OPHI MPI METHODOLOGICAL NOTE 50

Changes over Time in the Global Multidimensional Poverty Index

Sabina Alkire, Fanni Kovesdi, Corinne Mitchell,
Monica Pinilla-Roncancio, Sophie Scharlin-Pettee*

July 2020

* The Oxford Poverty and Human Development Initiative (OPHI), Oxford Department of International Development, University of Oxford. Contact details: ophi@qeh.ox.ac.uk Tel +44 1865 271915.

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

We are very grateful to Sunita Kishor and her team at the Demographic and Health Survey (USAID), Attila Hancioglu and his team at the Multiple Indicator Cluster Surveys (UNICEF), to Wu Qiong for support with the China Family Panel Survey, Teresa Shamah and Marco Antonio Avila at INSP, and Anselme Ketomagnan Yawovi Badohoun at INSEED for promptly and precisely answering our detailed survey-related queries. We are grateful to our colleagues at the UNDP Human Development Report Office for their engagement, especially Pedro Conceição, Cecilia Calderon, and Milorad Kovacevic.

Citation for this document and Table 6: Alkire, S., Kovesdi, F., Mitchell, C., Pinilla-Roncancio, M. and Scharlin-Pettee, S. (2020). 'Changes over Time in the Global Multidimensional Poverty Index', OPHI MPI Methodological Note 50, Oxford Poverty and Human Development Initiative, University of Oxford.

Contents

Introduction

This methodological note presents an eighty-country study of changes over time in multidimensional poverty, using the global MPI specifications.[1] Accompanying tables show the full results of these disaggregations: national, rural, urban, subnational regions, and age groups, as well as complementary data, indicator breakdowns, and standard errors. This note first explains the choice of the 80 countries for this global study of changes over time. It then describes the principles used to guide the data harmonization process and the estimation procedures. Lastly, it provides the methodological details of harmonization for the estimation of each dataset used. The results of these estimations are presented online in Table 6 of Data Tables 2020.

1.   An Eighty-Country Study of Changes over Time in the Global MPI

Table 6 of the 2020 global MPI presents harmonized intertemporal estimations using 160 datasets from 80 countries.[2] Harmonized datasets are used in order to make rigorous comparisons of changes

---

[1] It is essential to read this note alongside the methodological notes that precisely define the global MPI indicators. For these details on the global MPI structure and specifications, please see the MPI Methodological Note 49 by Alkire, Kanagaratnam, and Suppa (2020), as well as the MPI Methodological Notes 46 (2018) and MPI Methsodological Note 47 (2019) by the same authors.

[2] Afghanistan, Albania, Armenia, Bangladesh, Belize, Benin, Bolivia, Bosnia and Herzegovina, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Chad, China, Colombia, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Dominican Republic, Egypt, eSwatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guyana, Haiti, Honduras, India, Indonesia, Iraq, Jamaica, Jordan, Kazakhstan, Kenya, Kyrgyzstan, Lao People's Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mexico, Moldova, Mongolia, Montenegro, Mozambique,

in the MPI and its associated statistics over time. Strict harmonization requires using the same information from both the older and newer datasets to ensure that any differences observed are due to changes in the conditions of the country rather than changes in the questionnaire. The harmonization process is further detailed in Section 3, 'Harmonization Principles and Decisions'. The countries included in the study span all major world regions (East Asia and the Pacific, Europe and Central Asia, Latin America and the Caribbean, South Asia, and sub-Saharan Africa), various World Bank income categories (e.g. upper-middle income, lower-middle income, and low income), and include seven of the ten most populous countries in the world (China, India, Indonesia, Pakistan, Nigeria, Bangladesh, and Mexico) (UNDESA 2019). Taken together, the 80 countries are home to roughly five billion persons.[3]

Selection of countries

The 80 countries presented in this analysis were selected from the 101 countries covered as part of the global MPI 2018 and based on the availability of multiple comparable datasets.[4] Like the global MPI, our data primarily comes from Multiple Indicator Cluster Surveys (MICS) and Demographic and Health Surveys (DHS). In a minority of cases, the changes over time analysis uses national datasets: CFPS (China), JSLC (Jamaica), ENSANUT (Mexico), and ENDES (Peru). Datasets for each country were selected based on the length of time between the surveys. As only one period of time was included in this study, a minimum period of three years between surveys was selected for this initial study. The sample designs also had to be comparable. Sometimes, this principle allowed for matching (DHS-DHS or MICS-MICS) survey comparisons, as countries often administer the same surveys over time. In cases where countries switched from one survey type to another, a comparison between the two survey types was used (e.g. São Tomé and Príncipe DHS 2008/09 and MICS 2014). We have confirmed through the sample designs that the sampling frames and information collected in the DHS and MICS surveys are comparable in the included countries. Analyses relying on DHS and MICS

Namibia, Nepal, Nicaragua, Niger, Nigeria, North Macedonia, Pakistan, Peru, Philippines, Rwanda, São Tomé and Príncipe, Senegal, Serbia, Sierra Leone, State of Palestine, Sudan, Suriname, Tajikistan, Tanzania, Thailand, Timor-Leste, Togo, Trinidad and Tobago, Turkmenistan, Uganda, Ukraine, Viet Nam, Yemen, Zambia, and Zimbabwe.

3   The population of these countries is about 5 billion. The population was 4.71 billion in the first time period, 5.14 billion in the second and 5.29 billion in 2018. When analyzing trends in multidimensional poverty, the population in the survey years is used to estimate the number of multidimensional poor people. If a survey was conducted between two years, we present both the population of the second year and the average of the two survey years.

4   We do not include data or calculate trends for 27 countries that are part of the global MPI 2020 release: Algeria, Angola, Barbados, Bhutan, Botswana, Brazil, Comoros, Cuba, Ecuador, El Salvador, Georgia, Guatemala, Guinea-Bissau, Kiribati, Libya, Maldives, Morocco, Myanmar, Papua New Guinea, Paraguay, Saint Lucia, Seychelles, South Africa, South Sudan, Sri Lanka, Syria, Tunisia, and Vanuatu.

comparisons have been rigorously harmonized to be comparable after the appropriate adjustments outlined in Section 3, which details the indicator-specific harmonization principles.

While the changes over time analysis has followed the data updates of the global MPI from 2018 to 2019, the list of datasets included in the analysis predates the updates of the 2020 round of the global MPI. As a result, the majority of new datasets released as part of the global MPI this year are not included in our estimations, with the exception of five datasets: Bangladesh MICS 2019, Indonesia DHS 2017, Madagascar MICS 2018, Nigeria DHS 2018, and Peru ENDES 2018. These countries were prioritized as their inclusion offered a timely update due to their large populations (Bangladesh, Indonesia, and Nigeria) or an improvement in our analysis due to more recent (Madagascar) or less complex datasets (Peru). The next round of changes over time will aim to incorporate all of the datasets released as part of the global MPI 2020.

Countries, data, and time periods

We present results for the 80 countries that were identified as having available and suitable data for two time periods following the 2018 global MPI release.[5] The analysis uses datasets ranging from 2000 for the Central African Republic (MICS) and Gabon (DHS) to the most recent datasets from 2019 for Bangladesh (MICS) and 2018 for Madagascar (MICS), Nigeria (DHS), and Peru (DHS).

Thirty-six of the 80 countries have DHS data for both years (see Table 1 below),[6] including the comparison for Senegal using the DHS-Continuous in its second year.[7] Twenty of the 80 countries have MICS data for both years. Twelve countries have DHS data in the first period and MICS data in the second; eight countries have MICS data in the first period and DHS data in the second. Three countries have national datasets in both years: China (CFPS), Jamaica (JSLC), and Mexico (ENSANUT). Additionally, Peru has a DHS-Continuous[8] in the first year and a national survey (ENDES) in the second.

---

[5] See footnote (2).

[6] The fourth round of the India National Family Health Survey or NFHS-4 was conducted in 2015/16. In the global MPI, the dataset is identified as India DHS 2015/16 (Alkire, Kanagaratnam, and Suppa 2018). This is because the micro-data was obtained from the DHS website. Similarly, NFHS-3, which was carried out in 2005/06, is identified as India DHS 2005/06 in OPHI's global MPI work.

[7] Senegal DHS-Continuous collects data in five yearly phases; for a description and details see https://dhsprogram.com/pubs/pdf/DM34/DM34.pdf.

[8] Peru DHS-Continuous was a continuous survey with data collected and reported annually by a permanently maintained DHS office and field staff (USAID 2014).

In total, 35 countries have Year 1 surveys that were conducted before 2010 and in only one country, Bolivia, both surveys were conducted before 2010. Time periods between surveys range from 12 years in Gabon (2000–2012) and Senegal (2005–2017) to a three-year period in Cameroon (2011–2014), Ghana (2011–2014), and Mongolia (2010–2013). Below is Table 1 with a description of surveys, time periods, and sample size for each country in the analysis. The average time span between the two surveys is 5.7 years for the 80 countries included, and the population-weighted average time span is 6 years. The effective sample size ranges from 8,888 for Montenegro in 2005/06 to 2,702,677 in India in 2015/16, while the average sample size is 58,284 in Year 1 and 92,742 in Year 2. Sample sizes increased in 53 countries and decreased in 27.

Table 1. Countries, Time Periods, and Data Use for the Analysis of Changes over Time

Country	Time period	Surveys	Sample size (t_1)	Sample Size (t_2)
Afghanistan	2010/11–2015/16	MICS - DHS	101,240	200,132
Albania	2008/09–2017/18	DHS - DHS	30,453	51,317
Armenia	2010–2015/16	DHS - DHS	23,111	26,879
Bangladesh	2014–2019	DHS - MICS	73,995	248,068
Belize	2011–2015/16	MICS - MICS	16,070	18,177
Benin	2014–2017/18	MICS - DHS	71,903	72,098
Bolivia	2003–2008	DHS - DHS	76,935	73,563
Bosnia and Herzegovina	2006–2011/12	MICS - MICS	20,754	19,611
Burkina Faso	2006–2010	MICS - DHS	35,901	39,271
Burundi	2010–2016/17	DHS - DHS	20,053	37,759
Cambodia	2010–2014	DHS - DHS	36,895	46,805
Cameroon	2011–2014	DHS - MICS	35,348	44,814
Central African Republic	2000–2010	MICS - MICS	87,876	51,031
Chad	2010–2014/15	MICS - DHS	77,928	61,485
China	2010–2014	CFPS - CFPS	42,376	41,740
Colombia	2010–2015/16	DHS - DHS	191,719	152,688
Congo	2005–2014/15	DHS - MICS	27,970	51,872
Congo, Democratic Republic of	2007–2013/14	DHS - DHS	22,543	46,482
Côte D'Ivoire	2011/12–2016	DHS - MICS	23,860	55,108
Dominican Republic	2007–2014	DHS - MICS	115,086	116,159
Egypt	2008–2014	DHS - DHS	89,678	115,996
eSwatini	2010–2014	MICS - MICS	17,256	20,651

Ethiopia	2011–2016	DHS - DHS	72,938	69,889
Gabon	2000–2012	DHS - DHS	29,386	26,502
Gambia	2005/06–2013	MICS - DHS	44,765	49,363
Ghana	2011–2014	MICS - DHS	53,055	42,596
Guinea	2012–2016	DHS - MICS	22,098	45,220
Guyana	2009–2014	DHS - MICS	19,614	20,754
Haiti	2012–2016/17	DHS - DHS	38,458	58,054
Honduras	2005/06–2011/12	DHS - DHS	86,031	93,200
India	2005/06–2015/16	DHS - DHS	484,462	2,702,677
Indonesia	2012–2017	DHS - DHS	178,033	191,090
Iraq	2011–2018	MICS - MICS	234,442	130,155
Jamaica	2010–2014	JSLC - JSLC	5,357	5,193
Jordan	2012–2017/18	DHS - DHS	48,793	44,606
Kazakhstan	2010/11–2015	MICS - MICS	53,153	54,254
Kenya	2008/09–2014	DHS - DHS	36,840	69,538
Kyrgyzstan	2005/06–2014	MICS - MICS	24,285	30,141
Lao People's Democratic Republic	2011/12–2017	MICS - MICS	96,257	105,140
Lesotho	2009–2014	DHS - DHS	17,268	15,163
Liberia	2007–2013	DHS - DHS	32,734	22,637
Madagascar	2008/09–2018	DHS - MICS	39,223	77,651
Malawi	2010–2015/16	DHS - DHS	38,393	37,716
Mali	2006–2015	DHS - MICS	68,899	96,973
Mauritania	2011–2015	MICS - MICS	55,972	64,051
Mexico	2012–2016	ENSANUT - ENSANUT	194,143	29,759
Moldova	2005–2012	DHS - MICS	29,719	27,816
Mongolia	2010–2013	MICS - MICS	34,160	49,583
Montenegro	2005/06–2013	MICS - MICS	8,888	14,405
Mozambique	2003–2011	DHS - DHS	57,350	61,013
Namibia	2006/07–2013	DHS - DHS	39,007	18,292
Nepal	2011–2016	DHS - DHS	22,511	22,796
Nicaragua	2001–2011/12	DHS - DHS	57,245	81,378
Niger	2006–2012	DHS - DHS	22,371	28,148
Nigeria	2013–2018	DHS - DHS	171,853	65,667
North Macedonia	2005/06–2011	MICS - MICS	25,629	15,907

Pakistan	2012/13–2017/18	DHS - DHS	30,034	27,831
Peru	2012–2018	DHS-Cont. - ENDES	71,761	51,757
Philippines	2013–2017	DHS - DHS	98,453	139,822
Rwanda	2010–2014/15	DHS - DHS	70,215	118,069
São Tomé and Príncipe	2008/09–2014	DHS - MICS	27,623	53,666
Senegal	2005–2017	DHS - DHS-Cont.	12,102	13,055
Serbia	2010–2014	MICS - MICS	20,121	74,012
Sierra Leone	2013–2017	DHS - MICS	21,580	20,410
State of Palestine	2010–2014	MICS - MICS	34,674	73,906
Sudan	2010–2014	MICS - MICS	78,025	87,675
Suriname	2006–2010	MICS - MICS	20,499	25,735
Tajikistan	2012–2017	DHS - DHS	37,694	44,020
Tanzania	2010–2015/16	DHS - DHS	46,869	60,765
Thailand	2012–2015/16	MICS - MICS	85,502	103,602
Timor–Leste	2009/10–2016	DHS - DHS	65,390	59,978
Togo	2010–2013/14	MICS - DHS	29,354	22,446
Trinidad and Tobago	2006–2011	MICS - MICS	18,190	17,164
Turkmenistan	2006–2015/16	MICS - MICS	24,733	28,651
Uganda	2011–2016	DHS - DHS	13,396	28,480
Ukraine	2007–2012	DHS - MICS	32,659	33,631
Viet Nam	2010/11–2014	MICS - MICS	44,057	38,785
Yemen	2006–2013	MICS - DHS	25,318	118,071
Zambia	2007–2013/14	DHS - DHS	33,436	78,059
Zimbabwe	2010/11–2015	DHS - DHS	38,717	40,769

We conduct this analysis of poverty trends over time for 80 selected countries (see Table 6 of Data Tables 2020 online). Nevertheless, in the 2020 global MPI report published in partnership with UNDP's Human Development Report Office, we restricted our analysis to an agreed set of 75 countries. To be excluded from the joint report, the countries' harmonized files must meet the following conditions:

1. The absolute value of the relative difference in MPI or H is over 500%;

2. The difference between the headcount ratio from the standardized (published in Table 1 of Alkire Kanagaratnam and Suppa 2020) MPI and the harmonized MPI has an absolute value that is greater than 15%;

3. The nutrition indicator is dropped, and the child mortality indicator does not include whether or not the death took place within the last five years, and the change between standardized and harmonized value is greater than the absolute value of 0.080 for MPI or 15 percentage points for the headcount ratio, or the relative change is greater than 75%.

The countries excluded from the joint publication but included in OPHI publications are Afghanistan, Montenegro, Trinidad and Tobago, Viet Nam, and Yemen. Due to data limitations in the surveys for Afghanistan and Viet Nam, the harmonized MPIs are calculated without the nutrition indicator; hence, double the weight is given to the remaining health indicator (child mortality). In these two countries, the child mortality indicator also lacks data on the date of death, therefore we consider the household as deprived if any child has ever died in the household. This creates differences between standardized and harmonized estimates that prove complex to explain to a general audience: in the case of Afghanistan the MPI rises by over 0.80 and in Viet Nam, the relative change is over 75%. In the case of Montenegro and Trinidad and Tobago, the relative differences between standardized and harmonized estimates (MPI and H) in the second survey year are over 500%, hence violate the first criteria. Yemen – whose harmonized MPI does not include the nutrition indicator – is excluded from the joint analysis because the harmonized MPI has an absolute difference of -0.106 and the headcount ratio (H) has an absolute difference of -19.2% compared with the standardized estimate in the global MPI. While from a technical standpoint the data may still provide insightful analyses, given that they follow the harmonization principles outlined above and can therefore be explained according to those changes (detailed under Section 5, 'Considerations by Country'), we agreed to exclude these countries from the joint publication in order to focus on changes that are more straightforward to interpret.

Policies regarding population figures and complementary information

As in previous years, the surveys are dated according to the year as detailed on the survey report's title and follow previous global MPI publication citations (see Table 7 online). If the fieldwork took place during two calendar years, the data will be labelled with both years, e.g. 2010/11, and the annualized analysis will consider the average between the two periods (e.g. 2010/11= 2010.5). Our tables present the population figures in two ways: a) as indicating the average of those survey years, for surveys that

were conducted over the course of two years and b) as indicating those of the year of the survey corresponding to the second calendar year.

Population figures are reported for the year of the survey, using the new 2019 *Revision of World Population Prospects* (UNDESA 2019). Our previous analysis of changes over time for 10 countries, published in July 2019, used population figures from the 2017 *World Population Prospects*. Due to the revision of the *World Population Prospects*, the total population and number of poor figures for these countries (Cambodia, Democratic Republic of the Congo, Ethiopia, Haiti, India, Pakistan, and Viet Nam) differ slightly from previously published figures (Alkire et al. 2019). The estimates for Bangladesh, Nigeria, and Peru cover different periods in 2020 than were reported in 2019, so their figures differ for that reason, as well.

2.   The Global MPI: Measuring Multidimensional Poverty

The global MPI is a measure of acute global poverty developed by the Oxford Poverty and Human Development Initiative (OPHI) with the UNDP's Human Development Report Office (Alkire, Kanagaratnam, and Suppa 2020). The index is an application of the method developed by Sabina Alkire and James Foster (2007, 2011; Alkire et al., 2015).

The global MPI 2020 assesses multidimensional poverty for people in 107 countries overall.[9] As summarized in Table 2 below, the MPI uses information from 10 indicators that are organized into three dimensions: health, education, and living standards, following the same dimensions and weights as the UNDP's Human Development Index (HDI) (UNDP 2010). Each person is identified as deprived or non-deprived in each indicator based on a deprivation cutoff (See Table 2 as well as Alkire and Santos 2014). 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

---

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

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 ($H \times A$).

Table 2 (next page) presents the dimensions, indicators, deprivation cutoffs, and weights used in the global MPI 2020. For a more detailed look at the specifications of the global MPI 2020, please refer to Alkire, Kanagaratnam, and Suppa (2020).

The global MPI 2020 and our subsequent analysis include four MICS-6 surveys (Sierra Leone MICS 2017, Lao PDR MICS 2017, Madagascar MICS 2018, and Bangladesh MICS 2019) that propose a few specific considerations for the assets and cooking fuel indicators. In MICS-6, households without electricity are not asked whether they own a television or a refrigerator and as a result, they have missing values for these assets and are considered deprived by the global MPI. In line with the global MPI, we consider these households as deprived and assume that the household does not possess these assets given their lack of electricity.

Table 2. Global MPI 2020 – Dimensions, Indicators, Deprivation Cutoffs, and Weights

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

Source: Alkire, Kanagaratnam, and Suppa (2020).
Notes: The global MPI is related to the following SDGs: No Poverty (SDG 1), Zero Hunger (SDG 2), Health & Well-being (SDG 3), Quality Education (SDG 4), Clean Water & Sanitation (SDG 6), Affordable & Clean Energy (SDG 7), and Sustainable Cities & Communities (SDG 11).

1 Children under 5 years (60 months and younger) are considered undernourished if their z-score of either height-for-age (stunting) or weight-for-age (underweight) is below minus two standard deviations from the median of the reference population. Children 5–19 years (61–228 months) are identified as deprived if their age-specific BMI cutoff is below minus two standard deviations. Adults older than 19 to 70 years (229–840 months) are considered undernourished if their Body Mass Index (BMI) is below 18.5 kg/m².

2 The child mortality indicator of the global MPI is based on birth history data provided by mothers aged 15–49. In most surveys, men have provided information on child mortality in the household as well, but this lacks the date of birth and death of the child. Hence, the indicator is constructed solely from information from mothers. However, if the data from the mother is missing, and if the male in the household reported no child mortality, then we identify no child mortality in the household.

3 If all individuals in the household are in an age group where they should have formally completed 6 or more years of schooling, but none have this achievement, then the household is deprived. However, if any individuals aged 10 years and older reported 6 years or more of schooling, the household is not deprived.

4 Data source for the age children start compulsory primary school: DHS or MICS survey reports; and http://data.uis.unesco.org/.

5 If survey report uses other definitions of solid fuel, we follow the survey report.

6 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. If survey report uses other definitions of adequate sanitation, we follow the survey report.

7 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 a 30-minute walk, round trip. If survey report uses other definitions of clean or safe drinking water, we follow the survey report.

8 A number of countries do not collect data on electricity because of 100% coverage. In such cases, we identify all households in the country as non-deprived in electricity.

9 Deprived if floor is made of natural materials or if dwelling has no roof or walls or if either the roof or walls are constructed using natural or rudimentary materials. The definition of natural and rudimentary materials follows the classification used in country-specific DHS or MICS questionnaires.

Further, the question on cooking fuel has been supplemented with a question on the cookstove used by the household, and we build the cooking fuel indicator considering information from both variables.

In addition, in 2020, the global MPI introduced a minor revision to the years of schooling indicator by applying a country-specific age cutoff to identify eligible household members instead of the previous universal cutoff of 10 years of age. This revision has been applied to all new datasets released as part of the 2020 global MPI, and we incorporate this revision by harmonizing accordingly in five of the countries with new datasets: Bangladesh, Indonesia, Madagascar, Nigeria, and Peru. For all other countries, we retain the 10-year age cut off for the years of schooling indicators, as does the global MPI 2020. For a more detailed look at the specifications of the global MPI, please refer to Alkire, Kanagaratnam, and Suppa (2020).

