water, public tap, borehole or pump, protected well, protected spring or rainwater, and it is within 30 minutes' walk (roundtrip).

**TABLE A1.1:** Uncensored Headcount Ratios 2019, Previous Methodology

Dimension	Indicator	Percentage of Population Deprived
Health	Child Mortality	9.0
	Nutrition	12.2
Education	School Attendance	4.9
	Years of Schooling	10.0
Living Standards	Electricity	10.2
	Water	7.6
	Sanitation	21.3
	Housing	51.6
	Cooking Fuel	56.8
	Assets	20.8

Source: Calculations based on data from NMICS (2019).

**TABLE A1.2:** Incidence, Intensity and Multidimensional Poverty Index (MPI) 2019, Previous Methodology

Poverty Cut-off (k)	Index	Value	Confidence Interval (95%)	
			0.055	0.068
k value=33.33%	MPI	0.062	0.055	0.068
	Incidence (H, %)	14.7	13.3	16.2
	Intensity (A, %)	41.9	41.1	42.7

Source: Calculations based on data from NMICS (2019).

**TABLE A1.3:** Censored Headcount Ratios 2019, Previous Methodology

Dimension	Indicator	Percentage of Population MPI Poor and Deprived
Health	Child Mortality	4.3
	Nutrition	6.4
Education	School Attendance	3.4
	Years of Schooling	6.7
Living Standards	Electricity	4.9
	Water	2.1
	Sanitation	5.6
	Housing	13.4
	Cooking Fuel	13.7
	Assets	8.9

Source: Calculations based on data from NMICS (2019).

**TABLE A1.4:** Contribution of each Indicator to National, Urban and Rural MPI 2019, Previous Methodology

Indicator	Percentage Contribution of each Indicator to MPI		
	Urban	Rural	National
Child Mortality	12.4%	10.9%	11.6%
Nutrition	18.4%	16.2%	17.2%
School Attendance	9.9%	8.6%	9.2%
Years of Schooling	17.1%	19.1%	18.2%
Electricity	3.7%	5.1%	4.4%
Water	1.9%	1.9%	1.9%
Sanitation	5.9%	4.3%	5.0%
Housing	11.7%	12.4%	12.1%
Cooking Fuel	11.9%	12.7%	12.3%
Assets	7.0%	8.8%	8.0%

Source: Calculations based on data from NMICS (2019).

**TABLE A1.5:** Multidimensional Poverty by Rural/Urban Areas 2019, Previous Methodology

Index	Urban				Rural			
	Population Share (%)	Value	Confidence Interval (95%)	Population Share (%)	Value	Confidence Interval (95%)		
MPI		0.044	0.037 0.051		0.098	0.086 0.110		
Incidence (H, %)	67.3	10.6	8.9 12.3	32.7	23.3	20.8 25.8		
Intensity (A, %)		41.6	40.4 42.8		42.2	41.1 43.2		

Source: Calculations based on data from NMICS (2019).

**TABLE A1.6:** Multidimensional Poverty by Sub-National Region 2019, Previous Methodology

Sub-National Region	Population Share (%)	MPI		Incidence (H, %)		Intensity (A, %)		Poor	
		Value	Confidence Interval (95%)	Value	Confidence Interval (95%)	Value	Confidence Interval (95%)	Number (thousand)	
Province 1	16.9	0.053	0.038 0.068	13.0	9.4 16.5	40.8	39.2 42.4	629	
Province 2	18.8	0.095	0.074 0.116	21.6	17.1 26.2	43.9	42.0 45.7	1,167	
Bagmati Province	23.2	0.020	0.013 0.028	5.0	3.3 6.8	40.4	38.9 41.9	334	
Gandaki Province	8.2	0.025	0.019 0.031	6.7	5.1 8.3	37.1	36.0 38.2	157	
Lumbini Province	18.4	0.063	0.045 0.080	14.9	11.3 18.4	42.1	39.7 44.5	781	
Karnali Province	5.6	0.151	0.123 0.179	35.6	29.5 41.6	42.4	41.0 43.9	575	
Sudurpashchim Province	8.7	0.092	0.072 0.112	22.7	17.9 27.4	40.6	39.3 41.8	567	

Source: Calculations based on data from NMICS (2019).

