Sri Lanka's **Multidimensional Poverty Index 2019** **Results:** National and Child Analyses

OPHI
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DCS

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Acknowledgement

This report is the product of a collective effort of the Department of Census and Statistics (DCS), the United Nations Children's Fund (UNICEF) Sri Lanka and the Oxford Poverty & Human Development Initiative (OPHI) at the University of Oxford.

Our special thanks go to the technical team of the DCS, whose technical expertise were critical to the discussions and the analysis of national Multidimensional Poverty Index (national MPI) and child Multidimensional Poverty Index (child MPI) for Sri Lanka. Overall guidance provided by the Director General P.M.P.Anura Kumara, guidance given by the Additional Director General (Statistics) K.M.D.S.D.Karunaratne, with the statistics staff led by Dr D. Dilshanie Deepawansa, Deputy Director of the Sample Surveys Division of DCS under the supervision of K.A.S.Kodikara, Director Sample Surveys Division are greatly appreciated. We are thankful to all representatives from line ministries and the subject matter experts who participated in the consultation process and provided valuable comments to make the national and child MPIs relevant to Sri Lanka.

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Substantive technical and policy support and training was provided by the staff of the Oxford Poverty & Human Development Initiative (OPHI) at the University of Oxford, including Professor Dr Sabina Alkire (Director), Dr Christian Oldiges, and a team comprising Dr Juliana Yael Milovich, Dr Mónica Pinilla, Alexandra Fortacz, and Dr Putu Natih with communications support from Ross Jennings and Maya Evans, and administrative support from Dr Aparna John and Irini Hatzimichali.

Foreword

This report presents the official national Multidimensional Poverty Index (national MPI) and child Multidimensional Poverty Index (child MPI) complementing the monetary poverty measures published by the Department of Census and Statistics (DCS) in Sri Lanka. These indexes cover the different dimensions of nonmonetary deprivations experienced by poor people and children at the same time. The report provides a comprehensive picture of poverty for evidence-based policy decisions to achieve the Sustainable Development Goal 1, Target 1.2, Indicator 1.2.2 "End poverty in all its forms everywhere" as per the national definition with the concept of the "no one left behind" principle.

The DCS has compiled national MPI and child MPI as official statistics, for the first time in history for the year 2019 using the data from Household Income and Expenditure Survey 2019 (HIES 2019). This report is an outcome of the collaborative exercise done by the DCS, the Oxford Poverty & Human Development Initiative (OPHI) in the University of Oxford and the United Nations Children's Fund (UNICEF) Country Office in Sri Lanka.

Sri Lanka's national MPI is the first MPI in the world to directly and fully link the individual measure of child poverty with national poverty, also known as the 'drawer approach'. The national MPI in Sri Lanka has 10 indicators grouped into three dimensions: Education, Health and Standard of Living. The individual and pioneering child MPI for children aged 0–4 includes the same indicators as the national MPI and adds a fourth dimension to cover undernutrition and early childhood development.

The national MPI is 0.067 for Sri Lanka in 2019. It indicates that poor people in Sri Lanka experience only 6.7 per cent of the deprivation that would be experienced if all Sri Lankans were deprived in all indicators. The multidimensional poverty headcount ratio is 16 per cent at national level and the poverty rate of urban, rural and estate sectors are 4.4 per cent, 16.6 per cent and 51.3 per cent respectively. Monetary poverty in Sri Lanka is 14.3 per cent in 2019. This report includes an innovative chapter on the linked individual child MPI and disaggregates it by age cohorts and sex. According to the child MPI, a startling 42.2 per cent of the 0-4-year-old children are multidimensionally poor in Sri Lanka.

Finally, the DCS would like to thank UNICEF Sri Lanka for their continuous support and to Professor Sabina Alkire, Director, Oxford Poverty and Human Development Initiative and her team for their technical support given to compile the first national MPI and the child MPI for Sri Lanka. We are grateful and convinced that the results of this report will be instrumental to formulate policies to reduce poverty effectively in Sri Lanka.

Mr. P.M.P. Anura Kumara
Director General
Department of Census and Statistics

It has been a privilege to work on Sri Lanka's national Multidimensional Poverty Index (national MPI) and linked child Multidimensional Poverty Index (child MPI), under the guidance of the Department of Census and Statistics (DCS), and with the support of the United Nations Children's Fund (UNICEF) Sri Lanka. This report presents the findings of these two MPIs, which are now adopted as official statistics, giving a comprehensive picture of multidimensional poverty in Sri Lanka, aligned with the 2030 Agenda for Sustainable Development.

Based on data from the Household Income and Expenditure Survey 2019, the report sheds light on the multiple deprivations experienced by the poor in Sri Lanka: nearly one out of every six people are multidimensionally poor by the national MPI (16%) and their deprivations vary greatly by district and age. It also finds that those living in multidimensional poverty are not necessarily poor in monetary terms. Furthermore, by the linked child MPI, 42.2% of children 0-14 years old are multidimensionally poor and an alarming one third of children are undernourished. Sri Lanka's child MPI is pioneering in being the first official measure of child poverty that links directly and consistently with the national MPI: they both include the same indicators, while a fourth dimension covering undernutrition and early childhood development is added to the linked child MPI.

I would like to thank the DCS team for their dedication and hard work while computing the MPI and drafting this report, as well as the team of UNICEF Sri Lanka and UNICEF ROSA for their continuous support and engagement. It has been a pleasure to work with such competent colleagues.

It is our hope that Sri Lanka's national MPI and linked child MPI will further support public action to eradicate poverty in all its dimensions, guiding the allocation of resources, coordinating policy and prioritising multisectoral interventions that accelerate impact.

Sabina Alkire
Director
Oxford Poverty and Human Development Initiative

Poverty has many faces and the effects of childhood poverty, in particular, can last a lifetime. Deprivations in food, care and stimulation can seriously hamper early childhood development and carry over into adulthood. The first years in a child's life in particular are a make or break for girls and boys and set the tone for their future development, the social and economic contributions they can make to their communities and nations, and their capacity to aspire to different kinds of life. Despite this, in many countries, child poverty is often not routinely measured, let alone explicitly embraced as a national priority.

In the past years, Sri Lanka has embarked on an impressive trajectory. Today, Sri Lanka recognizes the multiple ways in which poverty manifests itself for individuals beyond just monetary deprivations, including in education, health and living standards. In tandem, it has evolved from having no measurement of child poverty at all, which had made this policy issue invisible, to becoming a pioneer in the way it measures multidimensional child poverty and hence putting it firmly on its policy agenda.

This report provides important insights, starting from the purpose and the inclusive process of designing a country-specific national Multidimensional Poverty Index (national MPI) and closely linked child Multidimensional Poverty Index. The report also illustrates the policy relevance of the multidimensional poverty indices by explaining the extent to which different deprivations contribute to poverty, for whom and where. This provides important insights into how to focus policy interventions, with the aim of improving the well-being of children and the society more broadly.

It is disheartening that more than 4 in 10 children under the age of 5 years are multidimensionally poor, that is, they are being deprived of several factors that are key to their wellbeing, specifically nutrition, care and stimulation. Multidimensional child poverty is much higher than the national average based on the national MPI, with 1 in 6 people living in poverty. This finding reproduces a global pattern, namely that children often suffer disproportionately from poverty.

Against these findings, it is all the more important and laudable that Sri Lanka has started to measure poverty in all its forms and that conversations on what these statistics mean for policy making have already started. It has been a privilege for UNICEF to support the Department of Census and Statistics in this endeavour, and to continue working with the Government of Sri Lanka to ensure that this important policy tool can be used to its full potential.

Christian Skoog
Representative
UNICEF Sri Lanka

Executive Summary

In 2021, in close consultation with various ministries, the Department of Census and Statistics (DCS) developed the first official national Multidimensional Poverty Index (national MPI) for Sri Lanka. The Sri Lankan national MPI is an official permanent statistic of multidimensional poverty that will be updated and published regularly, reported as Sustainable Development Goal (SDG) indicator 1.2.2, and used to complement the monetary poverty measure.

A key population of concern around poverty is young children, whose deprivations in nutrition and cognitive development have lifelong effects. To further probe and support child poverty policies, DCS crafted an individual child Multidimensional Poverty Index (child MPI) for children aged 0-4, which includes exactly the same indicators as the national MPI, plus undernutrition and early childhood development. The national MPI and the child MPI are both based on data from the Household Income and Expenditure Survey 2019 (HIES 2019). The HIES 2019 was modified to include key MPI indicators, and will do so in future, permitting updates of both MPIs.

Sri Lanka's child MPI is the first official measure of child poverty that links directly and precisely with the national MPI.

The MPI is not just a statistic, it is a policy tool. It provides relevant information to accelerate poverty reduction with limited resources – by informing high-impact budget allocation, focused interventions, policy design and coordination, and poverty monitoring. This report presents the key findings of Sri Lanka's official permanent national MPI and its linked child MPI, further disaggregated by location, age and sex, and the policy implications of these findings.

This report explains why Sri Lanka was motivated to develop multidimensional poverty indices, the process followed to design these policy-salient measures, and the measurement methodology. The national MPI results convey the level and composition of multidimensional poverty, disaggregated by age, area, district, and sex of the household head. The child MPI results delve further into an individual measure for children aged 0-4 that is directly linked to the national MPI, but which exposes particular needs of young children.

Key Results

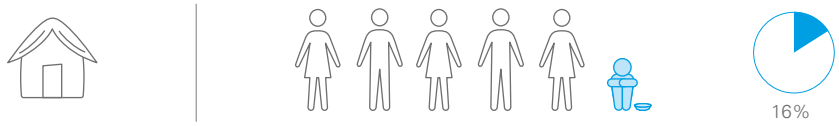
National Multidimensional Poverty Index

- Approximately one out of every six (16 per cent) people in Sri Lanka are multidimensionally poor.
- Estate areas are pockets of poverty requiring policy attention as more than half (51.3 per cent) of all people in these areas are living in poverty.
- Rural areas are also a key focus point as more than eight out of every 10 (80.9 per cent) people who are poor live in rural areas.
- Poverty levels in districts vary significantly from a low of 3.5 per cent in Colombo to 44.2 per cent in Nuwara Eliya. Even for districts with similar MPI values, high-impact policies must consider the indicator composition of poverty, in order to plan the most cost-effective response.
- People aged 65 years and older are the poorest age group in Sri Lanka, with the highest headcount ratio (17.9 per cent) as well as intensity of poverty and MPI.
- The deprivations that require immediate policy attention are the lack of access to health facilities and basic facilities, clean cooking fuels, and safe drinking water.
- Deprivation patterns – and therefore policy and budgetary responses – vary by district and age.

Child Multidimensional Poverty Index

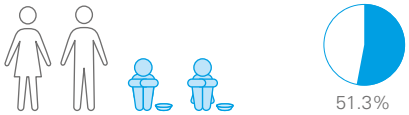
- Using the child MPI more than four out of every 10 (42.2 per cent) children under the age of 5 years are multidimensionally poor.
- All children considered poor by the national MPI are concurrently poor by individual level child MPI. In addition, the child MPI adds a fourth dimension comprising deprivations in each child's nutrition and cognitive development.
- One third (33.4 per cent) of children aged 0-4 years old are multidimensionally poor and either underweight or stunted.
- One sixth (16.4 per cent) of children aged 0-4 years are multidimensionally poor and deprived in early childhood development.
- Nearly half of children 0-11 months and 4 years old are poor, mainly due to undernutrition, and for children who are 4 years old, not being in preschool.
- Encouragingly, there are no statistically significant differences between the poverty levels of girls and boys in Sri Lanka.

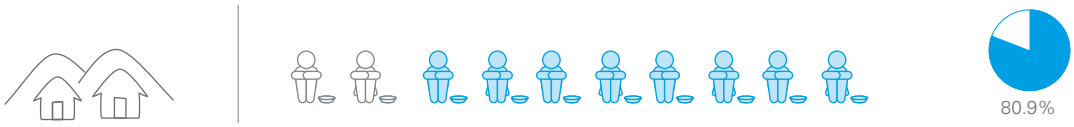
Sri Lanka's Multidimensional Poverty Index 2019 Results: National and Child Analyses



Approximately one out of every six (16 per cent) people in Sri Lanka are **multidimensionally poor**.

Estate areas are pockets of poverty requiring policy attention as more than half (51.3 per cent) of all people in these areas are living in poverty.

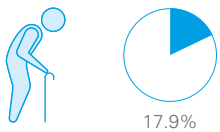




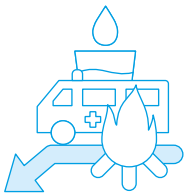
Rural areas are also a key focus point as more than eight out of every 10 (80.9 per cent) people who are poor live in **rural areas**.

Poverty levels in districts vary significantly from a low of 3.5 per cent in Colombo to 44.2 per cent in Nuwara Eliya.

Even for districts with similar MPI values, high-impact policies must consider the indicator composition of poverty, in order to plan the most cost-effective response.



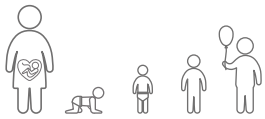
People aged 65 years and older are the poorest age group in Sri Lanka, with the highest headcount ratio (17.9 per cent) as well as intensity of poverty and MPI.



The deprivations that require immediate policy attention are the **lack of access to health facilities** and **basic facilities**, **clean cooking fuels**, and **safe drinking water**.

Deprivation patterns – and therefore policy and budgetary responses – vary by district and age.

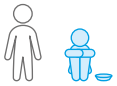
Using the child MPI more than four out of every 10 (42.2 per cent) children under the age of 5 years are **multidimensionally poor.**



All children considered poor by the national MPI are concurrently poor by individual level child MPI. In addition, the child MPI adds a fourth dimension comprising deprivations in child's nutrition and cognitive development.

One third (33.4 per cent) of children aged 0-4 years old are **multidimensionally poor** and either **underweight or stunted.**

One sixth (16.4 per cent) of children aged 0-4 years are **multidimensionally poor** and **deprived in early childhood development.**



Nearly half of the children 0-11 months and 4 years old are **poor**. Among children 0-11 months old, this is mainly due to them being **undernourished**; whereas for children who are 4 years old, the main reason is them **not attending preschool**.

Encouragingly, there are no statistically significant differences between the **poverty levels of girls and boys** in Sri Lanka.

1

Introduction

1.1 POLICY OBJECTIVES IN SRI LANKA FOR THE NATIONAL MULTIDIMENSIONAL POVERTY INDEX

Eradicating poverty remains one the greatest global challenges and is an indispensable requirement for sustainable development. The first SDG aims to "end poverty in all its forms everywhere". Overcoming poverty in all its forms is also a central goal of the development agenda of the Government of Sri Lanka. Since its independence in 1948, successive governments introduced and implemented several policies, programmes and strategies to reduce poverty in Sri Lanka. Today, it has one of the lowest rates of child mortality in the region, and levels of access to antenatal care, exclusive breastfeeding, and immunization are almost universal. Water and sanitation coverage has also improved, and almost every child has access to primary school, with no significant gender disparities. The steady progress in economic growth over the past decades (before the COVID-19 pandemic) has allowed for impressive poverty reduction and human development.

The DCS has measured monetary poverty using the Cost of Basic Needs (CBN) method since 2002. The monetary measure draws on the information collected from the HIES. Based on the updated poverty line (based on 2012/13 HIES), the incidence of monetary poverty in Sri Lanka has dramatically declined from 46.8 per cent in 2002 to 14.3 per cent in 2019.[1] However, while overall poverty has declined at the national level, progress is uneven and pockets of poverty still exist in certain districts.

In addition, poverty is a broader, multifaceted phenomenon that cannot be comprehended just from a reflection of income or consumption expenditure. Therefore, it is essential to understand the experiences of poor people with respect to many dimensions at the same time, such as education, health, and living standards. This information is needed for measuring poverty and equally for achieving the objective of poverty eradication. Hence, to achieve the policy coherence required at the national level to reduce poverty effectively and efficiently, it is vitally important to adopt an integrated policy framework. It is also vital to involve a wide range of stakeholders, as together they can design public policies in a cross-cutting manner.

Accordingly, in addition to the consumption approach the DCS has decided to measure poverty using the multidimensional approach periodically. This publication presents the multidimensional measure of poverty. It uses the Alkire-Foster method, which is globally accepted – for example since 2010 it has been used by United Nations Development Programme (UNDP) and Oxford Poverty & Human Development Initiative (OPHI) to measure acute poverty covering more than 100 developing countries.[2] In collaboration with the OPHI and UNICEF Sri Lanka using the data collected through the Household Income and Expenditure Survey conducted by the DCS in 2019, the DCS compiled for the first time the national MPI and the linked child MPI for children aged 0-4.

1. The Official Poverty Line (OPL) was published in the first time in the history in 2004 based on 2002 HIES data. Using the OPL, the headcount rate declined from 2002 to 2019 from 22.7 to 3.2 percent. In line with international best practices Sri Lanka's OPL was revised in 2016 based on 2012/13 HIES and published in 2019.

2. See UNDP and OPHI 2021.

Historically, Sri Lanka has not used separate poverty measures for children. The individual and pioneering child MPI for children aged 0–4 includes the same indicators as the national MPI and adds a fourth dimension to cover deprivations in nutrition and early childhood development. Sri Lanka's national MPI is thereby the first MPI in the world to directly and fully link the measure of child poverty with the national MPI – so every child who is poor as measured by the national MPI is also poor by the child MPI. Some children face several household-level deprivations at the same time, but not enough to be identified as poor by the national MPI. By considering additional and specific child-level deprivations, the child MPI identifies these children as indeed poor if they also experience deprivations in either nutrition or in early childhood development or in both. Therefore, the child MPI transparently adds information to the national MPI and it is an official companion statistic to it. These two indices are useful to formulate policies to alleviate national poverty and for further focus to eradicate child poverty in the country.

1.2 SUSTAINABLE DEVELOPMENT GOAL REPORTING

The incidence of the national MPI for Sri Lanka, and its disaggregation by rural and urban areas and for men, women and children of all ages, will be reported as SDG Indicator 1.2.2 that looks at the "proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions." The linked child MPI will also be reported within SDG 1.2.2.

Of course, Sri Lanka's MPI provides additional disaggregations by other population groups, that at the time of reporting, could not be profiled in the global SDG database. Nor can the detailed information on the indicator composition of poverty be profiled there. This report therefore provides a more comprehensive picture of poverty in Sri Lanka, and all seeking to advance SDG localisation (local strategies to advance interlinked SDGs), or integrated policies to advance the SDG agenda, are encouraged to use the information platform presented here.
Some indicators within Sri Lanka's multidimensional poverty indicator are likewise reported individually as SDG indicators – for example within SDG 4 for Years of Schooling and School Attendance, SDG 6 for Drinking Water, SDG 11 for Sanitation, SDG 3 for Chronic Illness and Access to Health Facilities. So, when the MPI goes down for the country, SDG 1.2.2 is reduced and other SDG indicators will also register reductions.

Sri Lanka's efforts to profile its work to reduce both monetary and multidimensional poverty will also be articulated in its period Voluntary National Reviews that are presented at High-Level Political Fora in specified years.

1.3 OTHER NATIONAL MULTIDIMENSIONAL POVERTY INDEXES

In releasing this national MPI, Sri Lanka joins many other countries that have also designed official permanent multidimensional poverty indices that are tailor-made to reflect national data, policy priorities, and insights of poor persons and communities.