Destitution

The 2020 release of the global MPI – and the changes over time – includes destitution, a more stringent version of the global MPI that identifies a subset of the poor with graver deprivations, identified through the use of stricter indicator cutoffs as shown in Table 3 below. For a detailed description of the destitution measure, please refer to Alkire, Kanagaratnam and Suppa (2020). Changes over time presents destitution figures for national and urban-rural disaggregations.

Table 3. Dimensions, Indicators, Deprivation Cutoffs, and Weights for Measuring Destitution

Dimensions of poverty	Indicator	Deprived if...	Weight
Health	Nutrition	Any person under 70 years of age for whom there is nutritional information is **severely undernourished**.[1]	1/6
	Child mortality	A child **under 18** has **died** in the household in the five-year period preceding the survey.[2]	1/6
Education	Years of schooling	**No** eligible household member has completed at least **one year** of schooling.	1/6
	School attendance	Any school-aged child is **not attending** school **up to** the age at which he/she would complete **class 6**.	1/6
Living Standards	Cooking fuel	A household cooks using **solid fuel**, such as dung, agricultural crop, shrubs, wood, charcoal or coal.[2]	1/18
	Sanitation	The household practises **open defecation**.	1/18
	Drinking water	The household's source of **drinking water** is **not safe** or safe drinking water is **more than a 45-minute walk** from home, roundtrip.	1/18
	Electricity	The household has **no electricity**.[2]	1/18
	Housing	The household has **inadequate** housing materials in **any two** of the three components: **floor**, **roof**, or **walls**.	1/18
	Assets	The household does **not own any of these assets**: radio, TV, telephone, computer, animal cart, bicycle, motorbike, or refrigerator, and does not own a car or truck.	1/18

Source: Alkire, Kanagaratnam, and Suppa (2020).

Notes:

1. Children under 5 years (60 months and younger) are considered undernourished if their z-score of either height-for-age (stunting) or weight-for-age (underweight) is below minus three standard deviations from the median of the reference population. Children 5–19 years (61–228 months) are identified as deprived if their age-specific BMI cutoff is below minus three standard deviations. Adults older than 19 to 70 years (229–840 months) are considered undernourished if their Body Mass Index (BMI) is below 17.0 m/kg².

2. The deprivation cutoff is the same as the global MPI.

3.   Harmonization Principles and Decisions

General principles

This section describes the guiding principles and decisions used in our harmonization procedure for intertemporal estimation, using two data points for each of the 80 countries (160 datasets in total). It follows the same basic principles as previous MPI harmonization procedures (Alkire and Roche 2013; Alkire et al. 2017, Alkire, Roche, and Vaz 2017). The harmonization process guarantees rigorous comparisons of changes in MPI and its associated statistics over time and invites us to analyse trends in poverty over time. Unlike *standardization* – the process used to compute the global MPI for over 100 countries by applying a standard structure of the measure to all datasets – *harmonization* seeks to make two or more MPI estimations comparable by exactly aligning the indicator definitions. In other words, harmonization, where necessary, re-creates the indicators in the global MPI so that they are using precisely the same information and deprivation cutoffs in both years. For instance, if a survey in one year collects nutrition information from women aged 15 to 49 years and in the other year it collects nutrition information from women aged 15 to 54, the harmonized computations will only use information from women aged 15 to 49 in both years – so that any changes in the nutrition indicator are due to changes in the nutritional status of women in the country rather than the inclusion of a new group of women who may tend to be more (or less) malnourished. This enables better identification of changes in the situation on the ground and minimizes noise caused by changes in the questionnaires. This section describes the guiding principles and decisions used in our harmonization procedure for the changes over time estimation.

Several general principles directed our harmonization process. In cases of difference between available indicators between the two surveys, we resort to the condition that is the most restricted. For example, if one year of the surveys did not collect information needed to construct the nutrition indicator and the other year did, the indicator was dropped from the year that includes the information, and the indicators within the dimensions were re-weighted to maintain equal weights across dimensions and match the survey with the more restricted data. In our sample of 80 countries, six countries dropped the nutrition indicator from one year to match the year that did not collect anthropometric measurements (Colombia, Dominican Republic, Philippines, Trinidad and Tobago, Viet Nam, and Yemen), three countries (Montenegro, North Macedonia, and Suriname) dropped the child mortality indicator from one year, and we removed the school attendance indicators in one country

(Philippines). The next section builds on these general principles to describe the indicator-specific decisions required in the harmonization process.

Indicator-specific decisions

Health

The dimension of health includes the nutrition and child mortality indicators. For the nutrition indicator in the case of DHS, the eligible subsample of individuals for anthropometric measurement, as defined by the report, are used and compared between the two years. As subsamples cannot be adjusted without compromising the representativeness of the survey – for instance, if in one year anthropometric data is collected from two out of every three households, and in the other year, it is collected from all households – no adjustments are made, and instead the original subsamples are used to construct the nutrition indicator. If the reference populations can be adjusted, they are restricted to the year with the more limited eligibility conditions. For example, in Namibia DHS 2006/07, eligible women for height and weight measurement included all women aged 15 to 49 years, whereas in Namibia DHS 2013, eligible women included all women aged 15 to 64 years. As a result, in Namibia, only women aged 15 to 49 years are considered as eligible for nutrition measurement for both years. This restricted condition principle also applies when one year includes nutrition information from men and the other year does not; in that case, men's nutritional information would be excluded from the indicator in both years of the DHS.

Most MICS surveys used in this analysis collect anthropometric measurements only for children under 5 years. In comparisons where in one year the survey is a DHS and in the other the survey is a MICS, the nutrition indicator is harmonized to include anthropometric information only for children under 5 years. Additionally, in the MICS surveys, there are often two variables – children's age in days and age in months – which can be used to compute the nutrition statistics, although some MICS do not include the age-in-days variable. As the calculation of the nutrition statistics differs slightly based on the precision of the age unit, the age unit is harmonized between the two years. So, if in the second year both the 'age in months' and 'age in days' variables exist and in the first year only the 'age in months' variable exists, then the 'age in months' variable is used for both surveys when calculating the nutrition statistics for children.

For the child mortality indicator, attention was paid to which individuals provide information on child mortality to ensure the applicable populations match between the two years. For instance, in Afghanistan MICS 2010/11, women who are eligible to provide child mortality information are all

women aged 15 to 49 years, and, in Afghanistan DHS 2015/16, eligible women are ever-married women aged 15 to 49 years. Therefore, only child mortality information from ever-married women aged 15 to 49 years is included in the indicator for both years, following the more restricted condition principle. Child mortality information from eligible men, however, was not excluded even when not present in the other year, as it is only used to supplement information for the household in the absence of information from eligible women. For further details on the complementary nature of men's information on child mortality, please see Alkire, Kanagaratnam, and Suppa (2020). Additionally, birth history information – whether the mother gave birth in the last five years preceding the survey and how old the child was when he or she died – is used to construct the child mortality indicator. Often, the older MICS surveys do not include a birth history questionnaire and thus do not have information on the age and time of passing of the child. When one year includes birth history information and the other does not, the more restricted condition principle is followed and information on age and year of death are removed from the survey that has them, as was the case in Afghanistan, for instance. In this case, the child mortality indicator then takes on the deprivation cutoff from earlier releases of the global MPI, which considers whether any child has died in the household (Alkire and Santos 2010). The same rule applies when neither survey has birth history information.

Education

The dimension of education includes two indicators: years of schooling and school attendance. For the years of schooling indicator, DHS data includes a variable that states the total number of years of education for the individual, whereas the MICS data does not provide an equivalent variable. Instead, when using MICS data, the total number of years of education is computed by combining the education level and highest-grade variables, taking into consideration the country's national education system, as described in the survey report. In cases where this information is not included in the survey report, we refer to the UNESCO Institute for Statistics (UIS) databank.[10] In cases of mismatch between the survey report and the national guidance, we always follow the MICS report. For the DHS and MICS comparisons, the DHS variable was treated as equivalent to the MICS composite variable (e.g. six years of schooling in the DHS variable corresponds to the first six years of primary education in MICS). For the five countries incorporating new datasets released as part of the global MPI 2020, we adopt the revised 2020 version of this indicator for which the youngest eligible persons are

---

[10] See http://data.uis.unesco.org for further details.

specified using country-specific age cutoffs that correspond to the age at which they are expected to complete class six (Alkire, Kanagaratnam, and Suppa 2020).

The school attendance indicator is manually computed using the age range for the indicator based on the national entry age to compulsory schooling. The official national entry age to compulsory schooling is selected using either the survey report (where possible) or the UNESCO Institute for Statistics data (if not available in the survey report). In cases of mismatch between the report and the UNESCO guidance, the indicator follows the report. For most countries included in the changes over time analysis, the official entry age for primary schooling is six years, although for a few countries, this differs. For example, for Ethiopia, the official entry age is 7 years, and, for Pakistan, the official entry age is five years. When the official entry age changes between the two surveys, often due to education policy changes, we retain the accurate official entry age in each survey and do not harmonize across the years in order to fully capture the range of eligible children. Additionally, for this indicator, when the comparisons are between MICS surveys, we currently use the age variable constructed from the household roster rather than the 'schage' (age at the beginning of school year) variable, except for when both surveys are MICS-5 or later. This is due to an ongoing internal investigation into the 'schage' variable in earlier surveys.

Living Standards

The third and final dimension, living standards, includes six indicators: electricity, sanitation, drinking water, housing, cooking fuel, and assets. Previously published changes over time results in 2019 had harmonized indicators to the more deprived condition; however, after internal discussion, the decision was made to revise this principle. Thus, the subsequent analysis harmonized all living standards indicators to classifications presented in the most recent survey, which, more often than not, presents an estimate of a lower bound of poverty across time (Alkire, Roche, and Vaz 2017). Below is an updated description of each indicator and the principles reflecting this change in criteria for the 2020 release of multidimensional poverty trends over time.

The first indicator, electricity, does not have any indicator-specific harmonization decisions, beyond the general principles of only using information that is available in datasets from both survey years. For the sanitation indicator, two conditions are used – whether the toilet facility is shared by other households and whether the toilet facility is considered an improved or unimproved facility – to define a household's access to adequate sanitation. If in one year, there is no information on whether the facility is shared, but the other year does have that information, the more limited information is

considered in both years. In terms of categorizing labelled types of toilet facilities as improved or unimproved, if survey report classifications differ between the two years, we consider the more recent data's definition of improved facilities for both years. For example, in Togo MICS 2010, the category 'flush to unknown place/not sure/don't know where' is considered an improved sanitation facility by the report, whereas in Togo DHS 2013/14, the report considers the same category as an unimproved facility. We code the category as unimproved in both years, following the latest standard. In addition to labelled types of toilet facilities, some surveys include a category for responses of 'missing' to the question about toilet type (often coded as 99). This separate category is not equivalent to a truly missing observation, which would be an observation not included in the list of categories. If in the second (most recent) year, the 'missing' (99) response is not included as a sanitation facility (as is the case, for example, in Cambodia DHS 2014), but the first year specifies 'missing' (99) as unimproved, this category is left as unimproved in the first year (Cambodia DHS 2010/11). This follows the same principle as when a first-year survey specifies a category for sanitation facilities that the second year does not; we would leave the category labelled as is in the first year. Otherwise, if the category is available in both years' raw data but assigned as unimproved in one year and unspecified in the other year, we code the 'missing' (99) category to follow the latest standard.

For the drinking water indicator, there are two conditions to consider – how long it takes the respondent to fetch water from the main drinking water source of the household and whether the main drinking water source is considered an improved or unimproved source – to define a household's access to safe and adequate drinking water. If in one year, there is no information on how long it takes to fetch water, but the other year does have that information, that information is dropped to accord with the year that has the more limited information. Further, when different main drinking water sources are considered improved between the two years, as in the case for sanitation facilities, we follow the standard in the more recent survey. The same procedure for 'missing' (99) responses is also followed as described above for sanitation facilities. Lastly, unless directly specified otherwise by the report, because the quality of bottled water is unknown, households that use bottled water for drinking are classified as using an improved source only if the water they use for cooking and hand washing comes from an improved source. This information exists in a non-drinking water variable, which often is not present in the earlier surveys. When in one year, there is no information on non-drinking water, as in Pakistan DHS 2012/13, but the second year does have that information, as in Pakistan DHS 2017/18, the condition is dropped to accord with the year that has the more limited information.

Often, when this is the case, the reports specify that bottled water is an improved source, and, consequently, it is coded as such.

The assets indicator considers whether a household owns a radio, television, telephone, computer, animal cart, bicycle, motorbike, refrigerator, or car/truck. When in one year there is no information on certain assets, as in Ethiopia DHS 2011, which is missing data on computer ownership, but the second year does have that information, as in Ethiopia DHS 2016, those assets are dropped from the assets indicator in the second year to accord with the more limited information available. Our definition of telephone ownership includes information on whether a household owns a landline or mobile telephone. In earlier surveys, as is the case in Mozambique DHS 2003, the questionnaire did not include a question on whether the household owned a mobile telephone (as they were not as common a telecommunications device as they are today). In these cases, for the second year, as in the case of Mozambique DHS 2011, we kept the telephone information from both the landline and mobile phone questions (as opposed to excluding the information on whether the household owns a mobile phone), as we believe the changes in phone ownership are best reflected with the inclusion of all available information on telephone devices because individuals may own a mobile phone instead of, rather than in addition to, a landline.

For the cooking fuel indicator, households are defined as deprived when they cook with solid fuels: dung, agricultural crop, shrubs, wood, charcoal, or coal. To follow the principle of harmonizing to the latest survey, when one survey codes a fuel source as solid fuel and the other does not, both years are coded to consider that fuel source to be solid whatever the classification is in the later year. For example, in the Moldova DHS 2005 to MICS 2012 comparison, the fuel sources 'coal/lignite' and 'charcoal' are included in the list of solid fuels in the second year, so we consider them unclean sources for cooking in that year; however, in the first year, they are considered clean sources. For harmonization purposes, we consider the categories 'coal/lignite' and 'charcoal' unclean fuel sources in both years. In the rare instance where a report does not specify a list of solid fuels, we follow the global MPI and consider 'other' cooking fuel responses to reflect non-deprived sources.

For the housing indicator, the household is considered as deprived if they live in inadequate housing, where the floor is of natural materials or the roof or walls are of natural or rudimentary materials. Following the principle of differing classifications reverting to the more recent standard, when the first year considers a housing material (constituting the dwelling's floor, roof, or walls) as natural or rudimentary and the second (more recent) year does not, both years are coded to consider that housing

material as an improved housing material. Further, when information on one or more of the three categories (floor, roof, walls) is missing in one year, the information from the year where it exists is removed to match the missing year. For example, Democratic Republic of Congo DHS 2007 does not collect information on the material used for walls, but Democratic Republic of Congo DHS 2013/14 does; therefore, the information on wall material in the second year has been removed, following the restricted condition principle.

Details of these country-specific decisions for all 10 indicators are included in the final section, 'Considerations by Country'.

Principles for disaggregation

Subnational Analysis

The changes over time analysis follows the three principles for disaggregation outlined in the global MPI 2019 methodological note (Alkire, Kanagaratnam, and Suppa 2019). According to the *first criterion*, the survey reports need to establish that the results are representative at the subnational level. In the case of our data, 76 countries fulfilled this criterion, while four countries (Armenia, Bosnia and Herzegovina, Burkina Faso, and Yemen) have surveys in one or both of the years that did not satisfy this principle according to their survey reports. *Second,* the national MPI estimate and poverty headcount ratio must be large enough (>0.005 and >1.5%, respectively) to enable disaggregation at the subnational level with meaningful estimates. A total of nine countries (Albania, Jordan, Kazakhstan, Moldova, Serbia, State of Palestine, Thailand, Turkmenistan, and Ukraine) did not satisfy this criterion and were therefore excluded from subnational analysis.[11] The *third criterion* set out in the 2019 global MPI methodological note refers to sufficient sample retention at both the national and subnational levels. For countries that have retained samples of less than 85% of the original sample,[12] or a sample size of less than 75% for one or more of the subnational regions, we conduct a bias analysis using hypothesis tests of differences in means (Alkire and Santos 2014) to identify whether we are able to obtain meaningful and non-biased estimates at the subnational level.

---

[11] It is important to mention that the 2020 release of the global MPI does not carry this principle in its original form and introduced disaggregation for countries with a national headcount ratio below 1.5% and an MPI above 0.005. However, for this study, we have made the decision to retain the principle in full and only disaggregate for countries where trends over time can be established for subnational regions using a minimum level of poverty.

[12] We conducted bias analyses for three countries that did not meet one or two of the criteria on sample size, and, after interpreting the results, the decision was made to exclude the countries of Guinea-Bissau, Maldives, and South Africa, as they did not meet the 85% retained national sample criteria.

Many of the comparisons presented here cover time periods during which countries have undergone changes not only in terms of their poverty levels, but often in their administrative outlook. In a small number of cases, subnational regions have changed boundaries or have been split into new regions between the two survey years, so an additional *fourth criterion* was introduced for disaggregation. We exclude subnational disaggregations for countries where changes in the subnational unit definitions between the two time periods are incomparable. A total of seven countries (Burundi, Chad, Iraq, Liberia, Sudan, Tanzania, and Uganda) were identified that did not fulfil the fourth principle and were therefore not disaggregated by subnational regions, although they were still disaggregated by age group and rural or urban residence.

Besides these cases, a number of countries had regional changes between the two time points that did not violate the principle of comparability, and we were therefore able to harmonize and obtain subnational estimates for all or some of the regions. To ensure comparable estimates are derived for both time periods, where possible, regions were aggregated to recreate the region(s) presented in the survey with the more limited regional classification. For instance, in the case of Bangladesh MICS 2019, we aggregated the regions of Dhaka and Mymensingh to recreate the Dhaka region presented in the MICS 2014 survey. We followed this principle in Haiti DHS 2016/17, Kyrgyzstan MICS 2014, Indonesia DHS 2017, Malawi DHS 2015/16, Senegal DHS 2017, and Togo MICS 2010 and DHS 2013/14. For details of the adjustments, see Section 5 'Considerations by Countries'.

In a few exceptional cases, a different number of regions were surveyed in the two years due to accessibility, physical security, or cost issues. For example, Honduras DHS 2011/12 covered the Islas de la Bahía and Gracias a Díos that were excluded in the earlier 2005/06 DHS survey. Similarly, Lao People's Democratic Republic MICS 2017, Mali DHS 2006, India DHS 2015/16, and Pakistan DHS 2012/13 and DHS 2017/18 also surveyed additional regions that are not available in the other dataset. This presented a problem for the estimation of trends over time as we aimed to preserve the national estimates while ensuring that subnational estimates are comparable between the two times. Our approach was to estimate national poverty using all available regions in both years (even if some were not present earlier) in order to preserve the weighting scheme for obtaining the national estimates. Subnational estimates utilize the individual regional weights, and, in cases where additional regions

were surveyed in one year compared to those in the other, our analysis omits the extra region(s) in its estimation of the regional results, but the weights and sample are retained for national analyses.[13]

Furthermore, several of the countries cover different levels of subnational disaggregation that reflect improvements in data collection, sampling methodologies, and data quality. When necessary, we revert to the less detailed disaggregation and harmonize the other survey to the more restricted condition, despite the results being representative at a lower level (e.g. districts as opposed to regions). Examples of such adjustments can be found in the country considerations for Afghanistan, Congo, Dominican Republic, Gabon, India, Jamaica, Nepal, Suriname, Togo, and Trinidad and Tobago. Details of these country-specific decisions are included in Section 5 and all results at the regional level can be found online in Table 6 of Data Tables 2020.

Urban-rural Areas

At the area level, we were able to produce urban-rural disaggregations for all countries – except for Trinidad and Tobago, as the 2006 (MICS) survey did not permit that level of disaggregation (p.64 of the report). In the State of Palestine, area-level data is produced for urban and rural settlements as well as refugee camps. The decision was made to preserve all of the information from the three distinct areas for the national estimates; however, disaggregated results are presented only for urban and rural areas in order to align with the other countries. All area-level results can be found online in Table 6 of Data Tables 2020.

---

[13] As mentioned above, this issue concerned only five countries: Honduras (Gracias a Díos and Islas de la Bahía), India (Andaman and Nicobar, Dadra and Nagar Haveli, Daman and Diu, Lakshadweep, and Puducherry), Lao PDR (Xaysomboun), Mali (Kidal), and Pakistan (Azad Jammu and Kashmir [AJK], the former Federally Administrated Tribal Areas [FATA], and Gilgit Baltistan).

In terms of the weighted population share of each country's national sample, once we have taken the eligible nutrition subsample into account, the regions' percentages of the sample were as follows: Honduras DHS 2011/12: Gracias a Díos (1.08%), Islas de la Bahía (0.72%); India DHS 2015/16: Andaman and Nicobar (0.03%), Dadra and Nagar Haveli (0.03%), Daman and Diu (0.01%), Lakshadweep (0.01%), Puducherry (0.10%); Lao PDR MICS 2017: Xaysomboun (1.53%); Mali DHS 2006: Kidal (0.34%); Pakistan DHS 2012/13: Gilgit Baltistan (0.79%); Pakistan DHS 2017/18: Azad Jammu and Kashmir and Gilgit Baltistan were not included in the national sample (see Section 5 for details on the particulars of the sample weights), the former Federally Administrated Tribal Areas (FATA) (2.02%).

In terms of the *World Population Prospects* population projections for 2018, these regions' population estimates follow, in thousands: Honduras (Gracias a Díos: 103; Islas de la Bahía: 70); India (Andaman and Nicobar: 403, Dadra and Nagar Haveli: 380, Daman and Diu: 198, Lakshadweep: 83, and Puducherry: 1,366); Lao PDR (Xaysomboun: 107); Mali (Kidal: 16); and Pakistan (the former Federally Administrated Tribal Areas [FATA]: 4,488).

Age Groups

Our analysis also includes disaggregations for four age groups: children aged 0 to 9 and 10 to 17 and adults aged 18 to 59 and 60+. Results by age groups are presented for all countries except one (Armenia) and can be found online in Table 6 of Data Tables 2020. We do not present age disaggregations for Armenia because for more than one of the age groups, there was zero poverty in both years. Further, we also include disaggregations for three age groups: children aged 0 to 17, adults aged 18 to 64, and elders aged 65+.

4. Changes over Time Estimation

A strong motivation for computing multidimensional poverty is to track and analyse changes over time. This section describes how to compare the MPI and its associated partial indices over time using repeated cross-sectional data, which are the most widely available data.

