Multidimensional Poverty Index – Summer 2017: Brief Methodological Note and Results

***MPI Methodological Notes* 44**

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Citation *For Tables 1-7*: Alkire, S. and Robles, G. (2017). 'Multidimensional Poverty Index - Summer 2017: brief methodological note and results'. *OPHI MPI Methodological Notes No. 44*, Oxford Poverty and Human Development Initiative, University of Oxford.

Citation *For Table 8*: Alkire, S. Jindra, C. Robles, G. and Vaz, A. (2017). 'Multidimensional Poverty Index - Summer 2017: brief methodological note and results'. *OPHI MPI Methodological Notes No. 44*, Oxford Poverty and Human Development Initiative, University of Oxford.

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This note has been prepared within the OPHI theme on multidimensional poverty measurement.

Contents

Introduction

The Multidimensional Poverty Index (MPI) 2017 uses the same parameters (dimensions, indicators, cutoffs, and weights) and the same functional form (Alkire and Foster Adjusted Headcount Ratio M_0) as in previous years.[1] This brief methodological note presents the 2017 MPI updates and releases tables with the full results in these categories: national MPI, destitution and vulnerability results, rural, urban, subnational regions, changes over time, and complete estimations, as well as complementary data, dimensional breakdowns, and confidence intervals. Destitution data are now available for all 103 countries. It first explains the main updates in the 2017 MPI, following the guidelines for updates presented in the 2014 Methodological Note (Alkire, Conconi and Seth 2014b). It uses the MPI methodology that has been presented in detail in previous methodological notes (Alkire and Santos 2010; Alkire, Roche, Santos and Seth 2011; Alkire, Conconi and Roche 2013; Alkire, Conconi and Seth 2014b; Alkire and Robles 2015; Alkire, Jindra, Robles and Vaz 2016). Then it briefly describes the methodological assumptions for the estimation of each dataset. It adds a new section on disaggregation by children. The results of these estimations are presented in eight main tables (Table 8 focusing on age disaggregation), 103 country briefings and the interactive databank, all available on OPHI's website (www.ophi.org.uk).

1. Global MPI 2017 Updates

Updated MPIs from new data

The 2017 Summer MPI presents updated estimations for 25 countries including Algeria, El Salvador, Guatemala and Myanmar, which were not reported in the June 2016 MPI dataset, and 21 datasets were

1 Since January 2015, the global MPI estimations have been updated twice a year. This methodological note appends the considerations for the new country estimations.

updated in June 2017. Fifteen datasets were updated in June 2016. Thirty-eight datasets for 37 countries were updated in June 2015. Thirty-three countries were updated in 2014; in 2013 there were updates for 16 countries and in 2011, for 25 countries.

The countries updated in June 2017, together with the surveys used and years are as follows.[2]

Updated countries: Afghanistan (DHS 2015–16), Algeria (MICS 2012–13), Chad (DHS 2014–15), China (CFPS 2014) Dominican Republic (MICS 2014), El Salvador (MICS 2014), Guatemala (DHS 2014–15), Guinea-Bissau (MICS 2014), Guyana (MICS 2014), India (IHDS 2011–12), Kazakhstan (MICS 2014), Lesotho (DHS 2014), Malawi (DHS 2015–16), Myanmar (DHS 2015–16), México (MICS 2015), Mongolia (MICS 2013), Sao Tome and Principe (MICS 2014), Senegal (DHS 2015), South Africa (NIDS 2014–15), Sudan (MICS 2014), Swaziland (MICS 2014), Tanzania (DHS 2015–16), Thailand (MICS 2012), Turkmenistan (MICS 2014), and Zimbabwe (DHS 2015). The survey data used to estimate the 2017 MPI is dated from 2006 to 2016.[3]

MPI 2017 estimations for five countries are carried out with 2006 data; 16 estimations use data collected between 2007 and 2010, and the number of analyses with data from 2011 onwards has increased to 82.

Policies regarding population figures and complementary information

As in previous years, the surveys are dated according to the year in which the fieldwork took place, as detailed in the survey report. If the fieldwork took place during two calendar years, the data will be labelled with both years, e.g. 2010–11.

In this case, the population figures indicated as those of the year of the survey, as well as the complementary information, correspond to the second calendar year, or the closest available year with information.

Population figures are reported for 2013 and 2014, using the 2015 Revision of World Population Prospects (UNDESA 2015). When, for illustrative purposes, regional aggregates are presented, 2013 population data are employed. Aggregate MPI estimates in 2016 used 2012 population data; 2015 used 2011 population data, 2014 estimations used 2010 population data, and 2009 population data in 2013. The population year used for aggregate estimates changes by one year annually in the summer updates.