Sri Lanka participates in the Multidimensional Poverty Peer Network (www.mppn.org), a South-South network with over 60 countries and 20 international agencies, that share good practices in designing and using multidimensional poverty indices to powerfully reduce poverty in all its forms.

As such, Sri Lanka is available to support other countries who wish to learn from its experience in formulating a normative concept of multidimensional poverty, designing a new permanent survey component within the HIES for the MPI, estimating and analysing the MPI – as is done in this report – and using the results to guide effective interventions.

1.4 THE ALKIRE-FOSTER METHOD

This section provides a brief overview of the Alkire-Foster (AF) method.[3] This method is a general framework for measuring multidimensional poverty in many countries around the world. It is also the method used for calculating the national MPI and child MPI in Sri Lanka.

The AF method is based on counting the simultaneous deprivations that negatively affect a person's life. This allows the construction of individual deprivation profiles that can then be used to identify multidimensionally poor people. The number of people living in multidimensional poverty and the intensity of their poverty are combined in the value of the MPI. The AF method follows two main steps in its analysis: Identification and Aggregation. Each step is implemented sequentially. One way of explaining identification is to go through the efforts of measurement design that precede it, ending with identification of who is poor.

Identification

- Define the set of indicators that constitute multidimensional poverty
- Set the deprivation cut-off showing how much is needed to be non-deprived
- Based on the deprivation cut-off, identify the deprived persons in each indicator
- Set the relative weights for each indicator (these add up to 100 per cent)
- Calculate the deprivation score for each person by adding up the weighted deprivations that she/he experiences.
- Determine the multidimensional poverty cut-off, which is applied to deprivation scores.
- Identify a person as multidimensionally poor if their deprivation score is equal to or greater than the poverty cut-off.

3. See Alkire and Foster 2011, Alkire, Foster, Seth, Santos, Roche and Ballon 2015, UNDP and OPHI 2019.

So first, each person is considered deprived or non-deprived in each indicator. This is done by setting a deprivation cut-off for each indicator and comparing each person's achievement to that cut-off. This yields a set of binary variables for every person, each one for each respective indicator and taking the value of 1 if the individual is deprived in that indicator, and 0 otherwise.

Once the set of binary variables is calculated, each person is assigned a deprivation score indicating the proportion of deprivations that the person experiences, weighted by the relative importance of each indicator in the structure of the MPI. The deprivation score is defined to take values ranging from 0 (indicating that person does not experience any weighted deprivations) to 1 (indicating that the person experiences weighted deprivations in all the respective indicators).

In order to identify people who suffer multidimensional poverty, the deprivation score is compared to a poverty cut-off or the k-value. All people experiencing deprivations in a share of weighted indicators equal to or greater than this poverty cut-off, are identified as multidimensionally poor.

Aggregation

Information on poor people is then aggregated into the poverty measure, the MPI, and also into linked and consistent partial indices, the headcount ratio or incidence, and the intensity of poverty.

The **headcount ratio (H)** or incidence of multidimensional poverty is the proportion of the population who are multidimensionally poor.

The **intensity of poverty (A)** reflects the proportion of the weighted indicators in which, on average, multidimensionally poor people are deprived.

The **Multidimensional Poverty Index (MPI)** combines these two aspects of poverty in the following way:

$$MPI = H \times A$$

Once poor people are identified, the MPI is computed as the product of two component indices: the multidimensional headcount ratio (H) and the intensity of multidimensional poverty (A). The MPI is equivalent to the sum of the weighted deprivations that poor people experience, divided by all deprivations the total population could face. Its special features mean that the MPI satisfies many poverty axioms including subgroup decomposability characteristics (Alkire and Foster 2011). The MPI is the official statistic of poverty because it takes into account changes in incidence and/or intensity. It also provides incentives to 'Leave No One Behind' by making visible progress among the poorest population groups.

It is important to note that the MPI can be equivalently computed as the weighted sum of censored headcount ratios – which show the percentage of people who are identified as poor and deprived in a particular indicator. Censored headcount ratios show in which indicator poor people experience the highest deprivations, which, together with the number of poor people, is very useful for budgeting purposes. In addition, it is also usual to calculate the weighted contributions of each indicator to the MPI, in order to see which indicators contribute most to poverty (considering their weights). This feature of dimensional breakdown provides detailed information on the composition of multidimensional poverty, which brings added policy relevance to the analysis.

The MPI is a precise instrument for tracking changes over time. If policy succeeds in reducing any deprivation of any poor person, the MPI will immediately go down. If that deprivation carries a higher weight, MPI will go down more.

By applying this method, the national MPI and the child MPI of Sri Lanka reflect simultaneous deprivations experienced by poor people. The next section explains how the MPI for Sri Lanka was conceptualised, based on a detailed analysis of relevance as well as data availability.

2

National Multidimensional Poverty Index of Sri Lanka

2.1 DESIGN OF THE NATIONAL MULTIDIMENSIONAL POVERTY INDEX OF SRI LANKA

Sri Lanka's MPI is constructed to reflect the national requirements for policymaking on poverty targeting. The measurement design builds on the global multidimensional poverty index as developed by OPHI and UNDP.

2.1.1 Policy design and consultation process

The national MPI and child MPI have been designed to identify the critical factors responsible for poverty reduction and stimulate and support the evaluation of existing poverty alleviations strategies. The DCS took several successive steps to achieve this objective more efficiently, with the collaboration of UNICEF Sri Lanka and OPHI. In particular, the DCS:

1. Held round table discussions with several government and non-governmental institutes to discuss most relevant dimensions in the local context.
2. Incorporated a new module to HIES questionnaire to collect additional information specifically related to child poverty.
3. Held a conference to discuss the most appropriate method for estimating the national MPI and child MPI and exposing participants to some examples from other countries.
4. Arranged a training programme to enhance the technical capacity of those analysing the indices.
5. Continuously worked with international expertise when compiling the indices.
6. Held several stakeholders' meetings with government and non-governmental institutions from the relevant sectors to finalise the national MPI and child MPI.

2.1.2 Data

The national MPI is compiled using the data from the HIES conducted by the DCS in 2019. The HIES covered 19,911 housing units representing all districts in the entire country. The survey collected information from all the households within the selected housing unit. The sample design is two stage stratified sampling. The Primary Sampling Units (PSUs) are the census blocks which were prepared from the Census of Population and Housing in 2011. The Secondary Sampling Units (SSUs) are the housing units of the selected PSUs. The sample is strong enough to provide reliable estimates down to district level in the country.

2.1.3 Structure

The structure of the national MPI measurement design is built on the global multidimensional poverty index as developed by OPHI and UNDP, and adapted to Sri Lanka's context (Figure 1).

Indicators and Dimensions: A set of carefully selected indicators lie at the heart of the MPI. The MPI is built by using the profile of deprivations in these indicators that each household experiences. The national MPI in Sri Lanka has 10 indicators grouped into three dimensions (see Figure 1 and Table 1 for details).

Figure 1 | Structure of the National Multidimensional Poverty Index in Sri Lanka

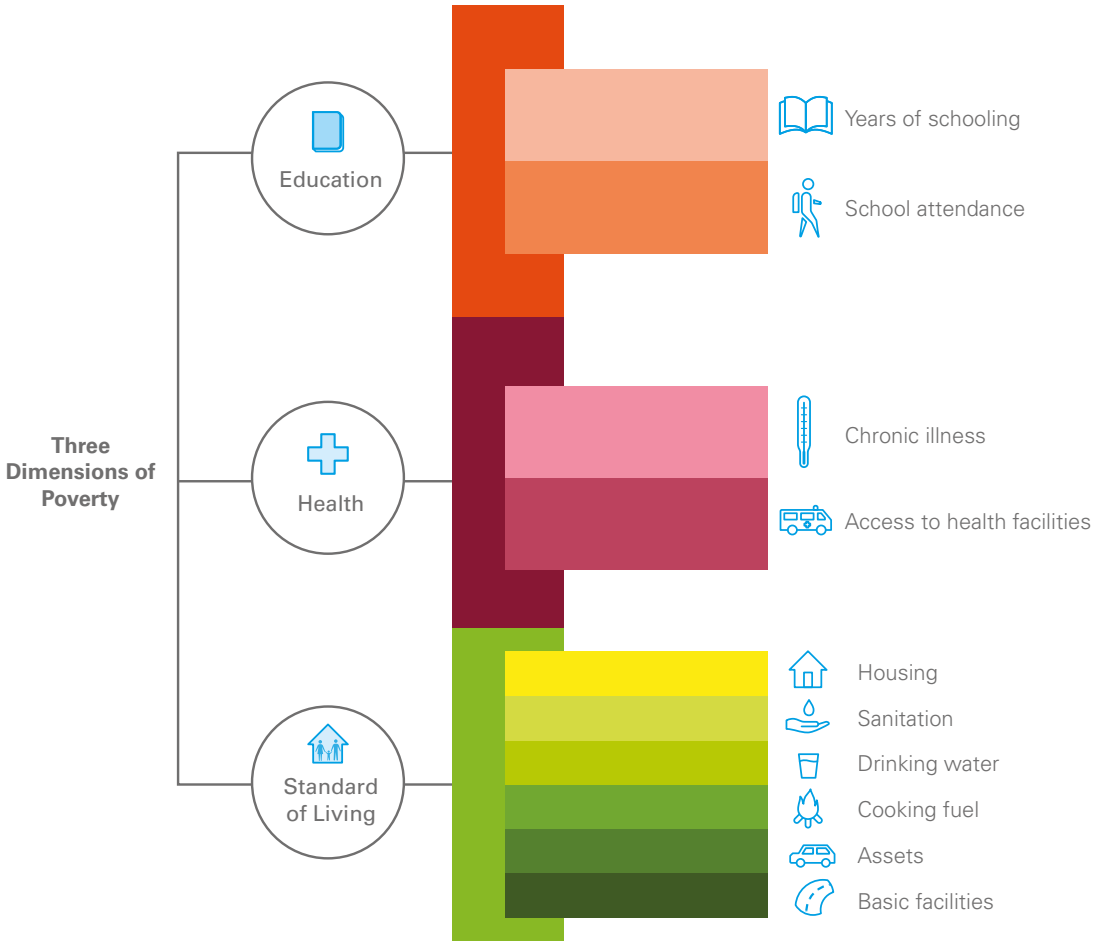


Table 1 | Dimensions, indicators, and weights for Sri Lanka's National Multidimensional Poverty Index

National Multidimensional Poverty Index			
Dimension	**Indicator**	**Deprivation cut-off: A household and all its members are deprived if the household (household's) …**	**Weight**
Education (1/3)	Years of schooling*	Has at least one member (aged 17+) with less than the level of schooling that was compulsory when they were studying (age dependent) or has never attended school, or is attending special education	1/12
	School attendance	Has any school-age child (aged 5-16) who is not attending school	1/4
Health (1/3)	Chronic illness	Has any member who is suffering from chronic illness that has stopped their usual activities or job for one month or more	1/6
	Access to health facilities	Access to health facilities takes 30 minutes or more	1/6
Standard of Living (1/3)	Housing†	Uses semi-permanent materials for wall, floor, or roof of the house	1/18
	Sanitation‡	Facility is not improved, or it is shared with other households	1/18
	Drinking water§	Has no access to a safe source of drinking water, or the time/distance to collect is at least 15mins/1km, or there has been insufficient drinking water for the last month, or the quality of drinking water is not improved	1/18
	Cooking fuel	Uses firewood, kerosene or saw dust/paddy husk for cooking	1/18
	Assets	Does not have at least one of TV, washing machine, fridge, computer, motorbike, three-wheeler, car, van, bus, lorry and does not have more than one of land, livestock, agriculture/fishing equipment (tractor, thresher, combine harvester, fishing boat, fishing nets)	1/18
	Basic facilities	Requires at least 15 minutes or more to reach the nearest bus stop or 30 minutes or more to reach a primary or secondary school	1/18

*** According to Sri Lanka Legislation for Education:** Born before 1940: 3 years of schooling; Born between 1940-1991: 5 years of schooling; Born between 1992-2010: 9 years of schooling; Born in 2011 or after: 11 years of schooling.

† Walls: Deprived if cadjan/palmyrah, wood/takaran/asbestos, metal sheet or other.

† Floor: Deprived if mud, wood, sand or other.

† Roof: Deprived if takaran, cadjan/palm/straw or other.

‡ Non-improved sanitation facility includes: Water seal with connected to a river or a drain, not water seal pit latrine with deck, not water seal open pit latrine without deck, no facility – use bush/field or other.

§ Unsafe source of drinking water includes: Unprotected well, tap private projects, river/tank/streams, rain water, bowser or other.

§ Insufficient drinking water for last month: At least once or don't know.

Deprivation cut-off and poverty cut-off

The AF method uses a dual cut-off. First, it is determined whether a person is deprived or not in each indicator using an indicator cut-off. If an individual's achievement falls short of the indicator cut-off, then he/she is considered deprived in that indicator. Deprivation cut-offs are decided fundamentally in a normative way. Table 1 summarizes the list of all indicators with their respective cut-offs. Secondly, the AF method uses a poverty cut-off (k) that is a cross–indicator cut-off to decide whether a person is multidimensionally poor or non-poor according to the weighted share of deprivations they experience. In most cases, the poverty cut-off is a normative one validated by technical robustness tests.

We set the poverty cut-off for Sri Lanka to 1/3 or 33.3 per cent. Given the three dimensions chosen for the Sri Lanka national MPI, each person experiencing 33.3 per cent of the weighted deprivations or more (equivalent to being deprived in an entire dimension or more) is considered to be multidimensionally poor.

Weights: Each dimension is equally weighted, and the indicators within the health and standard of living dimensions are equally weighted. Within the education dimension, school attendance has a higher weight than the Years of Schooling indicator.[4] A person who is deprived in any set of indicators whose weights add up to one-third or more is identified as multidimensionally poor.

4. The reason why the school attendance indicator has a higher weight than the years of schooling indicator is a normative decision to give more importance to the attendance of people who are in compulsory schooling age (5-16 years old).

2.2 RESULTS OF THE NATIONAL MULTIDIMENSIONAL POVERTY INDEX OF SRI LANKA

This chapter presents the national MPI results using the 2019 HIES dataset. We first present the national MPI as well as the incidence and intensity of poverty among the poor. We then show how people are poor according to each indicator, and who is poor among different population subgroups. The last section presents the robustness analysis, showing that the national MPI provides roughly the same policy information even if the weights and poverty cut-offs are changed, and the redundancy analysis, which shows that each indicator contributes with unique information on poverty in the country.

2.2.1 Level of poverty: National Multidimensional Poverty Index, H, A

The incidence of multidimensional poverty in Sri Lanka is 16 per cent, meaning that nearly one out of every six people in Sri Lanka are multidimensionally poor by the national MPI.[5] The intensity of poverty, which reflects the share of weighted deprivations each poor person experiences on average, is 41.6 per cent.

This indicates that each poor person in Sri Lanka is, on average, deprived in 41.6 per cent of the weighted indicators. The national MPI has a value of 0.067. Recall that the national MPI is calculated by multiplying the percentage of population who is multidimensionally poor (the incidence, H) by the share of weighted deprivations that poor people face on average (the intensity, A). The value of 0.067 shows that poor people experience, on average, 6.7 per cent of the total possible deprivations that could be experienced if everyone was deprived in everything.[6] The national MPI is the official statistic because it is most precise and most sensitive to change, but for non-technical users, the incidence may be more intuitive, so this report always discusses both.

Table 2 shows the main figures related to the national MPI for 2019, including the headcount ratio or poverty rate among the population in Sri Lanka, H, also called the incidence of poverty (or the proportion of the population identified as multidimensionally poor); and the intensity of poverty (or the average proportion of weighted indicators in which poor people are deprived), A.

Table 2 | National Multidimensional Poverty Index, incidence, and intensity levels

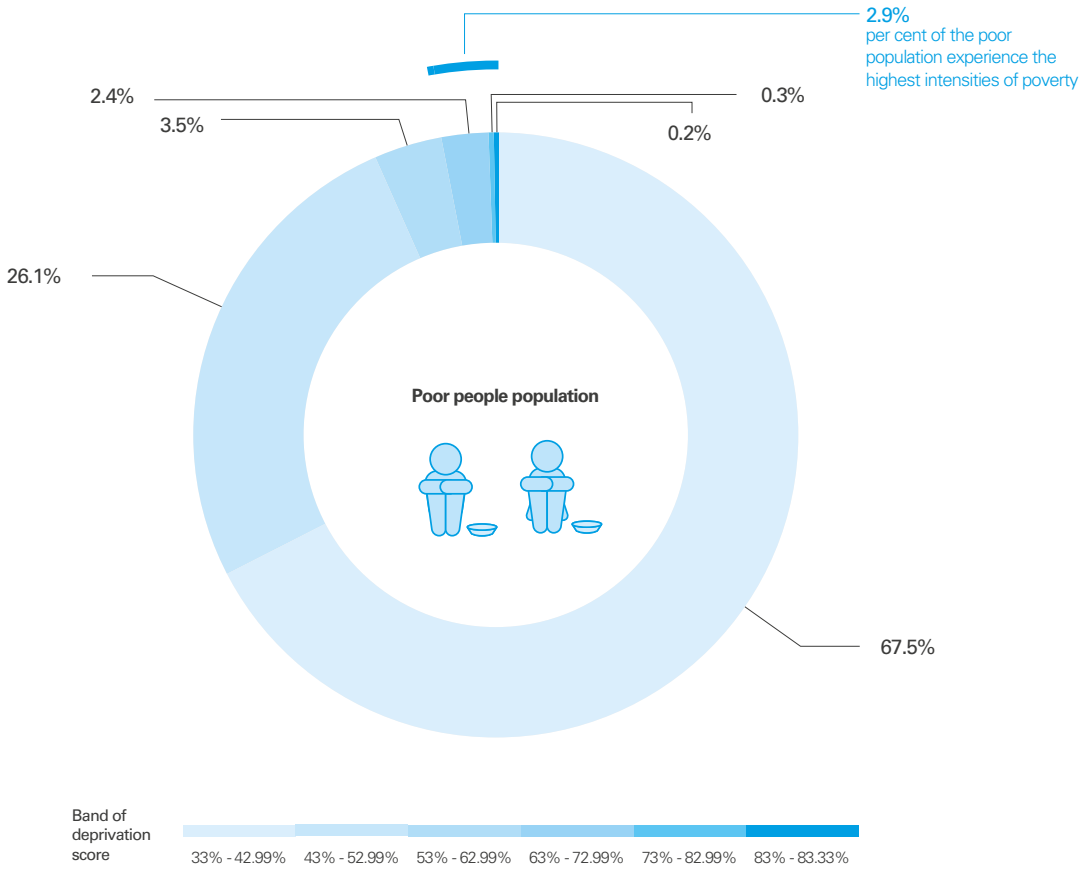
Poverty Cut-off (k)	Index	Value	Confidence Interval (95%)	
k value=33%	MPI	0.067	0.062	0.071
	Incidence or Headcount Ratio (H)	16.0 %	15.0 %	17.1%
	Intensity (A)	41.6 %	41.2 %	42.1%

Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

5. Since all survey-based estimates are based on a sample, each has a margin of error. Thus, the 95 per cent confidence interval is also presented in the tables. In the case of the incidence of national MPI, we can say with 95 per cent confidence that the true national MPI headcount ratio of the entire national population is between 15 per cent and 17.1 per cent.
6. With 95 per cent confidence, the true value of the national MPI is between 0.062 and 0.071.