The basic component of poverty comparisons is the absolute pace of change across periods. The **absolute rate of change** is the simple difference in poverty levels between two periods. We denote the initial period by t_1 and the final period by t_2, and the corresponding achievement matrices for these two periods by X_{t1} and X_{t2}, respectively. The same set of parameters – deprivation cutoff vector z, weight vector w, and poverty cutoff k – are used in each period.

The **absolute rate of change** (Δ)[14] is the difference in MPIs between two periods and is computed as

$$\Delta MPI = MPI(X_{t2}) - MPI(X_{t1}).$$

Similarly, for H and A:

$$\Delta H = H(X_{t2}) - H(X_{t1}) \text{ and}$$

$$\Delta A = A(X_{t2}) - A(X_{t1}).$$

The absolute rate of change is indifferent to the initial level. For example, a 5-percentage point reduction could mean that the headcount ratio decreased from 75% to 70% or from 10% to 5%.

---

[14] This section draws on Chapter 9 of Alkire et al. (2015) and the papers by Alkire et al. (2016) and Alkire, Roche, and Vaz (2017).

Significance of the difference is determined by t-tests and is reported at 90% (*), 95% (**), and 99% (***) confidence levels online in Table 6 of Data Tables 2020.

Changes (increases or decreases) in poverty across two time periods are also evaluated using relative rates. The **relative rate of change** is the difference in poverty as a percentage of the initial poverty level. Interpreting the analysis of absolute and relative changes together provides a clear sense of overall progress. The **relative rate of change** (δ) is computed for the MPI (and similarly for H and A, which are not presented) as

$$\delta MPI = \frac{MPI(X_{t2}) - MPI(X_{t1})}{MPI(X_{t1})} \times 100.$$

The absolute and relative changes, however, are not comparable for different countries when the reference periods are of different length. To compare the rates of poverty reduction across countries that have different periods of reference, annualized changes are used. The **annualized absolute rate of change** ($\overline{\Delta}$) is the difference in the MPI between two periods divided by the difference in the two time periods ($t_2 - t_1$) and is computed for the MPI as

$$\overline{\Delta} MPI = \frac{MPI(X_{t2}) - MPI(X_{t1})}{t^2 - t^1}.$$

The **annualized relative rate of change** ($\overline{\delta}$) is the compound rate of reduction in the MPI per year between the initial and the final periods, and is computed for the MPI as

$$\overline{\delta} MPI = [(\frac{MPI(X_{t2})}{MPI(X_{t1})})^{\frac{1}{t^2 - t^1}} - 1] \times 100.$$

The same formula can be used to compute and report annualized changes in the other partial indices, namely H, A, censored headcounts, or percent contributions. And all of these formulas may be used for MPI or for destitution measures. For surveys conducted between two periods of time (e.g. Pakistan DHS 2017/2018), the analysis takes the average of the two time periods (e.g. in the case of 2017/18 = 2017.5) for calculating annualized change.[15]

---

[15] Surveys have been dated according to previously published results in Table 7 of the global MPI Data Tables online and as detailed in the relevant survey reports. We would like to acknowledge and thank Attila Hancioglu of UNICEF MICS for his suggestion on the use of median interview date, although, due to time constraints, we were not able to properly assess this recommendation for this release of changes over time.

The reductions in MPI can be broken down by indicators. An analysis of changes in MPI considers both changes in the raw or uncensored headcount ratios (h_j) and in the censored headcount ratios ($h(k)$). The changes in censored headcount ratios depict changes in deprivations among the poor.

Changes in the national-level MPI can be decomposed by subnational regions, age groups, or other population subgroups. That is, poverty in each period can be expressed as $MPI = \sum_{\ell=1}^{m} v^{\ell} MPI(X^{\ell})$, where $MPI(X^{\ell})$ denotes the MPI of subgroup ℓ and $v^{\ell} = n^{\ell}/n$ denotes the population share of subgroup ℓ.

It can be extremely useful to analyse poverty changes by population subgroups to see if the poorest subgroups reduced poverty faster than less poor subgroups and to see the dimensional composition of reduction across subgroups (Alkire and Roche 2013; Alkire and Seth 2015; Alkire et al. 2017, Alkire, Roche, and Vaz 2017).

Population shares for each period must always be analysed alongside subgroup trends in order to take into account demographic shifts such as migration or population growth, as these can significantly influence the interpretation of results. Also, when interpreting subnational results, it is important to check if any samples have been dropped due to missing observations, and to understand how this affects results. In particular, the difference between the full and retained sample must be analysed directly, and the population shares produced by the full and retained sample must be scrutinised to understand if any distortions were introduced by dropping the missing observations.

5. Considerations by Country

This section comments on the methodological details of the analyses of the 160 country datasets for 80 countries presented in July 2020.

Afghanistan (MICS 2010/11): In the children's file, variables corresponding to anthropometric measurements were excluded by the implementing agency (Government of Afghanistan) due to the findings of an expert review of the anthropometry data by UNICEF Headquarters and Centers for Disease Control of the United States. The review identified a high degree of implausible measurements, which led to the conclusion that there were serious departures from the recommended measurement practices; therefore no anthropometric information is

included in the MPI estimation and the indicator of nutrition is dropped.[16] Child mortality information is provided by all eligible women, aged 15 to 49, living in all households sampled; this was restricted to ever-married women aged 15 to 49 to align with the 2015/16 data. There is no data on birth history in the last five years, so the child mortality indicator considers a household deprived if there is any child who died in the household (the earlier global MPI definition of deprivation for child mortality). While Table 7.5 on page 75 of the survey report considers the 'missing' response to be an unimproved sanitation facility, we recode these categories as missing values to match the 2015/16 data. Further, although the variable indicating the main source of water used by the household for other purposes, such as cooking and handwashing, exists, we do not use this condition and instead code 'bottled water' as improved to match Table 7.1 on page 68 of the survey report and the 2015/16 classification. Table 6.10 on pages 63–4 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The survey does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the eight regions. The final analytical sample for Afghanistan (2010/11) covered some 101 thousand people. The global MPI for Afghanistan (2010/11) was first published in June 2014.

Afghanistan (DHS 2015/16): Anthropometric data was not part of the Afghanistan DHS 2015/16 dataset. Child mortality information was provided by eligible ever-married women aged 15 to 49 living in all sampled households and eligible ever-married men aged 15 to 49 living in one out of every three households selected for the male questionnaire. While there is data on birth history in the last five years, for harmonization purposes, we have removed this information to match the 2010/11 data, which did not include a birth history questionnaire. The child mortality indicator therefore considers a household deprived if there is any child who died in the household (the earlier global MPI definition of deprivation for child mortality). The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water, as it is according to Table 2.1 on page 15. Further, Table 2.3 on page 17 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI

---

[16] The 'Read me_Afghanistan.txt' file provided by DHS 2015/16 explains this problem in detail.

estimation follows that categorization for cooking fuel. The earlier data in 2010/11 does not include information on whether the household owns a computer, so it is therefore not included in the assets indicator for harmonization purposes. Survey estimates are disaggregated by rural and urban areas and age cohorts, while the report allows for provincial disaggregation by the 34 provinces regions, for harmonization purposes, we aggregate the 34 provinces into eight regions, following the categorization on page 6 of the 2010/11 survey report. The final analytical sample for Afghanistan (2015/16) covered some 200 thousand people. The global MPI for Afghanistan (2015/16) was first published in June 2017.

Albania (DHS 2008/09): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in all sampled households, and, in the half of sampled households selected for the male interview, measurements were also taken for men aged 15 to 49. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and by eligible men aged 15 to 49 living in the half of households selected for the male questionnaire. The survey did not collect information on electricity. We identified all households in the sample as non-deprived in electricity, following the same logic as the global MPI (Alkire, Kanagaratnam, and Suppa 2019). This is because data from the World Bank and the UN indicate that 100% of the population in Albania has had access to electricity since 1990. Table 2.9 on page 29 of the report does not consider 'no food cooked in household' 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 age cohorts, and, while the report allows for regional disaggregation by four regions, for harmonization purposes, we do not disaggregate by subnational regions, as the 2017/18 data disaggregate by 12 prefectures that do not map onto the 38 districts used to construct the regions in 2008/09. The final analytical sample for Albania (2008/09) covered some 30 thousand people. The global MPI for Albania (2008/09) was first published in April 2011.

Albania (DHS 2017/18): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in all sampled households, and, in the half of sampled households selected for the male interview, measurements were also taken for men aged 15 to 59. For harmonization purposes, we only include anthropometric information from men aged 15 to 49 years to match with the information available in the earlier survey. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households

and by eligible men aged 15 to 59 living in the half of households selected for the male questionnaire. The survey did not collect information on electricity, following the same logic as the global MPI (Alkire, Kanagaratnam, and Suppa 2019). We identified all households in the sample as non-deprived in electricity. This is because data from the World Bank and the UN indicate that 100% of the population in Albania has had access to electricity since 1990. Table 2.3 on page 18 of the report does not consider 'no food cooked in household' 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, age cohorts, and, while the report allows for regional disaggregation by 12 prefectures, for harmonization purposes, we only conduct subnational analysis at the 'area of residence' level and age cohorts, as these prefectures do not map onto the 38 districts used to construct the regions in 2008/09. The final analytical sample for Albania (2017/18) covered some 51 thousand people. The global MPI for Albania (2017/18) was first published in July 2019.

Armenia (DHS 2010): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 49 living in one of every three households selected for the male questionnaire. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water, to accord with Table 2.1 on page 10. Table 2.4 on page 13 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. While the report allows for regional disaggregation by 11 marzer and urban and rural areas, we do not disaggregate by any subnational groups because the overall MPI estimate for Armenia 2010 falls below the minimum threshold level of 0.005 and we encountered technical issues in disaggregating the subgroups that lacked sufficient levels of poverty. The final analytical sample for Armenia (2010) covered some 23 thousand people. The global MPI for Armenia (2010) was first published in February 2013.

Armenia (DHS 2015/16): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in all of the households sampled; however, for harmonization purposes, we only use the anthropometric information from children, to accord with the 2010 data. Child mortality information was provided by eligible women aged 15 to 49

living in all sampled households and by eligible men aged 15 to 49 living in the half of households selected for the male questionnaire. As Table 2.1 on page 13 does not specify a classification for 'bottled water', and for harmonization purposes, we do not use the non-drinking water source condition; we code 'bottled water' as improved to match the 2010 classification. While the report allows for regional disaggregation by 11 marzer and urban and rural areas, we do not disaggregate by any subnational groups because the overall MPI estimate for Armenia 2015/16 falls below 0.005 and we encountered technical issues in disaggregating the subgroups that lacked sufficient levels of poverty. The final analytical sample for Armenia (2015/16) covered some 26 thousand people. The global MPI for Armenia (2015/16) was first published in January 2018.

Bangladesh (DHS 2014): Anthropometric measurements were collected from ever-married women aged 15 to 49 and children aged under 5 years living in all of the households sampled; however, for harmonization purposes, we only use the anthropometric information from children in order to accord with the 2019 data. Child mortality information is provided by eligible ever-married women aged 15 to 49 living in all households sampled. While Table 2.2 on page 11 of the survey report considers the 'flush to don't know where' response to be an unimproved sanitation facility, we code this facility to be improved to match the more recent classification in the 2019 data. Table 2.1 on page 10 considers 'cart with drum' to be an unimproved source of drinking water, but we code this source to be improved to match the 2019 definition of improved drinking water sources. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water, in accordance with Table 2.1. To accord with the recent 2019 definition of rudimentary roofing materials, the category 'tin' is considered unimproved. Table 2.6 on page 15 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel; however, for harmonization purposes, we consider 'no food cooked in household' an improved source and 'other' an unimproved source to agree with the 2019 classification. The report does not include information on whether the household owns an animal cart, so the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and the seven regions. The final analytical sample for Bangladesh (2014) covered around 74 thousand people. The global MPI for Bangladesh (2014) was first published in December 2016.

Bangladesh (MICS 2019): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. In the global MPI, the nutrition indicator uses the variable for age in days to compute the reference population for the indicator, but, to match the 2014 data, we compute the eligible population using the variable that captures age in months. Child mortality information is provided by eligible ever-married women aged 15 to 49 living in all households sampled. In the global MPI, the school attendance indicator uses the variable 'schage' to compute the reference population of the indicator, whereas we instead use the 'hl6' variable, age of household member, to match the 2014 data. Table WS.3.1 starting on page 350 considers 'flush to don't know where' responses as improved sanitation facilities, and we follow this definition. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' and 'sachet water' were considered improved sources of drinking water, in accordance with Table WS.1.1 starting on page 323. In the global MPI, the cooking fuel indicator is constructed using information on the type of fuel or energy source used for the cookstove, in addition to the cooking fuel source, but we remove this information about cookstove energy sources to match the 2014 data. Table TC.3.2 starting on page 184 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The earlier data in 2014 does not include information on whether the household owns an animal cart; therefore, we remove this asset from the indicator for harmonization purposes. Survey estimates are disaggregated by rural and urban areas and age cohorts. While the report allows for regional disaggregation by eight regions, for harmonization purposes, we aggregate 'Dhaka and 'Mymensingh' into one region, 'Dhaka', allowing subnational disaggregation by seven regions. These divisions are allowable because the 'Mymensingh' division was created out of the Northern district of 'Dhaka' in 2015 ([Daily Star 2015](#)). The final analytical sample for Bangladesh (2019) covered around 248 thousand people. The global MPI for Bangladesh (2019) was first published in July 2020.

Belize (MICS 2011): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. There is no data on birth history in the last five years, so the child mortality indicator considers a household deprived if there is any child who died in the household (the earlier global MPI definition of deprivation for child mortality). In 2011, the official entry age to primary school is 5 years, and in 2015/16, the

official entry age to primary school is 6 years; we keep the age ranges as they are (in this case, 5 to 13 in the first survey and 6 to 14 in the second) to fully capture the range of eligible children. Table WS.5 starting on page 83 considers 'missing' responses as unimproved sanitation facilities, and we follow this definition. Table CH.9 on page 70 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns an animal cart, so the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the seven regions. The final analytical sample for Belize (2011) covered some 16 thousand people. The global MPI for Belize (2011) was first published in June 2014.

Belize (MICS 2015/16): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was provided by eligible women aged 15 to 49 and eligible men aged 15 to 49 living in all sampled households. While there is data on birth history in the last five years, for harmonization purposes, we have removed this information to match the 2011 data, which did not include a birth history questionnaire. In 2011, the official entry age to primary school is 5 years, and in 2015/16, the official entry age to primary school is 6 years; we keep the age ranges as they are (in this case, 5 to 13 in the first survey and 6 to 14 in the second) to fully capture the range of eligible children. Additionally, for the school attendance indicator, we replace the 'schage' variable with the individual's age from the household roster to match the earlier MICS data. Table WS.5 starting on page 77 considers 'flush to unknown place/not sure/don't know where' responses as improved sanitation facilities, and we follow this definition. Table CH.12 starting on page 62 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The earlier data in 2011 does not include information on whether the household owns an animal cart, so it is therefore not included in the assets indicator for harmonization purposes. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the seven regions. The final analytical sample for Belize (2015/16) covered some 18 thousand people. The global MPI for Belize (2015/16) was first published in September 2018.

Benin (MICS 2014): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 49 living in the one out of every three households selected for the male questionnaire. Additionally, for the school attendance indicator, we replace the 'schage' variable with the individual's age from the household roster to match the DHS 2017/18 data. While Table WS.5 starting on page 176 of the survey report considers the 'flush to unknown place/not sure/don't know where' response to be an improved sanitation facility, we code this facility to be unimproved to match the recent classification in the 2017/18 data. Table WS.1 starting on page 166 considers 'sachet water' to be an unimproved source of drinking water, but we code this source to be improved to match the 2017/18 definition of improved drinking water sources. Table CH.12 on page 136 of the report does not consider 'no food cooked in household' 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, age cohorts, and by the 12 departments. The final analytical sample for Benin (2014) covered some 71 thousand people. The global MPI for Benin (2014) was first published in September 2018.

Benin (DHS 2017/18): Anthropometric measurements were collected from children aged under 5 years living in all of the households sampled and women aged 15 to 49 living in the half of households sampled for the male questionnaire; however, for harmonization purposes, we only use the anthropometric information from children, to accord with the 2014 data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 64 living in the half of the households selected for the male questionnaire. Table 2.4 on page 20 of the report does not consider 'no food cooked in household' 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, age cohorts, and by the 12 departments. The final analytical sample for Benin (2017/18) covered some 72 thousand people. The global MPI for Benin (2017/18) was first published in July 2019.

Bolivia (DHS 2003): Anthropometric information was collected from all eligible children under 5 years and all eligible women aged 15 to 49 years. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 64

living in the one out of every three households selected for the male questionnaire. Table 2.1 on page 12 of the survey report does not classify the sanitation facilities by improved or unimproved status; however, we consider 'flush toilet' and 'camara septica' to be improved and the remaining categories ('no facility/bush/field' and 'pit toilet') to be unimproved, following the standard global MPI classification. Neither does Table 2.1 differentiate between improved and unimproved sources of drinking water. Drawing on the standard global MPI classifications, we consider the following sources as improved: 'piped into dwelling', 'piped into yard/plot', 'piped outside dwelling', 'well with electrical pump', and 'water from neighbours'. We consider the other sources as unimproved ('well without electrical pump', 'river/stream', 'pond/lake', 'tanker truck', and 'other'). The report does not set a national definition for solid fuels, so we code the sources of cooking fuel according to the standard global MPI classification. The report does not include information on whether the household owns an animal cart, so the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the nine departments. The final analytical sample for Bolivia (2003) covered some 76 thousand people. The global MPI for Bolivia (2003) was first published in July 2010.

Bolivia (DHS 2008): Anthropometric information was collected among all eligible children under 5 years and all eligible women aged 15 to 49 years. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 64 living in the one out of every three households selected for the male questionnaire. Table 2.2 on page 13 of the survey report does not classify the sanitation facilities by improved or unimproved status; however, we consider the following facilities to be improved, following the standard global MPI classification: 'sewage system' and 'septic system', and the remaining categories ('open pit', 'surface water [street/stream]', and 'no bathroom, flush toilet, or latrine') to be unimproved. Table 2.3 on page 14 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns an animal cart, so the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the nine departments. The final analytical sample for Bolivia (2008) covered some 73 thousand people. The global MPI for Bolivia (2008) was first published in October 2011.

Bosnia and Herzegovina (MICS 2006): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was not collected in this survey; therefore, the nutrition indicator was re-weighted to maintain equal weights across dimensions. While Table EN.5 on page 89 of the survey report considers the 'flush to unknown place/not sure/don't know where' response to be an unimproved sanitation facility, we code this facility to be improved to match the more recent classification in the 2011/12 data. The report does not include information on whether the household owns a computer, so the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the three municipalities; however, the disaggregation is not representative for all three regions, according to page 25 of the survey report, so we only disaggregate by the 'area of residence' level. The final analytical sample for Bosnia and Herzegovina (2006) covered some 20 thousand people. The global MPI for Bosnia and Herzegovina (2006) was first published in July 2010.

Bosnia and Herzegovina (MICS 2011/12): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. While child mortality information was collected in this survey, for harmonization purposes, we remove the indicator and re-weight the nutrition indicator to maintain equal weights across dimensions. Additionally, for the school attendance indicator, we replace the 'schage' variable with the individual's age from the household roster to match the earlier data. Table WS.5 on page 54 considers 'flush to unknown place/not sure/don't know where' responses as improved sanitation facilities, and we follow this definition. Table CH.8 on page 44 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The earlier data in 2006 does not include information on whether the household owns a computer, so it is therefore not included in the assets indicator for harmonization purposes. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the three municipalities; however, the disaggregation is not representative for all three regions, according to page 3 of the survey report, so we only disaggregate by the 'area of residence' level and age cohorts. The final analytical sample for Bosnia and Herzegovina (2011/12) covered some 19 thousand people. The global MPI for Bosnia and Herzegovina (2011/12) was first published in June 2014.

Burkina Faso (MICS 2006): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. There is no data on birth history in the last five years, so the child mortality indicator considers a household deprived if there is any child who died in the household (the earlier global MPI definition of deprivation for child mortality). In 2006, the official entry age to primary school is 7 years, and, in 2010, the official entry age to primary school is 6 years; we keep the age ranges as they are (in this case, 7 to 15 in the first survey and 6 to 14 in the second) to fully capture the range of eligible children. Table EN.1 on page 96 states that 'bottled water' was considered an improved water source, and we follow that categorization. Table CH.8 on page 87 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, so the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by 13 regions. The final analytical sample for Burkina Faso (2006) covered some 35 thousand people. The global MPI for Burkina Faso (2006) was first published in July 2010.

Burkina Faso (DHS 2010): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in the half of sampled households selected for the male interview; however, for harmonization purposes, we only use the anthropometric information from children, to accord with the MICS 2006 data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of households selected for the male questionnaire. While there is data on birth history in the last five years, for harmonization purposes, we have removed this information to match the 2006 data, which did not include a birth history questionnaire. In 2006, the official entry age to primary school is 7 years, and, in 2010, the official entry age to primary school is 6 years; we keep the age ranges as they are (in this case, 7 to 15 in the first survey and 6 to 14 in the second) to fully capture the range of eligible children. Table 2.1 on page 17 states that 'bottled water' was considered an improved water source and 'missing' responses are considered an unimproved source, and we follow that categorization. Table 2.4 on page 20 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The earlier data in 2006 does not include information on

whether the household owns a computer, so it is therefore not included in the assets indicator for harmonization purposes. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by 13 regions. The final analytical sample for Burkina Faso (2010) covered some 39 thousand people. The global MPI for Burkina Faso (2010) was first published in February 2013.

Burundi (DHS 2010): Anthropometric measurements were collected from women aged 15 to 49 and children under 5 years living in the half of sampled households selected for the male interview. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of households selected for the male questionnaire. Table 2.1 on page 12 states that 'bottled water' was considered an improved water source, and we follow that categorization. Table 2.3 on page 14 of the report does not consider 'no food cooked in household' 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, age cohorts, and by five regions; however, because these regions are not comparable to those in the 2016/17 data, we disaggregate only by the 'area of residence' level and age cohorts. The final analytical sample for Burundi (2010) covered some 20 thousand people. The global MPI for Burundi (2010) was first published in June 2014.