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2 Recent surveys for other countries/years (Argentina MICS 2011–2012, Belarus MICS 2012) were also considered but eventually dismissed from the calculations of the MPI 2017 because they do not satisfy the policies for updating, which are explained in the 2013 Methodological Note.

3 The 2016 was 2005-2015; and in 2015, 2004-14. In 2014, the MPI reported estimations from 2003 to 2013 along with China's WHS 2002. In 2013, MPI estimations were sed data 2002–2011; in 2011 from 2000–2010 and in 2010 from 2000–2008.

2. The MPI Methodology: Poverty, Vulnerability, and Severe Poverty

The MPI is a measure of acute global poverty developed by the Oxford Poverty and Human Development Initiative (OPHI) with the United Nations Development Programme's Human Development Report Office (Alkire and Santos 2010, 2014; UNDP 2010 and previous methodological notes). The index belongs to the family of measures developed by Alkire and Foster (2007, 2011); Alkire, Foster, Seth, Santos, Roche and Ballon (2015). In particular, it is an application of the Adjusted Headcount Ratio, M_0. This methodology requires determining the unit of analysis (here the household), identifying the set of indicators in which each person is deprived at the same time and summarizing their poverty profile in a weighted deprivation score. Persons are identified as multidimensionally poor if their deprivation score exceeds a cross-dimensional poverty cutoff. The proportion of poor people and their average deprivation score (i.e. the 'intensity' of poverty or percentage of simultaneous deprivations they experience) become part of the final poverty measure. A more formal explanation of the methodology is presented in Alkire and Santos (2014) and in Alkire and Foster (2011).

The global MPI 2017 assesses multidimensional poverty for people in 103 countries for which data from 2006 onwards are available.[4] As summarized in Table 1, the MPI uses information from ten indicators that are organized into three dimensions:[5] health, education, and living standards, following the same dimensions and weights as the Human Development Index (HDI). Each person is identified as deprived or non-deprived in each indicator based on a deprivation cutoff (See Table 1 and Alkire and Santos 2014). Health and education indicators reflect the achievements of all household members. Each person's deprivation score is constructed based on a weighted average of the deprivations they experience using a nested weight structure: equal weight across dimensions and equal weight for each indicator within dimensions. Finally, a poverty cutoff of 33.33% identifies as multidimensionally poor those people whose deprivation score meets or exceeds this threshold.

The MPI reflects both the **incidence** or headcount ratio (H) of poverty – the proportion of the population that is multidimensionally poor – and the average **intensity** (A) of their poverty – the average proportion of indicators in which poor people are deprived. The MPI is calculated by multiplying the incidence of poverty by the average intensity across the poor ($H \times A$). Two additional poverty cutoffs are reported in addition to the MPI cutoff by which a person is identified as poor if he or she is deprived in at least one third of the weighted indicators. Those identified as 'vulnerable to poverty' are deprived in 20% – 33.33%

4 All ever-published MPI estimations are available in Table 7 of the MPI online resources.

5 For a more detailed description of the indicator definitions, see Alkire and Santos (2010, 2014) and Alkire Roche Santos and Seth (2011).

of weighted indicators and those identified as in 'severe poverty' are deprived in 50% or more of the dimensions.

Table 1 presents the dimensions, indicators, deprivation cutoffs, and weights used in the global MPI 2017, which have not changed.

Table 1: The dimensions, indicators, deprivation cutoffs, and weights of the global MPI

Dimensions of Poverty	Indicator	Deprived if…	Weight
Education	Years of Schooling	No household member aged 10 years or older has completed five years of schooling.	1/6
	Child School Attendance	Any school-aged child[+] is not attending school up to the age at which he/she would complete class 8.	1/6
Health	Child Mortality	Any child has died in the family in the five-year period preceding the survey.	1/6
	Nutrition	Any adult under 70 years of age or any child for whom there is nutritional information is undernourished in terms of weight for age.[*]	1/6
Living Standard	Electricity	The household has no electricity.	1/18
	Improved Sanitation	The household's sanitation facility is not improved (according to MDG guidelines) or it is improved but shared with other households.[**]	1/18
	Improved Drinking Water	The household does not have access to improved drinking water (according to MDG guidelines) or safe drinking water is at least a 30-minute walk from home, roundtrip.[***]	1/18
	Flooring	The household has a dirt, sand, dung, or 'other' (unspecified) type of floor.	1/18
	Cooking Fuel	The household cooks with dung, wood, or charcoal.	1/18
	Assets Ownership	The household does not own more than one of these assets: radio, TV, telephone, bicycle, motorbike, or refrigerator, and does not own a car or truck.	1/18