Figure 2 shows the percentage of poor people that experience each band of deprivation score. It gives an idea of how the proportion of weighted deprivations faced by the poor population are distributed. The minimum number is 33.3 per cent because it corresponds to the poverty cut-off, that is, multidimensionally poor people are deprived in at least 33.3 per cent of the weighted indicators. The highest number is 83.3 per cent, which means that the poorest person in Sri Lanka experiences 83.3 per cent of the weighted deprivations. Thus, no poor person in Sri Lanka is deprived in all the indicators. The figure reveals that almost 70 per cent of all poor people in the country are deprived in between 33 per cent and 42.9 per cent of the weighted indicators. On the other hand, 2.9 per cent of the poor population experience the highest intensities of poverty, as they are deprived in at least 63 per cent or more of the weighted indicators, which is equivalent to a deprivation of about two dimensions or more. But as the figure shows, most of the poor people are very near to the multidimensional poverty line.

Figure 2 | What percentage of poor people experience what level of deprivation?



Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

2.2.2 Composition of poverty by indicator

Multidimensional poverty in Sri Lanka has been described through the national MPI by understanding how many people are poor on average (the incidence) and how poor they are (the intensity). We are now interested in analysing how they are poor. That is, which deprivations do they experience?
This information is useful in order to develop public policies that most efficiently reduce poverty.

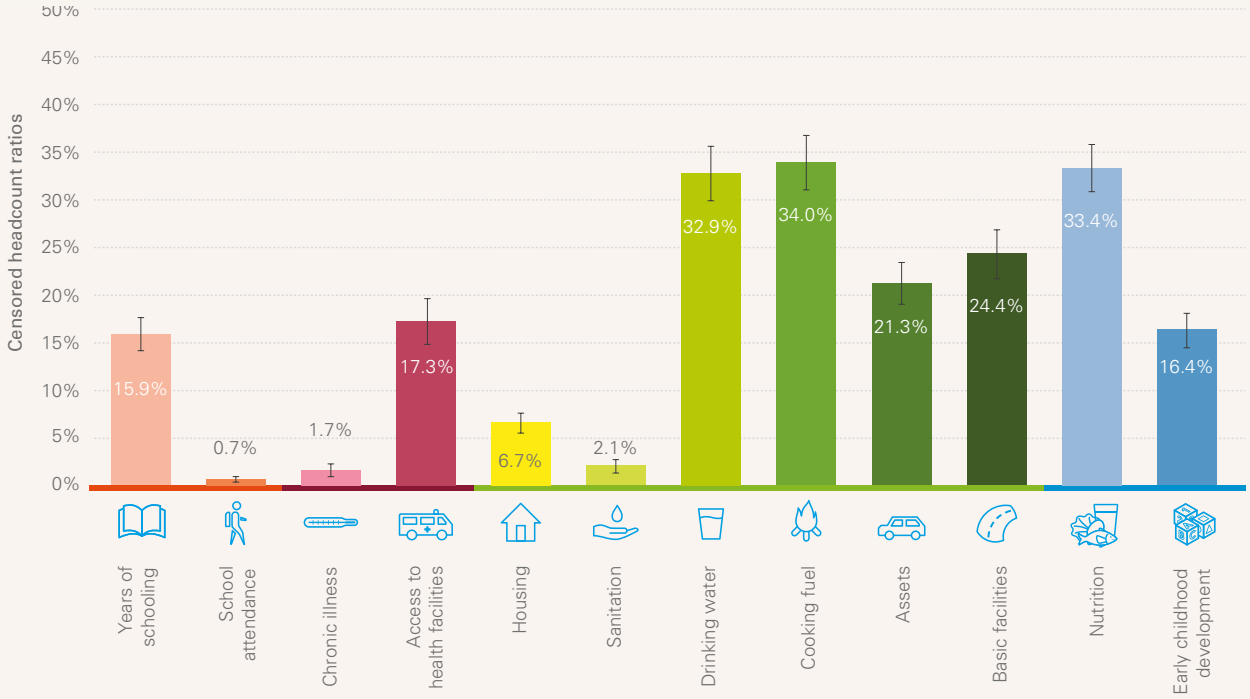
National censored headcount ratios

We first study the percentage of the population who is multidimensionally poor and deprived in each of the indicators. These are called the censored headcount ratios.

The analysis of the censored headcount ratios shows those indicators in which the national MPI poor people face the highest levels of deprivation. A reduction in any deprivation of any poor person (that is, of any censored headcount ratio) will reduce the national MPI and improve the lives of poor people in Sri Lanka.

Figure 3 shows that a large percentage of people are multidimensionally poor and also deprived in clean cooking fuel (14.5 per cent). Providing clean energy alternatives to firewood, kerosene or sawdust/paddy husks for cooking will reduce this deprivation, which affects more than 3 million people in Sri Lanka. Moreover, 13.5 per cent are multidimensionally poor and lack access to a safe, quality and sufficient drinking water. In addition, around one in every eight people are multidimensionally poor and live in a household that is at least 15 minutes away from a bus stop or at least 30 minutes away from a primary or secondary school (12.6 per cent); and in a household from which any health facility is at least 30-minutes away (11.9 per cent).

Figure 3 | National Multidimensional Poverty Index: Censored headcount ratios



Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

Deprivations such as school attendance, chronic illness, and sanitation have low deprivation rates. But they should not be overlooked since all of them together contribute around 15 per cent to the overall national MPI.

Level of poverty by area, district, age group and household headship

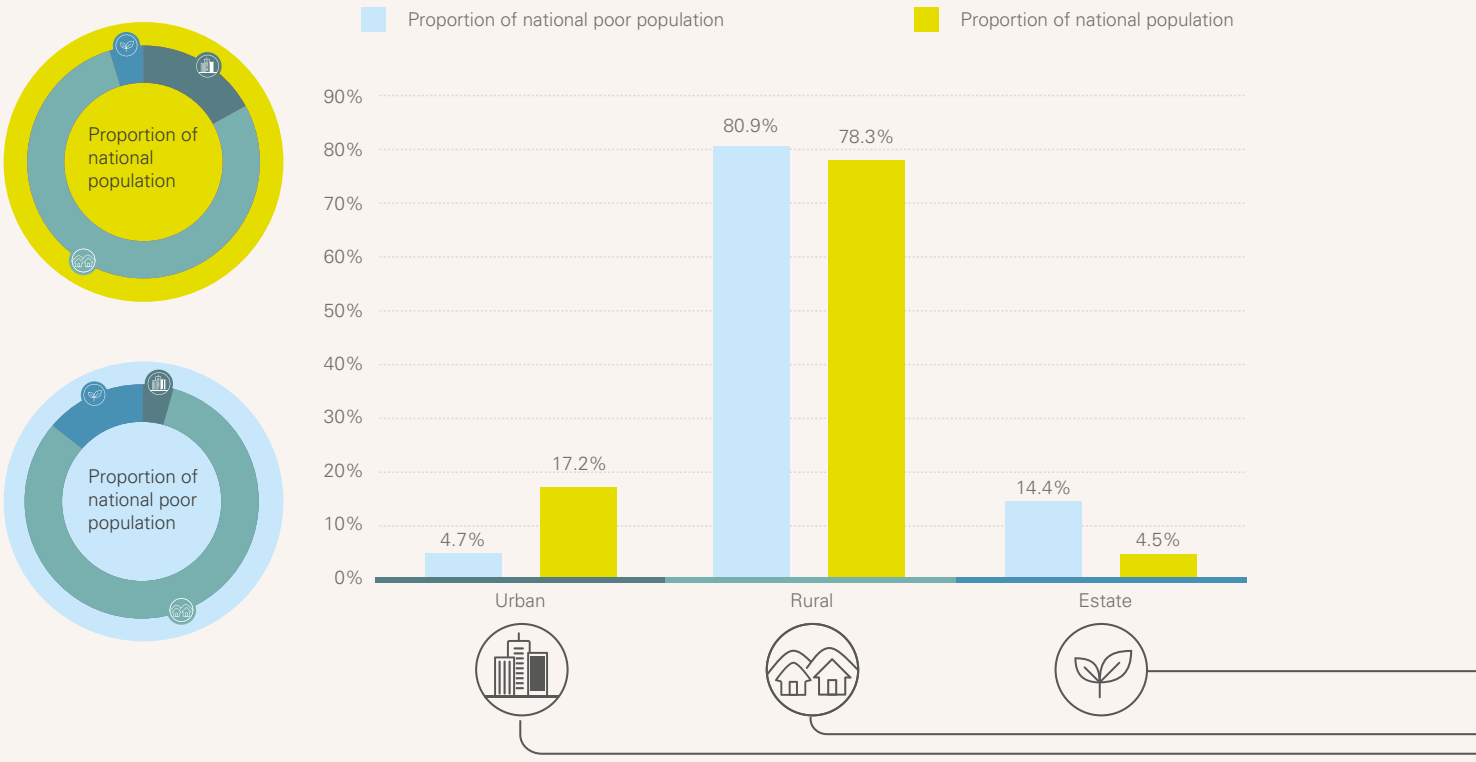
In order to learn how to use the composition of the national MPI to shape budget and policy priorities, we show how the deprivation patterns vary by area and district, by age group and by the sex of the head of the household. Disaggregation shows up disparities and pockets of high poverty, so that high poverty places and groups can be targeted by appropriate interventions.

“Disaggregation shows up disparities and pockets of high poverty, so that high poverty places and groups can be targeted by appropriate interventions.”

Disaggregation by area

Table 3 shows the urban/rural/estate divide, which is unique to Sri Lanka. Poverty levels are highest in estate areas, followed by rural and then urban areas. The incidence of multidimensional poverty or headcount ratio is 4.4 per cent in urban areas, 16.6 per cent in rural areas, and 51.3 per cent in estate areas. The intensity is also highest in estate areas (46.1 per cent), compared to rural (40.9 per cent) and urban areas (40.6 per cent). The national MPI is 0.018 in urban areas, 0.068 in rural areas, and 0.236 in estate areas. This highlights estate areas as pockets of poverty that require policy attention.

Figure 4 | Distribution of the population and those who are multidimensionally poor by urban, rural and estate areas



Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

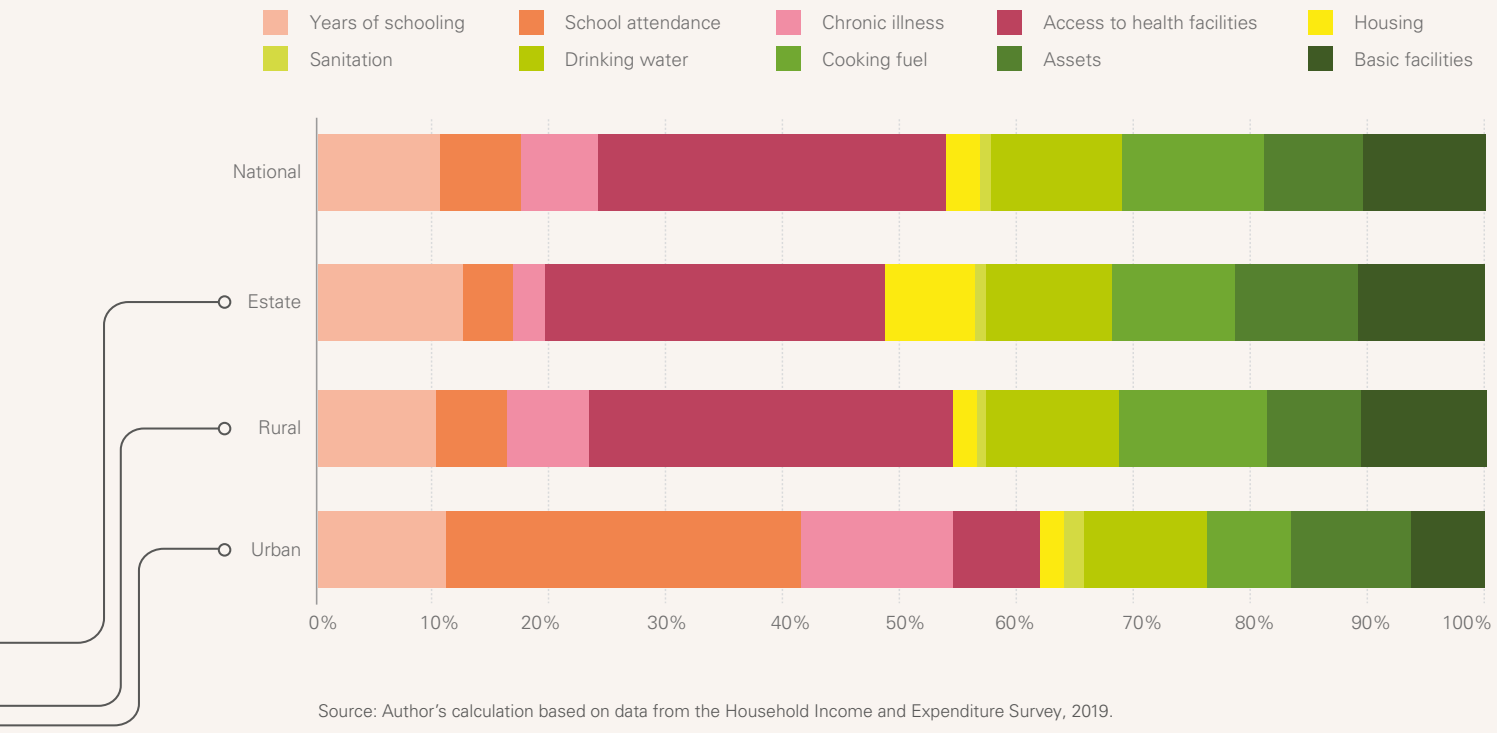
Table 3 | Multidimensional poverty by urban, rural, and estate areas

Area	Population Share (%)	MPI			Incidence or Headcount Ratio (H)			Intensity (A)		
		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)	
Urban	17.2%	0.018	0.014	0.023	4.4%	3.4%	5.6%	40.6%	39.5%	41.8%
Rural	78.3%	0.068	0.063	0.073	16.6%	15.4%	17.8%	40.9%	40.4%	41.3%
Estate	4.5%	0.236	0.199	0.278	51.3%	43.6%	58.9%	46.1%	44.5%	47.7%

Source : Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

Policy responses must also consider the number of poor people. As Figure 4 shows, only 4.5 per cent of Sri Lankans live in estate areas. Yet estate areas account for 14.4 per cent of those living in poverty, making this a crucially important group. Still, the large majority (80.9 per cent) of multidimensionally poor people live in rural areas. Therefore, rural areas must be a priority.
Also, as Figure 5 shows, the composition of poverty varies by area. In rural and estate areas, a top priority is access to health facilities, as well as years of schooling and the basic facilities, assets, cooking fuel and drinking water indicators. In estate areas, housing is more of a problem; in rural areas, school attendance and chronic illness are more visible. Urban areas have the highest deprivations in school attendance.

Figure 5 | Percentage contribution by indicator to Multidimensional Poverty Index by urban, rural and estate areas



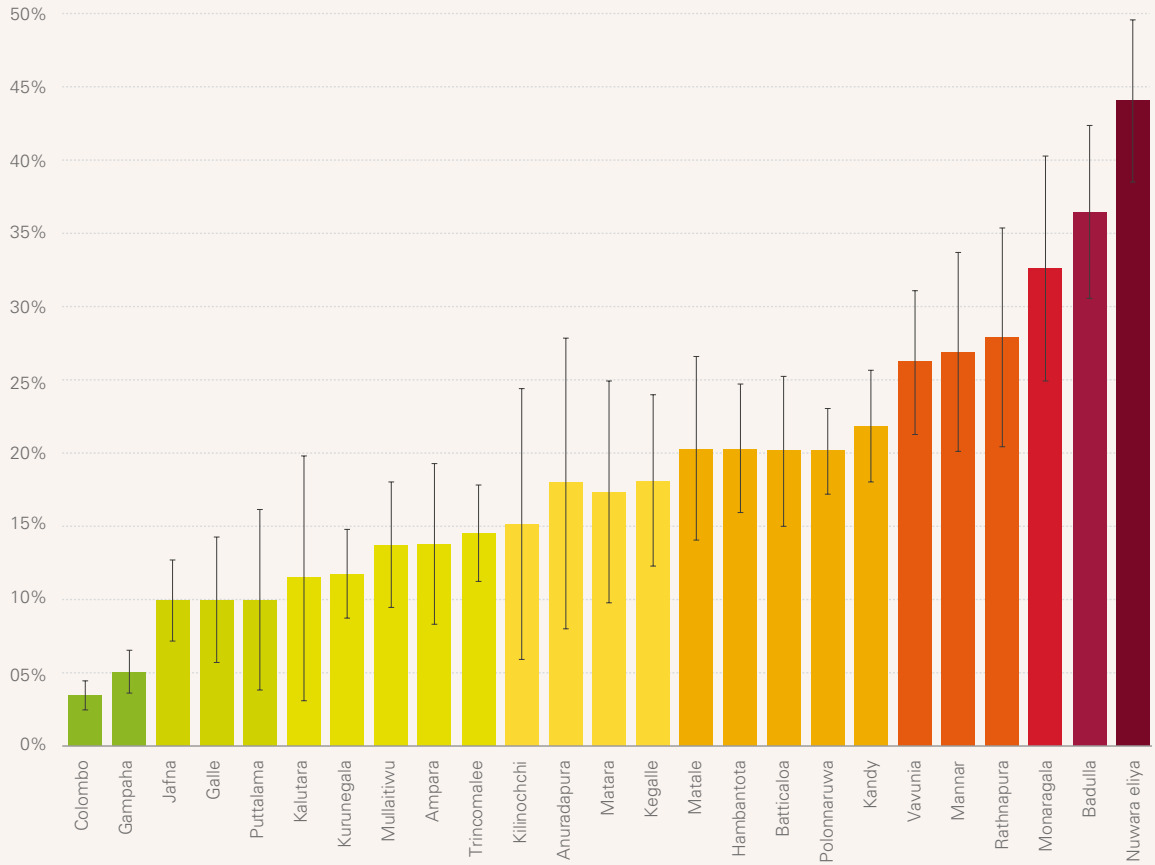
Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

Disaggregation by district

At the district level, multidimensional poverty varies substantially (see Table 4, Figure 6a and Figure 6b). Colombo (3.5 per cent) and Gampaha (5.1 per cent) have the lowest incidence of poverty, while in Nuwara Eliya, more than two-fifths (44.2 per cent) of the population are living in poverty according to the national MPI. We also see (Figure 6a) that confidence intervals overlap so there is not a precise ranking of most districts.

Just as we saw that the population mattered across estate, rural and urban areas, population matters when drafting district responses. So, while Colombo and Gampaha have the lowest incidence of poverty, their relatively large population size means that they have higher actual numbers of people living in poverty than districts such as Vavuniya and Mannar which have a far higher incidence of multidimensional poverty.