**TABLE A1.7:** Multidimensional Poverty by Age Groups 2019, Previous Methodology

Age-group	Population Share (%)	MPI			Incidence (H, %)			Intensity (A, %)			Poor Number (thousand)
		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		
Age 0-17	35.2	0.078	0.070	0.087	18.2	16.4	20.0	43.1	42.1	44.0	1,833
Age 18+	64.7	0.053	0.047	0.058	12.8	11.6	14.1	41.0	40.3	41.8	2,377

Source: Calculations based on data from NMICS (2019).

**TABLE A1.8:** Multidimensional Poverty by Sex 2019, Previous Methodology

Gender	Population Share (%)	MPI			Incidence (H, %)			Intensity (A, %)			Poor Number (thousand)
		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		
Male	47.3	0.060	0.053	0.067	14.3	12.9	15.8	42.0	41.2	42.8	1,941
Female	52.7	0.063	0.056	0.070	15.1	13.6	16.5	41.9	41.0	42.7	2,269

Source: Calculations based on data from NMICS (2019).

**TABLE A1.9:** Multidimensional Poverty by Disability status of household members 2019, Previous Methodology

MPI among households in which a person experiences disability	Population Share (%)	MPI			Incidence (H, %)			Intensity (A, %)			Poor Number (thousand)
		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		
With a member with disability	3.2	0.086	0.063	0.109	19.6	14.4	24.9	43.8	41.3	46.3	178
Without a member with disability	96.8	0.061	0.054	0.067	14.6	13.1	16.0	41.8	41.0	42.7	4,032

Source: Calculations based on data from NMICS (2019). Refers to population living in households with a member (aged 15-49) is experiencing at least one of the following difficulties: difficulty seeing, even if wearing glasses or contact lenses; difficulty hearing, even if using a hearing aid; difficulty walking or climbing steps; difficulty remembering or concentrating; difficulty with self-care, such as washing all over or dressing; difficulty communicating.

# Statistical Appendix II: Changes over time 2014- 2019: Previous Methodology

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**TABLE A-1:** Changes in MPI, H, and A at the National Level 2014-19, Previous Methodology

Index	Poverty across time		Changes			Population (millions)	
	2014	2019	Absolute p.p.)	Relative (%)	significance	Year 1	Year 2
MPI	0.127	0.062	-0.065	-51.3%	***	26.91	28.61
H	28.6%	14.7%	-13.9	-48.6%	***	Poor people (millions)	
A	44.2%	41.9%	-2.3	-5.2%	***	7.70	4.21

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$ .

**TABLE A-2:** Changes in Uncensored Headcount Ratios, National Level 2014-19, Previous Methodology

Dimension	Indicator	Uncensored Headcount Ratios (%)		Changes		
		2014	2019	Absolute (p.p.)	Relative (%)	significance
Education	Years of Schooling	15.7	10.0	-5.7	-36.4%	***
	School Attendance	7.9	4.9	-3.0	-38.0%	***
Health	Nutrition	15.9	12.2	-3.6	-22.9%	***
	Child Mortality	13.9	9.0	-4.9	-35.4%	***
Living Standards	Sanitation	39.6	21.3	-18.3	-46.2%	***
	Water	11.2	7.6	-3.6	-32.3%	***
	Electricity	15.7	10.2	-5.5	-35.2%	***
	Cooking Fuel	74.5	56.8	-17.7	-23.8%	***
	Housing	67.3	51.6	-15.6	-23.3%	***
	Assets	21.0	20.8	-0.2	-0.7%	

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$ .