Note for Table 1:
[+] Data source for age children start school: United Nations Educational, Scientific and Cultural Organization, Institute for Statistics database, Table 1. Education systems [UIS, http://stats.uis.unesco.org/unesco/TableViewer/tableView.aspx?ReportId=163].
[*]Adults are considered malnourished if their BMI is below 18.5 m/kg^2. Children are considered malnourished if their z-score of weight-for-age is below minus two standard deviations from the median of the reference population.
[**]Unless the survey report definitions change, a household is considered to have access to improved sanitation if it has some type of flush toilet or latrine, or ventilated improved pit or composting toilet, provided that they are not shared.
[***]A household has access to clean drinking water if the water source is any of the following types: piped water, public tap, borehole or pump, protected well, protected spring or rainwater, and it is within 30 minutes' walk (roundtrip).
Source: Alkire and Santos (2010). For details on the rationale behind each indicator, please see Alkire and Santos (2010, 2014). If survey reports use other definitions of 'adequate' sanitation or 'safe' drinking water, we follow the survey reports.

3. Measurement of Destitution and Inequality among the Poor

Since 2014, to illustrate the ability of the MPI to consider the 'depth' of deprivations rigorously even if data is ordinal, OPHI has estimated a linked poverty measure, referred to as 'destitution'. The destitution measure has precisely the same dimensions, indicators, weights, and poverty cutoffs as the MPI. Only one set of parameters changes: the deprivation cutoffs. The cutoffs for eight of the ten indicators reflect more extreme deprivations. As a result, the destitution measure identifies a subset of the MPI poor who are also deprived in at least one-third of the indicators according to the destitution cutoffs.

That is, those identified as 'destitute' are deprived in at least one third or more of the same weighted indicators with more extreme deprivation cutoffs (as described in Table 2). Data on destitution is available for all 103 countries analysed in the 2017 MPI. For details, see Alkire, Conconi and Seth (2014b).

Table 2: The dimensions, indicators, deprivation cutoffs, and weights for measuring destitution

Dimensions of Poverty (same as for standard MPI)	Indicator (same as for standard MPI)	Deprived if…
Education	Years of Schooling	No household member has completed **at least one** year of schooling.
	Child School Attendance	**No children** are attending school up to the age at which they should finish **class 6.**
Health	Child Mortality	**Two or more children have died** in the household.
	Nutrition	There is **severe undernourishment** of any adult under 70 years of age (**BMI<17kg/m²**) or of any child (**-3 standard deviations** from the median).
Living Standard	Electricity	The household has no electricity (**no change**).
	Improved Sanitation	There is **no sanitation facility (open defecation).**
	Improved Drinking Water	The household does not have access to safe drinking water or safe water is more than a **45-minute** walk (round trip).
	Flooring	The household has a dirt, sand, or dung floor (**no change**).
	Cooking Fuel	The household cooks with dung or wood (**coal/lignite/charcoal are now non-deprived**).
	Assets Ownership	The household has **no assets (radio, mobile phone, refrigerator, etc.)** and no car.

Since 2014 OPHI has also reported the level of inequality in deprivation scores among the poor, both at the national level and within subnational regions, by using a separate, decomposable inequality measure. OPHI also uses the measure to assess disparities across subnational MPIs. Seth and Alkire (2014) proposed an additively decomposable inequality measure that is a positive multiple of 'variance' and that can be broken down into a within-group and a between-group component. For measuring inequality among the

poor at the national or subnational level, the inequality measure I^q uses the vector of deprivation scores of the q poor people, $c_i(k)$.

$$I^q = \frac{\tilde{\beta}}{q}\sum_{i=1}^{q}[c_i(k) - A]^2$$

The difference between each poor person's deprivation score and average intensity is squared and the squared distances are summed and multiplied by a constant $\tilde{\beta}$ to create the measure of inequality. The deprivation scores of the poor range between 1/3 and 1, and so we set $\tilde{\beta} = 1/9$. This is the maximum possible value the inequality measure can take, given the range of deprivation scores, and thus ensures that the inequality measure is bounded between zero and one. In the 2015/16 MPI estimations, inequality among the poor at the national level varies from 0 to 0.300, and inequality among the poor at the subnational level varies from 0 to 0.375.

A lower level of inequality among the poor or a reduction in the level of inequality among the poor, however, may not mean that poverty has fallen uniformly in all regions or population subgroups.

For further details of the measure and how it is applied, see Seth and Alkire (2014).

4. Child Poverty Estimates

This is the first time that OPHI reports the decomposition of the global MPI by age groups. OPHI follows the United Nations Convention on the Rights of the Child, which defines a child as 'a human being below the age of 18 years'. OPHI reports estimates for the age groups 0–17, 0–4, 5–9, 10–14, and 15–17, as well as for a comparison with adults, defined as people aged 18 or older.