Figure 6a | Incidence of Multidimensional Poverty by district



Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

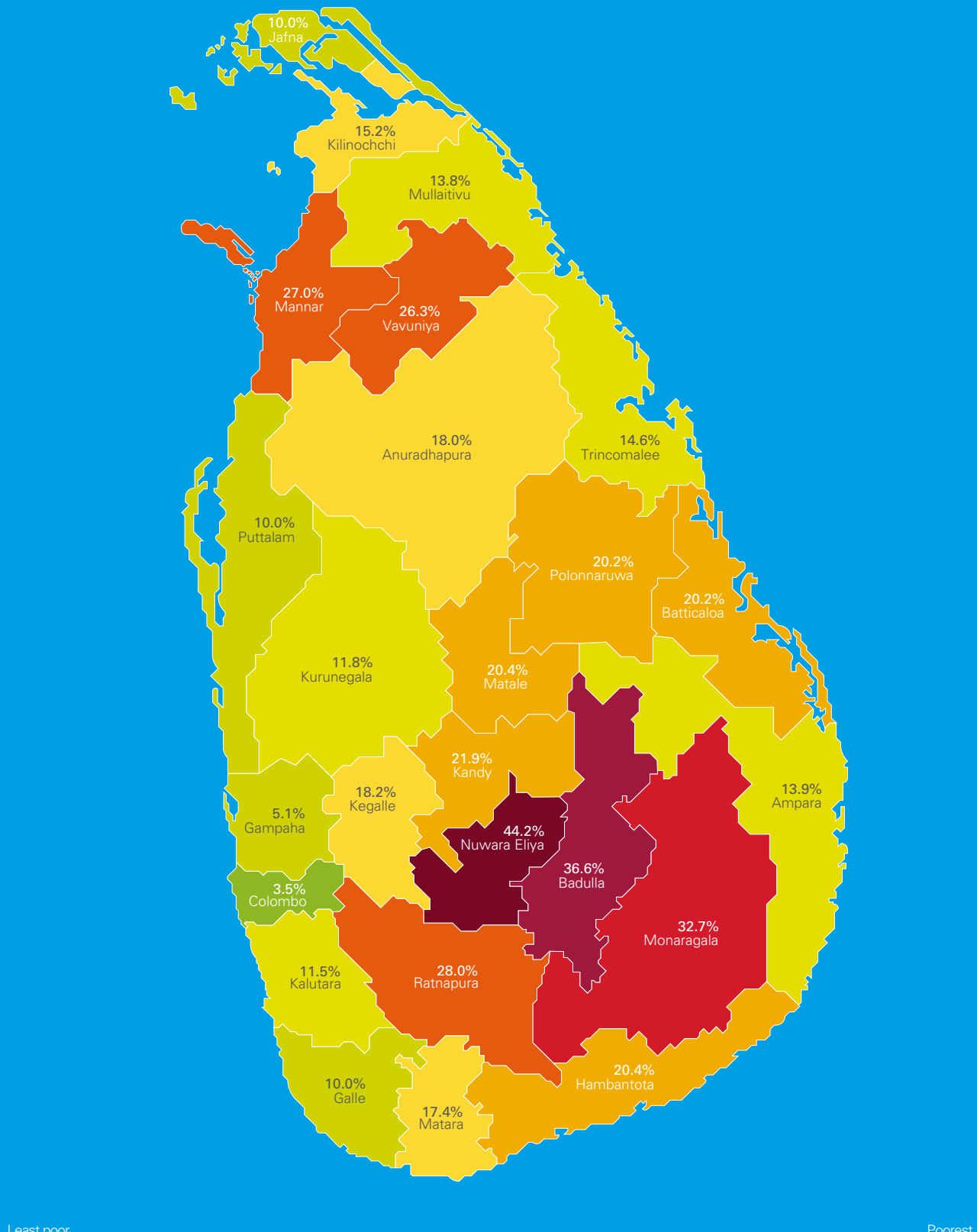
Table 4 | Multidimensional poverty by district

District	Population Share (%)	MPI			Incidence or Headcount Ratio (H)			Intensity (A)		
		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)[7]	
Colombo	9.8%	0.014	0.010	0.020	3.5%	2.5%	4.8%	39.9%	38.1%	41.7%
Gampaha	7.9%	0.019	0.014	0.027	5.1%	3.6%	7.1%	37.9%	36.3%	39.4%
Jaffna	6.1%	0.039	0.027	0.058	10.0%	6.7%	14.7%	39.6%	37.6%	41.5%
Galle	6.0%	0.041	0.028	0.059	10.0%	7.0%	14.2%	40.7%	39.4%	42.0%
Puttalam	3.0%	0.044	0.027	0.071	10.0%	6.2%	15.8%	43.9%	40.5%	47.3%
Kalutara	3.9%	0.046	0.035	0.061	11.5%	8.7%	15.0%	40.4%	38.6%	42.2%
Kurunegala	5.7%	0.048	0.036	0.063	11.8%	8.9%	15.4%	40.8%	39.2%	42.4%
Mullaitivu	5.4%	0.054	0.024	0.114	13.8%	6.2%	28.1%	38.8%	35.8%	41.8%
Ampara	3.5%	0.058	0.040	0.085	13.9%	9.5%	19.9%	41.9%	40.1%	43.7%
Trincomalee	3.7%	0.059	0.039	0.090	14.6%	9.5%	21.9%	40.5%	39.1%	41.9%
Kilinochchi	1.6%	0.060	0.037	0.096	15.2%	9.3%	24.0%	39.1%	36.9%	41.4%
Anuradhapura	1.9%	0.071	0.052	0.097	18.0%	13.1%	24.4%	39.5%	37.9%	41.0%
Matara	1.3%	0.074	0.056	0.098	17.4%	13.1%	22.8%	42.8%	NE	NE
Kegalle	2.0%	0.075	0.053	0.107	18.2%	12.6%	25.5%	41.6%	40.1%	43.0%
Matale	3.2%	0.081	0.056	0.115	20.4%	14.2%	28.4%	39.7%	37.7%	41.8%
Hambantota	3.7%	0.081	0.060	0.110	20.4%	14.9%	27.2%	40.0%	NE	NE
Batticaloa	2.8%	0.085	0.058	0.123	20.2%	13.9%	28.4%	42.1%	39.4%	44.9%
Polonnaruwa	6.1%	0.085	0.056	0.128	20.2%	13.4%	29.4%	42.1%	39.6%	44.7%
Kandy	3.0%	0.096	0.077	0.118	21.9%	17.6%	26.8%	43.7%	42.1%	45.4%
Vavuniya	3.2%	0.110	0.069	0.169	26.3%	16.3%	39.4%	41.7%	NE	NE
Mannar	2.7%	0.112	0.075	0.163	27.0%	17.7%	38.9%	41.4%	NE	NE
Ratnapura	3.5%	0.116	0.091	0.146	28.0%	22.1%	34.8%	41.3%	40.0%	42.7%
Monaragala	2.9%	0.141	0.107	0.184	32.7%	25.0%	41.5%	43.2%	40.8%	45.7%
Badulla	4.2%	0.153	0.122	0.191	36.6%	29.1%	44.7%	41.8%	40.0%	43.7%
Nuwara Eliya	3.1%	0.193	0.157	0.236	44.2%	35.8%	52.9%	43.8%	42.1%	45.4%

Notes: NE (Not Estimated)
Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

7. The confidence intervals for the intensity of multidimensional poverty in the districts of Matara, Hambantota, Vavuniya and Mannar, are not calculated for either two reasons: **a)** either everyone is almost uniformly poor, or **b)** there are very few poor people.

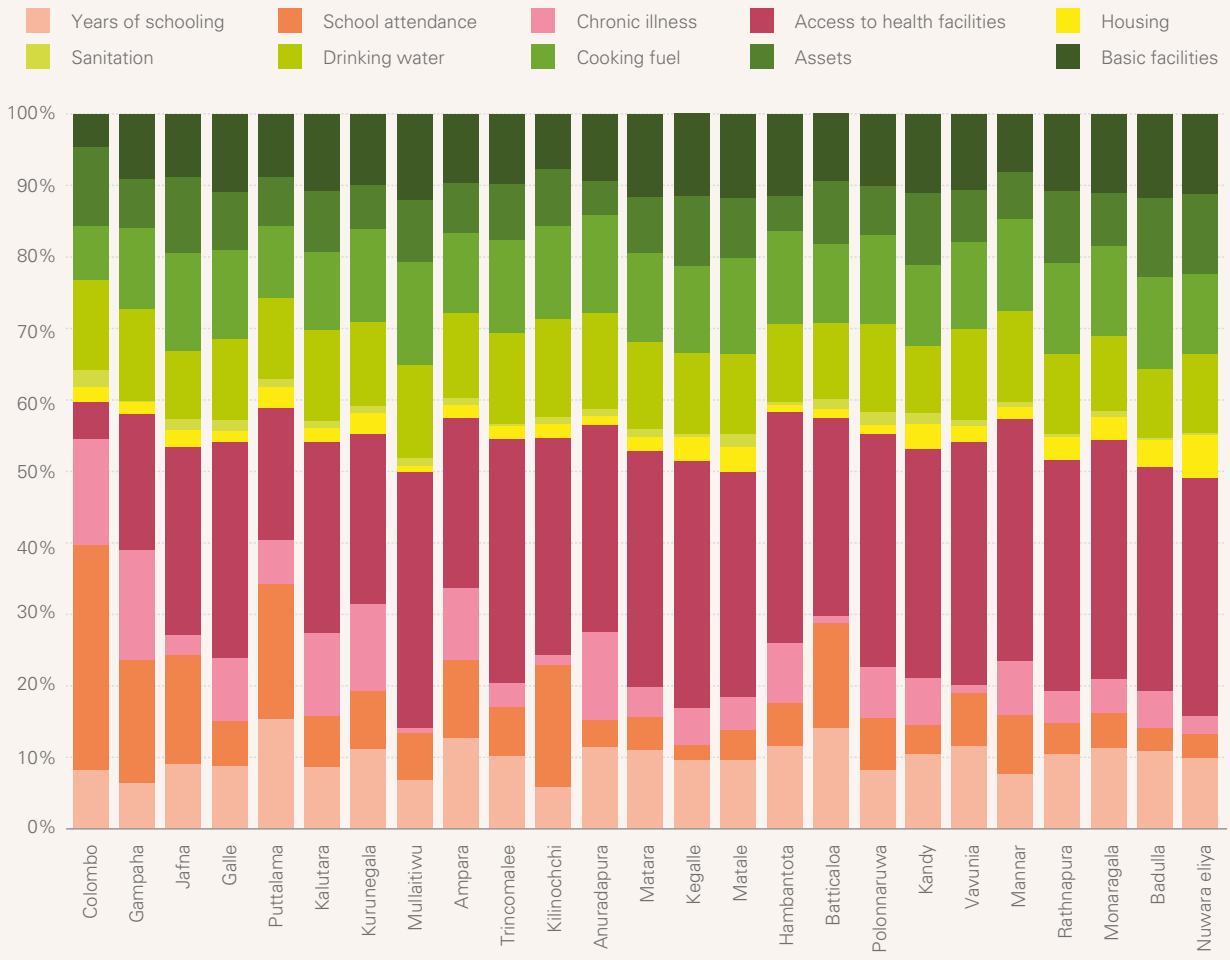
Figure 6b | Incidence of Multidimensional Poverty by districts



Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

To chart policy priorities and design high-impact policies in Sri Lanka, Figure 7 shows the percentage contributions of each of the weighted indicators to the national MPI for each district. Districts are ranked from poorest to least poor, according to the national MPI numbers presented in Table 4. In the district with the lowest levels of multidimensional poverty, Colombo, school attendance has the largest contribution to the MPI. Years of schooling also contributes most significantly in Puttalam, whereas access to health facilities contributes the most in all the other districts. To use the percentage contributions for policy, consider the example of Matale and Hambantota in Figure 7, which have nearly the same MPI value. It might be assumed that anti-poverty policies would be the same. But both education indicators ( ) and chronic illness ( ) contribute more to multidimensional poverty in Hambantota than in Matale, whereas deprivations in housing, sanitation ( ), and assets ( ) contribute more in Matale. In terms of policy this means that a uniform approach is not cost-effective, because the different composition of indicators in each district requires different policy and budgetary responses.

Figure 7 | Percentage contribution by indicator to Multidimensional Poverty Index by district (ordered by MPI)



Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.


ORIES

Disaggregation by age

In addition to geographic location, the national MPI is disaggregated by age groups, which is useful for identifying priority groups. Table 5 shows that people aged 65 and older and children aged 5-17 are the poorest. Persons 65 and older have the highest headcount ratio (17.9 per cent), intensity (42.5 per cent), and MPI (0.076) followed by children 5-17 (16.9 per cent of them are multidimensionally poor). Children aged 0-4 are the least poor group by the national MPI but are the focus of the special child study in Part III of this national multidimensional poverty report, in part because additional indicators are particularly important in order to understand their situation.

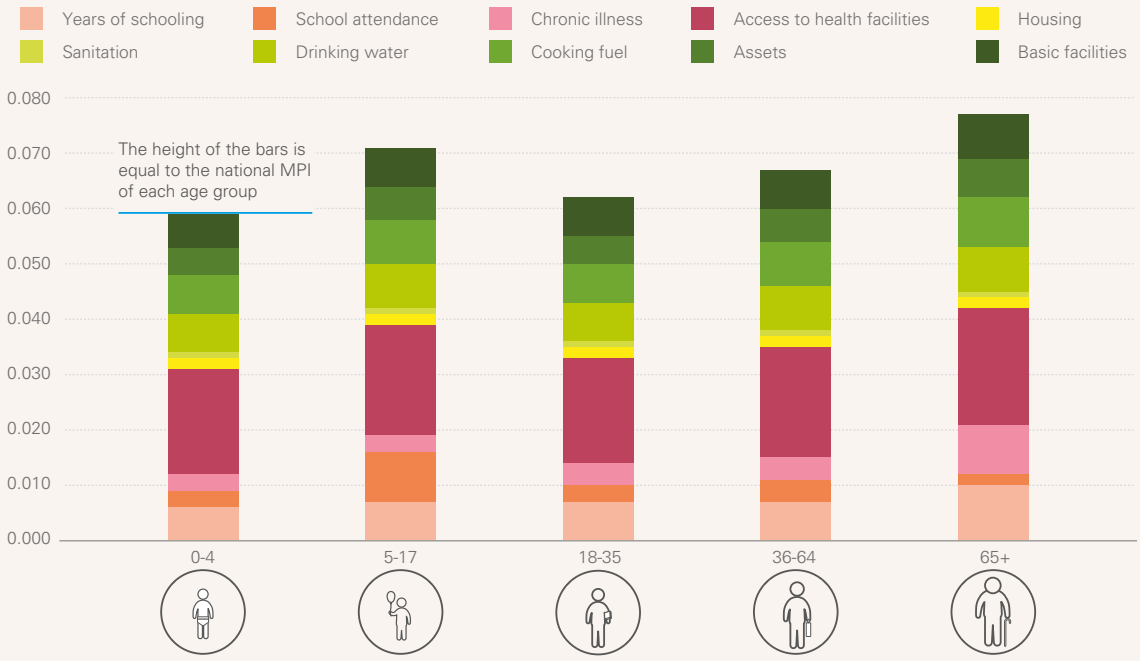
Table 5 | Multidimensional poverty by age group

Age group	Population Share (%)	MPI			Incidence or Headcount Ratio (H)			Intensity (A)		
		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)	
0-4	6.6%	0.057	0.052	0.064	14.0%	12.6%	15.5%	41.0%	40.3%	41.7%
5-17	21.2%	0.071	0.066	0.076	16.9%	15.8%	18.1%	41.8%	41.2%	42.4%
18-35	22.9%	0.061	0.056	0.067	14.8%	13.7%	16.0%	41.3%	40.7%	41.9%
36-64	37.2%	0.066	0.062	0.071	16.0%	15.0%	17.1%	41.4%	41.0%	41.9%
65+	12.2%	0.076	0.070	0.083	17.9%	16.5%	19.4%	42.5%	41.9%	43.2%

Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

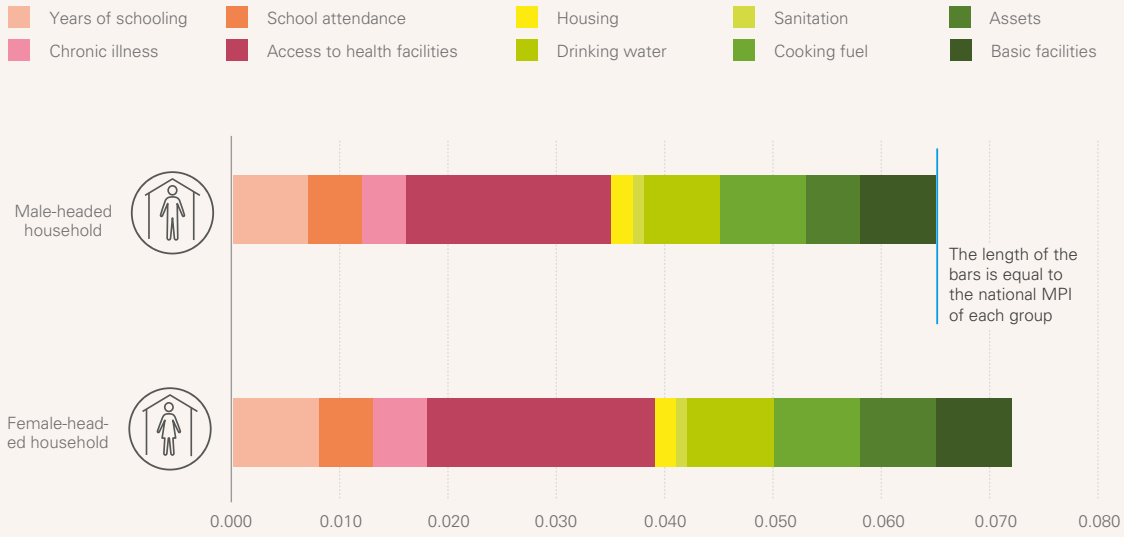
Analysing the composition of poverty by age group provides powerful insights for policy action. Figure 8 shows the absolute contributions by indicator to the national MPI of each age group. The height of the bars is equal to the national MPI of each group. Across all age groups, the deprivation in access to health facilities contributes by around one-third to the national MPI of each group and is larger for children under the age of five (33.5 per cent). This is followed by the use of solid fuel to cook and the lack of an improved source of drinking water. Living in a household with any school-age child who is not attending school contributes more to the national MPI of children aged 5-17 years than to the national MPI of the other age groups. Among the elderly, the chronic illness indicator is higher while in children under five years old it is very low. Nonetheless, it is the dimension of living standards that contributes more to the national MPI for all groups, with all indicators contributing very similarly across age groups.

Figure 8 | Absolute contributions by indicator to Multidimensional Poverty Index by age group



Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

Figure 9 | Absolute contributions by indicator to Multidimensional Poverty Index by household headship



Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

Disaggregation by household headship

Disaggregating the national MPI by the gender of the household head to explore gender inequality finds that there are no statistically significant differences in the incidence, intensity or the MPI between male and female-headed households. Table 6 shows that, although the incidence of multidimensional poverty in female-headed households (17.2 per cent) is higher than in male-headed households (15.7 per cent), as is their national MPI (0.072 versus 0.065, respectively), the differences are not statistically significant.[8]

Table 6 | Multidimensional poverty by household headship

Household Headship	Population Share (%)	MPI			Incidence or Headcount Ratio (H)			Intensity (A)		
		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)	
Male-headed household	78.7%	0.065	0.061	0.070	15.7%	14.7%	16.8%	41.5%	41.0%	42.0%
Female-headed household	21.3%	0.072	0.066	0.079	17.2%	15.7%	18.8%	41.9%	41.2%	42.6%

Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

The study of the composition of poverty by household headship reveals no statistically significant difference in the censored headcounts of each deprivation between groups, meaning that the indicators contribute equally to the overall poverty across both groups. This is visible in Figure 9, where although the MPI (the height of the bar) is higher for women (though this difference is not statistically significant), the composition is equivalent between both household types.