**TABLE A-3:** Changes in Censored Headcount Ratios, National Level 2014-19, Previous Methodology

Dimension	Indicator	Censored Headcount Ratios (%)		Changes		
		2014	2019	Absolute (p.p.)	Relative (%)	significance
Education	Years of Schooling	13.5	6.7	-6.7	-50.1%	***
	School Attendance	7.3	3.4	-3.9	-53.3%	***
Health	Nutrition	12.1	6.4	-5.7	-47.1%	***
	Child Mortality	9.5	4.3	-5.2	-54.5%	***
	Sanitation	18.7	5.6	-13.1	-70.0%	***
	Water	5.2	2.1	-3.1	-58.8%	***
Living Standards	Electricity	9.9	4.9	-5.0	-50.3%	***
	Cooking Fuel	28.2	13.7	-14.5	-51.5%	***
	Housing	27.2	13.4	-13.8	-50.6%	***
	Assets	11.9	8.9	-3.1	-25.7%	***

Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$ .

**TABLE A-4:** Contribution of Each Indicator to National MPI 2014 & 2019, Previous Methodology

Dimension	Indicator	Percentage Contribution to MPI (%)	
		2014	2019
Education	Years of Schooling	17.7	18.2
	School Attendance	9.6	9.2
Health	Nutrition	15.9	17.2
	Child Mortality	12.5	11.6
	Sanitation	8.2	5.0
	Water	2.3	1.9
Living Standards	Electricity	4.3	4.4
	Cooking Fuel	12.4	12.3
	Housing	11.9	12.1
	Assets	5.2	8.0

**TABLE A-5:** Changes in MPI, H, and A at the National Level 2014-19, Previous Methodology

Province	MPI		Changes <sup>20</sup>			Total Population (thousands)	
	2014	2019	Absolute (p.p.)	Relative (%)		2014	2019
Province 1	0.085	0.053	-0.032	-37.7%	**	4,448	4,848
Province 2	0.217	0.095	-0.122	-56.3%	***	5,553	5,391
Bagmati Province	0.051	0.020	-0.031	-60.3%	***	5,243	6,651
Gandaki Province	0.061	0.025	-0.036	-59.2%	***	2,553	2,347
Lumbini Province	0.133	0.063	-0.070	-52.8%	***	4,835	5,258
Karnali Province	0.230	0.151	-0.079	-34.3%	***	1,586	1,616
Sudurpashchim Province	0.146	0.092	-0.054	-37.0%	***	2,688	2,498
Province	H (%)		Changes			Population Share	
	2014	2019	Absolute (p.p.)	Relative (%)		2014	2019
Province 1	19.7	13.0	-6.7	-34.1%	**	16.5%	16.9%
Province 2	47.9	21.6	-26.2	-54.8%	***	20.6%	18.8%
Bagmati Province	12.2	5.0	-7.2	-58.9%	***	19.5%	23.2%
Gandaki Province	14.2	6.7	-7.5	-52.9%	***	9.5%	8.2%
Lumbini Province	29.9	14.9	-15.1	-50.3%	***	18.0%	18.4%
Karnali Province	51.2	35.6	-15.6	-30.6%	***	5.9%	5.6%
Sudurpashchim Province	33.6	22.7	-10.9	-32.4%	***	10.0%	8.7%
Province	A (%)		Changes			Number of Poor (thousands)	
	2014	2019	Absolute (p.p.)	Relative (%)		2014	2019
Province 1	43.2	40.8	-2.4	-5.6%	*	875	629
Province 2	45.3	43.9	-1.5	-3.2%		2,659	1,167
Bagmati Province	41.9	40.4	-1.4	-3.4%		642	334
Gandaki Province	42.9	37.2	-5.7	-13.3%	***	362	157
Lumbini Province	44.3	42.1	-2.2	-5.1%		1,447	781
Karnali Province	44.9	42.4	-2.4	-5.4%	**	812	575
Sudurpashchim Province	43.5	40.6	-2.9	-6.8%	***	902	567

<sup>20</sup> Note: \*\*\* statistically significant at  $\alpha=0.01$ , \*\* statistically significant at  $\alpha=0.05$ , \* statistically significant at  $\alpha=0.10$ .