The national estimates, reported alongside the child estimates in Tables 8.1–8.3, can deviate from the general global MPI estimates due to minor differences in the sample size. In order to decompose by age groups, we only use observations without missing values for the age variable. Consequently, the sample size for the global MPI might be slightly different from the sample size for the child poverty estimates. However, the number of missing observations is generally not an issue as the share of missing values due to age is below 1% for 99 of the 103 countries. We find more than 1% of values for age are missing only for Jamaica, Vanuatu, Suriname, and Maldives (5%, 4.7%, 1.2%, and 1.2%, respectively). Nonetheless, small differences in the sample size can lead to slight differences between the national estimates in Tables 8.1–8.3 and those in Table 1.1.

The sample size in each age group is sufficient for this type of analysis. We observe cells with less than 500 observations only for three countries: Barbados, Saint Lucia, and Vanuatu. The small sample sizes are only found for a very fine-grained grouping according to the age variable and never for the age groups 0

to 17 and 18 and above. The smallest sample size is 287 for the age group 15 to 17 for Saint Lucia. Standard errors and confidence intervals for children and adults can be found in Table 8.3

As in the case of subnational decompositions we estimate the population size for each group in each country by multiplying the survey population share by the national population estimate for 2013. The same procedure is applied when figures are disaggregated by urban areas or subnational regions. The number of poor people is then calculated by multiplying the headcount ratio of the group by the estimated population size of the group.

Another element of uncertainty, not yet accounted for in the analysis, is the potential bias due to missing values on global MPI indicators by age groups. If certain age groups have higher nonresponses, and these nonresponses are not completely random, then child estimates can be susceptible to bias.

5. Considerations by Country

This section comments on the methodological details of the analyses of the 25 country datasets updated in June 2017.

a) New country datasets

Afghanistan (DHS 2015–16): No anthropometric measure was collected. Child mortality information is provided by ever married, eligible women, aged 15 to 49, living in all households sampled and eligible men aged 15 to 59 living in a household selected for male questionnaires. Table 2.2 on page 16 establishes that toilets that 'flush to somewhere else', 'do not know where', traditional dry vault, and eco-sanitation are not improved sources of sanitation and the MPI considers the same category as non-improved sanitation; 'other' types of toilets are also considered as non-improved sources of sanitation. Table 2.1 on page 15 states that all instances of bottled water are considered an improved water source while the response 'other' source of water is considered to be unimproved in the report and for the MPI. Table 2.3 on page 19 does not consider 'no food cooked' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. Survey estimates are disaggregated by rural and urban areas and 34 provinces. This MPI was first published in June 2017.

Algeria (MICS 2012–13): Information on child mortality was collected among ever married women aged 15 to 49 years. Anthropometric information was collected among all eligible children under 5 years old. Toilets that 'flush to somewhere else' are not considered improved sources of sanitation in the survey report nor are they considered as such for the MPI. The use of bottled water as the main source of drinking water was classified as improved or non-improved, depending on the main

source of non-drinking water. Fuels coded 'en beton, tole, and djebbs' were not considered as solid fuels. Following our guidelines for computing subnational figures (Alkire, Roche and Seth 2011), subnational figures are not reported because the multidimensional headcount ratio for the entire country is smaller than 1.5%. This MPI was first published in December 2016.

Chad (DHS 2014–15): Height and weight information was collected for children under 5 and women aged 15 to 49 years old who were not living in households selected for the male or HIV questionnaire, the latter represented 1/3 of the total sample. Following guidelines from the Methodological Note 2013 (Alkire, Conconi and Roche 2013), this MPI estimation is based on such samples with anthropometric information. Child mortality information is provided by eligible women aged 15 to 49 living in all households sampled and eligible men aged 15 to 59 living in a third of the households selected for male and HIV questionnaires. Table 2.2 on page 16 establishes that toilets that 'flush to somewhere else/do not know where' and 'other' types of toilets are not improved sources of sanitation nor are they considered as such for the MPI. Table 2.1 on page 15 states that all instances of bottled water are considered as an improved water source while 'other' source of water is considered as unimproved in the report and for the MPI. Table 2.3 on page 19 of the report does not consider 'no food cooked' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. Survey estimates are disaggregated by rural and urban areas, 20 districts, and the capital city. This MPI was first published in December 2016.

China (CFPS 2014): Anthropometric information was collected from children under 15 years old and men and women aged 15 to 69 years old. Child mortality information was available for women aged 15–49 and men aged 15–59 years old. School age for children is defined as 7 to 15 years old. Years of schooling was derived from the highest level of education attained. Information on the main source of water used for cooking was considered to be the main source of drinking water, and rain and cellar water were considered as non-improved. Solar energy is considered as an improved source of cooking fuel. No information on type of floor, radio, and landline telephone ownership was collected. This MPI was first published in June 2017.