Burundi (DHS 2016/17): Anthropometric measurements were collected from women aged 15 to 49 and children under 5 years living in the half of sampled households selected for the male interview. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of households selected for the male questionnaire. Although Table 2.1 on page 18 indicates that households using 'bottled water' as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the 2010 classification. Table 2.4 starting on page 20 of the report does not consider 'no food cooked in household' 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, age cohorts, and by 18 regions; however, because these regions are not comparable to those in the 2010 data, we disaggregate only by the area of

residence level and age cohorts. The final analytical sample for Burundi (2016/17) covered some 37 thousand people. The global MPI for Burundi (2016/17) was first published September 2018.

Cambodia (DHS 2010): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in the half of sampled households selected for the male interviews. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 49 living in the half of households selected for the male questionnaire. The question classifying non-drinking water sources is not included in the survey, and we follow Table 2.6 starting on page 17 of the report that identifies 'bottled water' as an improved source of drinking water. Further, Table 2.6 codes the sources of drinking water as improved or unimproved based on the dry and wet seasons, as does this MPI. Additionally, Table 2.7 considers 'missing' responses as unimproved sanitation facilities, and we follow this categorization. Table 2.8 on page 20 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. Further, the report does not include information on whether the household owns a computer, so the assets indicator was computed without this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the 19 provinces. The final analytical sample for Cambodia (2010) covered some 36 thousand people. The global MPI for Cambodia (2010) was first published in March 2013.

Cambodia (DHS 2014): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in the two-thirds of the sampled households not selected for the male interview. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. The question classifying non-drinking water sources is not included in the survey, and we follow Table 2.6 on page 19 of the report that identifies 'bottled water' as an improved source of drinking water. Further, Table 2.6 codes the sources of drinking water as improved or unimproved based on the dry and wet seasons, as does this MPI. Table 2.9 on page 22 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. Further, the report does not include information on whether the household owns a computer, so the assets indicator is missing this variable. Survey

estimates are disaggregated by rural and urban areas, age cohorts, and the 19 provinces. The final analytical sample for Cambodia (2014) covered some 44 thousand people. The global MPI for Cambodia (2014) was first published in December 2015.

Cameroon (DHS 2011): Anthropometric measurements were collected from children aged under 5 years living in all of the households sampled and women aged 15 to 49 living in the half of the households not sampled for the male questionnaire; however, for harmonization purposes, we only use the anthropometric information from children, to accord with the 2014 data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. Table 2.3 on page 21 of the report does not consider 'no food cooked in household' 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, age cohorts, and by the 12 regions. The final analytical sample for Cameroon (2011) covered some 35 thousand people. The global MPI for Cameroon (2011) was first published in June 2014.

Cameroon (MICS 2014): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Additionally, for the nutrition indicator, we replace the 'age in days' variable with the individual's 'age in months' to match the earlier DHS data. For the school attendance indicator, we replace the 'schage' variable with the individual's age from the household roster to match the earlier DHS data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of the households selected for the male questionnaire. Table WS.5 on page 108 considers 'flush to unknown place/not sure/don't know where' responses as improved sanitation facilities and 'missing' as unimproved sanitation facilities, and we follow this definition. Table CH.12 on page 80 of the report does not consider 'no food cooked in household' 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, age cohorts, and by the 12 regions. The final analytical sample for Cameroon (2014) covered some 44 thousand people. The global MPI for Cameroon (2014) was first published in September 2018.

Central African Republic (MICS 2000): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information

was provided by eligible women aged 15 to 49 living in all sampled households. There is no data on birth history in the last five years, so the child mortality indicator considers a household deprived if there is any child who died in the household (the earlier global MPI definition of deprivation for child mortality). Table 5.21 on page 86 of the survey report does not classify the sanitation facilities by improved or unimproved status; however, we consider the following facilities to be improved, following the standard global MPI classification: 'flush to sewage system/septic tank', 'pour flush latrine', 'improved pit latrine', and 'traditional pit latrine (improved)', and the remaining categories ('open pit', 'bucket', 'other', 'no facilities/bush/field', and 'traditional pit latrine [unimproved]') to be unimproved. There is also no information on shared toilets between households. Table 5.1 on page 72 of the report does not differentiate between improved and unimproved sources of drinking water. Drawing on the standard global MPI classification and harmonization with the 2010 data, we consider the following sources as improved: 'tap water in household', 'tap water in yard/plot', 'fountain/kiosk', 'tube well/borehole', 'protected pump/well', 'protected source', 'rainwater', and 'bottled water', and we consider the other sources as unimproved ('unprotected pump/well', 'unprotected source', 'dam/stream/river/etc.', 'tanker truck vendor', and 'other'). The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water based on harmonization with the 2010 definition. Table 2.23 on page 36 of the report does not consider 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a telephone, animal cart, and computer; so, the assets indicator does not include these variables. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the 17 regions. The final analytical sample for the Central African Republic (2000) covered some 87 thousand people. The global MPI for the Central African Republic (2000) was first published in July 2010.

Central African Republic (MICS 2010): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. There is no data on birth history in the last five years, so the child mortality indicator considers a household deprived if there is any child who died in the household (the earlier global MPI definition of deprivation for child mortality). Table WS.5 starting on page 148 considers 'flush to

somewhere else' and 'flush to unknown place/not sure/don't know where' responses to be improved sanitation facilities and 'missing' responses as unimproved sanitation facilities, and we follow this definition. Table WS.1 starting on page 140 states that 'missing' was considered an unimproved water source, and we follow that categorization. Table CH.9 starting on page 118 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The earlier data in 2000 does not include information on whether the household owns a telephone, computer, or animal cart, so they are therefore not included in the assets indicator for harmonization purposes. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the 17 regions. The final analytical sample for the Central African Republic (2010) covered some 51 thousand people. The global MPI for the Central African Republic (2010) was first published in June 2014.

Chad (MICS 2010): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. There is no data on birth history in the last five years, so the child mortality indicator considers a household deprived if there is any child who died in the household (the earlier global MPI definition of deprivation for child mortality). While Table WS.5 starting on page 111 considers 'flush to unknown place/not sure/don't know where' responses as improved sanitation facilities, we code this facility to be unimproved to match the recent classification in the 2014/15 data. Table WS.1 starting on page 102 states that 'missing' was considered an unimproved water source, and we follow that categorization. Table CH.9 on page 82 of the report does not consider 'no food cooked in household' 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 age cohorts; while the report disaggregates the country by 20 regions, the re-drawing of the subnational boundaries of the Northern regions between the surveys does not allow for comparable regional disaggregation. The final analytical sample for Chad (2010) covered some 77 thousand people. The global MPI for Chad (2010) was first published in January 2015.

Chad (DHS 2014/15): Anthropometric measurements were collected from children aged under 5 years living in all of the households sampled and women aged 15 to 49 living in the two out

of every three households not sampled for the male questionnaire; however, for harmonization purposes, we only use the anthropometric information from children, to accord with the 2010 data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. While there is data on birth history in the last five years, for harmonization purposes, we have removed this information to match the 2010 data, which did not include a birth history questionnaire. Table 2.3 starting on page 18 of the report does not consider 'no food cooked in household' 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 age cohorts; while the report disaggregates the country by 21 regions, the re-drawing of the subnational boundaries of the Northern regions between the surveys does not allow for comparable regional disaggregation. The final analytical sample for Chad (2014/15) covered some 61 thousand people. The global MPI for Chad (2014/15) was first published in June 2017.

China (CFPS 2010): Anthropometric measurements were collected from all eligible children and women and men aged 0 to 98; however, given the global MPI criteria, we only consider those aged 0 to 70 years. Child mortality information was provided by either adult women or men in the sampled households. There is no data on birth history in the last five years, so the child mortality indicator considers a household deprived if there is any child who died in the household (the earlier global MPI definition of deprivation for child mortality). Although there is no variable for shared toilet in CFPS 2010, it is possible to identify public and private types of toilet from a different variable, and we use this to construct the sanitation indicator. The information on 'water source for cooking' was used to identify whether households use water from an improved or unimproved source for drinking. Information on the time it takes to procure water for the household is not present, and the question classifying the non-drinking water source is also not included in the survey. Drinking water sources are categorized according to the standard global MPI classification; however, following the advice from data providers at Peking University, we have identified 'well/spring water' as an unimproved source. As the CFPS 2010 did not collect information on floor, wall, or roof material, we do not include the indicator on housing and re-weight the other indicators to assure equal weighting among the three dimensions. In China, households that responded as using 'other' cooking fuel are considered as deprived, following advice from the data providers at Peking University. The report does not include information on whether the household owns a radio,

a refrigerator, a bicycle, a motorcycle, an animal cart, or a computer, and likewise the assets indicator does not include these variables. The 'telephone' asset only includes information on mobile telephone ownership, as information about landline phones is not available in the survey. Survey estimates are disaggregated by rural and urban areas, age cohorts, and the three major regions. The final analytical sample for China (2010) covered some 42 thousand people.

China (CFPS 2014): Anthropometric measurements were collected from all eligible children and women and men aged 0 to 98; however, given the global MPI criteria, we only consider those aged 0 to 70 years. Child mortality information was provided by either adult women or men in the sampled households. While there is data on birth history in the last five years, for harmonization purposes, we have removed this information to match the 2010 data, which did not include a birth history questionnaire. Although there is no variable for shared toilet in CFPS 2010, it is possible to identify public and private types of toilet from a different variable, and we use this to construct the sanitation indicator. Drinking water sources are categorized according to the standard global MPI classification; however, following advice from data providers at Peking University, we have identified 'well/spring water' as an unimproved source. Information on the time it takes to procure water for the household is not present, and the question classifying non-drinking water source is also not included in the survey. As the CFPS 2010 did not collect information on floor, wall, or roof material, we do not include the indicator on housing and re-weight the other indicators to assure equal weighting among the three dimensions. In China, households that responded as using 'other' cooking fuel are considered as deprived, following advice from data providers at Peking University. The report does not include information on whether the household owns a radio or an animal cart, and likewise the assets indicator does not include these variables. While information on refrigerator, bicycle, motorcycle, and computer ownership exists in the data, we have removed this information for harmonization purposes, and, therefore, we do not include it as part of the assets indicator in the MPI. The 'telephone' asset only includes information on mobile telephone ownership, as information for landline phone is not available in the survey. Survey estimates are disaggregated by rural and urban areas, age cohorts, and the three major regions. The final analytical sample for China (2014) covered some 44 thousand people. The global MPI for China (2014) was first published in June 2017.

Colombia (DHS 2010): While anthropometric measurements were collected from children aged under 5 years and women aged 15 to 49 living in all of the households sampled, for harmonization purposes, we exclude the nutrition indicator, as the DHS 2015/16 did not collect anthropometric information. Child mortality information was provided by eligible women aged 13 to 49 living in all sampled households. Table 3.1 starting on page 29 of the survey report does not classify sanitation facilities by improved or unimproved status; however, we consider the following facilities to be improved, following the standard global MPI classification: 'toilet connected to sewer' and 'toilet connected to septic well', and the remaining categories ('toilet connected to plot/yard', 'traditional pit toilet', 'traditional toilet to sea/river [low tide]', 'no toilet facility', and 'other') to be unimproved. Neither does Table 3.1 differentiate between improved and unimproved sources of drinking water. Drawing on the standard global MPI classifications, we consider the following sources as improved: 'piped water from utility company', 'piped water from rural system', 'public tap', 'open well with sump pump', and 'bottled water', and we consider the other sources as unimproved ('open well without sump pump', 'river/stream/spring', 'rain water', 'tanker truck', 'water in drums/big cans', and 'other'). There is no information on roof materials in the report, and therefore this information is not included in the housing indicator. Table 3.1 does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns an animal cart or computer, so the assets indicator does not include these variables. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the 16 regions (as required by p.3 of the report). The final analytical sample for Colombia (2010) covered some 191 thousand people. The global MPI for Colombia (2010) was first published in October 2011.

Colombia (DHS 2015/16): Anthropometric data was not part of the 2015/16 data collection, and so this MPI estimation excludes the nutrition indicator. Child mortality information was provided by eligible women aged 13 to 49 and eligible men aged 13 to 59 living in all sampled households. Table 3.1 starting on page 97 of the survey report does not classify the sanitation facilities by improved or unimproved status; however, we consider the following facilities to be improved, following the standard global MPI classification: 'toilet connected to sewer' and 'toilet connected to septic well', and the remaining categories ('toilet connected to plot/yard', 'traditional pit toilet', 'traditional toilet to sea/river [low tide]', 'no toilet facility', and 'other')

to be unimproved. Neither does Table 3.1 differentiate between improved and unimproved sources of drinking water. Drawing on the standard global MPI classifications, we consider the following sources as improved: 'piped water from utility company', 'piped water from rural system', 'public tap', 'open well with sump pump', and 'bottled water', and we consider the other sources as unimproved ('open well without sump pump', 'river/stream/spring', 'rain water', 'tanker truck', 'cart with small tank', and 'other'). There is no information on roof materials in the report, and therefore this information is not included in the housing indicator. Table 3.1 does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Additionally, the earlier data in 2010 does not include information on whether the household owns a computer, so it is therefore not included in the assets indicator for harmonization purposes. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the 16 regions, following comparability with the 2010 data. The final analytical sample for Colombia (2015/16) covered some 152 thousand people. The global MPI for Colombia (2015/16) was first published in September 2018.

Congo (DHS 2005): Anthropometric measurements were collected from children aged under 5 years living in all of the households sampled and women aged 15 to 49 living in the half of the households not sampled for the male questionnaire; however, for harmonization purposes, we only use the anthropometric information from children, to accord with the 2014/15 data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of the households selected for the male questionnaire. Table 2.5 on page 20 of the survey report does not classify the sanitation facilities by improved or unimproved status; however, we consider the following facilities to be improved, following the standard global MPI classification: 'flush toilet' and 'ventilated improved pit latrine', and the remaining categories ('no facility, bush, field', 'traditional pit toilet', and 'other') to be unimproved. Neither does Table 2.5 differentiate between improved and unimproved sources of drinking water. Drawing on the standard global MPI classifications, we consider the following sources as improved: 'piped into dwelling', 'piped into yard/plot', 'piped into neighbour's yard/plot {cg}', 'protected well in dwelling or yard/plot {cg}', 'protected, pumped {cg}', 'protected surface water {cg}', 'rainwater', and

'bottled water', and we consider the other sources as unimproved ('open well in dwelling, yard/plot {cg}', 'open public well', 'non-protected surface water {cg}, 'river, pond, lake {cg}', 'tanker truck', and 'other'). The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. Table 2.5 does not consider 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns an animal cart, so the assets indicator does not include this variable. Further, the later data in 2014/15 does not include information on whether the household owns a computer, so it is therefore not included in the assets indicator for harmonization purposes. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the four regions. The final analytical sample for Congo (2005) covered some 27 thousand people. The global MPI for Congo (2005) was first published in July 2010.

Congo (MICS 2014/15): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 49 living in the half of the households selected for the male questionnaire. Additionally, for the school attendance indicator, we replace the 'schage' variable with the individual's age from the household roster to match the earlier DHS data. Table WS.5 on page 141 of the survey report considers the 'flush to unknown place/not sure/don't know where' response to be an improved sanitation facility, and we follow this definition. Although Table WS.1 starting on page 131 also indicates that households using 'bottled water' as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the 2005 classification. Table CH.12 on page 100 does not consider 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, so the assets indicator does not include this variable. Further, the earlier data in 2005 does not include information on whether the household owns an animal cart, so it is therefore not included in the assets indicator for harmonization purposes either. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the 12 departments, but for harmonization purposes, we aggregate the 12 departments into the four regions following the map on page xxx of the 2005 survey report.

The final analytical sample for Congo (2014/15) covered some 51 thousand people. The global MPI for Congo (2014/15) was first published in July 2019.

Côte d'Ivoire (DHS 2011/12): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in the half of sampled households selected for the male interview. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of households selected for the male questionnaire. While Table 2.2 on page 16 of the survey report considers the 'flush to unknown place/not sure/don't know where' response to be an unimproved sanitation facility, we code this facility to be improved to match the more recent classification in the 2016 data. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water, in accordance with Table 2.1 on page 15. Table 2.3 on page 17 of the report does not consider 'no food cooked in household' 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, age cohorts, and by the 11 regions. The final analytical sample for Côte d'Ivoire (2011/12) covered some 23 thousand people. The global MPI for Côte d'Ivoire (2011/12) was first published in June 2014.

Côte d'Ivoire (MICS 2016): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households and for women aged 15 to 49 living in the half of the households not sampled for the male interview. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. Additionally, for the school attendance indicator, we replace the 'schage' variable with the individual's age from the household roster to match the earlier DHS data. Table WS.5 starting on page 79 of the survey report considers the 'flush to unknown place/not sure/don't know where' response to be an improved sanitation facility, and we follow this definition. Although Table WS.1 starting on page 70 also indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the 2011/12 classification. Table CH.12 on page 55 does not consider '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, age cohorts, and by the 11 regions. The final analytical sample for Côte d'Ivoire (2016) covered some 55 thousand people. The global MPI for Côte d'Ivoire (2016) was first published in September 2018.

Democratic Republic of the Congo (DHS 2007): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in the half of sampled households selected for the male interview. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of sampled households selected for the male questionnaire. Table 2.7 on page 21 of the survey report establishes that 'traditional pit toilet (covered)' is considered an improved sanitation facility, but 'traditional pit toilet (uncovered)' is considered unimproved, as are 'missing' responses, and we follow this categorization. Table 2.6 on page 20 states that 'bottled water' was considered an unimproved water source, but for harmonization purposes, we consider it an improved drinking water source to accord with the 2013/14 data. The question classifying non-drinking water sources does not exist in the survey. Additionally, for harmonization purposes, we consider the 'other' drinking water category to be an unimproved drinking water source, following the 2013/14 data. The report does not state whether the categories 'open well in dwelling', 'open well in yard/plot', and 'open public well' are improved or unimproved, but we consider them as unimproved water sources, following the standard global MPI classification. Additionally, there is no information on wall materials in the report, and therefore this information is not included in the housing indicator. Table 2.8 on page 22 of the report does not consider 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for the cooking fuel indicator. Further, information on whether the household owns a computer or animal cart is not present and therefore these variables are not included in the assets indicator. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the 11 provinces. The final analytical sample for the Democratic Republic of the Congo (2007) covered some 22 thousand people. The global MPI for the Democratic Republic of the Congo (2007) was first published in October 2011.

Democratic Republic of Congo (DHS 2013/14): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in the half of sampled households selected for the male interview. Child mortality information was provided by

eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of the households selected for the male questionnaire. As in 2007, the question classifying non-drinking water sources is not present, and therefore 'bottled water' is considered an improved drinking water source, following Table 2.1 on page 18. To accord with the limited data in the earlier survey, we have removed information on wall material, so while it does exist in the report, we do not include it as part of the housing indicator in the MPI. Table 2.3 on page 21 of the survey report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for the cooking fuel indicator. To correspond with the 2007 data, we have removed information on whether the household owns a computer or animal cart as part of the assets indicator. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the 11 provinces. The final analytical sample for the Democratic Republic of the Congo (2013/14) covered some 46 thousand people. The global MPI for the Democratic Republic of Congo (2013/14) was first published in December 2015.

Dominican Republic (DHS 2007): While anthropometric measurements were collected from children aged under 5 years living in all of the households sampled, for harmonization purposes, we exclude the nutrition indicator, as the MICS 2014 survey did not collect anthropometric information. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. Table 2.9.2 on page 39 of the survey report does not classify the sanitation facilities by improved or unimproved status; however, we consider the following facilities to be improved, following the standard global MPI classification: 'private toilet' and 'private latrine with slab', and the remaining categories ('shared toilet', 'private latrine without slab', 'share latrine with slab', 'share latrine without slab', 'no facility', and 'other') to be unimproved. Neither does Table 2.9.3 on page 40 differentiate between improved and unimproved sources of drinking water. Drawing on the standard global MPI classifications, we consider the following sources as improved: 'piped into dwelling', 'piped to yard/plot', 'tube well or borehole', 'rainwater', and 'bottled water', and we consider the other sources as unimproved ('river / dam / lake / ponds / stream / canal / irrigation channel', 'tanker truck', 'cart with small tank' and 'other'). Table 2.9.2 does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns an animal cart, so the assets indicator

does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the 32 regions, but for harmonization purposes, we aggregate the 32 regions to the 10 regions of the 2014 data. The final analytical sample for the Dominican Republic (2007) covered some 115 thousand people. The global MPI for the Dominican Republic (2007) was first published in October 2011.

Dominican Republic (MICS 2014): Anthropometric data was not part of the 2014 data collection. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. Additionally, for the school attendance indicator, we replace the 'schage' variable with the individual's age from the household roster to match the earlier DHS data. Table WS.5 on page 119 considers 'flush to unknown place' responses as improved sanitation facilities, and we follow this definition. Table CH.11 on page 103 does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. While the report does include information on whether the household owns an animal cart, we remove this variable from the assets indicator for harmonization purposes. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the 10 regions. The final analytical sample for the Dominican Republic (2014) covered some 116 thousand people. The global MPI for the Dominican Republic (2014) was first published in December 2016.

Egypt (DHS 2008): Anthropometric measurements were collected from children under age 6 and never-married youth and young adults aged 10 to 19 years. In the subsample of households selected for the health issues survey, the measurements were also obtained for all women and men aged 29, while in the remaining households in the sample, measurements were recorded only for ever-married women aged 20 to 49. For harmonization purposes, we only use the anthropometric information from children under 5 years, never-married girls and boys aged 10 to 19, and ever-married women 15 to 49 years, to accord with the 2014 data. Child mortality information was provided by eligible ever-married women aged 15 to 49 living in all sampled households. While Table 2.7 on page 21 of the survey report considers the 'vented improved pit latrine' response to be an unimproved sanitation facility, we code this facility to be improved to match the recent classification in the 2014 data. Although Table 2.5 on page 19 indicates that households using 'bottled water' as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source

used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the 2014 classification. There is no information on wall or roofing materials in the report, and therefore this information is not included in the housing indicator. There is no information on cooking fuels in the dataset; therefore, we compute the MPI without a cooking fuel indicator, and the other living standards indicators are re-weighted to sum to one-third. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the six regions. The final analytical sample for Egypt (2008) covered some 89 thousand people. The global MPI for Egypt (2008) was first published in July 2010.