**TABLE A-6:** Changes in Censored Headcount Ratios by Province 2014-19, Previous Methodology

Province	Absolute Changes (p.p.)									
	Years of Schooling	School Attendance	Nutrition	Child Mortality	Sanitation	Water	Electricity	Cooking Fuel	Housing	Assets
Province 1	-4.1**	-1.3	-2.6**	-3.2***	-9.6***	-0.6	-0.8	-7.1**	-7.3**	0.8
Province 2	-13.3***	-9.8***	-13.3***	-5.1***	-30.3***	-0.1	-11.0***	-27.6***	-24.7***	-1.4
Bagmati	-4.6***	-0.6	-2.3***	-2.0**	-4.3***	-2.4**	-2.0	-7.2***	-7.4***	-3.8**
Gandaki	-3.4**	-0.7	-4.7***	-2.3*	-2.0**	-2.5**	-4.9**	-8.0***	-8.0***	-5.7**
Lumbini	-6.2***	-3.2*	-5.4***	-8.0***	-15.0***	-2.7**	-6.1***	-15.8***	-14.7***	-3.3*
Karnali	-7.7***	-4.3***	-2.3	-9.6***	-6.9**	-17.3***	-6.8	-15.9***	-16.6***	-6.7
Sudurpashchim	-3.1***	-4.5***	-2.2	-8.3***	-8.6***	-6.8***	-0.3	-12.0***	-11.2***	-3.8

Province	Relative Changes (%)									
	Years of Schooling	School Attendance	Nutrition	Child Mortality	Sanitation	Water	Electricity	Cooking Fuel	Housing	Assets
Province 1	-37.6**	-31.4	-38.6**	-48.0***	-68.3***	-24.3	-13.7	-36.9**	-38.1**	9.7
Province 2	-52.0***	-53.6***	-58.6***	-49.8***	-70.2***	-9.9	-82.1***	-58.1***	-55.3***	-14.7
Bagmati	-60.9***	-62.1	-62.3***	-56.5**	-68.4***	-61.7**	-60.3	-61.2***	-63.9***	-47.1**
Gandaki	-46.4**	-51.1	-71.8***	-57.1*	-45.0**	-71.2**	-92.9**	-58.4***	-58.0***	-55.5**
Lumbini	-49.2***	-46.1*	-42.1***	-61.1***	-76.6***	-63.6**	-56.3***	-54.0***	-53.2***	-31.5*
Karnali	-45.3***	-56.1***	-11.0	-44.1***	-48.6**	-65.7***	-21.6	-31.2***	-32.6***	-17.8
Sudurpashchim	-33.8***	-56.5***	-16.0	-53.1***	-59.4***	-63.0***	-2.8	-35.8***	-33.9***	-20.0

**TABLE A-7:** Changes in MPI, H, and A for Age Groups 2014-19, Previous Methodology

Age group	MPI		Change 2014 - 2019			Total Population (thousands)	
	2014	2019	Absolute	Relative	significance	2014	2019
Age 0-17	0.154	0.078	-0.076	-49.3%	***	10.8	10.1
Age 18+	0.108	0.053	-0.055	-51.2%	***	16.1	18.5
Age group	H		Change 2014 - 2019			Population Share	
	2014	2019	Absolute	Relative	significance	2014	2019
Age 0-17	34.0	18.2	-15.8	-46.5%	***	40.2	35.2
Age 18+	25.0	12.8	-12.2	-48.7%	***	59.8	64.7
Age group	A		Change 2014 - 2019			Number of Poor (thousands)	
	2014	2019	Absolute	Relative	significance	2014	2019
Age 0-17	45.5	43.1	-2.4	-5.3%	***	3,676.6	1,833.1
Age 18+	43.1	41.0	-2.1	-4.8%	***	4,022.8	2,376.9





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