Dominican Republic (MICS 2014): This survey lacks of information on nutrition. Child mortality information is provided for women aged 15 to 49. The MICS report does not consider 'no food cooked' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The same report states that sources of non-drinking water determine whether the source of water is non-improved when drinking water is bottled, and

so likewise it is considered for the purpose of MPI. Survey estimates are disaggregated by rural and urban areas and ten health areas. This MPI was first published in December 2016.

El Salvador (MICS 2014): Anthropometric information was collected for all children under five. Child mortality information was collected from all women aged 15–49. Table WS1 on page 142 states that if 'bottled water' is the main source of drinking water it is considered non-improved if the source of non-drinking water is non-improved, and this definition is used for the MPI. Table WS5 on page 159 says that a toilet that 'flushes to unknown place' is improved sanitation and those that 'flush to somewhere else' and 'other' types of toilets are non-improved sources of sanitation; they are likewise considered as non-improved for the MPI. 'No food cooked in household' and 'other' sources of fuel are not considered to be solid fuel according to the report, and this approach was followed in this estimation of the MPI. Survey estimates are disaggregated by rural and urban areas, and for 14 regions in the country. This MPI was first published in June 2017.

Guatemala (DHS 2014–15): Height and weight information was collected for all children under five and women aged 15 to 49 years old in the sampled household. Child mortality information was gathered from eligible women aged 15 to 49 living in all households sampled and eligible men aged 15 to 59 living in households selected for male questionnaires. Table 2.3 on page 20 establishes that toilets that flush to a latrine are improved sanitation and toilets that 'flush to somewhere else/do not know where' and 'other' types of toilets are not improved sources of sanitation, and this estimation of MPI uses the same categories of non-improved sanitation. Table 2.2 on page 19 states that a public fountain or tank, mechanical or manual well and bottled water are non-improved drinking water sources, and this MPI estimation followed such an approach. Table 2.1 on page 17 of the report does not consider 'no food cooked' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. Survey estimates are disaggregated by rural and urban areas and 22 departments. This MPI was first published in June 2017.

Guinea-Bissau (MICS 2014): Anthropometric information was collected for all children under five. Child mortality information was collected from all women aged 15–49 and from men in a similar age group living in a sub-sample of households. Table WS1 on page 126 states that 'bottled water' as a main source of drinking water is non-improved if the source of non-drinking water is non-improved, and this definition is used for the MPI. Page 203 of the report establishes six as the age to start primary education. 'No food cooked in household' and 'other' sources of fuel are not considered as solid fuel according to the report, and this approach was followed in this estimation. Plasma televisions were considered as part of the small assets of the household. Survey estimates

are disaggregated by rural and urban areas, and for nine regions in the country. This MPI was first published in June 2017.

Guyana (MICS 2014): Anthropometric information was collected for all children under five. Child mortality information was collected from all women aged 15–49 and from men in a similar age group living in 1/2 of the households sampled as stated on page 50 of the report. The country report establishes that toilets that 'flush to somewhere else' are not improved. Page 147 states that 'bottled water' as a main source of drinking water is unimproved if the source of non-drinking water is unimproved. Definitions of non-improved toilet and drinking water source for the MPI followed those in the report. Page 166 of the report establishes six as the age to start primary education. 'No food cooked in household' and 'other' sources of fuel are not considered as solid fuel according to the report, and this approach was followed in this estimation. Survey estimates are disaggregated by rural and urban areas, by coastal and interior areas, and standard errors can also be reported for nine regions in the country, as the report advises that the 7th and 8th regions be reported jointly. Ten percent of values are missingin child mortality and 12% in nutrition in Barima-Waini and 13% are missing in Potaro-Siparuni, but these missing values were not found to be concentrated only among the most-deprived population, so we concluded that the disaggregation and inference to nine regional areas is robust. This MPI was first published in December 2016.

India (IHDS 2011–12): The IHDS user guide establishes that children aged 0 to 5, 8 to 11, their mothers, and other available household members were eligible for anthropometric measurements (p. 8) and all information for people younger than 70 was used to estimate undernourishment at the household level. We were not able to retrieve meaningful information on usual residency of members in survey so all members are considered for the MPI. Child mortality information was provided by all women, but for the MPI we only considered child mortality of women aged 15 to 49 years to maintain comparability to other international surveys. Bottled water is considered an improved source of water. Solid fuel usage for a household was established when a household used only solid fuel for cooking and no other source of fuel was used for this purpose. The survey does not have information on radio ownership, so the list of small assets considered is reduced to five instead of six. However, the global MPI indicator considers as deprived households that own one or none of the small assets or that do not have a car, and radio does not have a big influence on the final indicator. Survey estimates are disaggregated by rural and urban areas, but disaggregation by administrative areas was not possible due to the small sample size for some states, as explained in the user guide. Subnational disaggregations are not presented due to documented concerns regarding their accuracy due to data quality. This MPI was first published in June 2017.