8. This conclusion is driven by the overlap of the confidence intervals of each estimate. Nonetheless, a proper statistical test should be performed to confirm the robustness of this conclusion.

Breakdown by components of some indicators

Some of the indicators considered in the national MPI, such as drinking water and basic facilities, have several components. In this section, we are interested in analysing the proportion of the population which is only deprived in some of the components but not in others, as well as the proportion of the population who is deprived in some of the components but not in others and at the same time is multidimensionally poor. It is important to recall that being deprived in any of the components of each indicator, implies being deprived in the respective indicator, although this does not mean that the person would be poor.

Drinking water

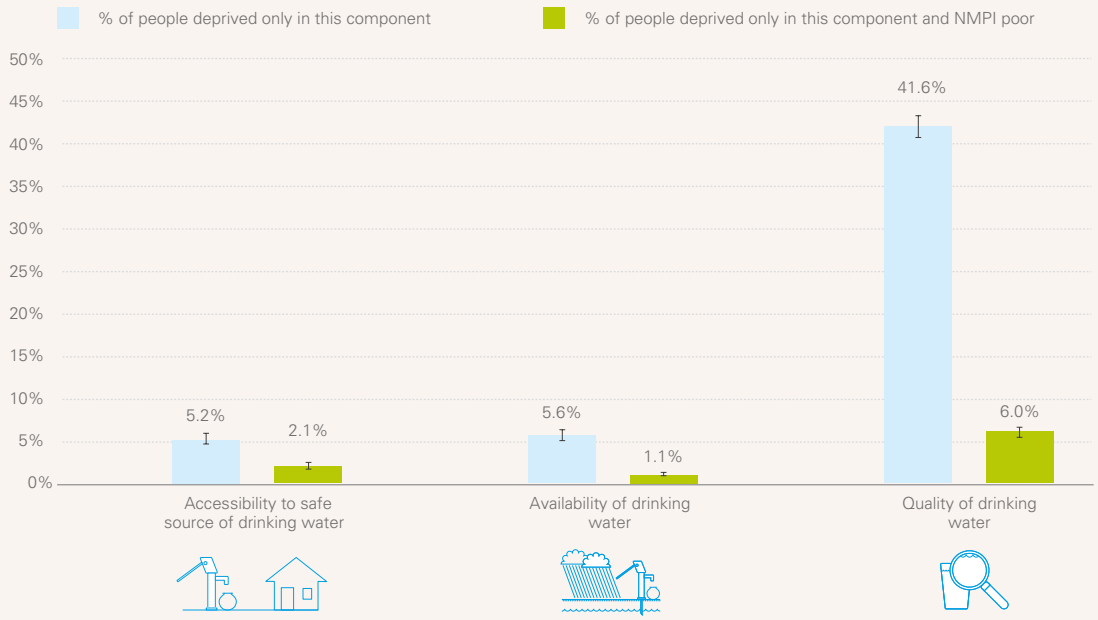
The indicator of drinking water is formed of three parts: 1) accessibility, 2) availability and 3) quality; so that a household and all its members are identified as deprived in this indicator if

1. the household has **no access** to a safe source of drinking water, or the time/distance to collect is at least 15mins/1km; or
2. there has been **insufficient drinking water** for the last month; or
3. the quality of drinking water is **not improved.**

Figure 10 reveals large disparities between the deprivations only in quality of drinking water (41.6 per cent of the population) and the other two components (around 5 per cent), suggesting that the deprivation in the drinking water indicator is mainly driven by the type of procedure the household applies to the water it drinks. This means that, most of the time, people who are deprived of *drinking water* have access to a safe source of drinking water and had sufficient drinking water during the last month. But they are deprived because the procedures applied to the water they drink is either to let it stand and settle or to use a piece of clothing for filtering or to not use any method. Note that many persons who are deprived in this way are not multidimensionally poor. Indeed, Figure 10 also shows that only 6 per cent of the population is only deprived in the quality of drinking water component and is multidimensionally poor at the same time, whereas 35 per cent of the population is non-poor, but still deprived in this way, making this a priority for both poor and non-poor populations.

There is a visible but smaller difference between the percentage of population who is only deprived in access to a safe source of drinking water (5.2 per cent), or in availability (5.6 per cent) and the percentage of population who is only deprived in this component and is also multidimensionally poor (2.1 per cent and 1.1 per cent respectively). In both of these cases, more than half of those deprived, still, are non-poor, although the difference is smaller within the accessibility aspect. Hence, enhancing the accessibility to a safe source of drinking water should be a priority.

Figure 10 | Proportion of population only deprived in each component of drinking water and proportion of population only deprived in each component and national MPI poor

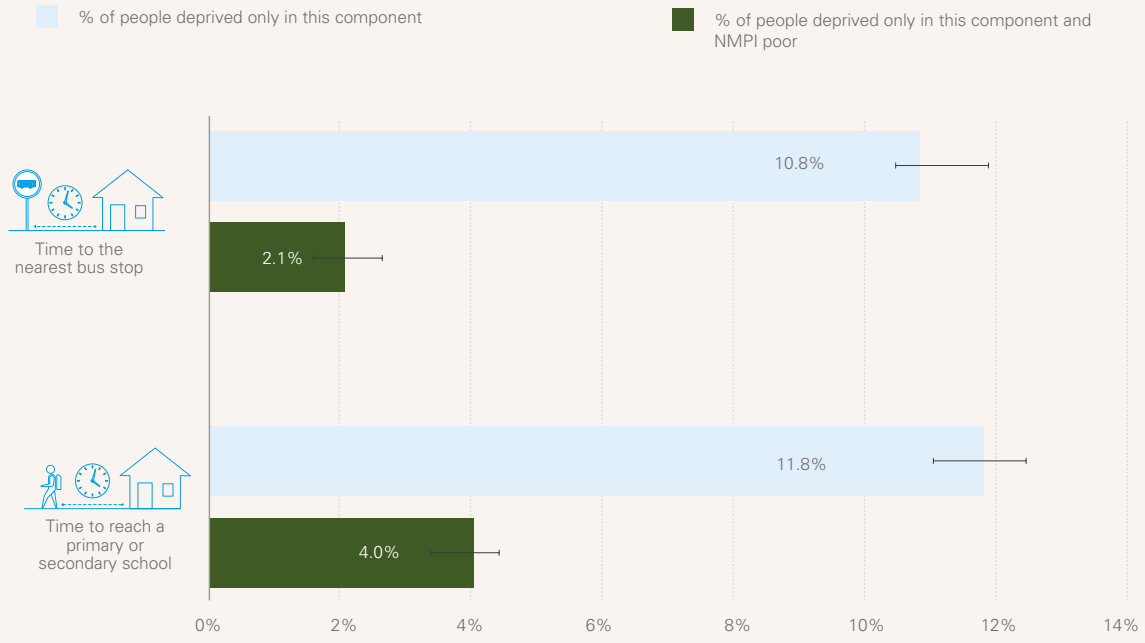


Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

Basic facilities

The basic facilities indicator comprises of two components: 1) the time to transport facilities and 2) the time to educational facilities. A household and all its members are identified as deprived in this indicator if 1) the household requires at least 15 minutes or more to reach the nearest bus stop; or 2) the household requires at least 30 minutes or more to reach a primary or secondary school. Figure 11 shows that both deprivations are important nationally and affect roughly one in 10 persons. The lower bars show that both are also important among the poor and need to be addressed. We observe that poor people experience small but significantly higher deprivations in the time to reach either a primary or a secondary school, compared to the time required to reach the nearest bus stop. This suggests that while both are important, improving the distance to educational facilities cannot be ignored.

Figure 11 | Proportion of population only deprived in each component of basic facilities and proportion of population only deprived in each component and national MPI poor



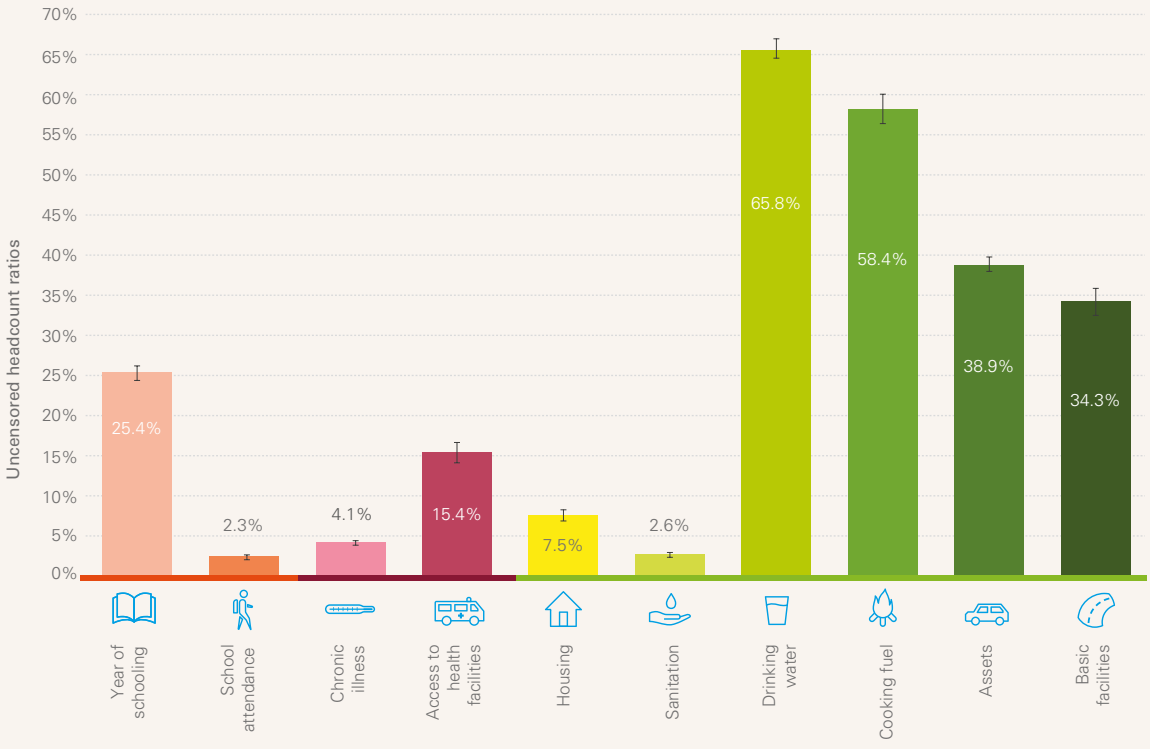
Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

National uncensored headcount ratios

To conclude with the analysis of the main results of the National Multidimensional Poverty Index of Sri Lanka, Figure 12 presents the uncensored headcount ratios for each indicator. Uncensored headcount ratios show the total percentage of the population who are deprived in the corresponding indicator – whether they are poor or non-poor.

As the figure shows, the highest deprivations are found for the access to a safe source of drinking water (with 65.8 per cent of the population being deprived in this indicator), cooking fuel (58.4 per cent), assets (38.9 per cent) and access to basic facilities, such as the closest bus stop or primary or secondary school previously mentioned (34.3 per cent). On the other hand, some indicators show much lower rates of deprivation. In particular, the rate of deprivation in school attendance (2.3 per cent) is the lowest among all indicators, and relatively fewer people are deprived in sanitation (2.6 per cent) and in chronic illness (4.1 per cent).

Figure 12 | National uncensored headcount ratios



Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

2.2.3 Robustness of results and redundancy analysis

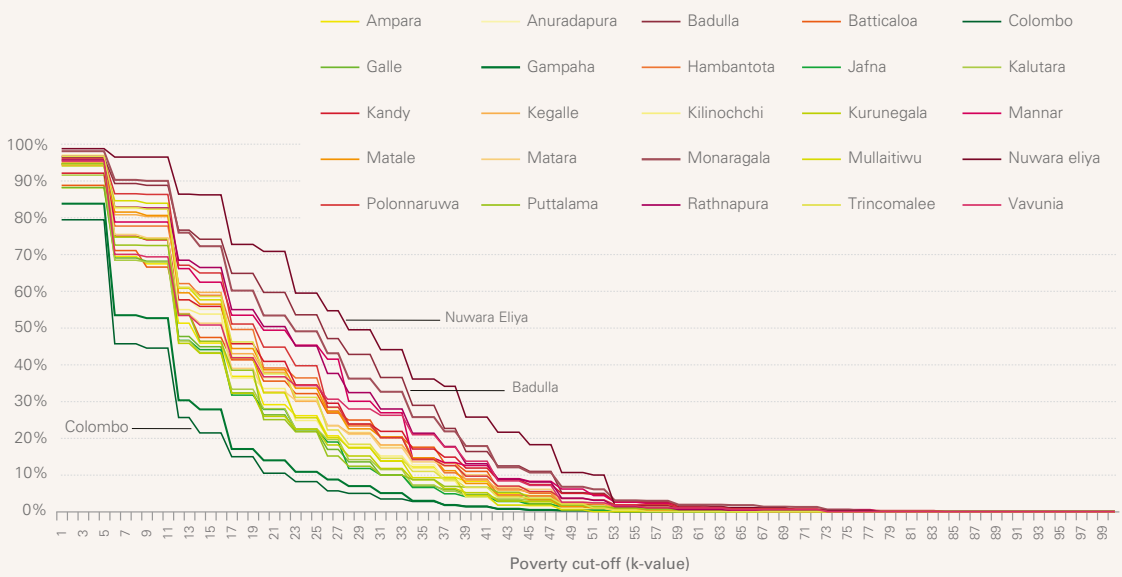
This last section presents robustness tests for the choice of the k-value (poverty cut-off), the different structures that were considered and which assigned different weights to each dimension, as well as a redundancy analysis. This analysis confirms that the national MPI results presented in the previous sections are not highly sensitive to 'conceptual' changes, even when the poverty line is modified with respect to the one considered (k=33 per cent) and when the dimensions, and hence the indicators, have a higher or lower weight.

Robustness to alternative poverty cut-offs and to alternative weights of the dimensions

Figure 13 plots the value of H for each district and various levels of poverty cut-off. The crossing lines in this figure show that there is not a clear ranking in terms of national poverty between districts for all possible cut-offs. However, most of the lines do not cross. We also see that the poverty rate in the district of Colombo is the lowest among all districts for every cut-off between 1 per cent and 52 per cent. Thus, the average incidence of multidimensional poverty in Colombo is the lowest in the country irrespective of the chosen poverty cut-off within this range.

On average, the converse is true for Nuwara Eliya, which is identified as the district with the highest average national multidimensional poverty headcount ratio for every cut-off between 1 per cent and 52 per cent. For every cut-off between 1 per cent and 50 per cent, Colombo and Gampaha are identified, on average as the two least- national MPI poor districts in the country. The national MPI-poorest districts between 60 per cent and 63 per cent are Nuwara Eliya, Badulla and Monaragala.

Figure 13 | District poverty rates (H) for different values of the poverty cut-off k



Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

Given that the national MPI is based on a sample of the Sri Lankan population, it is subject to sampling error. Thus, it is important to consider the standard errors when assessing the robustness of the ordering of the districts according to their national MPI. To do this, we first compare the national MPI values for each pair of districts under the chosen poverty cut-off of 33 per cent, equal weights for the three dimensions, accounting for the national MPI standard errors.[9] We then assess whether it is possible to establish, for example, that i) district A is poorer than district B, ii) district B is poorer than district A, or if iii) we cannot statistically determine which one is poorer. This district ordering is taken as the baseline. We then perform robustness tests to changes in the poverty cut-off to 30 per cent and 40 per cent, and in the dimension-weighting scheme as follows.

We estimate the district national MPI for the alternative poverty cut-offs k=30 per cent and k=40 per cent, under the selected weighting scheme. We consider a pairwise comparison to be robust if the district ordering established at baseline is preserved. We found that half (51.33 per cent) of the 300 possible pairwise comparisons of national MPI levels across districts are significantly different at the baseline, and around 80 per cent are also significantly different under the alternative cut-offs and maintain the same ordering of which is poorer. This shows that the district orderings by the national MPI are largely stable with respect to changes in the poverty cut-off.

Turning now to district ordering stability with respect to the dimension-weighting scheme, we perform similar pairwise comparison tests to assess the relationship between the ordering obtained under the baseline (k=33 per cent and a weight of 33 per cent for each dimension), and alternative weighting schemes. We consider the three alternative schemes previously explained, where each dimension takes the weight of 50 per cent and the other two 25 per cent.

9. This information is already presented in the Table 4 of the previous section.

Then, we compare the ordering of the districts according to the national MPI and the three MPIs with alternative weighting structures. The results show that 82.5 per cent of the pairwise comparisons that are significantly different in the national MPI structure are also significantly different, with the same districts being poorer, when the Health dimension has a weight of 50 per cent. This percentage increases to 84.4 per cent when the Education dimension has a weight of 50 percent, and reaches 90.3 per cent when the Standard of Living dimension has a weight of 50 per cent. These results show the extent to which the orderings of the national MPI at the district level are stable and maintained most of the time when the weights scheme of the dimensions is changed.[10]

The pairwise ordering analysis above is the most authoritative analysis and the one that is used to assess the robustness of the national MPI. However, because some readers will be more familiar with rank correlations, we present these analyses below, keeping in mind that rank correlations are less precise because they do not consider sampling errors.

Table 7 presents the Spearman and Kendall Tau-b rank correlation coefficients for the rankings of the districts using the selected poverty cut-off, k=33 per cent, and the ranking for alternative poverty cut-offs of 30 per cent, 35 per cent, 40 per cent, 45 per cent and 50 per cent. The Spearman coefficient is higher than 0.8 for alternative poverty lines between k=30 per cent and k=50 per cent. Similar results are found when using the Kendall Tau-b correlation coefficient, which is above 0.7 for each of the values between k=30 per cent and k=50 per cent, and rises to 0.9 for k=30 per cent and k=35 per cent.[11] This means that the ranking comparisons of the districts according to their national MPI using a poverty cut-off of 33 per cent is preserved to a large extent (at least 70 per cent of the time) when we consider alternative poverty lines between 30 per cent and 50 per cent.

Table 7 | Correlation among districts ranks for different poverty cut-offs

		k = 33%
k = 30%	Spearman	0.995
	Kendall Tau-b	0.967
k =35%	Spearman	0.982
	Kendall Tau-b	0.913
k = 40%	Spearman	0.941
	Kendall Tau-b	0.807
k = 45%	Spearman	0.907
	Kendall Tau-b	0.767
k = 50%	Spearman	0.872
	Kendall Tau-b	0.713

Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

We also analyse the comparisons in the ranking of the districts when the weights of the dimensions are modified from the equal weights established in the national MPI (each dimension weights one-third or 33 per cent). Therefore, we consider three alternative structures where each dimension takes the weight of 50 per cent and the other two 25 per cent, and we calculate the rank correlation coefficients of Spearman and Kendall Tau-b for the four combinations of weights across dimensions. The analysis reveals that the Spearman coefficient is higher than 0.8 and the Kendall Tau-b coefficient is higher than 0.7 (Table 8). This suggests that the ranking comparisons of the districts according to their national MPI using equal weights for the three dimensions is also preserved to a large extent (at least 70 per cent of the time) when we consider alternative dimension-weighting schemes.

10. Please, refer to the Table 19 in the Appendix for a summary of these results.
11. The Kendall Tau-b rank correlation coefficient is always lower than Spearman as it accounts for tied ranks.