Egypt (DHS 2014): Anthropometric measurements were collected from children under age five, never-married youth and young adults aged 5 to 19 years, and ever-married women aged 15 to 49. For harmonization purposes, we only use the anthropometric information from children under 5 years, never-married girls and boys aged 10 to 19, and ever-married women 15 to 49 years, to accord with the 2008 data. Child mortality information was provided by eligible ever-married women aged 15 to 49 living in all sampled households. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water, following Table 2.1 on page 13. There is no information on wall or roofing materials in the report, and therefore this information is not included in the housing indicator. There is no information on cooking fuels in the dataset, and therefore we compute the MPI without a cooking fuel indicator, and the other living standards indicators are re-weighted to sum to one-third. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the six regions. The final analytical sample for Egypt (2014) covered some 115 thousand people. The global MPI for Egypt (2014) was first published in January 2018.

eSwatini (MICS 2010): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. While Table WS.5 starting on page 89 of the survey report considers the 'missing' response to be an unimproved sanitation facility, we impute these categories as missing values to match the 2014 data. Table WS.5 also considers 'flush to unknown place / not sure / don't know where' responses as improved sanitation facilities, and we follow this definition. Table WS.1 on page 82 states that 'missing' was

considered an unimproved water source and we follow that categorization. Table CH.9 on page 67 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the four regions. The final analytical sample for eSwatini (2010) covered some 17 thousand people. The global MPI for eSwatini (2010) was first published in February 2013.

eSwatini (MICS 2014): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. For the school attendance indicator, we replace the 'schage' variable with the individual's age from the household roster to match the earlier MICS data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the one out of every three households selected for the male questionnaire. Table WS.5 on page 85 considers 'flush to unknown place / not sure / don't know where' responses as improved sanitation facilities, and we follow this definition. Table WS.1 on page 78 states that 'missing' was considered an unimproved water source and we follow that categorization. Table CH.12 on page 72 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the four regions. The final analytical sample for eSwatini (2014) covered some 20 thousand people. The global MPI for eSwatini (2014) was first published in June 2017.

Ethiopia (DHS 2011): Anthropometric measurements were collected from women aged 15 to 49, men aged 15 to 59, and children aged under 5 years living in all of the sampled households. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 59 living in all households sampled. While Table 2.2 on page 16 of the survey report considers the 'missing' response to be an unimproved sanitation facility, we impute these categories as missing values to match the 2016 data. Table 2.3 on page 17 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean

cooking fuel, and this MPI estimation follows that categorization for cooking fuel. Further, the report does not include information on whether the household owns a computer, and likewise this variable is missing from the assets indicator. Survey estimates are disaggregated by rural and urban areas, age cohorts, and the 11 regions. The final analytical sample for Ethiopia (2011) covered some 72 thousand people. The global MPI for Ethiopia (2011) was first published in March 2013.

Ethiopia (DHS 2016): Anthropometric measurements were collected from women aged 15 to 49, men aged 15 to 59, and children aged under 5 years living in all of the sampled households. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 59 living in all households sampled. Table 2.4 on page 21 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for the cooking fuel indicator. The earlier data from 2011 does not include information on whether the household owns a computer, so it is therefore not included in the assets indicator for harmonization purposes. Survey estimates are disaggregated by rural and urban areas, age cohorts, and the 11 regions. The final analytical sample for Ethiopia (2016) covered some 69 thousand people. The global MPI for Ethiopia (2016) was first published in September 2018.

Gabon (DHS 2000): Anthropometric measurements were collected from children under 5 years and their mothers, aged 15 to 49, living in all of the sampled households. 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 one out of every three households. Table 2.6 on page 20 of the survey report does not classify the sanitation facilities by improved or unimproved status; however, we consider the following facilities to be improved, following the standard global MPI classification: 'modern flush toilets' and 'ventilated improved pit latrines', and the remaining categories ('traditional pit toilet', 'no toilet/bush', and 'other') to be unimproved. Neither does Table 2.6 differentiate between improved and unimproved sources of drinking water. Drawing on the standard global MPI classification and harmonization with the 2012 data, we consider the following sources as improved: 'piped into residence / yard / plot', 'public tap', 'protected well in yard / plot', 'rainwater', and 'bottled water', and we consider the other sources as unimproved ('open well in yard/plot', 'public open well', 'spring, river / stream', 'pond / lake', 'other', and 'public protected well'). The question classifying non-

drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. Table 2.7 on page 22 of the report does not consider 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for the cooking fuel indicator. The report does not include information on whether the household owns an animal cart or computer, and likewise the assets indicator does not include these variables. Survey estimates are disaggregated by rural and urban areas, age cohorts, and the five regions. The final analytical sample for Gabon (2000) covered some 29 thousand people. The global MPI for Gabon (2000) was first published in July 2010.

Gabon (DHS 2012): Anthropometric measurements were collected from children under 5 years and women aged 15 to 49 years in two out of every three households selected for the haemoglobin test; however, for harmonization purposes, we include nutrition information only from children under 5 years and their mothers, aged 15 to 49, living in the households within the haemoglobin subsample. 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 two out of every three households. Table 2.3 on page 16 of the report does not consider 'no food cooked in the household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for the cooking fuel indicator. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Additionally, the earlier data in 2000 does not include information on whether the household owns a computer, so it is therefore not included in the assets indicator for harmonization purposes. Survey estimates are disaggregated by rural and urban areas, age cohorts, and the 10 regions; however, for harmonization purposes, we have aggregated the 10 regions to match the five regions used in the 2000 survey, following the map on page xxvi of the 2000 report. The final analytical sample for Gabon (2012) covered some 26 thousand people. The global MPI for Gabon (2012) was first published in June 2014.

Gambia (MICS 2005/06): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. There is no data on birth history in the last five years, so the child mortality indicator considers a household deprived if the mother reports having had any child die. While Table EN.5 on page 114 of the survey report considers the 'missing' response to be an unimproved sanitation facility, we impute these

categories as missing values to match the 2013 data. Although Table EN.1 on page 110 indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the 2013 classification. Further, Table EN.1 states that 'missing' was considered an unimproved water source, and we follow that categorization. Table CH.8 on page 101 of the report does not consider 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the eight Local Government Areas (LGAs). The final analytical sample for Gambia (2005/06) covered some 44 thousand people. The global MPI for Gambia (2005/06) was first published in July 2010.

Gambia (DHS 2013): Anthropometric measurements were collected from children aged under 5 years and eligible women aged 15 to 49 living in the half of households sampled for the male questionnaire; however, for harmonization purposes, we only use the anthropometric information from children, to accord with the 2005/06 data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of households selected for the male questionnaire. While there is data on birth history in the last five years, for harmonization purposes, we have removed this information to match the 2005/06 data, which did not include a birth history questionnaire. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water, following Table 2.1 on page 12. Table 2.3 on page 14 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The earlier data in 2005/06 does not include information on whether the household owns a computer, so it is therefore not included in the assets indicator for harmonization purposes. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the eight LGAs. The final analytical sample for Gambia (2013) covered some 49 thousand people. The global MPI for Gambia (2013) was first published in June 2015.

Ghana (MICS 2011): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. While Table WS.5 on page 141 of the survey report considers the 'flush to unknown place / not sure / don't know where' response to be an improved sanitation facility, we code this facility to be unimproved to match the recent classification in the 2014 data. Although Table WS.1 on page 133 indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the 2014 classification. Table CH.9 on page 81 of the report does not consider 'no food cooked in household' 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, age cohorts, and by the 10 regions. The final analytical sample for Ghana (2011) covered some 53 thousand people. The global MPI for Ghana (2011) was first published in June 2014.

Ghana (DHS 2014): Anthropometric measurements were collected from women aged 15 to 49, men aged 15 to 59, and children aged under 5 years living in the half of households sampled for the male questionnaire; however, for harmonization purposes, we only use the anthropometric information from children, to accord with the 2011 data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of households sampled for the male questionnaire. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water, following Table 2.1 on page 13. Table 2.3 starting on page 15 of the report does not consider 'no food cooked in household' 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, age cohorts, and the 10 regions. The final analytical sample for Ghana (2014) covered some 42 thousand people. The global MPI for Ghana (2014) was first published in June 2016.

Guinea (DHS 2012): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in the half of sampled households selected for the male interview; however, for harmonization purposes, we only use anthropometric information

from children, to accord with the 2016 data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of households selected for the male questionnaire. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water, in accordance with Table 2.1 on page 17. Additionally, although Table 2.1 considers 'rainwater' to be an improved source of drinking water, we code this source to be unimproved to match the 2016 definition of improved drinking water sources. Table 2.3 on page 19 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and eight regions. The final analytical sample for Guinea (2012) covered some 22 thousand people. The global MPI for Guinea (2012) was first published in January 2015.

Guinea (MICS 2016): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Additionally, for the school attendance indicator, we replace the 'schage' variable with the individual's age from the household roster to match the earlier DHS data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. Table WS.5 starting on page 136 of the survey report considers the 'flush to unknown place / not sure / don't know where' response to be an improved sanitation facility, and we follow this definition. Although Table WS.1 starting on page 125 indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' and 'water in sachets' as improved to match the 2012 classification. Table CH.12 on page 93 does not consider 'no food cooked in the household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The earlier data in 2012 does not include information on whether the household owns a computer, so it is therefore not included in the assets indicator for harmonization purposes. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the eight regions. The final analytical sample for Guinea (2016) covered some 45 thousand people. The global MPI for Guinea (2016) was first published in September 2018.

Guyana (DHS 2009): Anthropometric measurements were collected from women aged 15 to 49, men aged 15 to 49, and children aged under 5 years living in all sampled households; however, for harmonization purposes, we only use the anthropometric information from children, to accord with the MICS 2014 data. Child mortality information was provided by eligible women aged 15 to 49 and eligible men aged 15 to 49 living in all sampled households. Table 2.7 on page 23 of the report does not consider 'no food cooked in household' 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, age cohorts, and by coastal or interior residency. The final analytical sample for Guyana (2009) covered some 19 thousand people. The global MPI for Guyana (2009) was first published in February 2013.

Guyana (MICS 2014): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Additionally, for the nutrition indicator, we replace the 'age in days' variable with the individual's 'age in months' to match the earlier 2009 data. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled and eligible men aged 15 to 49 living in the half of households sampled for the male interview. Additionally, for the school attendance indicator, we replace the 'schage' variable with the individual's age from the household roster to match the earlier DHS data. Table WS.5 starting on page 157 states that 'missing' toilets were considered an unimproved sanitation facility, and we follow that categorization. While Table WS.1 starting on page 148 considers 'missing' to be an unimproved source of drinking water, we impute these values to be genuinely missing to match the 2009 classification. Table CH.12 starting on page 126 of the report does not consider 'no food cooked in household' 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, age cohorts, and by coastal or interior residency. The final analytical sample for Guyana (2014) covered some 20 thousand people. The global MPI for Guyana (2014) was first published in December 2016.

Haiti (DHS 2012): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in the two-thirds of sampled households selected for the male interview. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the two-thirds of the households selected for the male questionnaire. Table 2.3 on page 16 of the report does not

consider 'no food cooked in household' to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for the cooking fuel indicator. Survey estimates are disaggregated by rural and urban areas, age cohorts, and the 10 departments plus camps; for harmonization purposes, we disaggregate by the 10 departments, with the camps' population redistributed among the departments. The final analytical sample for Haiti (2012) covered some 38 thousand people. The global MPI for Haiti (2012) was first published in December 2015.

Haiti (DHS 2016/17): Anthropometric information was collected from all children under 5 years. Among a subsample of the two-thirds of households selected for the domestic violence module, anthropometric measures were also recorded among women aged 15 to 49. In the other subsample of the one in three households not selected for the domestic violence module, weight and height measurements were also recorded for men and women aged 35 to 64 and children aged 5 to 14. For harmonization purposes, we only use nutrition information from children aged under 5 years and women aged 15 to 49 living in two-thirds of sampled households. Child mortality information is provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 64 living in the subsample of two-thirds of the households. Table 2.4 on page 25 of the report does not consider 'no food cooked in household' 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, age cohorts, and the 10 departments and the Metropolitan area; for harmonization purposes, we combine the Metropolitan and Reste-Ouest areas to accord with the subnational disaggregation of the 2012 survey that presents results by 10 departments. The final analytical sample for Haiti (2016/17) covered some 58 thousand people. The global MPI for Haiti (2016/17) was first published in September 2018.

Honduras (DHS 2005/06): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in all of the sampled households. Child mortality information is provided by eligible women aged 15 to 49. The survey did not collect information on electricity, and therefore this MPI estimation does not include the electricity indicator. Table 2.2.1 on page 14 of the survey report does not classify sanitation facilities by improved or unimproved status; however, we consider the following facilities to be improved, following the standard global MPI classification and harmonization with the 2011/12 data:

'flush toilet connected to sewer system', 'flush toilet connected to a septic tank', 'latrine with siphon', 'latrine with composting facility', 'flush toilet – does not know connection', and 'flush toilet with connection to open water', and the remaining categories ('pit latrine', 'latrine with connection to open water', 'no facility', and 'other') to be unimproved. Neither does Table 2.1.1 on page 12 of the report differentiate between improved and unimproved sources of drinking water. Drawing on the standard global MPI classification and harmonization with the 2011/12 data, we consider the following sources as improved: 'public water piped into the household', 'public water piped outside the household', 'private water piped into the household', 'private water piped outside the household', 'well water with winch', 'well water with pump', 'rainwater', 'public fountain', and 'bottled water', and we consider the other sources as unimproved ('open well water', 'surface water', 'tanker truck', and 'other'). Table 2.3 on page 15 of the report does not consider 'no food cooked in the household' 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 age cohorts; the report disaggregates the country by 16 departments, as the survey, due to cost and inaccessibility (as described on page 4 of the report) does not include Islas de la Bahía and Gracias a Díos. The final analytical sample for Honduras (2005/06) covered some 86 thousand people. The global MPI for Honduras (2005/06) was first published in July 2010.

Honduras (DHS 2011/12): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in all of the sampled households. 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 the one out of every three households sampled for the male interview. The survey did not collect information on electricity, and therefore this MPI estimation does not include the electricity indicator. Table 2.3.1 on page 18 of the survey report does not classify sanitation facilities by improved or unimproved status; however, we consider the following facilities to be improved, following the standard global MPI classification and harmonization with the 2005/06 data: 'flush toilet connected to a sewer system', 'flush toilet connected to a septic tank', 'latrine with siphon', 'latrine with composting facility', 'flush toilet – does not know a connection', and 'flush toilet with connection to open water', and the remaining categories ('pit latrine', 'latrine with connection to open water', 'no facility', and 'other') to be unimproved. Neither does Table 2.1.1 on page 14 of the report differentiate between improved and unimproved sources of drinking water. Drawing on the standard global

MPI classification and harmonization with the 2005/06 data, we consider the following sources as improved: 'public water piped into the household', 'public water piped outside the household', 'private water piped into the household', 'private water piped outside the household', 'well water with winch', 'well water with pump', 'rainwater', 'public fountain', and 'bottled water', and we consider the other sources as unimproved ('river/lake', 'spring/stream/waterhole', 'tanker truck', and 'other'). Table 2.3.3 on page 20 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for the cooking fuel indicator. Survey estimates are disaggregated by rural and urban areas and age cohorts; while the report disaggregates the country by 18 departments, the inability of the 2005/06 survey (due to cost and inaccessibility, as described on page 4 of the 2005/06 report) to include Islas de la Bahía and Gracias a Díos does not allow for comparable regional disaggregation between the surveys. Therefore, we disaggregate only by the 16 departments presented in the 2005/06 survey. The final analytical sample for Honduras (2011/12) covered some 93 thousand people. The global MPI for Honduras (2011/12) was first published in June 2014.

India (DHS 2005/06):[17] Anthropometric data was collected for all eligible children under 5 years, all women aged 15 to 49 years, and a subsample of men aged 15 to 54 years. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 54 living in households selected for the male questionnaire. The NFHS-3 survey identifies households that drink bottled water as having an improved source of water only if the source of water they use for cooking and/or hand washing is from an improved source, following the general principle; however, the NFHS-4 considers bottled water to be an unimproved source because the quality of bottled water is not known (IIPS and ICF, 2017, p. 24). The indicators were harmonized for the two time periods following the decision in NFHS-4 survey report. Some 3% of individuals were dropped from the NFHS-3 dataset because they were identified as non-usual residents. Non-usual residents were excluded because poverty estimates are usually based on usual or permanent residents of a household. The final analytical sample for NFHS-3 (2005/06) covered some 484 thousand people. Survey

---

[17] All decisions related to harmonizing India over the two-year period are exclusively based on the work by Alkire, Oldiges, and Kanagaratnam (2018). We then adjusted the estimation to match the global MPI 2019 (and 2020) specifications regarding data recode files, the details of which can be found in Alkire, Kovesdi, et al. (2019).

estimates are disaggregated by rural and urban areas, age cohorts, and 29 states. The global MPI for India (2005/06) was first published in October 2011.

India (DHS 2015/16):[18] Anthropometric data was collected for all eligible children under 5 years, all women aged 15 to 49 years, and a subsample of men aged 15 to 54 years. These men, who lived in one third of the sampled households, were selected for the state module questionnaire. The weight and height of children under 5 years were measured regardless of whether their mothers were interviewed in the survey. The anthropometric data from women aged 15 to 49 excluded pregnant women and those who had given birth in the last two months of the survey. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 54 living in households selected for the male questionnaire. The NFHS-4 survey report identifies bottled water as an unimproved source because the quality of bottled water is not known (IIPS and ICF, 2017, p.24). The NFHS-4 data also identified an additional source of drinking water, which is the community reverse osmosis plant. All those whose source of drinking water is from this particular category are identified as non-deprived following the survey report (IIPS and ICF, 2017, p.24). Furthermore, the category 'other water sources' is listed as neither improved nor unimproved in the NFHS-4 survey report (IIPS and ICF, 2017, Table 2.1, p. 24). As such, this estimation followed the internationally agreed guideline, where other drinking sources are listed as deprived (UNICEF and WHO, 2019). In the NFHS-4 survey report, three of the cooking fuel categories – that is, 'kerosene', 'other', and 'no food cooked in household' – were neither listed as clean fuel nor solid fuel (IIPS and ICF, 2017, Table 2.3, p.26). As part of the harmonization work, we followed the internationally agreed guideline of identifying these three categories as clean or non-solid fuel for indoor cooking (WHO, 2014). Some 2% of individuals were dropped from the NFHS-4 dataset because they were identified as non-usual residents. Non-usual residents were excluded because poverty estimates are usually based on usual or permanent residents of a household. The final analytical sample for NFHS-4 (2015/16) covered some 2.7 million individuals. Survey estimates are disaggregated by rural and urban areas, age cohorts, and 29 states. The global MPI for India (2015/16) was first published in September 2018.

---

[18] Ibid.

Indonesia (DHS 2012): Anthropometric data was not part of the 2012 data collection, and so this MPI estimation excludes the nutrition indicator. Child mortality information is provided by eligible women aged 15 to 49 living in all households sampled and eligible ever-married men aged 15 to 54 living in the one out of every three households sampled for the currently married men's questionnaire. Table 2.2 on page 12 of the survey report does not classify sanitation facilities by improved or unimproved status; however, we consider the following facilities to be improved, following the standard global MPI classification and harmonization with the 2017 data: 'private – with septic tank' and 'private – without septic tank', and the remaining categories ('shared / public', 'pit latrine', 'yard / bush / forest', 'river / stream / creek', and 'other') to be unimproved. Table 2.1 on page 10 considers 'rainwater' to be an unimproved source of drinking water, but we code this source to be improved to match the 2017 definition of improved drinking water sources. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water, following Table 2.1. Table 2.3 on page 13 of the report does not consider 'no food cooked in the household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. Further, the report does not include information on whether the household owns a computer, and likewise this variable is missing from the assets indicator. Survey estimates are disaggregated by rural and urban areas, age cohorts, and the 33 provinces. The final analytical sample for Indonesia (2012) covered some 178 thousand people. The global MPI for Indonesia (2012) was first published in June 2014.

Indonesia (DHS 2017): Anthropometric data was not part of the 2017 data collection, and so this MPI estimation excludes the nutrition indicator. Child mortality information is provided by eligible women aged 15 to 49 living in all households sampled and eligible ever-married men aged 15 to 54 living in eight of the 25 households in the 2017 IDHS sampled census block (p.3 of the 2017 report). Table 2.3 on page 16 of the survey report does not classify sanitation facilities by improved or unimproved status; however, we consider the following facilities to be improved, following the standard global MPI classification and harmonization with the 2012 data: 'flush to septic tank' and 'flush without septic tank', and the remaining categories ('flush toilet: shared / public', 'ventilated improved pit latrine (VIP)', 'no facility / bush / field / river / beach / pond / pool', and 'other') to be unimproved. Although Table 2.1 on page 15 indicates that households using bottled water as the main source of drinking water were

classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the 2012 classification. Table 2.4 on page 17 of the report does not consider 'no food cooked in the household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The earlier data from 2012 does not include information on whether the household owns a computer, so it is therefore not included in the assets indicator for harmonization purposes. Survey estimates are disaggregated by rural and urban areas, age cohorts, and the 33 provinces; the original 34 provinces have been re-grouped to match the 2012 classification, with North Kalimantan merged with West Kalimantan (p. xxxii of 2017 report, p. xxii of 2012 report). The final analytical sample for Indonesia (2017) covered some 191 thousand people. The global MPI for Indonesia (2017) was first published in July 2020.

Iraq (MICS 2011): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. While Table WS.6 starting on page 85 of the survey report considers the 'flush to unknown place / not sure / don't know where' response to be an unimproved sanitation facility, we code this facility to be improved to match the recent classification in the 2018 data. Although Table WS.1 starting on page 78 considers 'tanker truck' and 'cart with small tank / drum' to be unimproved sources of drinking water, we code them to be improved sources to match the 2018 definition of improved drinking water sources. Table CH.9 starting on page 73 of the report does not consider 'no food cooked in household' 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 age cohorts; while the report also provides estimates for the 18 governorates, the MICS team has advised us against comparing the regions between the surveys at the governorate level due to issues in the sampling frame. The final analytical sample for Iraq (2011) covered some 234 thousand people. The global MPI for Iraq (2011) was first published in June 2014.

Iraq (MICS 2018): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. Additionally, for the school attendance

indicator, we replace the 'schage' variable with the individual's age from the household roster to match the earlier MICS data. Table WS.3.1 starting on page 299 states that 'flush to unknown place / not sure / don't know where' toilets were considered an improved sanitation facility, and we follow that categorization. Table WS.1.1 starting on page 276 states that 'tanker truck' and 'cart with small tank' were considered improved sources of drinking water, and we follow that categorization. Table TC.4.2 starting on page 156 of the report does not consider 'no food cooked in household' 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 age cohorts; while the report also provides estimates for the 18 governorates, on the advice of the MICS team we disaggregate by age cohort but not subnational regions. The final analytical sample for Iraq (2018) covered some 130 thousand people. The global MPI for Iraq (2018) was first published in July 2019.