Kazakhstan (MICS 2015): Anthropometric information was collected from all children under five. Information on child mortality was collected from women aged 15 to 49. School age is considered to be from 7 years old onwards, according to the survey report. Page 64 of the report does not define 'no food cooked in household' and 'other' fuels as inadequate cooking fuel, and the MPI follows this definition. Households in which bottled water is the main source of drinking water are considered as having improved sources of water depending on the source of non-drinking water, according to pages 69–70 of the report. Page 81 establishes that 'flush somewhere else' is a non-improved source of sanitation and so does this estimation of MPI. Information is disaggregated for urban and rural areas. Following our guidelines for computing subnational figures (Alkire, Roche and Seth 2011), subnational figures are not reported because the multidimensional headcount ratio for the entire country is smaller than 0.005. This MPI was first published in June 2017.

Lesotho (DHS 2014): The DHS report establishes that people in households eligible for biomarkers testing were eligible for anthropometric measurements. We also found that 37.9% of the people in the survey were non-usual members of households, which is not the population of interest to the MPI. Page 11 of the Lesotho DHS 2014 report confirms that 21% of eligible men and women listed in the household schedule were not usual members of households. We also found that some non-usual residents of those households selected for anthropometric measures were not eligible for measurement based on the eligibility variables hv117, hv118, and hv120. These two criteria defined the sample from which the MPI was calculated following guidelines from the Methodological Note 2013 (Alkire, Conconi and Roche 2013). As a result, we are left with 62% (60% unweighted cases) of the initial sample, a large reduction in sample size compared to other surveys. We did not consider this loss of sample in our bias analysis as it is not the result of missing information from usual residents. Child mortality information was provided by eligible men aged 15 to 59 years and women aged 15 to 49 years. Table 2.2 on p. 17 does not specify whether a composting toilet is an improved source of sanitation or not, so this MPI estimation considers a composting toilet as improved following the guidelines of Alkire and Santos (2014). All bottled water is considered as improved on Table 2.1 of page 16. Table 2.3 of the report does not consider 'no food cooked at home' as solid fuel (p. 18), and this MPI calculation follows the report. Survey estimates are disaggregated by rural and urban areas and ten districts (subnational areas). This MPI was first published in December 2016.

Malawi (DHS 2015–16): Height and weight information were collected for children under five and women aged 15 to 49 years old who were living in households selected for a male questionnaire. Following guidelines from the Methodological Note 2013 (Alkire, Conconi and Roche 2013), this

MPI estimation is based on such samples with anthropometric information. Child mortality information is provided by eligible women, aged 15 to 49, living in all households sampled and eligible men, aged 15 to 59, living in households selected for a male questionnaire. Table 2.3 on page 19 establishes that toilets that 'flush to somewhere else/do not know where' and 'other' types of toilets are not improved sources of sanitation and this definition is used for the MPI. Table 2.1 on page 18 states that bottled water is considered to be a non-improved water source if a non-improved source of water is used for non-drinking purposes, and the MPI follows the same guidelines. Table 2.3 on page 19 of the report does not consider 'no food cooked' as inadequate cooking fuel, and this MPI estimation follows that categorization for cooking fuel. Survey estimates are disaggregated by rural and urban areas and 28 districts. This MPI was first published in June 2017.

Myanmar (DHS 2015–16): Height and weight information was collected for children under five and women aged 15 to 49 years old in all households sampled. Child mortality information is provided by women and men aged 15 to 49 living in all households sampled. The report establishes five as the age to start primary education. Table 2.2 on page 17 establishes that toilets that 'flush to somewhere else/do not know where' and 'other' types of toilets are not improved sources of sanitation, and this definition is used for the MPI. Table 2.1 on page 16 states that bottled water is considered an improved water source, and the MPI follows the same guidelines. Table 2.3 on page 18 of the report does not consider 'no food cooked' as inadequate cooking fuel, and this MPI estimation follows that categorization for cooking fuel. Survey estimates are disaggregated by rural and urban areas and 15 districts. This MPI was first published in June 2017.

Mexico (MICS 2015): Anthropometric information was collected from all children under five years. Information on child mortality was collected among women aged 15 to 49 years old. The country report on p. 102 establishes that toilets that 'flush to somewhere else' are not improved. Page 97 states that 'bottled water' as a main source of drinking water is considered unimproved if the source of non-drinking water is unimproved. Definitions of a non-improved toilet and source of drinking water for the MPI followed those in the report. The report establishes six as the age to start primary education. 'No food cooked in household' and 'other' sources of fuel are not considered to be solid fuel according to the report, and this approach was followed in this estimation of the MPI. Survey estimates are disaggregated by rural and urban areas, but subnational figures are not reported, following Alkire, Roche and Seth (2011), because the MPI for the entire country is smaller than 0.005. This MPI was first published in June 2017.