Table 8 | Correlation among districts ranks for different weight structures

		Rank Correlation Coefficients	NMPI Weights 1	NMPI Weights 2	NMPI Weights 3
E = Education			33% E	50% E	25% E
H = Health			33% H	25% H	50% H
SL = Standard of Living			33% SL	25% SL	25% SL
NMPI Weights 2	50% E	Spearman	0.941		
	25% H				
	25% SL	Kendall Tau-b	0.813		
NMPI Weights 3	25% E	Spearman	0.963	0.899	
	50% H				
	25% SL	Kendall Tau-b	0.860	0.753	
NMPI Weights 4	25% E	Spearman	0.968	0.862	0.945
	25% H				
	50% SL	Kendall Tau-b	0.887	0.713	0.840

Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

Redundancy analysis

A final question is whether each indicator adds new information about poverty. It might be the case, for example, that years of schooling and school attendance have the same uncensored headcount ratio and identify exactly the same people as deprived. If this were the case, then in the interests of parsimony we might be able to drop one indicator with no loss of insight. Table 9 below provides the outcome of a redundancy test. The entries show the percentage of the people who could be deprived in both indicators, who actually are deprived. For example, consider sanitation and school attendance (see Figure 12). Just over 2 per cent of the population are deprived in each indicator. So we might expect them to be the exact same people. If they were, then the box with the underscored values would be 1.0. In fact, it is 0.062. That means that only 6.2 per cent of the people who could be deprived in both sanitation and school attendance, are actually deprived in both. Looking across all the indicators, the highest redundancy, between cooking fuel and access to health facilities, only finds 83.4 per cent of the population who could be deprived in both, actually are deprived in both indicators. By this table we assess that each indicator is adding new information to the national MPI.

Table 9 | National Multidimensional Poverty Index – Redundancy test of uncensored headcount ratios (R_0 measure)

	Years of schooling	School attendance	Chronic illness	Access to health facilities	Housing	Sanitation	Drinking water	Cooking fuel	Assets	Basic facilities
Years of schooling	1.000									
School attendance	0.383	1.000								
Chronic illness	0.449	0.056	1.000							
Access to health facilities	0.389	0.169	0.153	1.000						
Housing	0.499	0.133	0.081	0.328	1.000					
Sanitation	0.432	0.062	0.055	0.213	0.350	1.000				
Drinking water	0.760	0.729	0.667	0.758	0.804	0.816	1.000			
Cooking fuel	0.759	0.631	0.712	0.834	0.811	0.763	0.712	1.000		
Assets	0.534	0.475	0.498	0.510	0.732	0.640	0.692	0.690	1.000	
Basic facilities	0.441	0.393	0.375	0.826	0.567	0.399	0.702	0.724	0.460	1.000
Uncensored headcount ratio	0.254	0.023	0.041	0.154	0.075	0.026	0.658	0.584	0.389	0.343

Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

Table 10 repeats this analysis for the poor population. Poor individuals are identified because they are experiencing multiple deprivations, therefore we expect redundancy to be higher in this table among some variables. Indeed, it is higher for cooking fuel and for health facilities; these divergences are to be expected because of the much higher censored headcount ratios for cooking fuel and the high weight on health facilities, and so do not disqualify these indicators.

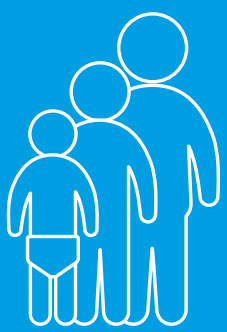
Table 10 | National Multidimensional Poverty Index – Redundancy test of censored headcount ratios (R_0 measure)

	Years of schooling	School attendance	Chronic illness	Access to health facilities	Housing	Sanitation	Drinking water	Cooking fuel	Assets	Basic facilities
Years of schooling	1.000									
School attendance	0.473	1.000								
Chronic illness	0.611	0.069	1.000							
Access to health facilities	0.692	0.208	0.237	1.000						
Housing	0.657	0.159	0.121	0.690	1.000					
Sanitation	0.661	0.135	0.126	0.509	0.580	1.000				
Drinking water	0.838	0.836	0.772	0.846	0.877	0.905	1.000			
Cooking fuel	0.905	0.705	0.893	0.933	0.903	0.932	0.900	1.000		
Assets	0.667	0.555	0.633	0.727	0.846	0.829	0.812	0.901	1.000	
Basic facilities	0.756	0.469	0.525	0.898	0.822	0.686	0.840	0.921	0.767	1.000
Censored headcount ratio	0.084	0.018	0.026	0.119	0.035	0.011	0.135	0.145	0.102	0.126

Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

3

Child Multidimensional Poverty Index of Sri Lanka



In Sri Lanka almost one third of the population are children less than 18 years of age. In 2019, out of the 5.9 million child population, nearly 1 million were living in monetary poverty. But we don't know whether they are poor and deprived in other dimensions like health, education, housing and drinking water, for instance, at the same time. Hence, measuring and addressing child poverty in all its dimensions is important and is underscored by the SDGs explicitly including reducing child poverty as a target under Goal 1.

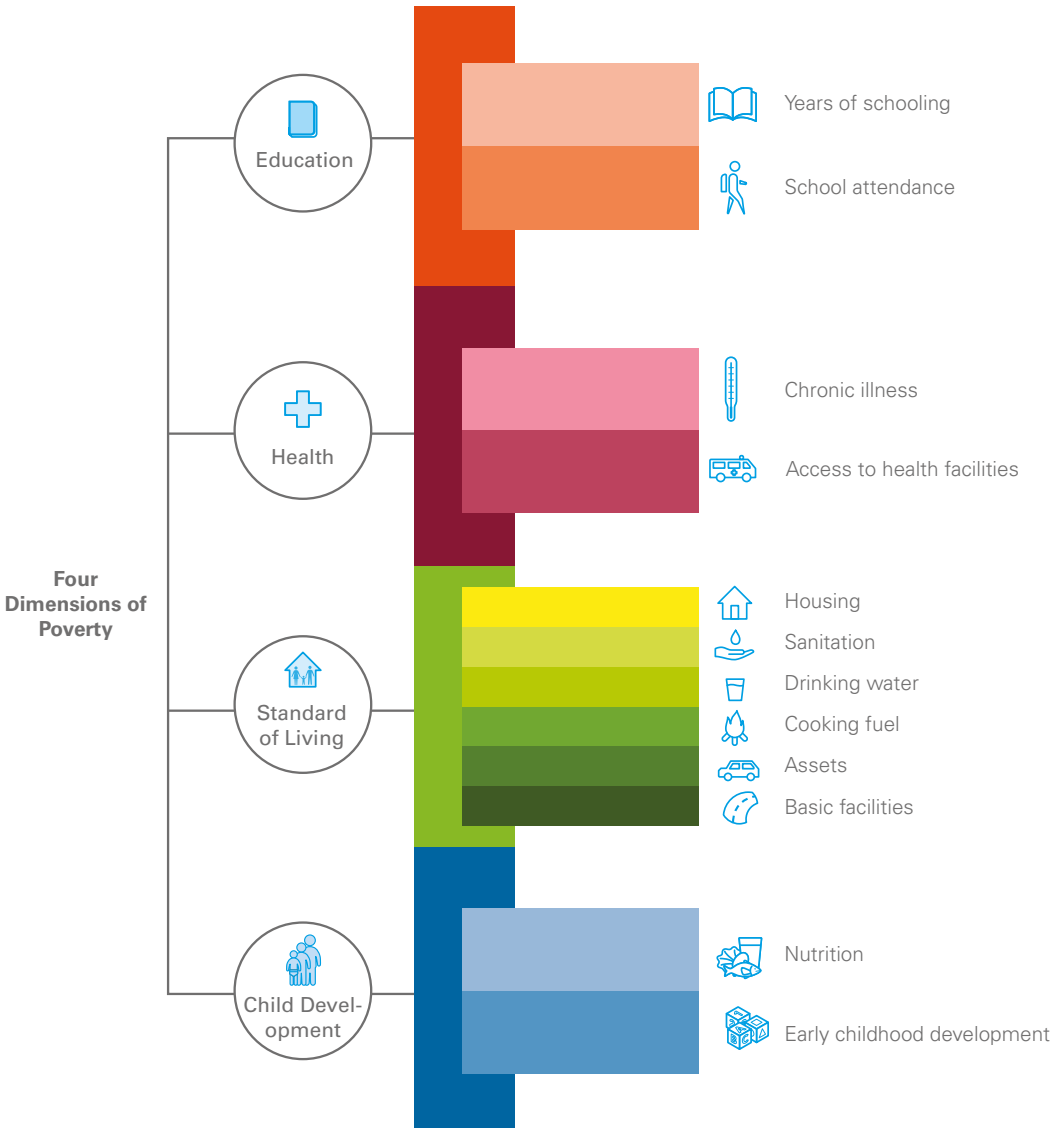
The child MPI for Sri Lanka is a policy tool to direct action towards the population of children between 0-4 years of age. It measures individual poverty among children aged 0-4 years old in a way that is directly linked to and consistent with the national MPI, while also making visible children's distinctive deprivations. First, the child MPI captures all deprivations the child has in the three dimensions of the national MPI. Second, it captures the simultaneous deprivations that each child experiences in a set of child-specific indicators within one dimension.

Consequently, any child who is poor by the national MPI, is also poor according to the child MPI. In addition, the child MPI individually identifies many more children living in non-poor households as requiring policy attention. And now the intensity and composition of poverty also include individual child-specific deprivations. Analysing the child MPI across individual children shows the different deprivations that poor children experience and provides insights into the differences that exist across age groups and between girls and boys.

3.1 DESIGN OF THE CHILD MULTIDIMENSIONAL POVERTY INDEX OF SRI LANKA

Like the national MPI, the child MPI is calculated using the HIES 2019 dataset. The child MPI is composed of four dimensions (education, health, standard of living, and child development) and twelve corresponding indicators (see Figure 14). The first three dimensions are identical to the national MPI of Sri Lanka and capture the deprivations of the household. The fourth dimension measures two deprivations of early childhood: undernutrition (being underweight or stunted) and early childhood development. The indicators tracked by the child MPI have been chosen through extensive consultation with a wide range of government officials and international agencies, principally UNICEF, to ensure that they are representative of the context of Sri Lanka.

Figure 14 | Structure of the Child Multidimensional Poverty Index in Sri Lanka



Early childhood development refers to age-specific deprivations that are likely to prevent the child from healthy physical and cognitive development. The early childhood development indicator is defined differently for children of different ages and has an increasing number of sub-indicators for older children.

- Children **zero to five months** old are deprived in the early childhood development indicator if they don't live with their respective biological parents or if they are left alone in the house for more than one hour
- Children **six to eleven months** are deprived if any of the above conditions apply or if they don't have soft toys at home or if they don't receive support from adults on their respective activities.
- Children **one to three years old** are deprived if any of the conditions for children zero to five months apply, or if they don't have soft toys and books at home or if they don't receive support from adults on their respective activities.
- Children who are **four years old** are deprived if the above conditions for children one to three years old apply or if they are not attending preschool.

In addition, a child is deprived in nutrition if she/he is underweight or stunted. The detailed information of indicators and cut-offs is given in Table 11.

As with the national MPI, each dimension is equally weighted, and the two indicators within the child development dimension are equally weighted. A child 0-4 years old is identified as multidimensionally poor if she/he is deprived in one dimension or more, which corresponds to a poverty cut-off of 25 per cent.[12] This means that every child who is already poor by the national MPI is still poor by the child MPI. In addition, many more children living in non-poor households are poor because they are also deprived in one or both of the two new indicators.

12 Because the national MPI has three dimensions and the child MPI has four dimensions, a k cut-off of 25 per cent for the child MPI corresponds to the population of children that has been identified as multidimensionally poor using the 33 per cent cut-off in the national MPI.

Table 11 | Dimensions, indicators, and weights of the Child Multidimensional Poverty Index of Sri Lanka (0-4 years old children)

	Child Multidimensional Poverty Index (children 0-4 years old)			
	Dimension	**Indicator**	**Deprivation cut-off: A child 0-4 years old is deprived if …**	**Weight**
SAME INDICATORS AS NATIONAL MPI	**Education (1/4)**	Years of schooling	The household has at least one member (aged 17+) with less than the level of schooling that was compulsory when they were studying (age dependent) or has never attended school, or is attending special education	1/16
		School attendance	The household has any school age child (aged 5-16) who is not attending school	3/16
	Health (1/4)	Chronic illness	The household has any member who is suffering from chronic illness that has stopped their usual activities or job for one month or more	1/8
		Access to health facilities	The household's access to health facilities takes 30 minutes or more	1/8
	Standard of Living (1/4)	Housing	The household uses semi-permanent materials for wall, floor or roof of the house	1/24
		Sanitation	The household's facility is not improved, or it is shared with other households	1/24
		Drinking water	The household has no access to a safe source of drinking water, or time/distance to collect is at least 15 mins/1km, or there has been insufficient water for the last month, or the quality of drinking water is not improved	1/24
		Cooking fuel	The household use firewood, kerosene or saw dust/paddy husk for cooking	1/24
		Assets	Does not have at least one of TV, washing machine, fridge, computer, motorbike, three-wheeler, car, van, bus, lorry and does not have more than one of land, livestock, agriculture/fishing equipment (tractor, thresher, combine harvester, fishing boat, fishing nets)	1/24
		Basic facilities	The household requires at least 15 minutes or more to reach the nearest bus stop or 30 min or more to reach a primary or secondary school	1/24
CHILD- SPECIFIC DIMENSION	**Child Development (1/4)**	Nutrition	She/he is underweighted or stunted	1/8
		Early childhood development	She/he is: Zero to five months old and is left alone or in the care of another child younger than 10 years of age at home for more than one hour or if both mother and father are not living with the child Six to eleven months old and is left alone at home more than one hour or if she/he doesn't have soft toys to play or if she/he doesn't receive support from adults in her/his activities or if both mother and father are not living with the child One to three years old and is left alone at home for more than one hour or if she/he doesn't receive support from adults in her/his activities or if both mother and father are not living with the child or if she/he doesn't have books and soft toys to play Four years old and is left alone at home for more than one hour or if she/he doesn't receive support from adults in her/his activities or if both mother and father are not living with the child or if she/he doesn't have books and soft toys to play or if she/he is not attending preschool	1/8

3.2 RESULTS OF THE CHILD MULTIDIMENSIONAL POVERTY INDEX OF SRI LANKA

This chapter presents details of the child MPI based on the HIES 2019 dataset. We first present the child MPI disaggregations as well as the incidence and intensity of child poverty according to the child MPI. We then show *how* children are poor according to each indicator, giving special attention to the new individual indicators for children. The last section presents the robustness analysis, which shows that the child MPI provides about the same policy information even if the weights assigned to the indicators in the Child Development dimension and the poverty cut-off are changed, and the redundancy analysis.

3.2.1 Level of poverty: Child Multidimensional Poverty Index, H, A

Recall that the incidence of multidimensional poverty by the national MPI is 16 per cent, and the disaggregation of that by children aged 0-4 is 14 per cent. According to the child MPI, 42.2 per cent of the 0-4 years old children are multidimensionally poor. So, the child MPI identifies many more children living in non-poor households as requiring policy attention.[13]

The average intensity of poverty, which reflects the share of weighted deprivations each poor child experiences on average, is 35.1 per cent. That is, each poor child 0-4 years old is, on average, deprived in more than one third of the weighted indicators. With 95 per cent confidence, the true value of the intensity of poverty lies between 34.2 per cent and 35.9 per cent.

13 Since all survey-based estimates are based on a sample, each has a margin of error. Thus, the 95 per cent confidence interval is also presented in the tables. In the case of the incidence of child MPI, we can say with 95 per cent confidence that the true child MPI headcount ratio of children 0-4 years of age is between 39.3 per cent and 45.1 per cent.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The child MPI, which is calculated by multiplying the percentage of children who are multidimensionally poor (the incidence, H) by the average share of weighted indicators in which poor children are deprived (the intensity, A), has a value of 0.148. This means that multidimensionally poor children in Sri Lanka experience 14.8 per cent of the total deprivations that would be experienced if all children under five years of age were deprived in all the indicators. With 95 per cent confidence, the true value of the child MPI is between 0.137 and 0.159. The child MPI is the official statistic because it is most sensitive to change.

Table 12 shows the main figures related to the child MPI for 2019, including the headcount ratio or poverty rate among children aged 0-4 years old, H, (or the proportion of children 0-4 years of age identified as multidimensionally poor); and the intensity of poverty (or the average proportion of weighted indicators in which poor children are deprived, A).

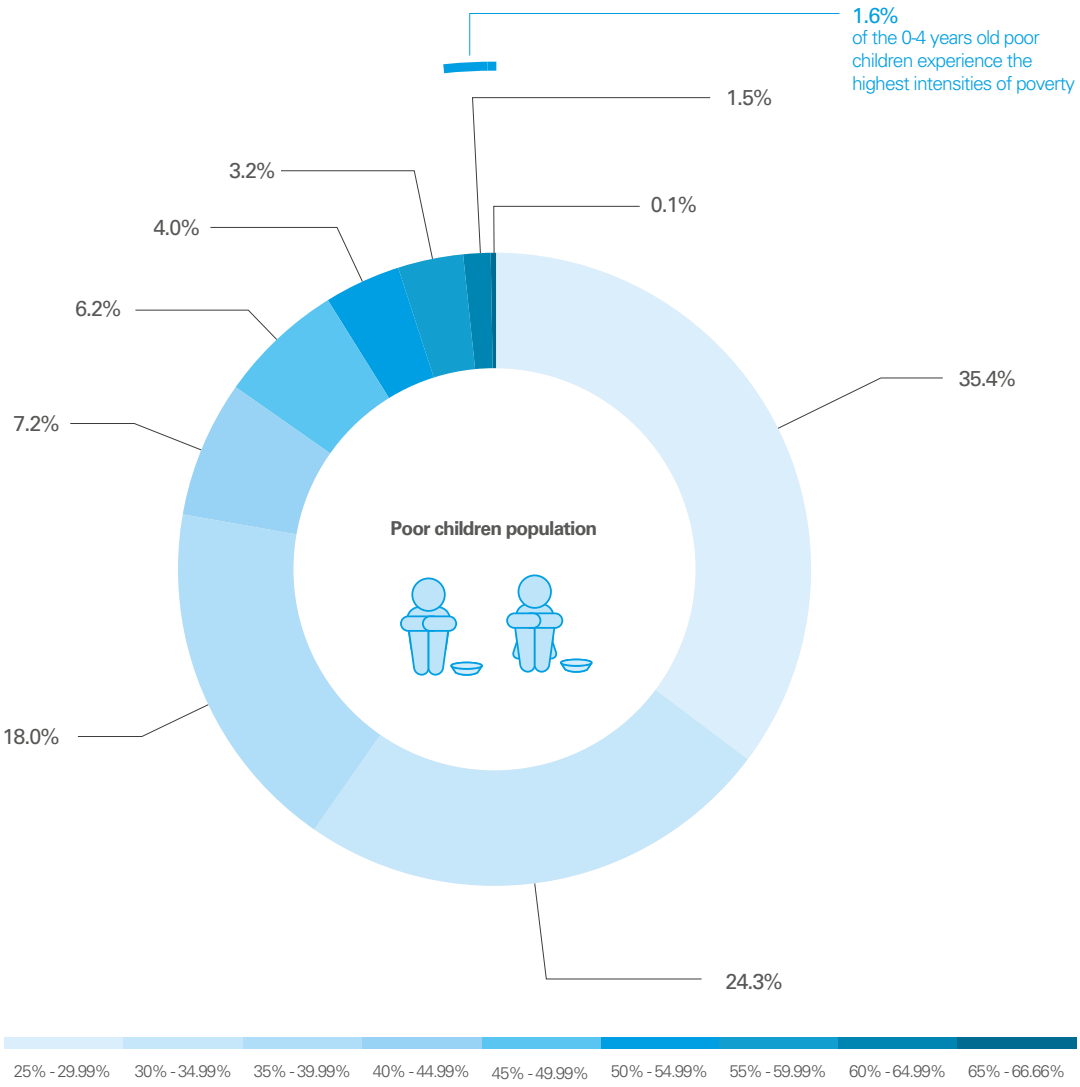
Table 12 | Child Multidimensional Poverty Index, incidence and intensity levels

Poverty Cutoff (k)	Index	Value	Confidence Interval (95%)	
k value=33%	National MPI	0.067	0.062	0.071
	Incidence orHeadcount Ratio (H)	16.0%	15.0%	17.1%
	Intensity (A)	41.6%	41.2%	42.1%
k value=25%	Child MPI	0.148	0.137	0.159
	Incidence or Headcount Ratio (H)	42.2%	39.3%	45.1%
	Intensity (A)	35.1%	34.2%	35.9%

Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.
Note: Children aged 0-4 represent 6.6 per cent of the population of Sri Lanka.