Jamaica (JSLC 2010): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality data was not part of the 2010 data collection, and so this MPI estimation excludes the child mortality indicator. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water, following the definition of safe water on page 74 of the report. There is no information on floors and roofing materials in the report, and therefore this information is not included in the housing indicator. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the three regions. The final analytical sample for Jamaica (2010) covered some 5 thousand people. The global MPI for Jamaica (2010) was first published in June 2015.

Jamaica (JSLC 2014): Anthropometric measurements were collected from all eligible children under 5 years living in one out of every three households. Child mortality data was not part of the 2014 data collection, and so this MPI estimation excludes the child mortality indicator. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water, following the definition of safe water on page 84 of the report. There is no information on floors and roofing materials in the report, and therefore this information is not included in the housing indicator. The report does

not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the three regions; while the survey allows for disaggregation by the 14 parishes, we retain the three regions used in the 2010 survey for comparability. The final analytical sample for Jamaica (2014) covered some 5 thousand people. The global MPI for Jamaica (2014) was first published in September 2018.

Jordan (DHS 2012): Anthropometric measurements were collected from ever-married women aged 15 to 49 and children aged under 5 years living in two out of every three households sampled; however, for harmonization purposes, we only use adult nutritional information collected from ever-married women. Child mortality information is provided by eligible ever-married women aged 15 to 49 living in all households sampled. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water, following from Table 2.1 on page 12 of the report. Table 2.3 on page 14 of the report does not specify whether 'other' responses reflect inadequate clean cooking fuel, so for harmonization with the 2017/18 data, we consider them an improved source for the cooking fuel indicator. The report does not include information on whether the household owns a bicycle, motorcycle / scooter, or animal cart, and likewise the assets indicator does not include these variables. Survey estimates are disaggregated by rural and urban areas, age cohorts, and the 12 governorates. The final analytical sample for Jordan (2012) covered some 48 thousand people. The global MPI for Jordan (2012) was first published in January 2015.

Jordan (DHS 2017/18): Anthropometric measurements were collected from ever-married women aged 15 to 49 and children aged under 5 years living in the half of households sampled; however, the Jordan Department of Statistics notes that 'analysis of the anthropometric data for children revealed that estimates of children's nutritional status were unreliable due to anomalies in the individual values. Therefore, nutritional status indicators based on anthropometric data were presented only for women in the Final Report. Anthropometric data variables for children have therefore not been made available in the standard recode data set'.[19] Therefore, we only use adult nutritional information collected from ever-married women. Child mortality information is provided by eligible ever-married women aged 15 to 49 living

[19] For more details on this decision, please refer to the 'Important note on data issue with Jordan.doc' file provided by DHS upon data download.

in all households sampled. Although Table 2.1 on page 15 of the report also indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the 2012 classification. Table 2.4 starting on page 17 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a bicycle, motorcycle/scooter, or animal cart, and likewise the assets indicator does not include these variables. Survey estimates are disaggregated by rural and urban areas, age cohorts, and the 12 governorates. The final analytical sample for Jordan (2017/18) covered some 44 thousand people. The global MPI for Jordan (2017/18) was first published in July 2019.

Kazakhstan (MICS 2010/11): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. There is no data on birth history in the last five years, so the child mortality indicator considers a household deprived if the mother reports having had any child die. Table WS.5 on page 100 of the report considers 'flush to unknown place / not sure / don't know where' responses as improved sanitation facilities, and we follow this definition. Table CH.9 on page 88 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the 16 regions. The final analytical sample for Kazakhstan (2010/11) covered some 53 thousand people. The global MPI for Kazakhstan (2010/11) was first published in June 2014.

Kazakhstan (MICS 2015): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. For the school attendance indicator, we replace the 'schage' variable with the individual's age from the household roster to match the earlier MICS data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. There is no data on birth history in the last five years, so the child

mortality indicator considers a household deprived if the mother reports having had any child die. Table WS.5 starting on page 81 considers 'flush to unknown place / not sure / don't know where' responses as improved sanitation facilities, and we follow this definition. Table CH.4 starting on page 64 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The earlier data from 2010/11 does not include information on whether the household owns an animal cart, so it is therefore not included in the assets indicator for harmonization purposes. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the 16 regions. The final analytical sample for Kazakhstan (2015) covered some 54 thousand people. The global MPI for Kazakhstan (2015) was first published in June 2017.

Kenya (DHS 2008/09): Anthropometric measurements were collected from all eligible children under 5 years and eligible women aged 15 to 49 living in all sampled households. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 54 living in the half of households selected for the male questionnaire. Although Table 2.6 on page 21 indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the 2014 classification. Table 2.8 on page 23 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the eight provinces. The final analytical sample for Kenya (2008/09) covered some 38 thousand people. The global MPI for Kenya (2008/09) was first published in October 2011.

Kenya (DHS 2014): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households and eligible women aged 15 to 49 living in the half of households selected for the male questionnaire. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 54

living in the half of households selected for the male questionnaire. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water, in accordance with Table 2.1 on page 12 of the report. Table 2.3 on page 15 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the eight provinces. The final analytical sample for Kenya (2014) covered some 69 thousand people. The global MPI for Kenya (2014) was first published in June 2016.

Kyrgyzstan (MICS 2005/06): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. There is no data on birth history in the last five years, so the child mortality indicator considers a household deprived if the mother reports having had any child die. While Table EN.5 on page 97 of the survey report does not consider the 'missing' response to be an unimproved sanitation facility, we consider these toilets as unimproved facilities to match the 2014 data. Table CH.8 on page 90 of the report does not consider '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, age cohorts, and by the eight regions. The final analytical sample for Kyrgyzstan (2005/06) covered some 24 thousand people. The global MPI for Kyrgyzstan (2005/06) was first published in July 2010.

Kyrgyzstan (MICS 2014): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Additionally, for the nutrition indicator, we replace the 'age in days' variable with the individual's 'age in months' to match the earlier MICS data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households. While there is data on birth history in the last five years, for harmonization purposes, we have removed this information to match the 2005/06 data, which did not include a birth history questionnaire. Additionally, for the school attendance indicator, we replace the 'schage' variable with the individual's age from the household roster to match the earlier MICS data. Table WS.5 on page 84 considers 'missing' responses as unimproved

sanitation facilities, and we follow this definition. Table CH.11 starting on page 70 of the report does not consider 'no food cooked in household' 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, age cohorts, and by the eight regions; while the report disaggregates by nine regions, we merge Osh City and Osh Oblast to constitute Osh for comparability between the surveys, following Appendix A starting on page 143 of the 2005/06 report. The final analytical sample for Kyrgyzstan (2014) covered some 30 thousand people. The global MPI for Kyrgyzstan (2014) was first published in June 2016.

Lao People's Democratic Republic (MICS 2011/12): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was provided by eligible women aged 15 to 49 and eligible men aged 15 to 49 living in all sampled households. Table WS.5 starting on page 32 considers 'flush to unknown place / not sure / don't know where' responses as improved sanitation facilities, and we follow this definition. Table WS.1 starting on page 22 considers 'tanker truck' to be an unimproved source of drinking water, but we code this source to be improved to match the 2017 definition of improved drinking water sources. Further, Table WS.1 states that 'missing' sources were considered an unimproved water source, and we follow that categorization. Table CH.9 starting on page 149 of the report does not consider 'no food cooked in the household' and 'other' responses to reflect inadequate clean cooking fuel, but for harmonization purposes, we only consider 'no food cooked in household' as an adequate source for cooking fuel. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the 17 provinces. The final analytical sample for the Lao People's Democratic Republic (2011/12) covered some 96 thousand people. The global MPI for the Lao People's Democratic Republic (2011/12) was first published in June 2014.

Lao People's Democratic Republic (MICS 2017): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Additionally, for the nutrition indicator, we replace the 'age in days' variable with the individual's 'age in months' to match the earlier MICS-DHS data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 49 living in the half of households sampled. Additionally, for the school attendance indicator, we replace the 'schage' variable with the individual's age from the household roster to match the earlier

MICS data. Table WS.3.1 starting on page 322 considers 'flush to unknown place / not sure / don't know where' responses as improved sanitation facilities, and we follow this definition. Table TC.4.2 starting on page 189 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. While Table TC.4.2 also does not consider 'other' responses as solid fuel, we code this source as deprived, as a cross-tabulation reveals that of the 2,047 individuals who reported using the 'other' type of cookstove, 2,008 of them have used solid fuel in the cookstove, while 39 of them used another type of fuel. It is very likely that these 39 individuals have also used some form of fuel that is not clean. As such, we identify all individuals who reported using 'other' fuel in their cookstove as deprived. Survey estimates are disaggregated by rural and urban areas, age cohorts, and by the 17 provinces; while the report disaggregates by 18 provinces, we do not report results for Xaysomboun, as it was not sampled in the 2011/12 survey. The final analytical sample for the Lao People's Democratic Republic (2017) covered some 99 thousand people. The global MPI for the Lao People's Democratic Republic (2017) was first published in July 2019.

Lesotho (DHS 2009): Anthropometric measurements were collected from women aged 15 to 49, men aged 15 to 59, and children aged under 5 years living in the half of households sampled for the male interview. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of households selected for the male questionnaire. Table 2.9 on page 21 of the report does not consider 'no food cooked in household' 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, age cohorts, and by the 10 districts. The final analytical sample for Lesotho (2009) covered some 17 thousand people. The global MPI for Lesotho (2009) was first published in October 2011.

Lesotho (DHS 2014): Anthropometric measurements were collected from women aged 15 to 49, men aged 15 to 59, and children aged under 5 years living in the half of households sampled for the male interview. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of households selected for the male questionnaire. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source

of drinking water, in accordance with Table 2.1 on page 16. Table 2.3 on page 18 of the report does not consider 'no food cooked in household' 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, age cohorts, and by the 10 districts. The final analytical sample for Lesotho (2014) covered some 15 thousand people. The global MPI for Lesotho (2014) was first published in June 2017.

Liberia (DHS 2007): Anthropometric measurements were collected from eligible women aged 15 to 49 and children under 5 years living in all sampled households. Child mortality information was provided by eligible women aged 15 to 49 and eligible men aged 15 to 49 living in all sampled households. Although Table 2.11 on page 22 of the report indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the 2013 classification. Table 2.13 starting on page 24 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas and age cohorts; while the report disaggregates by the six regions, the 2013 survey, in contrast with past surveys, samples so that the South Central region now includes Monrovia. Thus, data presented for the South Central region in the 2013 report is not directly comparable to that presented in the 2007 LDHS, the 2009 LMIS, or the 2011 LMIS (p.3 of the 2013 report). We therefore aggregate the Monrovia and South Central regions into a single region and disaggregate by five regions for comparability. The final analytical sample for Liberia (2007) covered some 32 thousand people. The global MPI for Liberia (2007) was first published in July 2010.

Liberia (DHS 2013): Anthropometric measurements were collected from women aged 15 to 49, men aged 15 to 49, and children aged under 5 years living in the half of households sampled for the male interview; however, for harmonization purposes, we only include nutrition information from women and children. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 49 living in the half of

households selected for the male questionnaire. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water, in accordance with Table 2.1 on page 11. Table 2.3 on page 13 of the report does not consider 'no food cooked in household' 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, age cohorts, and the five regions. The final analytical sample for Liberia (2013) covered some 22 thousand people. The global MPI for Liberia (2013) was first published in June 2015.

Madagascar (DHS 2008/09): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in the half of sampled households selected for the male interview; however, for harmonization purposes, we only use the anthropometric information from children, to accord with the MICS 2018 data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of households selected for the male questionnaire. Table 2.1 on page 12 considers 'tanker truck to be an unimproved source of drinking water, but we code this source to be improved to match the MICS 2018 definition of improved drinking water sources. Table 2.3 on page 14 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 22 regions. The final analytical sample for Madagascar (2008/09) covered some 39 thousand people. The global MPI for Madagascar (2008/09) was first published in October 2011.

Madagascar (MICS 2018): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. We follow the global MPI 2020 classification that does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel. While information on whether the household owns a computer does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. Survey

estimates are disaggregated by rural and urban areas, age cohorts, and for the 22 regions. The final analytical sample for Madagascar (2018) covered some 77 thousand people. The global MPI for Madagascar (2018) was first published in July 2020.

Malawi (DHS 2010): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in the one third of the sampled households selected for HIV testing. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 54 living in every third household sampled. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. Table 2.8 on page 21 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 27 regions. The final analytical sample for Malawi (2015/16) covered some 38 thousand people. The global MPI for Malawi (2010) was first published in February 2013.

Malawi (DHS 2015/16): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in the one third of the sampled households selected for the male interview. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 54 living in the one third of households selected for the male questionnaire. Although Table 2.1 on page 18 of the report indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the DHS 2010 classification. Table 2.4 on page 20 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. While information on whether the household owns a computer does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. Survey estimates are disaggregated by rural and urban areas, age cohorts, and the 27 regions; for harmonization purposes, we combine

Lilongwe City and Lilongwe Rural, Mzuzu City and Mzimba, and the Zomba City and Zomba Rural areas to accord with the 27 regions present in the DHS 2010 survey. The final analytical sample for Malawi (2015/16) covered some 37 thousand people. The global MPI for Malawi (2015/16) was first published in June 2017.

Mali (DHS 2006): Anthropometric information was collected among all eligible children under 5 years and women aged 15 to 49 years living in the half of sampled households selected for the male questionnaire; however, for harmonization purposes, we only use the anthropometric information from children, to accord with the MICS 2015 data. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 59 years living in the half of sampled households selected for the male questionnaire. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. There is no information on wall or roof materials in the report, and therefore this information is not included in the housing indicator. Table 2.7 on page 25 of the report does not consider '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, age cohorts, and for eight regions. While the Kidal region was surveyed as part of the DHS 2005, due to security issues, it was not included in MICS 2015; therefore, we exclude this region in 2005 and only present results for eight regions to ensure full comparability between the surveys. The final analytical sample for Mali (2006) covered some 67 thousand people. The global MPI for Mali (2006) was first published in October 2011.

Mali (MICS 2015): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 49 years living in the half of sampled households selected for the male questionnaire. Although Table WS.1 on page 154 of the report indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the DHS 2006 classification. While information on wall and roof materials does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the

housing indicator in the MPI. Table CH.12 on page 127 of the report does not consider 'no food cooked in household' 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, age cohorts, and for the eight regions. While the Kidal region was surveyed as part of the DHS 2005, due to security issues, it was not included in MICS 2015; therefore, we exclude this region in 2005 and only present results for eight regions only to ensure full comparability between the surveys. The final analytical sample for Mali (2015) covered some 96 thousand people. The global MPI for Mali (2015) was first published in September 2018.

Mauritania (MICS 2011): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was collected from ever-married women aged 15 to 49 years. Although the report does not explicitly state the ever-married women condition for child mortality, a cross-tabulation with the data verifies this is the case, and other reproductive health questions (early marriage, contraception practices) are asked only to an ever-married sample of women. Table WS.5 on page 100 considers 'missing' responses as unimproved sanitation facilities, and we follow this definition. Table WS.1 starting on page 93 considers 'rainwater' to be an improved source of drinking water, but we code this source to be unimproved to match the MICS 2015 definition of improved drinking water sources. To accord with the more recent MICS 2015 definition of rudimentary roofing materials, the category 'plywood' is considered unimproved. Table CH.9 on page 78 of the report does not consider 'no food cooked in household' 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, age cohorts, and for the 12 regions. The final analytical sample for Mauritania (2011) covered some 55 thousand people. The global MPI for Mauritania (2011) was first published in June 2015.

Mauritania (MICS 2015): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was collected from ever-married women aged 15 to 49 years and men aged 15 to 49 years. Although the report does not explicitly state the ever-married women condition for child mortality, a cross-tabulation with the data verifies this is the case, and other reproductive health questions (early marriage, contraception practices) are asked only to an ever-married sample of women. Table

WS.1 on page 137 considers 'missing' responses as an unimproved drinking water source, and we follow this definition. Table CH.12 on page 115 of the report does not consider 'no food cooked in household' 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, age cohorts, and for the 12 regions, for harmonization purposes, we aggregate 'Tiris-Zemmour' and 'Inchiri' into one region, allowing subnational disaggregation by the 12 regions present in Mauritania MICS 2011. The final analytical sample for Mauritania (2015) covered some 64 thousand people. The global MPI for Mauritania (2015) was first published in September 2018.

Mexico (ENSANUT 2012): Anthropometric measurements were collected from women aged 19 to 70, men aged 19 to 70, and children aged 0 to 18 living in all sampled households. Child mortality data was not collected as part of the ENSANUT 2012 survey. We re-weight the indicators to assure equal weighting among the three dimensions. Information on the time it takes to procure water for the household is not present. In ENSANUT, there is no particular information in the country report on the type of improved or unimproved toilet. As such we follow the standard global MPI classification and consider 'flush toilet to piped sewer' and 'flush to septic tank' as improved, and 'flush to somewhere else', 'pit latrine without slab/open pit', and 'no facility/bush/field' as unimproved sanitation facilities. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. Further, there is no information on the time it takes to collect drinking water if it is outside of the household premises. We follow the previous global MPI publication that does not consider 'other' responses to reflect inadequate clean cooking fuel. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the four regions; as the data for ENSANUT 2012 is representative at the state level, we recode the 32 states into the four geographical regions (based on the grouping presented on page 17 of the ENSANUT 2016 report) to ensure comparability across the surveys. The final analytical sample for Mexico (2012) covered some 194 thousand people. The global MPI for the Mexico (2012) was first published in June 2014.

Mexico (ENSANUT 2016): Anthropometric measurements were collected from women aged 19 to 70, men aged 19 to 70, and children aged 0 to 18 living in all sampled households. Child mortality data was not collected as part of the ENSANUT 2016 survey. We re-weight the indicators to assure equal weighting among the three dimensions. Information on the time it takes to procure water for the household is not present. In ENSANUT, there is no particular information in the country report on the type of improved or unimproved toilet. As such we follow the standard global MPI classification and consider 'flush toilet to piped sewer' and 'flush to septic tank' as improved, and 'flush to somewhere else', 'pit latrine without slab/open pit', and 'no facility/bush/field' as unimproved sanitation facilities. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. Further, there is no information on the time it takes to collect drinking water, if it is outside of the household premises. We follow the previous global MPI publication that does not consider 'other' responses to reflect inadequate clean cooking fuel. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the four regions. The final analytical sample for Mexico (2016) covered some 29 thousand people. The global MPI for the Mexico (2016) was first published in September 2018.

Moldova (DHS 2005): Anthropometric information was collected among all eligible children under 5 years and all women aged 15 to 49 years. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 59 years living in the one third of the sampled households selected for the male questionnaire. While the report (p.24) considers the 'flush to somewhere else' response to be an improved sanitation facility, we code this facility to be unimproved to match the more recent classification in the MICS 2012 data. Information on the time it takes to procure water for the household is not present. While the report (pp.23–24) considers the 'rainwater' response to be an unimproved drinking water source, we code this facility to be improved to match the recent classification in the MICS 2012 data. Footnote 12 on page xxv of the survey report considers 'coal/lignite' to be an improved source of cooking fuel, but we code this source to be unimproved to match the MICS 2012 definition of improved list of cooking fuels. Further, the report does not consider 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. Survey estimates are disaggregated only by rural and urban areas and age cohorts,

as the country does not meet the required minimum threshold (MPI value of 0.005) for regional disaggregation. The final analytical sample for Moldova (2005) covered some 29 thousand people. The global MPI for Moldova (2005) was first published in July 2010.

Moldova (MICS 2012): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 49 years living in every third household sampled. Although information on the time it takes to procure water for the household is present, we do not use this condition when constructing the drinking water indicator to match the DHS 2005 classification. Table CH.8 on page 45 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. Survey estimates are disaggregated only by rural and urban areas and age cohorts, as the country does not meet the required minimum threshold (MPI value of 0.005) for regional disaggregation. The final analytical sample for Moldova (2012) covered some 27 thousand people. The global MPI for Moldova (2012) was first published in June 2015.

Mongolia (MICS 2010): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by all eligible women aged 15 to 49 and eligible men aged 15 to 54 years living in every second household sampled. There is no data on birth history in the last five years, so the child mortality indicator considers a household deprived if the mother reports having had any child die. While Table WS.5 on page 84 of the survey report considers the 'pit latrine with slab' response to be an improved sanitation facility, we code this facility to be unimproved to match the more recent classification in the MICS 2013 data. Table WS.5 also considers 'missing' responses as unimproved sanitation facilities, and we follow this definition. While Table WS.1 on page 77 of the survey report considers the 'tanker truck response to be an unimproved drinking water source, we code this facility to be improved to match the more recent classification in the MICS 2013 data'. Table CH.9 on page 65 of the report does not consider '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, age cohorts, and for the five regions. The final analytical sample for Mongolia (2010) covered some 34 thousand people. The global MPI for Mongolia (2010) was first published in June 2015.

Mongolia (MICS 2013): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by all eligible women aged 15 to 49 and eligible men aged 15 to 54 years living in every second household sampled. While there is data on birth history in the last five years, for harmonization purposes, we have removed this information to match the MICS 2010 data, which did not include a birth history questionnaire. Table CH.12 on page 105 of the report does not consider 'no food cooked in household' 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, age cohorts, and for the five regions. The final analytical sample for Mongolia 2013 covered some 49 thousand people. The global MPI for Mongolia MICS 2013 was first published in June 2017.

Montenegro (MICS 2005/06): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality data was not collected as part of the MICS 2005/06 survey. We re-weight the indicators to assure equal weighting among the three dimensions. In MICS 2005/06, the official entry age to primary school is 7 years, and in MICS 2013 the official entry age to primary school is   years; we keep the age ranges as they are (in this case, 7 to 15 in the first survey and 6 to 14 in the second) to fully capture the range of eligible children. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the three regions. The final analytical sample for Montenegro (2005/06) covered some 8 thousand people. The global MPI for Montenegro (2005/06) was first published in July 2010.

Montenegro (MICS 2013): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled; however, for harmonization purposes, we remove all data on child mortality to accord with the MICS 2005/06 data and re-weight the indicators to assure equal weighting among the three dimensions. In MICS 2005/06, the official entry age to primary school is 7 years, and in MICS 2013 the official entry age to primary school is 6 years; we keep the age ranges as they are (in this case, 7 to 15 in the first survey and 6 to 14 in the second) to fully capture the range of eligible children. Table WS.5 on page 85 considers 'missing' responses as unimproved sanitation facilities, and we

follow this definition. Table CH.7 on page 70 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. While information on animal cart ownership does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the three regions. The final analytical sample for Montenegro (2013) covered some 14 thousand people. The global MPI for Montenegro (2013) was first published in June 2015.