Mongolia (MICS 2013): Anthropometric information was collected from all children under five years. Information on child mortality was collected among women aged 15 to 49 years and men aged 15 to 54 years. Eighty-four respondents who attended school levels classified as 'NFEEP' were considered with a missing value in education as the report had no information on what this category contained in the discussion of education variables on pages 82 and 83. Type of toilet and water were defined in terms of their definition in the report instead of international standards. Public water kiosks and designated water trucks are classified as improved water sources because the tanker trucks and tanks in the kiosks are cleaned regularly, as stated on p. 42 of the report. Page 47 of the report states that a pit latrine with a slab is classified as unimproved as it often does not meet international standards. Finally, the report differentiated between the flooring of two different types of housing, git and ger, when defining unimproved flooring as natural flooring. The time to water variable could not differentiate between 30 minutes and 45 minutes, which is the threshold for destitution. 'No food cooked in household' and 'other' types of fuel are not considered as solid fuels. Information is disaggregated for urban and rural areas and for five regions. This MPI was first published in December 2016.

Sao Tome and Principe (MICS 2014): Anthropometric information was collected from all children under five years. Information on child mortality was collected among men and women aged 15 to 49 years. The MICS report does not consider 'no food cooked' and 'other' responses to types of fuel to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The same report states that sources of non-drinking water define whether source of water is non-improved when drinking water is bottled, and the MPI follows the same guidelines. Information is disaggregated for urban and rural areas and for four regions, although the report states that Principe is not a domain of this survey. This MPI was first published in December 2016.

Senegal (DHS 2015): Height and weight information was collected for all children under five in the sampled household. Child mortality information is provided by eligible women aged 15 to 49 living in all households sampled and eligible men aged 15 to 59 living in households selected for a male questionnaire (50% of the sample). Table 2.1 on page 12 defines improved sources of water, and this MPI follows this definition as closely as possible by considering bottled water as an improved source of water and other sources as non-improved sources of water. Table 2.2 on page 13 lists improved and non-improved sources of sanitation, and these definitions are used for the MPI. Table 2.3 on page 14 of the report does not consider 'no food cooked' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. Survey estimates are disaggregated by rural and urban areas and four geographical/ecological zones (p. 247 of the report). This MPI was first published in June 2017.

South Africa (NIDS 2014–15): Anthropometric information is available for children under 15 and men and women aged 15 to 70 years old; all of this information was considered when estimating undernourishment in the household. Information on child mortality was available for women aged 15 to 49 years old who ever gave birth. Information on the availability of a truck is no longer present in the survey, so this affects the estimation of the assets indicator. Distance to water source was available in kilometers so the threshold of one kilometer or more was established for assessing deprivation in the water source indicator. Solar energy was considered an improved source of cooking fuel, but 'other' sources of fuel were considered as non-improved fuel. Due to the sample loss, this estimation cannot be disaggregated at the regional level. This MPI was first published in June 2017.

Sudan (MICS 2014): Anthropometric measures are available for all children under five. Child mortality is only available for married women aged 15 to 49. The MICS report considers that 'no food cooked' and 'other' types of fuel do not reflect inadequate cooking fuel. The report states that 'bottled water' as a main source of drinking water is unimproved if the source of non-drinking water is unimproved; this MPI follows the report's guidelines on water. Information is disaggregated for urban and rural areas and for 18 states. Eleven percent of the sample had missing values in child mortality and in nutrition in North Darfur, and 10% of the sample had missing values in nutrition in North Kordofan and in Red Sea. However, bias in these values was not concentrated uniquely among those deprived in the remaining indicators. Therefore, we concluded that the estimates disaggregated for the 18 states were robust. This MPI was first published in December 2016.

Swaziland (MICS 2014): Anthropometric measures are available for all children under five. Child mortality is available for women aged 15 to 49 and for men, aged 15 to 59 years old, living in a third of the households sampled. Table WS5 on page 85 states that toilets that 'flush to somewhere else' are not improved sanitation, and this definition is used for the MPI. The MICS report does not consider 'no food cooked' and 'other' types of fuel to reflect inadequate cooking fuel. Page 76 of the report states that 'bottled water' as a main source of drinking water is unimproved if the source of non-drinking water is unimproved. This MPI follows the report in these matters. Information is disaggregated for urban and rural areas and four regions. This MPI was first published in June 2017.