Figure 15 shows the distribution of the intensity of poverty among the 0-4 years old poor children. Around 60 per cent of all poor 0-4 years old children in Sri Lanka are in the lowest intensity band, which is between 25 per cent and 34.9 per cent, and almost 10 per cent of the poor children are deprived in two dimensions or more (have deprivation scores equal to 50 per cent or more). This suggests that further progress in child MPI is a legitimate policy objective even in the short and medium term, as most of the poor children are very near to the multidimensional poverty line. On the other hand, 1.6 per cent of the 0-4 years old poor children experience the highest intensities of poverty, as they are deprived in 60 per cent or more of the weighted indicators. However, no child is deprived in more than two-thirds of the dimensions: the highest deprivation profile is equal to 66.6 per cent.

Figure 15 | What percentage of poor children (0-4 years old) experience what level of deprivation?



Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

3.2.2 Composition of poverty by indicator

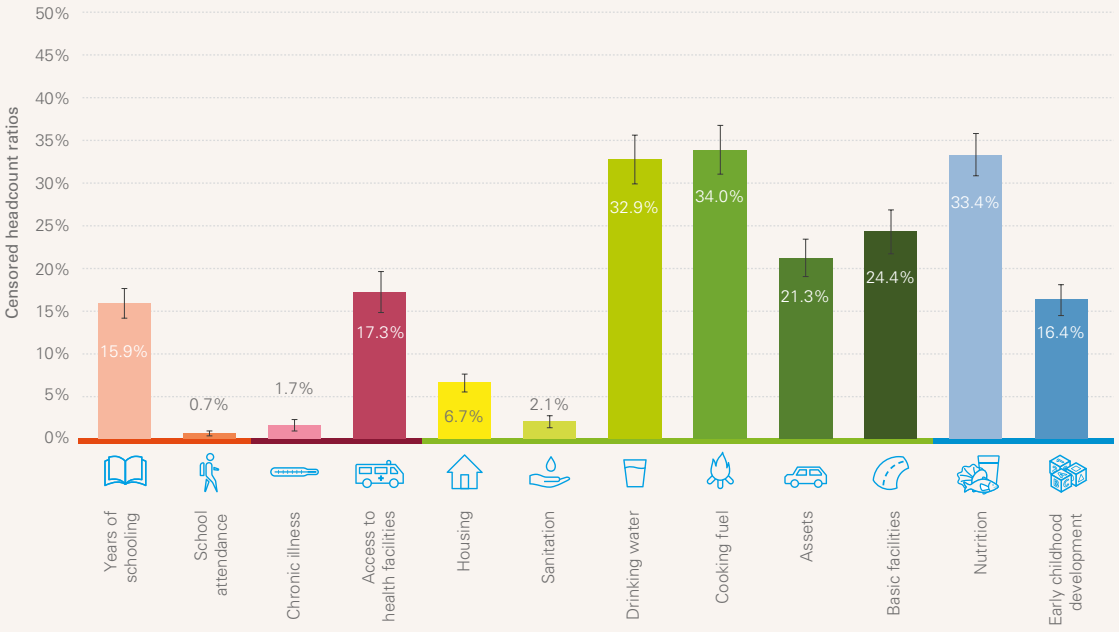
At this point, it is natural to ask what deprivations constitute this poverty and how can they be reduced? To answer these questions, we break the child MPI down by indicator and examine its composition. Understanding the composition of multidimensional poverty among the youngest children in the country is crucial to inform the development of child poverty policies.

National censored headcount ratios

The analysis of the percentage of children 0-4 years old who are multidimensionally poor and also deprived in each of the indicators (the censored headcount ratios) shows those indicators in which the child MPI poor children face the highest levels of deprivations. Recall that the child MPI can also be computed as the sum of the weighted censored headcount ratios. Therefore, a reduction in any deprivation of any poor child (that is, of any censored headcount ratio) will reduce the child MPI and improve the lives of children during their early stages of life.

Figure 16 shows that a large percentage of children 0-4 years old are multidimensionally poor and also deprived in clean cooking fuel (34 per cent) in Sri Lanka. And one-third of children aged 0-4 years old are multidimensionally poor and underweight or stunted (33.4 per cent). In addition, 32.9 per cent of children are multidimensionally poor and lack access to a safe source of drinking water; and 24.4 per cent live in a household that is at least 15 minutes away from a bus stop or at least 30 minutes away from a primary or secondary school. Confronting these deprivations are top priorities for child poverty reduction in Sri Lanka.

Figure 16 | Child Multidimensional Poverty Index: Censored headcount ratios



Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

Disaggregation by age cohort and by sex: Level of poverty and its composition

When applying the property of subgroup decomposability of the child MPI, it is possible to disaggregate the levels of poverty and its composition for the different age cohorts – zero, one, two, three and four years of age – as well as for the sex of the child. In Table 13, the child MPI, incidence, and intensity of poverty are shown by age cohort. As seen in the table, the largest population group is that of children aged 4 years (22.5 per cent), which has particularly high levels of poverty compared to other age groups. Nearly half of the children aged 4 years (47.5 per cent) are multidimensionally poor, which is significantly higher than the 34.2 per cent multidimensional poverty headcount ratio of children aged three years old, but otherwise not significantly different from other age years.

On average, four-year-old poor children experience deprivations in nearly 36 per cent of the weighted indicators, a figure that is not statistically significantly different from those observed in the other age cohorts, and neither from that of the entire population of children aged 0-4 years. As a result, the child MPI for children aged 4 years is 0.170, which is only statistically significantly higher than the child MPI for children aged three years old (0.119).

Table 13 | Child Multidimensional Poverty by age cohort

Age	Population Share (%)	CMPI			H			A		
		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)	
0 years old	17.9%	0.158	0.137	0.182	46.6%	40.4%	53.0%	34.0%	32.5%	35.5%
1 year old	19.2%	0.155	0.134	0.179	43.3%	37.5%	49.3%	35.8%	33.9%	37.8%
2 years old	20.2%	0.135	0.117	0.156	39.2%	33.9%	44.8%	34.5%	33.2%	36.0%
3 years old	20.2%	0.119	0.100	0.142	34.2%	28.7%	40.1%	34.9%	33.2%	36.7%
4 years old	22.5%	0.170	0.152	0.191	47.5%	42.5%	52.6%	35.9%	34.5%	37.3%
National	100.0%	0.148	0.137	0.159	42.2%	39.3%	45.1%	35.1%	34.2%	35.9%

Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019

Analysing the composition of poverty by age cohort (see Figure 17) provides powerful insights for policy action. Across all age groups, nutrition deprivations alone contribute more than one-quarter to the overall child MPI, and it's significantly higher for children under one year of age (that is, who are 0 years old in Figure 17 – 33.3 per cent). This is closely followed by access to health facilities (responsible for nearly 15 per cent of the overall child MPI) and early childhood development (almost 14 per cent). Lacking access to health facilities contributes more to the overall poverty of two and three-year-old children (almost one-fifth), than to the other age groups. Among children aged our years old, the early childhood development indicator accounts for 22.9 per cent of its child MPI, while in children aged two and three years old it is less than 10 per cent. Combined, the contribution of this indicator and nutrition is above 45 per cent in children aged four years old and under the age of one, making the Child Development dimension the leading contributor to overall poverty of 0-4 years old children. The indicators in the standard of living dimension contribute very similarly across age groups.

A truly successful part of this story is that there are no statistically significant differences between the poverty levels of the youngest girls and boys in Sri Lanka. The child MPI is not statistically different (0.150 for girls and 0.146 for boys), and the composition of multidimensional poverty is very similar across boys and girls. This is actually a stellar accomplishment, because it reflects gender equity at that early stage in life that many countries lack (see Figure 18).

Figure 17 | Percentage contribution by indicator to Child MPI by age group (children 0-4 years old)

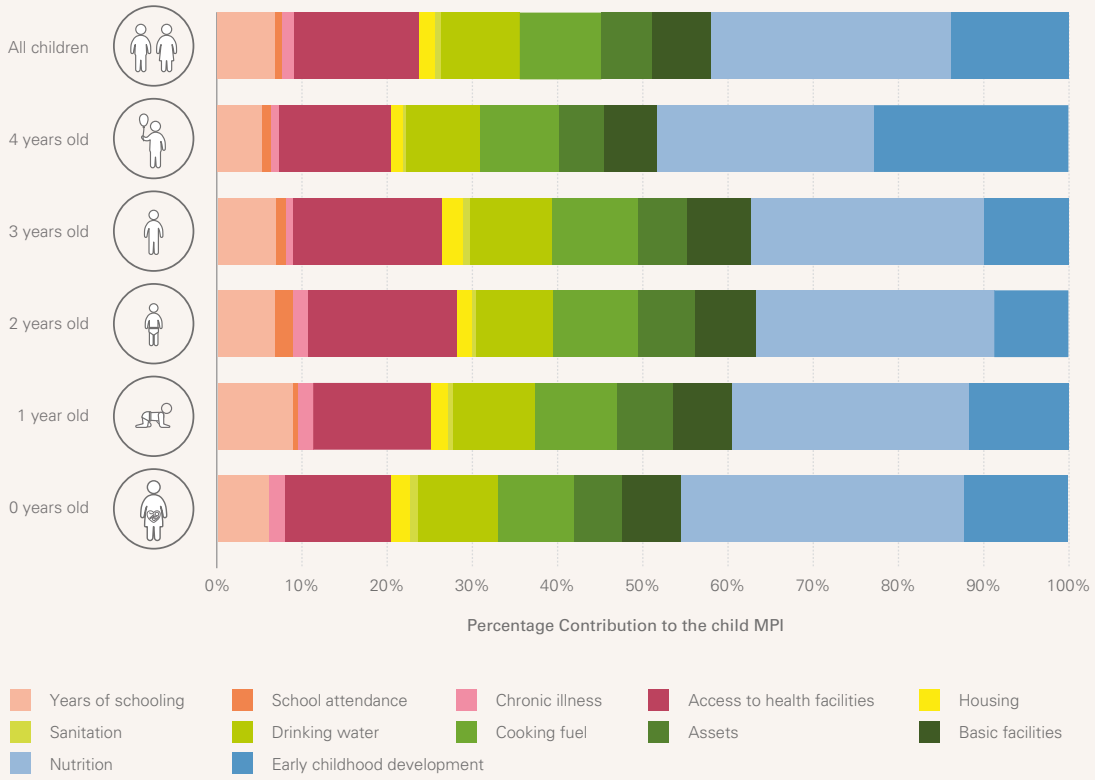
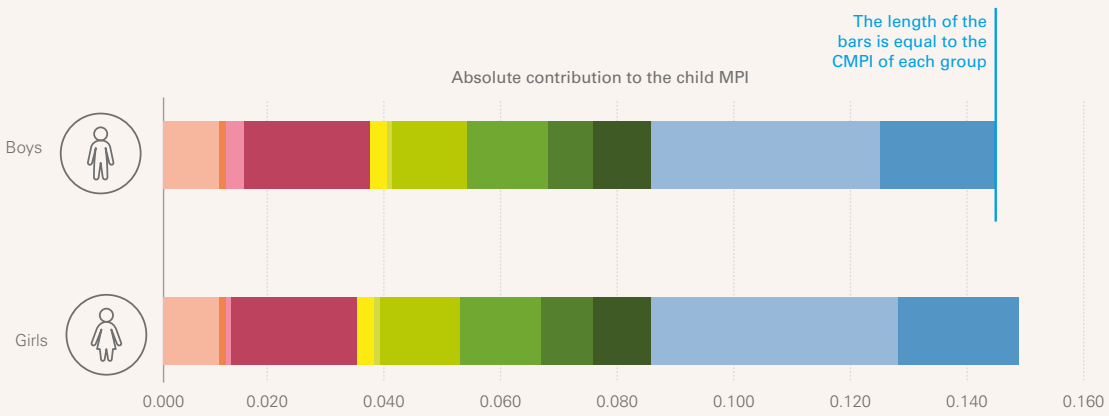


Figure 18 | Absolute contribution by indicator to Child MPI by the sex of the child (children 0-4 years old)



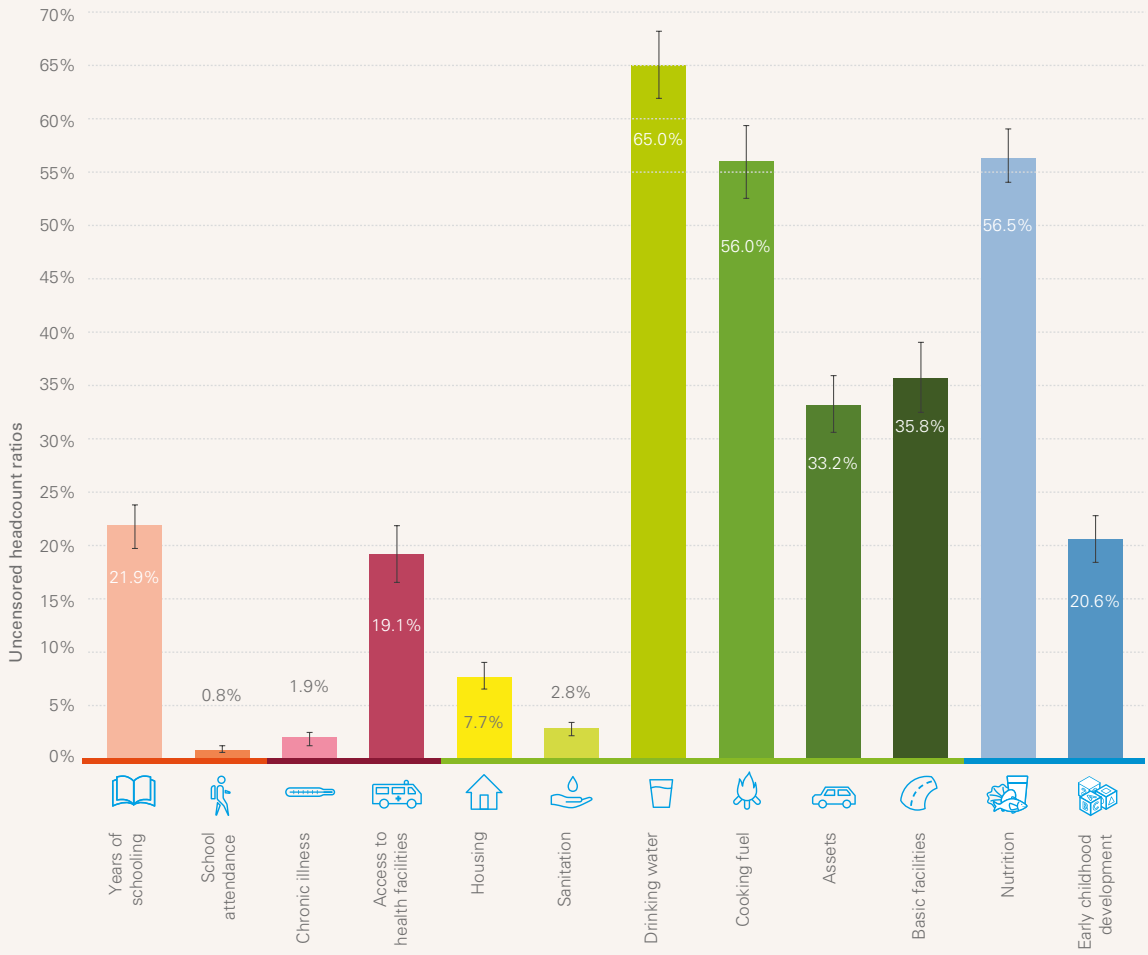
Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019

> There are no statistically signficant differences between the poverty levels of the youngest girls and boys in Sri Lanka. This reflects gender equity at that early stage in life that many countries lack.

National uncensored headcount ratios

To conclude with the analysis of the results of the child MPI of Sri Lanka, Figure 19 presents the uncensored headcount ratios. These headcount ratios are estimated for each indicator, representing the proportion of children aged 0-4 years old who are deprived in the corresponding indicator, irrespective of their poverty status. As the figure shows, the highest deprivations are found for the access to a safe source of drinking water (with 65 per cent of the children being deprived in this indicator), nutrition (56.5 per cent), cooking fuel (56 per cent), and access to basic facilities, such as the closest bus stop or primary or secondary school (35.8 per cent). On the other hand, some indicators show much lower rates of deprivation. In particular, the rate of deprivation in school attendance (0.8 per cent) is the lowest among all indicators, and relatively fewer people are deprived in chronic illness (1.9 per cent) and sanitation (2.8 per cent).

Figure 19 | Child Multidimensional Poverty Index: Uncensored headcount ratios



Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

3.2.3. Robustness of results and redundancy analysis

This last section presents robustness tests for the choice of the k-value (poverty cut-off), the different structures that were considered and which assigned different weights to the indicators considered within the Child Development dimension, as well as a redundancy analysis.