Mozambique (DHS 2003): Anthropometric information was collected among all eligible children under 5 years and women aged 15 to 49 years. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 64 years living in one third of the sampled households selected for the men's questionnaire. While the report does not define sanitation facilities by improved or unimproved standards, it does differentiate between categories for toilets as having or not having sanitation infrastructure (p.16). The toilet type coding thus follows the standard global MPI classification, even though the report does not specify the difference (i.e. 'flush toilet' is an improved standard, whereas the others are unimproved). Neither does the report differentiate between a household's main sources of drinking water. Following the standard global MPI classification, the categories for improved sources of drinking water include: 'inside the house' 'inside neighbour's house', 'public water', 'in own land', 'protected public well', and 'rainwater;' while categories for unimproved sources of drinking water are: 'in neighbour's land', 'unprotected public well', 'river/lake', and 'other.' The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. There is no information on wall materials in the report, and therefore this information is not included in the housing indicator. The report does not specify which cooking fuels reflect inadequate clean cooking fuel, so this MPI estimation follows the standard global MPI classification; notably, the 'other' category is considered a clean cooking fuel. The report does not include information on whether the household owns a computer, mobile telephone or an animal cart, and likewise the assets indicator does not include these variables. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 11 regions. The final analytical sample for Mozambique (2003) covered some 57 thousand people. The global MPI for Mozambique (2003) was first published in July 2010.

Mozambique (DHS 2011): Anthropometric information was collected among all eligible children under 5 years and women aged 15 to 49 years. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 64 years living in one third of the households selected for the male questionnaire. In Mozambique, the report considers all toilets with 'flush do not know where' and 'toilets without flush do not know where' as improved facilities, following Table 2.2 on page 20. Table 2.1a on page 19 follows the international guidelines, as do we, with the note that 'borehole with pump' is considered an improved drinking water source. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. While information on wall materials does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the housing indicator in the MPI. Table 2.3 on page 22 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. While information on animal cart ownership does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. The earlier data in DHS 2003 does not include information on whether the household owns a mobile telephone, so it is therefore not included in the conceptual definition of the 'telephone' asset; however, the later survey in DHS 2011 does include a question on mobile telephone ownership, so we incorporate that information into the assets indicator. We believe the principle of comparability is best achieved by keeping the concept of the asset harmonized. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 11 regions. The final analytical sample for Mozambique (2011) covered some 61 thousand people. The global MPI for Mozambique (2011) was first published in June 2014.

Namibia DHS (2006/07): Anthropometric information was collected among all eligible children under 5 years and women aged 15 to 49 years. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 49 years. Although Table 2.6 on page 17 of the report indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use

this condition and instead code 'bottled water' as improved to match the DHS 2013 classification. To accord with the recent DHS 2013 definition of finished wall materials, the category 'metal (iron or zinc sheet)' is considered improved. Table 2.10 on page 20 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 13 regions. The final analytical sample for Namibia (2006/07) covered some 39 thousand people. The global MPI for Namibia (2013) was first published in October 2011.

Namibia (DHS 2013): Anthropometric measurements were collected from women aged 15 to 64, men aged 15 to 64, and children aged under 5 years living in the half of sampled households selected for the male interview; however, for harmonization purposes, we only use the anthropometric information from children and women aged 15 to 49 to accord with the DHS 2006/07 data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 49 living in the half of households selected for the male questionnaire. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. Table 2.3 on page 14 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. While information on whether the household owns a computer does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 13 regions. The final analytical sample for Namibia (2013) covered some 18 thousand people. The global MPI for Namibia (2013) was first published in June 2015.

Nepal (DHS 2011): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in the half of sampled households selected for the male interview. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 49 living in the half of households selected for the male questionnaire. The question classifying non-drinking water sources is not included

in the survey, thus 'bottled water' was considered an improved source of drinking water. Table 2.4 on page 17 of the report does not consider 'no food cooked in household' 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, age cohorts, and for the five development regions. The final analytical sample for Nepal (2011) covered some 22 thousand people. The global MPI for Nepal (2011) was first published in February 2013.

Nepal (DHS 2016): Anthropometric measurements were collected from women aged 15 and over, men aged 15 and over, and children aged under 5 years living in the half of sampled households selected for the male interview; however, for harmonization purposes, we only use the anthropometric information from children and women aged 15 to 49, to accord with the DHS 2011 data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 49 living in the half of households selected for the male questionnaire. Although Table 2.1 on page 20 of the report indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the DHS 2011 classification. Table 2.4 on page 23 of the report does not consider 'no food cooked in household' 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, age cohorts, and for the five development regions; for harmonization purposes, we regroup the seven provinces that exist in the DHS 2016 into the five development regions to accord with the subnational disaggregation of the DHS 2011 survey. The final analytical sample for Nepal (2016) covered some 22 thousand people. The global MPI for Nepal (2016) was first published in September 2018.

Nicaragua (DHS 2001): Anthropometric information was collected among all eligible children under 5 years and women aged 15 to 49 years. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. In DHS 2001, the official entry age to primary school is 7 years, and in DHS 2011/12, the official entry age to primary school is 6 years; we keep the age ranges as they are (in this case, 7 to 15 in the first survey and 6 to 14 in the second) to fully capture the range of eligible children. While the survey also has

information on whether the toilet was shared with other households, we do not use this condition to match the DHS 2011/12 classification. The report does not categorize water sources, and, following the standard global MPI classification, we consider 'inside dwelling', 'outside dwelling', 'private', 'private well', 'rainwater', and 'purified water' as improve sources, while 'public', 'public well', 'river', 'spring', and 'other' are considered to be unimproved sources of drinking water. For harmonization purposes, we recode 'private well' to be an unimproved source of drinking water to match the more recent classification in DHS 2011/12. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. The report does not classify cooking fuels, and we consider 'electricity', 'butane or propane gas', 'kerosene', 'no food cooked in household', and 'other' responses to reflect clean cooking fuel, while 'wood' and 'coal' are considered unimproved sources. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 17 departments. The final analytical sample for Nicaragua (2001) covered some 57 thousand people. The global MPI for Nicaragua (2001) was first published in July 2010.

Nicaragua (DHS 2011/12): Anthropometric information was collected among all eligible children under 5 years and women aged 15 to 49 years. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 59 years. In DHS 2001, the official entry age to primary school is 7 years, and in DHS 2011/12, the official entry age to primary school is 6 years; we keep the age ranges as they are (in this case, 7 to 15 in the first survey and 6 to 14 in the second) to fully capture the range of eligible children. In Nicaragua, households that 'flush to a septic tank/well' have been identified as non-deprived. This decision follows country-level information that specifies that these tanks/wells are well covered and that they are usually pumped out by private sewage companies. The survey also has no information on whether the toilet was shared with other households. In the context of Nicaragua DHS 2011/12, we identify drinking water from 'public and private well', 'spring', and from 'another house/neighbour/company' as unimproved because there is no information on the quality of the water from these sources. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. There is no evidence in the report to indicate that the category 'other' cooking fuel relates to solid fuel. Hence this particular category is identified as 'non-deprived'. The report

does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 17 departments. The final analytical sample for Nicaragua (2001) covered some 81 thousand people. The global MPI for the Nicaragua (2011/12) was first published in June 2014.

Niger (DHS 2006): Anthropometric measurements were collected from women aged 15 to 49 and

children aged under 5 years living in the half of sampled households selected for the male interview. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of households selected for the male questionnaire. While the report does not specify improved or unimproved sanitation facilities based on the standard global MPI classification, page xxxiii of the survey report establishes that 'flush toilet', 'uncovered or covered pit/latrine', and 'ventilated improved latrine' are considered improved sanitation facility, so 'traditional pit toilet' and 'no facility/bush/field' are considered unimproved. Additionally, while the report does not specify improved or unimproved drinking water sources based on the SDGs, page xxxiii states that 'water from tap, drilling, or protected wells' are considered improved, so we code 'piped into dwelling', 'piped into yard/plot', 'public tap', and 'protected well' as improved whereas we code 'open well', 'spring', 'surface water', 'bottled water', and 'other' as unimproved. The question classifying non-drinking water sources is not included in the survey, and we recode 'bottled water' to be an improved source match the DHS 2012 definition of improved drinking water sources. There is no information on wall or roof materials in the report, and therefore this information is not included in the housing indicator. The report does not define inadequate clean cooking fuels, so this MPI estimation codes 'electricity', 'LPG', 'natural gas', 'do not cook', and 'other' as clean fuels and 'charcoal', 'firewood, straw', and 'dung', as unclean fuels, following international guidelines. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the eight regions. The final analytical sample for Niger (2006) covered some 22 thousand people. The global MPI for the Niger (2006) was first published in July 2010.

Niger (DHS 2012): Anthropometric information was collected among eligible children under 5

years and women aged 15 to 49 years living in every second household selected for the blood test. Child mortality information is provided by all eligible women aged 15 to 49 and eligible men aged 15 to 59 years living in every second household selected for the blood test. Table 2.2 on page 16 considers 'missing' responses as unimproved sanitation facilities, and we follow this definition. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. While information on wall and roof materials does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the housing indicator in the MPI. Table 2.3 on page 17 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. While information on whether the household owns a computer does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the eight regions. The final analytical sample for Niger (2012) covered some 28 thousand people. The global MPI for the Niger (2012) was first published in June 2014.

Nigeria (DHS 2013): Anthropometric information was collected among all eligible children under 5 years and women aged 15 to 49 years. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 49 years living in the half of the households selected for the male questionnaire. While Table 2.2 on page 13 of the survey report considers the 'flush to don't know where' response to be an unimproved sanitation facility, we code this facility to be improved to match the more recent classification in the DHS 2018 data. Table 2.1 starting on page 12 considers 'tanker truck' and 'cart with small tank' to be unimproved sources of drinking water, but we code these to be improved to match the DHS 2018 definition of improved drinking water sources. Table 2.1 also considers 'missing' responses as an unimproved drinking water source, and we follow this definition. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. Table 2.3 on page 14 of the report does not consider 'no food cooked in household' 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, age cohorts, and for the 37 regions. The final analytical

sample for Nigeria (2013) covered some 171 thousand people. The global MPI for Nigeria (2013) was first published in December 2015.

Nigeria (DHS 2018): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in the one third of the sampled households selected for the male interview. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the one third of households selected for the male questionnaire. Table 2.4 on page 26 of the report does not consider 'no food cooked in household' 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, age cohorts, and for the 37 regions. The final analytical sample for Nigeria (2018) covered some 65 thousand people. The global MPI for Nigeria (2018) was first published in July 2020.

North Macedonia (MICS 2005/06): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality data was not collected as part of the MICS 2005/06 survey. We re-weight the indicators to assure equal weighting among the three dimensions. In MICS 2005/06, the official entry age to primary school is 7 years, and in MICS 2011, the official entry age to primary school is 6 years; we keep the age ranges as they are (in this case, 7 to 15 in the first survey and 6 to 14 in the second) to fully capture the range of eligible children. While Table EN.5 on page 84 of the survey report considers the 'flush to unknown place/not sure/don't know where' response to be an unimproved sanitation facility, we code this facility to be improved to match the more recent classification in the MICS 2011 data. Table CH.8 on page 79 of the report does not consider '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, age cohorts, and for the eight regions. The final analytical sample for North Macedonia (2005/06) covered some 25 thousand people. The global MPI for Macedonia (2005/06) was first published in July 2010.

North Macedonia (MICS 2011): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled; however, for harmonization purposes, we remove all data on child mortality to accord with the MICS

2005/06 data and re-weight the indicators to assure equal weighting among the three dimensions. In MICS 2005/06, the official entry age to primary school is 7 years, and in MICS 2011, the official entry age to primary school is 6 years; we keep the age ranges as they are (in this case, 7 to 15 in the first survey and 6 to 14 in the second) to fully capture the range of eligible children. Table CH.9 on page 45 of the report does not consider 'no food cooked in household' 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, age cohorts, and for the eight regions. The final analytical sample for North Macedonia (2011) covered some 15 thousand people. The global MPI for Macedonia (2011) was first published in June 2014.

Pakistan (DHS 2012/13): Anthropometric information was collected among all eligible children under 5 years and ever-married women aged 15 to 49 years in the one third of the sampled households selected for the male interview. Child mortality information was provided by eligible ever-married women aged 15 to 49 living in all sampled households and eligible ever-married men aged 15 to 49 living in the one third of households selected for the male questionnaire. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. Table 2.3 on page 12 of the report does not consider 'no food cooked in household' 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, age cohorts, and for the five provinces of Balochistan, Sindh, Punjab, Islamabad Capital Territory and Khyber Pakhtunkhwa. The sixth region of Gilgit Baltistan is excluded for comparability with the 2017/18 survey. The final analytical sample for Pakistan (2012/13) covered some 27 thousand people. The global MPI for Pakistan (2012/13) was first published in December 2015.

Pakistan (DHS 2017/18): Anthropometric information was collected among all eligible children under 5 years and ever-married women aged 15 to 49 years in the one third of the sampled households selected for the male interview. Child mortality information was provided by eligible ever-married women aged 15 to 49 living in all sampled households and eligible ever-married men aged 15 to 49 living in the one third of households selected for the male questionnaire. Although Table 2.1 on page 18 of the report indicates that households using bottled water as the main source of drinking water were classified into improved or

unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the DHS 2012/13 classification. Table 2.4 on page 20 of the report does not consider 'no food cooked in household' 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, age cohorts, and for the five provinces of Balochistan, Sindh, Punjab, Islamabad Capital Territory, and Khyber Pakhtunkhwa. The regions of Azad Jammu and Kashmir (AJK) and Gilgit Baltistan are excluded (due to individual sample weights[20]), and the Federally Administered Tribal Areas (FATA) region is excluded for comparability with the 2012/13 survey. The final analytical sample for Pakistan (2017/18) covered some 25 thousand people. The global MPI for Pakistan (2017/18) was first published in July 2019.

Palestine, State of (MICS 2010): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by eligible ever-married women aged 15 to 49 living in all households sampled. While Table WS.1 on page 68 of the survey report considers the 'protected spring' response to be an unimproved drinking water source, we code this category to be improved to match the more recent classification in the MICS 2014 data. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. There is no information on wall or roof materials in the report, and therefore this information is not included in the housing indicator. Table CH.9 on page 65 of the report does not consider 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a bicycle, a motorcycle, or an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas and age cohorts only, as the country does not meet the required minimum threshold (MPI value of 0.005) for regional disaggregation. The final analytical sample for the State of Palestine (2010) covered some 71 thousand people. The global MPI for the State of Palestine (2010) was first published in June 2015.

---

[20] For greater detail, please see p. 2 of the report.

Palestine, State of (MICS 2014): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by eligible ever-married women aged 15 to 49 living in all households sampled. Although Table WS.1 on page 81 of the report indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the MICS 2010 classification. While information on wall and roof materials does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the housing indicator in the MPI. Table CH.12 on page 76 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a bicycle or a motorcycle, and likewise the assets indicator does not include this variable. While information on animal cart ownership does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. Survey estimates are disaggregated only by rural and urban areas and age cohorts only, as the country does not meet the required minimum threshold (MPI value of 0.005) for regional disaggregation. The final analytical sample for the State of Palestine (2014) covered some 51 thousand people. The global MPI for the State of Palestine (2014) was first published in June 2016.

Peru (DHS-Cont. 2012): Anthropometric information was collected among all eligible children under 5 years and women aged 15 to 49 years. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. Table 1.1 on page 43 of the survey report does not classify the sanitation facilities by improved or unimproved status; however, we consider the following facilities to be improved, following the standard global MPI classification: 'inside dwelling', 'outside dwelling', 'ventilated latrine', 'septic well', and the remaining categories ('latrine [ciego o negro]', 'latrine over river/lake', 'river, canal', 'no service', and 'other') to be unimproved. Neither does Table 1.1 classify the household's main drinking water source as improved or unimproved; however, we consider the following sources to be improved: 'piped into dwelling', 'piped outside dwelling but within building', 'public tap/standpipe', 'rainwater', and 'bottled water;' and the remaining categories ('public

well', 'well inside dwelling', 'spring', 'river/dam/lake/ponds/stream/canal/irrigation channel', 'tanker truck', and 'other') to be unimproved. The report does not set a national definition for solid fuels, so we code the sources of cooking fuel according to the standard global MPI classification and consider 'no food cooked in household' and 'other' responses to reflect clean cooking fuels. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 25 regions. The final analytical sample for Peru (2012) covered some 98 thousand people. The global MPI for Peru (2012) was first published in December 2015.

Peru (DHS 2018): Anthropometric information was collected among all eligible children under 5 years and women aged 12 to 49 years; however, for harmonization purposes we only consider data from children and women aged 15 to 49. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled; however, for harmonization purposes we only consider data from women aged 15 to 49. We follow the global MPI 2020 classification that does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 25 regions. The final analytical sample for Peru (2018) covered some 139 thousand people. The global MPI for Peru (2018) was first published in July 2020.

Philippines (DHS 2013): Anthropometric data was not collected as part of the DHS 2013 survey. We re-weight the indicators to assure equal weighting among the three dimensions. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. The survey did not collect information on school attendance; we re-weight the indicators to assure equal weighting among the three dimensions. Table 2.2 on page 9 of the survey report observes that it is impossible to determine whether the 'public toilet' responses refers to improved or unimproved sanitation facilities, so we classify this category as an unimproved sanitation facility to align with DHS 2017. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. Table 2.4 on page 11 of the survey report does not consider the 'no food cooked in household' response to reflect inadequate clean cooking fuel, and the MPI estimation follows that categorization for the cooking fuel indicator. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 17 regions. The final analytical sample for Philippines (2013) covered some 70 thousand people. The global MPI for Philippines (2013) was first published in June 2015.

Philippines (DHS 2017): Anthropometric data was not collected as part of the DHS 2017 survey. We re-weight the indicators to assure equal weighting among the three dimensions. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. While information on school attendance was collected as part of the survey, for harmonization purposes, we remove this information to accord with the DHS 2013 data that did not collect this data and re-weight the indicators to assure equal weighting among the three dimensions. Table 2.4 on page 15 classifies the 'public toilet' category as an unimproved sanitation facility, and we follow this definition. Although Table 2.1 on page 13 of the report indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the DHS 2013 classification. Table 2.7 on page 18 of the survey report does not consider the 'no food cooked in household' response to reflect inadequate clean cooking fuel, and the MPI estimation follows that categorization for the cooking fuel indicator. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 17 regions. The final analytical sample for Philippines (2017) covered some 118 thousand people. The global MPI for Philippines (2017) was first published in July 2019.

Rwanda (DHS 2010): Anthropometric measurements were collected from women aged 15 to 49, men aged 15 to 59, and children aged under 5 years living in the half of sampled households selected for the male questionnaire. Child mortality information is provided by all eligible women aged 15 to 49 and eligible men aged 15 to 59 years living in the half of sampled households selected for the male questionnaire. Table 2.6 on page 20 considers 'missing' responses as unimproved sanitation facilities, and we follow this definition. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. Table 2.5 on page 19 considers 'missing' responses as an unimproved drinking water source, and we follow this definition. Table 2.8 on pages 22–23 of the report does not consider 'no food cooked in household' 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, age cohorts, and for the five regions. The final analytical sample for Rwanda (2010) covered

some 27 thousand people. The global MPI for Rwanda (2010) was first published in February 2013.

Rwanda (DHS 2014/15): Anthropometric measurements were collected from women aged 15 to 49, men aged 15 to 59, and children aged under 5 years living in the half of sampled households selected for the male questionnaire. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 59 years living in the half of sampled households selected for the male questionnaire. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. Table 2.8 on page 24 of the report does not consider 'no food cooked in household' 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, age cohorts, and for the five regions. The final analytical sample for Rwanda (2014/15) covered some 53 thousand people. The global MPI for Rwanda (2014/15) was first published in June 2016.

São Tomé and Princípe (DHS 2008/09): Anthropometric measurements were collected from women aged 15 to 49, men aged 15 to 59, and children aged under 5 years living in all sampled households; however, for harmonization purposes, we only use the anthropometric information from children, to accord with the MICS 2014 data. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 59 years. There is no information on wall materials in the report, and therefore this information is not included in the housing indicator. Table 2.8 on page 25 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the four regions. The final analytical sample for São Tomé and Princípe (2008/09) covered some 12 thousand people. The global MPI for São Tomé and Princípe (2008/09) was first published in October 2011.

São Tomé and Princípe (MICS 2014): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 49 years. Table WS.5

on page 93 considers 'missing' responses as unimproved sanitation facilities, and we follow this definition. While information on wall and roof materials does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the housing indicator in the MPI. Table CH.12 on page 65 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. While information on animal cart ownership does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the four regions. The final analytical sample for São Tomé and Princípe (2014) covered some 13 thousand people. The global MPI for São Tomé and Princípe (2014) was first published in December 2016.

Senegal DHS (2005): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in the one third of the sampled households selected for the male interview; however, for harmonization purposes, we only use the anthropometric information from children, to accord with the DHS-Cont. 2017 data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the one third of households selected for the male questionnaire. In DHS 2005, the official entry age to primary school is 7 years, and in DHS-Cont. 2017, the official entry age to primary school is 6 years; we keep the age ranges as they are (in this case, 7 to 15 in the first survey and 6 to 14 in the second) to fully capture the range of eligible children. While page xxiv of the survey report does not consider 'rainwater' to be an improved source of drinking water, we code this category as improved to match the more recent classification in the DHS-Cont. 2017 data. Further, the question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. There is no information on wall or roof materials in the report, and therefore this information is not included in the housing indicator. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 11 regions. The final analytical sample for Senegal (2005) covered some 20 thousand people. The global MPI for Senegal (2005) was first published in October 2011.

Senegal (DHS-Cont. 2017): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 59 years. In DHS 2005, the official entry age to primary school is 7 years, and in DHS-Cont. 2017, the official entry age to primary school is 6 years; we keep the age ranges as they are (in this case, 7 to 15 in the first survey and 6 to 14 in the second) to fully capture the range of eligible children. Although Table 2.1 (p.21 of report) also indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the DHS 2005 classification. While information on wall and roof materials does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the housing indicator in the MPI. Table 2.4 on page 23 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. While information on animal cart ownership does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for 11 regions presented in the DHS 2005 data; as more regions are available in the DHS-Cont. 2017, we aggregate Tambacounda and Kédougou; Kolda and Sédhiou; and Kaolack and Kaffrine to match the 11 regions in the earlier data. The final analytical sample for Senegal (2017) covered some 74 thousand people. The global MPI for Senegal (2017) was first published in July 2019.