Tanzania (DHS 2015–16): Height and weight information was collected for all children under five and women aged 15 to 49 years old in the sampled households. Child mortality information is provided by eligible women aged 15 to 49 living in all households sampled and by eligible men, aged 15 to 59, living in a households selected for male and HIV questionnaires. Table 2.2 on page 32

establishes that toilets that 'flush to somewhere else/do not know where' and 'other' types of toilets are not improved sources of sanitation, and the MPI follows the report's guidelines in this. Table 2.1 on page 31 states that 'bottled water' is a non-improved water source if non-drinking water is also a non-improved source of water, while 'other' source of water is considered to be unimproved, and this definition is used for the MPI. Table 2.4 on page 33 of the report does not consider 'no food cooked' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. Survey estimates are disaggregated by rural and urban areas and nine zones. This MPI was first published in June 2017.

Thailand (MICS 2012): Anthropometric information was collected from all children under five. Information on child mortality was collected from women aged 15 to 49. Page 53 of the report does not define 'no food cooked in household' and 'other' fuels as inadequate cooking fuel, and the MPI follows this definition. Households in which bottled water is the main source of drinking water are considered to have improved sources of water depending on the source of non-drinking water, according to page 56 of the report. Page 61 defines 'flush somewhere else' as a non-improved source of sanitation, and so does this estimation of MPI. Information is disaggregated for urban (or municipal) and rural (or non-municipal) areas. Following our guidelines for computing subnational figures (Alkire, Roche and Seth 2011), subnational figures are not reported because the multidimensional headcount ratio for the entire country is smaller than 0.005. This MPI was first published in December 2016.

Turkmenistan (MICS 2015–16): Anthropometric information was collected from all children under five. Information on child mortality was collected from women aged 15 to 49. Page 28 of the report warns about the estimation of child mortality, as the data suggest potential underreporting of deaths among those surveyed. This MPI estimation could then be considered as a lower bound of multidimensional poverty for the country. Page 69 of the report does not define 'no food cooked in household' and 'other' fuels as inadequate cooking fuel, and the MPI follows this definition. Households that use bottled water as their main source of drinking water are considered to have improved sources of water, depending on the source of non-drinking water, according to page 71 of the report. Information is disaggregated for urban and rural areas. Following our guidelines for computing subnational figures (Alkire, Roche and Seth 2011), subnational figures are not reported because the multidimensional headcount ratio for the entire country is smaller than 0.005. This MPI was first published in June 2017.

Zimbabwe (DHS 2015): Height and weight information was collected for all children under five and women aged 15 to 49 and men aged 15 to 54 years old in the sampled households. Child mortality

information is provided by eligible women and men aged 15 to 49 living in all households sampled. Table 2.3 on page 21 establishes that toilets that 'flush to somewhere else/ do not know where' and 'other' types of toilets are not improved sources of sanitation and are defined as such for the MPI. Table 2.1 on page 19 states that bottled water is a non-improved water source if non-drinking water is also a non-improved source of water (and we include bottled water in this definition), while 'other' source of water is considered as unimproved for the MPI. Table 2.4 on page 22 of the report does not define 'no food cooked' and 'other' response to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. Survey estimates are disaggregated by rural and urban areas and ten provinces. This MPI was first published in June 2017.

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OPHI's Global MPI Databank
www.ophi.org.uk/multidimensional-poverty-index/

OPHI's Global MPI Databank contains a wealth of resources on multidimensional poverty in more than 100 developing countries, enabling users to see how poverty is experienced in different parts of the world, zoom in on subnational regions, or explore the character of poverty by different indicators. Follow the links below to find out more.

- ✓ **MPI Country Briefings:** Short, country-specific summaries on the results of the MPI analyses. A number of the briefings include data at the subnational level.
- ✓ **MPI Interactive Databank**: An interactive databank that enables you to navigate the world according to the MPI as a whole or by individual dimensions and indicators of MPI poverty. You can zoom in on individual countries and see how multidimensional poverty has changed over time.
- ✓ **MPI Policy Briefings**: The key policy briefings from the 2017 analysis.
- ✓ **MPI Data Tables – Main MPI Results**: A table that presents the basic MPI results and sorts 103 countries according to their MPI score.
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- ✓ **MPI Data Tables – rural-urban areas**: This table gives a breakdown of MPI results by rural and urban areas for 103 countries.
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- ✓ **MPI Background**: A brief history of the MPI, including how it came to be developed for publication in the UNDP's Human Development Report, and how it is being used now.
- ✓ **MPI Case Studies**: Stories of people who are poor according to the MPI in their country: their hopes, strengths, and challenges.
- ✓ **Policy Uses of the MPI**: Adaptations of the global MPI for other purposes, such as national poverty measurement, targeting, child poverty measurement, and empowerment.
- ✓ **Online Training Portal**: Resources on multidimensional measurement techniques, including video and audio files, lecture slides, exercises, and reading lists.

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