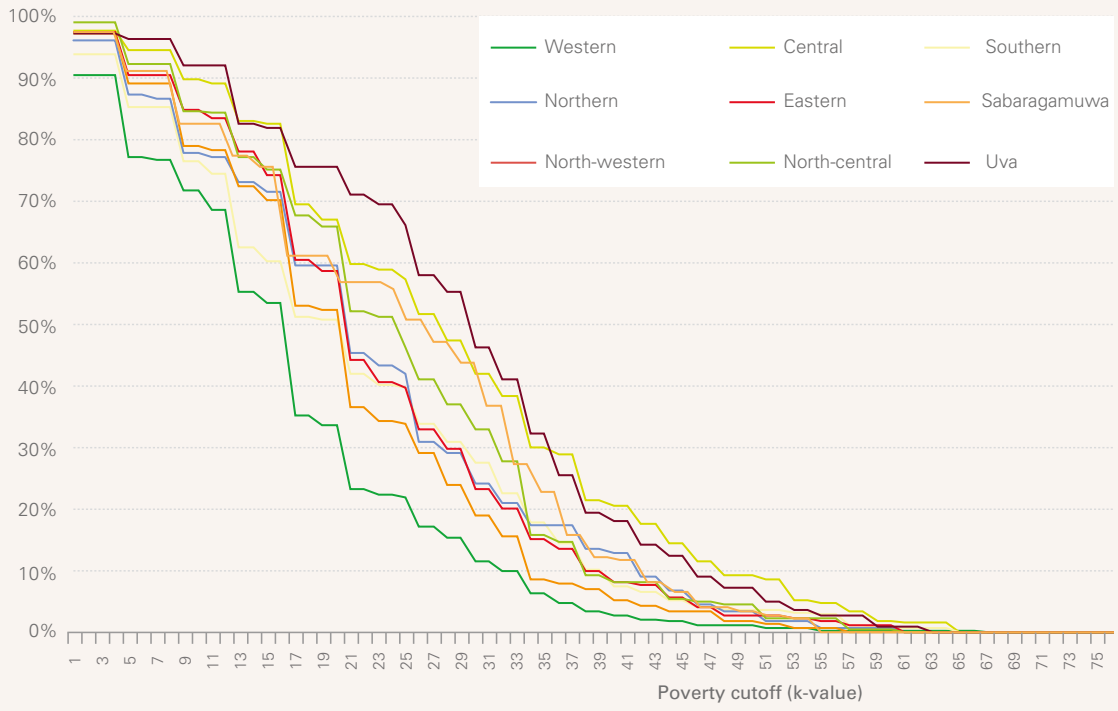
Robustness to alternative poverty cut-offs and weights (child development dimension)

Figure 20 plots the value of H for each province and various levels of poverty cut-off. The crossing lines in this figure show that there is not a clear ranking in terms of child poverty between provinces for all possible cut-offs. However, on average, the poverty rate in the Western province, where the capital Colombo is located, is the lowest among all provinces for every cut-off between 1 per cent and 56 per cent.

Thus, the Western's average incidence of children aged 0-4 years in multidimensional poverty is the lowest in the country irrespective of the chosen poverty cut-off within this range.

On average, the converse is true for Uva, which is identified as the province with the highest average child multidimensional poverty headcount ratio for every cut-off between 1 per cent and 35 per cent. For every cut-off between 13 per cent and 47 per cent, the Western, the Southern and the North-western are identified, on average as the three least child MPI poor provinces in the country. The child MPI-poorest provinces between 36 per cent and 62 per cent are Uva and Central.

Figure 20 | Province poverty rates (H) for dfferent values of the poverty cut-off K



Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

Table 14 presents the Spearman and Kendall Tau-b rank correlation coefficients between the province's rankings using the selected poverty cut-off, k=25 per cent and the ranking for alternative poverty cut-offs of 10 per cent, 15 per cent, 35 per cent and 50 per cent. The Spearman coefficient is higher than 0.7 for alternative cut-offs between k=10 per cent and k=50 per cent. This means that the ranking comparisons of the provinces according to their national MPI using a poverty cut-off of 25 per cent is preserved to a large extent (at least 70 per cent of the time) when we consider alternative poverty lines between 10 per cent and 50 per cent.

Similar results are found when using the Tau-b correlation coefficient, which is above 0.556 for each of the values between k=10 per cent and k=50 per cent, and it rises to 0.944 for k=10 per cent and k=15 per cent (it is always lower than Spearman as it accounts for tied ranks). Therefore, we found that the provincial comparisons for the chosen cut-off are robust to alternative choices of poverty cut-offs between 10 per cent and 50 per cent.

Table 14 | Correlation among province ranks for different poverty cut-offs

		k = 25%
k = 10%	Spearman	0.983
	Kendall Tau-b	0.944
k = 15%	Spearman	0.983
	Kendall Tau-b	0.944
k= 35%	Spearman	0.967
	Kendall Tau-b	0.889
k = 50%	Spearman	0.700
	Kendall Tau-b	0.556

Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

Let us delve deeper and present the most precise robustness test. Given that the child MPI is based on a sample of the 0-4 year old population in Sri Lanka, it is subject to sampling error. Thus, it is important to assess the robustness of the child MPI provincial orderings considering standard errors. For this, the child MPI for each pair of provinces are first compared to each other within the baseline scenario, which correspond to the poverty cut-off of 25 per cent. In the case of the HIES 2019 and due to the small sample of children 0-4 years old in each province, the standard errors are quite large. This, naturally, will affect the assessments of robustness.

Under the selected poverty cut-off (k=25 per cent) and the selected weight scheme (see Table 11), we compared the child MPI estimates for every pair of provinces while considering the standard errors. We assessed whether it is possible to establish, for example, that i) province A is poorer than province B, ii) province B is poorer than province A, iii) we cannot statistically determine which one is poorer. This province ordering is taken as the baseline. We then performed robustness tests to changes in the poverty cut-off and in the weighting scheme (according to different structures of the child MPI presented in Table 17 and Table 18 in the Appendix) as follows.

We estimated the province child MPI for the alternative poverty cut-offs k=22 per cent and k=30 per cent, under the selected weighting scheme. We considered a pairwise comparison to be robust if the province ordering established as baseline is preserved. We found that 22 out of the 36 possible pairwise comparisons, that is, 61.1 per cent, are significantly different at the baseline, and 18 of them (81.8 per cent) are also significantly different under the alternative poverty cut-offs and maintain the same ordering of which province is poorer. This shows that the province orderings by the child MPI are largely stable with respect to changes in the poverty cut-off.

Turning now to province ordering stability with respect to the structure-weighting scheme, we performed similar pairwise comparison tests to assess the relationship between the ordering obtained under the baseline (k=25 per cent and equal weighting for the two indicators within the Child Development dimension) and alternative structures that consider different weighting scheme of the indicators within this dimension. Computing first two alternative structures (Table 17 and Table 18 in the Appendix) in which alternative indicators and weights are considered within the Child Development dimension and then comparing the ordering of the provinces according to their MPI between the child MPI structure and two MPIs with alternative indicators, we find that 95.5 per cent of the pairwise comparisons that are significantly different in the Sri Lanka child MPI structure are also significantly different (with the same province being poorer) under the first alternative structure in which two indicators (living with biological parents and attending preschool) are introduced separately. This percentage increases to 100 per cent when we compare the child MPI to a second alternative structure, in which a combination of preschool and living with biological parents takes half of the weight of the early childhood development indicator.[14]

Redundancy analysis

Table 15 and Table 16 below provides the outcome of a redundancy test for the indicators used to compile child multidimensional poverty. The entries show the percentage of the people who could be deprived in both indicators, who actually are deprived. As before, the indicators show that they each contribute with distinctive information, and the redundancy of the child MPI is lower than the redundancy of the national MPI in most cases.

14 Please, refer to the Table 20 in the Appendix for a summary of these results.

Table 15 | Child Multidimensional Poverty Index – Redundancy test of uncensored headcount ratios (R_0 measure)

	Years of schooling	School attendance	Chronic illness	Access to health facilities	Housing	Sanitation	Drinking water	Cooking fuel	Assets	Basic facilities	Nutrition	Early childhood development
Years of schooling	1.000											
School attendance	0.582	1.000										
Chronic illness	0.412	0.000	1.000									
Access to health facilities	0.343	0.345	0.262	1.000								
Housing	0.340	0.148	0.055	0.409	1.000							
Sanitation	0.293	0.149	0.023	0.228	0.443	1.000						
Drinking water	0.771	0.649	0.633	0.761	0.713	0.733	1.000					
Cooking fuel	0.762	0.687	0.654	0.821	0.753	0.746	0.699	1.000				
Assets	0.441	0.257	0.272	0.409	0.731	0.554	0.720	0.702	1.000			
Basic facilities	0.460	0.422	0.434	0.798	0.572	0.477	0.689	0.690	0.435	1.000		
Nutrition	0.602	0.542	0.628	0.607	0.705	0.638	0.659	0.594	0.614	0.600	1.000	
Early childhood development	0.252	0.075	0.060	0.245	0.342	0.264	0.687	0.665	0.411	0.385	0.597	1.000
Uncensored headcount ratio	0.219	0.008	0.019	0.191	0.077	0.028	0.650	0.560	0.332	0.358	0.565	0.206

Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.

Table 16 | Child Multidimensional Poverty Index – Redundancy test of censored headcount ratios (R_0 measure)

	Years of schooling	School attendance	Chronic illness	Access to health facilities	Housing	Sanitation	Drinking water	Cooking fuel	Assets	Basic facilities	Nutrition	Early childhood development
Years of schooling	1.000											
School attendance	0.651	1.000										
Chronic illness	0.476	0.000	1.000									
Access to health facilities	0.406	0.386	0.303	1.000								
Housing	0.374	0.166	0.064	0.464	1.000							
Sanitation	0.337	0.166	0.000	0.309	0.579	1.000						
Drinking water	0.800	0.684	0.731	0.796	0.748	0.780	1.000					
Cooking fuel	0.883	0.770	0.626	0.855	0.796	0.829	0.820	1.000				
Assets	0.539	0.287	0.314	0.436	0.779	0.631	0.807	0.839	1.000			
Basic facilities	0.585	0.473	0.501	0.805	0.616	0.599	0.781	0.818	0.565	1.000		
Nutrition	0.736	0.607	0.725	0.668	0.772	0.788	0.786	0.779	0.788	0.744	1.000	
Early childhood development	0.308	0.084	0.069	0.286	0.380	0.358	0.725	0.760	0.471	0.460	0.752	1.000
Censored headcount ratio	0.159	0.007	0.017	0.173	0.067	0.021	0.329	0.340	0.213	0.244	0.334	0.164

Source: Author's calculation based on data from the Household Income and Expenditure Survey, 2019.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Conclusion

This report has provided a comprehensive overview of multidimensional poverty, using the new official Sri Lankan national MPI and child MPI which were estimated from HIES 2019 data and will be reported as SDG indicator 1.2.2.

Overall, 16.0 per cent of people are poor by the national MPI, but levels vary across Sri Lanka. Poverty is highest in estate areas, where over half the population are poor, and in rural areas, where over 80 per cent of poor people live. Multidimensional poverty is highest in districts like Nuwara-Eliya, Badulla and Monaragala, and also higher among people aged over 65.

Policy priorities vary across regions and groups. In general, deprivations tend to be low in sanitation, chronic illness and school attendance; and high in access to health facilities, drinking water, and cooking fuel and basic facilities. The official national MPI and its associated information platform provide action-oriented profiles of interlinked deprivations that policy actors in each sector, district, or priority area can use strategically to design high-impact activities.

The new and pioneering individual child MPI is an official companion statistic to the national MPI. Measured at the individual level and covering children aged 0-4, the child MPI includes every indicator of the national MPI (all poor children by national MPI remain poor) and extends it to consider two pivotally important deprivations in Sri Lanka: undernutrition and early childhood development.

By this linked child MPI, 42.2 per cent of children 0-4 years of age are MPI poor, and an alarming one-third of young children are poor and undernourished. Shining a light on children, and profiling important gaps in preschool attendance and in active parental stimulation of cognitive development is vital because deprivations during childhood can last a lifetime. Nonetheless, there are also positive findings, such as the fact that there are no statistically significant differences between the poverty levels of girls and boys in Sri Lanka.

The aim of the national MPI in Sri Lanka is to offer clear and rigorous statistics that illuminate the level and shape of multidimensional poverty, provide relevant information on where to target, allocate budgetary resources, design multisectoral policies, and coordinate anti-poverty activities. It is complemented by the child MPI, which has the same objectives for children. While this data was collected before the pandemic, the next wave of data will show how the pandemic impacted the poor. In future, the national and child MPIs will be used to monitor trends – a function they can effectively achieve, because if any deprivation of any poor person is reduced, MPI will decrease.

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Appendix

Table 17 | Alternative structure 1 for the Child Multidimensional Poverty Index: Household level measure

Dimension	Indicator	Deprivation cut-off: A child 0-4 years old is deprived if …	Weight
Education (1/4)	Years of schooling	The household has at least one member (aged 17+) with less than the level of schooling that was compulsory when they were studying (age dependent) or has never attended school, or is attending special education	1/16
	School attendance	The household has any school age child (aged 5-16) who is not attending school	3/16
Health (1/4)	Chronic illness	The household has any member who is suffering from chronic illness that has stopped their usual activities or job for one month or more	1/8
	Access to health facilities	The household's access to health facilities takes 30 minutes or more	1/8
Standard of Living (1/4)	Housing	The household uses semi-permanent materials for wall, floor, or roof of the house	1/24
	Sanitation	The household's facility is not improved, or it is shared with other households	1/24
	Drinking water	The household has no access to a safe source of drinking water, or time/distance to collect is at least 15 mins/1km, or there has been insufficient water for the last month, or the quality of drinking water is not improved	1/24
	Cooking fuel	The household use firewood, kerosene or saw dust/paddy husk for cooking	1/24
	Assets	Does not have at least one of TV, washing machine, fridge, computer, motorbike, three-wheeler, car, van, bus, lorry and does not have more than one of land, livestock, agriculture/fishing equipment (tractor, thresher, combine harvester, fishing boat, fishing nets)	1/24
	Basic facilities	The household requires at least 15 minutes or more to reach the nearest bus stop or 30 min or more to reach a primary or secondary school	1/24
Child Development (1/4)	Nutrition	The household has at least one child under the age of five who is underweighted or stunted	1/16
	Biological parents	The household has at least one child (zero to seventeen years old) in the household who is not living with her/his mother and father (biological parents)	1/16
	Early childhood development	The household has at least one child: Zero to five months old and is left alone or in the care of another child younger than 10 years of age at home for more than one hour Six to eleven months old and is left alone or in the care of another child younger than 10 years of age at home for more than one hour or if she/he doesn't have soft toys to play or if she/he doesn't receive support from adults in her/his activities One to four years old and is left alone or in the care of another child younger than 10 years of age at home for more than one hour or if she/he doesn't receive support from adults in her/his activities or if she/he doesn't have books or soft toys to play	1/16
	Preschool education	The household has at least one preschool-age child (four years old) in the household who is not attending preschool	1/16

Table 18 | Alternative structure 2 for the Child Multidimensional Poverty Index: Children 0-4 years old – individual – with cognitive development

Dimension	Indicator	Deprivation cut-off: A child 0-4 years old is deprived if …	Weight
Education (1/4)	Years of schooling	The household has at least one member (aged 17+) with less than the level of schooling that was compulsory when they were studying (age dependent) or has never attended school, or is attending special education	1/16
	School attendance	The household has any school age child (aged 5-16) who is not attending school	3/16
Health (1/4)	Chronic illness	The household has any member who is suffering from chronic illness that has stopped their usual activities or job for one month or more	1/8
	Access to health facilities	The household's access to health facilities takes 30 minutes or more	1/8
Standard of Living (1/4)	Housing	The household uses semi-permanent materials for wall, floor, or roof of the house	1/24
	Sanitation	The household's facility is not improved, or it is shared with other households	1/24
	Drinking water	The household has no access to a safe source of drinking water, or time/distance to collect is at least 15 mins/1km, or there has been insufficient water for the last month, or the quality of drinking water is not improved	1/24
	Cooking fuel	The household use firewood, kerosene or saw dust/paddy husk for cooking	1/24
	Assets	Does not have at least one of TV, washing machine, fridge, computer, motorbike, three-wheeler, car, van, bus, lorry and does not have more than one of land, livestock, agriculture/fishing equipment (tractor, thresher, combine harvester, fishing boat, fishing nets)	1/24
	Basic facilities	The household requires at least 15 minutes or more to reach the nearest bus stop or 30 min or more to reach a primary or secondary school	1/24
Child Development (1/4)	Nutrition	She/he is underweighted or stunted	1/8
	Early childhood development	She/he is: Zero to five months old and is left alone or in the care of another child younger than 10 years of age at home for more than one hour Six to eleven months old and is left alone or in the care of another child younger than 10 years of age at home for more than one hour or if she/he doesn't have soft toys to play or if she/he doesn't receive support from adults in her/his activities One to four years old and is left alone or in the care of another child younger than 10 years of age at home for more than one hour or if she/he doesn't receive support from adults in her/his activities or if she/he doesn't have books and soft toys to play	1/16
	Cognitive development	She/he is: Zero to three years old and both mother and father are not living with the child Four years old and is not attending preschool	1/16

Table 19 | Sri Lanka- National MPI robustness analysis

ROBUSTNESS ANALYSIS	Robustness to alternative values of the poverty cut-off (k)	Robustness to alternative weighting schemes of the dimensions considered in the NMPI structure		
Information obtained from the robustness tests	**Poverty cut-off of the NMPI (k = 33.3%) with k=30% and k=40%**	**Weighting of the NMPI with A1***	**Weighting of the NMPI with A2****	**Weighting of the NMPI with A3*****
A: Possible pairwise comparisons between 25 districts	300	300	300	300
B: Number of pairwise comparisons that are significantly different at the baseline (NMPI) (95% confidence interval)	154	154	154	154
C: The number of pairwise comparisons in B + number of pairwise comparisons that are not significantly different but whose ordering of which is poorer is the same as in the baseline (NMPI) (95% confidence interval)	216	227	235	252
D: The number of pairwise comparisons in B that are significantly different in the alternatives and maintain the same ordering of which is poorer (NMPI) (95% confidence interval)	125	130	127	139
		ROBUSTNESS RATIOS		
Robustness ratio of statistically signicant pairwise comparisons: robust pairwise comparisons among all significantly different pairwise comparisons (D/B)	81.2%	84.4%	82.5%	90.3%

*A1 corresponds to the alternative structure 1 for the National MPI, which gives a weight of 50% to the Education dimension and a weight of 25% to the Health and Standard of Living dimensions.

**A2 corresponds to the alternative structure 2 for the National MPI, which gives a weight of 50% to the Health dimension and a weight of 25% to the Education and Standard of Living dimensions.

***A3 corresponds to the alternative structure 3 for the National MPI, which gives a weight of 50% to the Standard of Living dimension and a weight of 25% to the Education and Health dimensions.

Table 20 | Sri Lanka- Child MPI robustness analysis

ROBUSTNESS ANALYSIS	Robustness to alternative values of the poverty cut-off (k)	Robustness to alternative structures of the CMPI that consider different weighting scheme of the indicators within the Child Development dimension	
Information obtained from the robustness tests	**Poverty cut-off of the CMPI (k = 25%) with k=22% and k=30%**	**Weighting scheme of the CMPI with A1***	**Weighting scheme of the CMPI with A2****
A: Possible pairwise comparisons between 9 provinces	36	36	36
B: Number of pairwise comparisons that are significantly different at the baseline (CMPI) (95% confidence interval)	22	22	22
C: The number of pairwise comparisons in B + number of pairwise comparisons that are not significantly different but whose ordering of which is poorer is the same as in the baseline (CMPI) (95% confidence interval)	32	34	36
D: The number of pairwise comparisons in B that are significantly different in the alternatives and maintain the same ordering of which is poorer (CMPI) (95% confidence interval)	18	21	22
		ROBUSTNESS RATIOS	
Robustness ratio of statistically signicant pairwise comparisons: robust pairwise comparisons among all significantly different pairwise comparisons (D/B)	81.8%	95.5%	100.0%

*A1 corresponds to the alternative structure 1 for the Child MPI (see Table 17 in the Appendix for details).

**A2 corresponds to the alternative structure 2 for the Child MPI (see Table 18 in the Appendix for details).

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ஒவ்வொரு சிறுவர்களுக்காகவும்

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