Serbia (MICS 2010): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. There is no data on birth history in the last five years, so the child mortality indicator considers a household deprived if the mother reports having had any child die. In MICS 2010, the official entry age to primary school is 7 years, and in MICS 2014, the official entry age to primary school is 6 years; we keep the age ranges as they are (in this case, 7 to 15 in the first survey and 6 to 14 in the second) to fully capture the range of eligible children. While Table WS.5 on page 100 of the survey report considers the 'missing' response to be neither an unimproved or improved sanitation facility, we recode these categories as unimproved to match the MICS 2014 data. Table CH.7 on pages

87–88 of the report does not consider 'no food cooked in household' 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 age cohorts only, as the country does not meet the required minimum threshold (MPI value of 0.005) for regional disaggregation. The final analytical sample for Serbia (2010) covered some 21 thousand people. The global MPI for Serbia (2010) was first published in June 2014.

Serbia (MICS 2014): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. There is no data on birth history in the last five years, so the child mortality indicator considers a household deprived if the mother reports having had any child die. In MICS 2010, the official entry age to primary school is 7 years, and in MICS 2014, the official entry age to primary school is 6 years; we keep the age ranges as they are (in this case, 7 to 15 in the first survey and 6 to 14 in the second) to fully capture the range of eligible children. Table WS.5 on page 87 considers 'missing' responses as unimproved sanitation facilities, and we follow this definition. Table CH.5 on pages 70–71 of the report does not consider 'no food cooked in household' 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 age cohorts only, as the country does not meet the required minimum threshold (MPI value of 0.005) for regional disaggregation. The final analytical sample for Serbia (2014) covered some 20 thousand people. The global MPI for Serbia (2014) was first published in June 2015.

Sierra Leone (DHS 2013): Anthropometric measurements were collected from women aged 15 to 49, men aged 15 to 59 years, and children aged under 5 years living in the half of households sampled for the male questionnaire; however, for harmonization purposes, we only use the anthropometric information from children, to accord with the MICS 2017 data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of households selected for the male questionnaire. While Table 2.2 on page 14 of the survey report considers the 'flush to don't know where' response to be an unimproved sanitation facility, we code this facility to be improved to match the more recent classification in the MICS 2017 data. Further, while the report considers the 'missing' response to be an unimproved sanitation facility, we recode

these categories as missing values to match the MICS 2017 data. While Table 2.1 on page 12 of the survey report considers the 'cart with small tank' response to be an unimproved drinking water source, we code this facility to be improved to match the more recent classification in the MICS 2017 data. The report considers 'missing' responses as an unimproved drinking water source, and we follow this definition. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. Table 2.3 on page 15 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and, while this MPI estimation follows that categorization for cooking fuel regarding 'no food cooked in household', we consider the category 'other' as an unimproved fuel to match the more recent MICS 2017 data. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 14 districts. The final analytical sample for Sierra Leone (2013) covered some 34 thousand people. The global MPI for Sierra Leone (2013) was first published in June 2015.

Sierra Leone (MICS 2017): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 49 years. Although Table WS.3.1 on pages 284–285 considers 'missing' responses as unimproved sanitation facilities, the global MPI 2020 considers them genuinely missing, and we follow that categorization. Although Table WS.1 (pp. 269–270 of report) indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the DHS 2013 classification. Table TC.4.2 on pages 164–65 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for 'no food cooked in the household', however, we consider 'other' cookstoves and fuel as unimproved. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 14 districts. The final analytical sample for Sierra Leone (2017) covered some 73 thousand people. The global MPI for Sierra Leone (2017) was first published in July 2019.

Sudan (MICS 2010): Anthropometric measurements were collected from all eligible children under

5 years living in all sampled households. Child mortality information is provided by eligible ever-married women aged 15 to 49 living in all households sampled. While Table 7.5 on page 127 of the survey report considers the 'flush to somewhere else' response to be an unimproved sanitation facility, we code this facility to be improved to match the recent classification in the MICS 2014 data. Further, the report considers 'missing' responses as unimproved sanitation facilities, and we follow this definition. Table 7.1 on page 117 considers 'missing' responses as an unimproved drinking water source, and we follow this definition. Table 6.9 on page 106 of the report does not consider 'no food cooked in household' 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 age cohorts only, as the country does not meet the required comparability for regional disaggregation due to changes in the administrative division of Sudan across the surveys. The final analytical sample for Sudan (2010) covered some 78 thousand people. The global MPI for Sudan (2010) was first published in June 2015.

Sudan (MICS 2014): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by eligible ever-married women aged 15 to 49 living in all households sampled. Table WS.5 on pages 115–116 considers 'missing' responses as unimproved sanitation facilities, and we follow this definition. Table WS.1 on pages 106–107 considers 'missing' responses as an unimproved drinking water source, and we follow this definition. Table CH.12 on pages 99–100 of the report does not consider 'no food cooked in household' 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 age cohorts only, as the country does not meet the required comparability for regional disaggregation due to changes in the administrative division of Sudan across the surveys. The final analytical sample for Sudan (2014) covered some 87 thousand people. The global MPI for Sudan (2014) was first published in December 2016.

Suriname (MICS 2006): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled; however, for harmonization purposes, we remove all data on child mortality to accord with the MICS 2010 data and re-

weight the indicators to assure equal weighting among the three dimensions. While Table EN.5 on page 111 of the survey report considers the 'flush to unknown place/not sure/don't know where' response to be an improved sanitation facility, we code this facility to be unimproved to match the recent classification in the MICS 2010 data. Further, while the survey report does not consider 'missing' (99) response to be an improved or unimproved sanitation facility, we recode this category as unimproved to match the MICS 2010 data. While Table EN.1 on page 106 of the survey report does not consider 'missing' (99) response to be an improved or unimproved drinking water source, we recode this category as unimproved to match the MICS 2010 data. Table CH.9 on page 58 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. While information on whether the household owns a computer does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the three regions (urban, rural coastal, and rural interior). The final analytical sample for Suriname (2006) covered some 20 thousand people. The global MPI for Suriname (2006) was first published in October 2011.

Suriname (MICS 2010): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information was not collected, so we exclude the child mortality indicator from the MPI estimation and re-weight the indicators to assure equal weighting among the three dimensions. Table WS.5 on page 82 considers 'missing' responses as unimproved sanitation facilities, and we follow this definition. Table WS.1 on page 74 considers 'missing' responses as an unimproved drinking water source, and we follow this definition. Table CH.8 on page 95 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. While information on animal cart ownership does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. Survey estimates are disaggregated by rural and urban areas, age cohorts, and the three regions (urban, rural coastal, and rural

interior); for harmonization purposes, we regroup the 10 districts to accord with the disaggregation into three regions in the MICS 2006 survey. The final analytical sample for Suriname (2010) covered some 25 thousand people. The global MPI for Suriname (2010) was first published in June 2014.

Tajikistan (DHS 2012): Anthropometric information was collected among all eligible children under 5 years and women aged 15 to 49 years. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. Table 2.3 on pages 17–18 of the report does not consider 'no food cooked in household' 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, age cohorts, and for the five regions. The final analytical sample for Tajikistan (2012) covered some 37 thousand people. The global MPI for Tajikistan (2012) was first published in June 2014.

Tajikistan (DHS 2017): Anthropometric information was collected among all eligible children under 5 years and women aged 15 to 49 years. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. Although Table 2.1 (p.16 of the report) also indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the DHS 2012 classification. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the five regions. The final analytical sample for Tajikistan (2017) covered some 44 thousand people. The global MPI for Tajikistan (2017) was first published in July 2019.

Tanzania (DHS 2010): Anthropometric information was collected among all eligible children under 5 years and women aged 15 to 49 years. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 59 years. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. Table 2.8 on page 24 of the survey report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report

does not include information on whether the household owns an animal cart or a computer, and likewise the assets indicator does not include these variables. Survey estimates are disaggregated by rural and urban areas an age cohorts only, as the country does not meet the required comparability for regional disaggregation due to changes in the administrative divisions of Tanzania across the surveys. The final analytical sample for Tanzania (2010) covered some 46 thousand people. The global MPI for Tanzania (2010) was first published in February 2013.

Tanzania (DHS 2015/16): Anthropometric information was collected among all eligible children under 5 years and women aged 15 to 49 years. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 59 years. Although Table 2.1 (p.31) also indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the DHS 2010 classification. Table 2.4 on page 33 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. While information on animal cart and computer ownership does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. Survey estimates are disaggregated by rural and urban areas and age cohorts only; subnational disaggregation was not possible due to changes in the administrative division of Tanzania between the survey years and the creation of a new province. The final analytical sample for Tanzania (2015/16) covered some 60 thousand people. The global MPI for Tanzania (2015/16) was first published in June 2017.

Thailand (MICS 2012): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. While Table WS.5 on page 61 of the survey report considers the 'flush to unknown place/not sure/don't know where' response to be an improved sanitation facility, we code this facility to be unimproved to match the classification in the MICS 2015/16 data. Table CH.8 on page 52 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. While

information on animal cart ownership does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. Survey estimates are disaggregated by rural and urban areas and age cohorts only, as the country does not meet the required minimum threshold (MPI value of 0.005) for regional disaggregation. The final analytical sample for Thailand (2012) covered some 85 thousand people. The global MPI for Thailand (2012) was first published in December 2016.

Thailand (MICS 2015/16): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 59 years. Table CH.11 on page 64 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas and age cohorts only, as the country does not meet the required minimum threshold (MPI value of 0.005) for regional disaggregation. The final analytical sample for Thailand (2015/16) covered some 103 thousand people. The global MPI for Thailand (2015/16) was first published in September 2018.

Timor-Leste (DHS 2009/10): Anthropometric information was collected among all eligible children under 5 years and women aged 15 to 49 years. Child mortality information is provided by eligible women aged 15 to 49 and eligible men aged 15 to 49 years in all sampled households. The category 'other' was not mentioned in the report but appears in the data; since it is not mentioned in the list of solid fuels in Table 2.9 on page 25, we consider it as improved. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 13 regions. The final analytical sample for Timor-Leste (2009/10) covered some 65 thousand people. The global MPI for Timor-Leste (2009/10) was first published in October 2011.

Timor-Leste (DHS 2016): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in all of the households sampled and men aged 15 to 59 living in one third of the sampled households. However, for harmonization purposes,

we only use the anthropometric information from children and women, to accord with the DHS 2009/10 data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the one third of households selected for the male questionnaire. While information on whether the household owns a computer does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 13 municipalities. The final analytical sample for Timor-Leste (2016) covered some 59 thousand people. The global MPI for Timor-Leste (2016) was first published in September 2018.

Togo (MICS 2010): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. There is no data on birth history in the last five years, so the child mortality indicator considers a household deprived if the mother reports having had any child die. While Table WS.5 on page 87 of the survey report considers the 'flush to unknown place/not sure/don't know where' response to be an improved sanitation facility, we code this facility to be unimproved to match the more recent classification in the DHS 2013/14 data. While Table WS.1 on page 80 of the survey report considers the 'rainwater' response to be an unimproved source of drinking water, we code this category to be improved to match the recent classification in the 2013/14 data. Although Table WS.1 also indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the DHS 2013/14 classification. Table CH.9 on page 67 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the five regions; for harmonization purposes, we have combined the regions of Lomé and Maritime into one to ensure comparability across the surveys. The final analytical sample for Togo (2010) covered some 29 thousand people. The global MPI for Togo (2010) was first published in June 2014.

Togo (DHS 2013/14): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in the half of sampled households selected for the male interview**;** however, for harmonization purposes, we only use the anthropometric information from children, to accord with the MICS 2010 data. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 59 living in the half of households selected for the male questionnaire. While there is data on birth history in the last five years, for harmonization purposes, we have removed this information to match the MICS 2010 data, which did not include a birth history questionnaire. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. Table 2.3 on page 19 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. While information on whether the household owns a computer does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the five regions; for harmonization purposes, we have combined the regions of Lomé and Maritime into one to ensure comparability across the surveys. The final analytical sample for Togo (2013/14) covered some 22 thousand people. The global MPI for Togo (2013/14) was first published in June 2015.

Trinidad and Tobago (MICS 2006): Anthropometric data was not collected as part of the MICS 2006 survey. We re-weight the indicators to assure equal weighting among the three dimensions. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. In MICS 2006 the official entry age to primary school is 6 years, and in MICS 2011, the official entry age to primary school is 5 years; we keep the age ranges as they are (in this case, 6 to 14 in the first survey and 5 to 13 in the second) to fully capture the range of eligible children. While Table EN.5 on page 148 of the survey report considers the 'flush to unknown place / not sure / don't know where' response to be an unimproved sanitation facility, we code this facility to be improved to match the more recent classification in the MICS 2011 data. Similarly, while the report considers 'flush to somewhere else' as an improved facility, we recode this facility as unimproved to match the classification in 2011. Table EN.5 also specifies that the 'missing' category should be considered an unimproved sanitation facility, and we follow that definition. Table CH.5 on page 142 of the report does

not consider 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a bicycle, a motorcycle, or an animal cart, and likewise the assets indicator does not include these variables. Survey estimates are disaggregated by the five regional health administrations; for comparability, the 15 regions available in the MICS 2011 survey were regrouped to reflect the regions presented in MICS 2006. We also disaggregate by age cohorts. The final analytical sample for Trinidad and Tobago (2006) covered some 18 thousand people. The global MPI for Trinidad and Tobago (2006) was first published in July 2010.

Trinidad and Tobago (MICS 2011): Anthropometric measurements were collected from children aged under 5 years living in all of the households sampled; however, for harmonization purposes, we remove all data on nutrition to accord with the MICS 2006 data and re-weight the indicators to assure equal weighting among the three dimensions. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. In MICS 2006 the official entry age to primary school is 6 years and in MICS 2011, the official entry age to primary school is 5 years; we keep the age ranges as they are (in this case, 6 to 14 in the first survey and 5 to13 in the second) to fully capture the range of eligible children. Table WS.5 (p.70) specifies that the 'missing' category should be considered an unimproved sanitation facility, and we follow that definition. Table CH.9 on page 65 of the report does not consider 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a bicycle, a motorcycle, or an animal cart, and likewise the assets indicator does not include these variables. Survey estimates are disaggregated by the five regional health administrations; for comparability, the 15 regions available in the MICS 2011 survey were regrouped to reflect the regions presented in MICS 2006. We also disaggregate by age cohorts. The final analytical sample for Trinidad and Tobago (2011) covered some 17 thousand people. The global MPI for Trinidad and Tobago (2011) was first published in September 2018.

Turkmenistan (MICS 2006): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. There is no data

on birth history in the last five years, so the child mortality indicator considers a household deprived if the mother reports having had any child die. In MICS 2006 the official entry age to primary school is 7 years, and in MICS 2015/16, the official entry age to primary school is 6 years; we keep the age ranges as they are (in this case, 7 to 15 in the first survey and 6 to 14 in the second) to fully capture the range of eligible children. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas and age cohorts only as the country does not meet the required minimum threshold (MPI value of 0.005) for regional disaggregation. The final analytical sample for Turkmenistan (2006) covered some 24 thousand people. The global MPI for Turkmenistan (2006) was first published in June 2016.

Turkmenistan (MICS 2015/16): Anthropometric measurements were collected from all eligible children under 5 years living in all sampled households. Child mortality information is provided by all eligible women aged 15 to 49 living in all households sampled. While there is data on birth history in the last five years, for harmonization purposes, we have removed this information to match the MICS 2006 data, which did not include a birth history questionnaire. In MICS 2006 the official entry age to primary school is 7 years, and in MICS 2015/16, the official entry age to primary school is 6 years; we keep the age ranges as they are (in this case, 7 to 15 in the first survey and 6 to 14 in the second) to fully capture the range of eligible children. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas and age cohorts only as the country does not meet the required minimum threshold (MPI value of 0.005) for regional disaggregation. The final analytical sample for Turkmenistan (2015/16) covered some 28 thousand people. The global MPI for Turkmenistan (2015/16) was first published in September 2018.

Uganda (DHS 2011): Anthropometric measurements were collected from women aged 15 to 49, men aged 15 to 54 and children aged under 5 years living in the one third of sampled households selected for the male interview. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 54 living in the half of households selected for the male questionnaire. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered

an improved source of drinking water. Table 2.3 on page 14 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas and age cohorts only, as the country does not meet the required comparability for regional disaggregation. The final analytical sample for Uganda (2011) covered some 13 thousand people. The global MPI for Uganda (2011) was first published in October 2011.

Uganda (DHS 2016): Anthropometric measurements were collected from women aged 15 to 49, men aged 15 to 54, and children aged under 5 years living in the one third of the sampled households selected for the male interview. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 54 living in the half of households selected for the male questionnaire. Although Table 2.1 (p.21 in the report) indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the DHS 2011 classification. Table 2.4 on page 23 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. While information on whether the household owns a computer does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. Survey estimates are disaggregated by rural and urban areas and age cohorts only, as the country does not meet the required comparability for regional disaggregation. The final analytical sample for Uganda (2016) covered some 28 thousand people. The global MPI for Uganda (2016) was first published in September 2018.

Ukraine (DHS 2007): Anthropometric data was not collected as part of the DHS 2007 survey. We re-weight the indicators to assure equal weighting among the three dimensions. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 49 living in the half of households selected for the male questionnaire. In DHS 2007, the official entry age to primary school is 6 years, and in MICS

2012, the official entry age to primary school is 7 years; we keep the age ranges as they are (in this case, 6 to 14 in the first survey and 7 to 15 in the second) to fully capture the range of eligible children. While Table 2.5 on page 16 of the survey report considers the 'missing' response to be an unimproved drinking water source, we recode these categories as missing values to match the MICS 2012 data. Information on the time it takes to procure water for the household is not present, and the drinking water indicator is constructed without this information. Table 2.7 on page 18 of the report does not consider 'no food cooked in household' 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 age cohorts only, as the country does not meet the required minimum threshold (MPI value of 0.005) for regional disaggregation. The final analytical sample for Ukraine (2007) covered some 32 thousand people. The global MPI for Ukraine (2007) was first published in July 2010.

Ukraine (MICS 2012): Anthropometric data was not collected as part of the MICS 2012 survey. We re-weight the indicators to assure equal weighting among the three dimensions. Child mortality information was provided by eligible women aged 15 to 49 living in all sampled households and eligible men aged 15 to 54 living in the half of households selected for the male questionnaire. In DHS 2007, the official entry age to primary school is 6 years, and in MICS 2012, the official entry age to primary school is 7 years; we keep the age ranges as they are (in this case, 6 to 14 in the first survey and 7 to 15 in the second) to fully capture the range of eligible children. While information on the time it takes to procure water for the household is present, we remove it for harmonization purposes, and the drinking water indicator is constructed without this information. Survey estimates are disaggregated by rural and urban areas and age cohorts only, as the country does not meet the required minimum threshold (MPI value of 0.005) for regional disaggregation. The final analytical sample for Ukraine (2012) covered some 33 thousand people. The global MPI for Ukraine (2012) was first published in January 2015.

Viet Nam MICS (2010/11): Anthropometric measurements were collected from children aged under 5 years living in all of the households sampled; however, for harmonization purposes, we remove all data on nutrition to accord with the MICS 2014 data and re-weight the indicators to assure equal weighting among the three dimensions. There is no data on birth history in the

last five years, so the child mortality indicator considers a household deprived if the mother reports having had any child die. While Table WS.5 on page 116 of the survey report considers the 'flush to somewhere else' response to be an unimproved sanitation facility, we code this facility to be improved to match the more recent classification in the MICS 2014 data. Table CH.9 on page 96 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the six regions. The final analytical sample for Viet Nam (2010/11) covered some 44 thousand people. The global MPI for Viet Nam (2010/11) was first published in March 2013.

Viet Nam (MICS 2014): Anthropometric data was not collected as part of the MICS 2014 survey. We re-weight the indicators to assure equal weighting among the three dimensions. While there is data on birth history in the last five years, for harmonization purposes, we have removed this information to match the MICS 2010/11 data, which did not include a birth history questionnaire. Table CH.12 on page 107 of the report does not consider 'no food cooked in household' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns an animal cart, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the six regions. The final analytical sample for Viet Nam (2014) covered some 38 thousand people. The global MPI for Viet Nam (2014) was first published in December 2016.

Yemen (MICS 2006): Anthropometric data was not collected as part of the MICS 2006 survey. We re-weight the indicators to assure equal weighting among the three dimensions. Child mortality information is provided by eligible ever-married women aged 15 to 49 living in all households sampled. Although Table EN.1 (p.83 of the report) indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the DHS 2013 classification. There is no information on wall materials in the report,

and therefore this information is not included in the housing indicator. Table CH.8 on page 82 of the report does not consider 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas and age cohorts only, as the survey is not representative at the subnational level. The final analytical sample for Yemen (2006) covered some 25 thousand people. The global MPI for Yemen (2006) was first published in July 2010.

Yemen (DHS 2013): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in all sampled households; however, for harmonization purposes, we remove all data on nutrition to accord with the MICS 2006 data and re-weight the indicators to assure equal weighting among the three dimensions. Child mortality information is provided by eligible ever-married women aged 15 to 49 living in all households sampled. While Table 2.2 on page 9 of the survey report considers the 'missing' response to be an unimproved sanitation facility, we recode these categories as missing values to match the 2006 data. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. While Table 2.1 on page 8 of the survey report considers the 'missing' response to be an unimproved source of drinking water, we recode these categories as missing values to match the 2006 data. While information on wall and roof materials does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the housing indicator in the MPI. Table 2.3 on page 10 of the report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and this MPI estimation follows that categorization for cooking fuel. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas and age cohorts only, as the estimates for Yemen MICS 2006 are not representative at the subnational level. The final analytical sample for Yemen (2013) covered some 118 thousand people. The global MPI for Yemen (2013) was first published in December 2015.

Zambia (DHS 2007): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in all sampled households. Child mortality information is

provided by all women aged 15 to 49 and men aged 15 to 59 living in all households sampled. In Zambia DHS 2007, the official entry age to primary school is 6 years, and in Zambia DHS 2013/14, the official entry age to primary school is 7 years; we keep the age ranges as they are (in this case, 6 to 14 in the first survey and 7 to 15 in the second) to fully capture the range of eligible children. Although Table 2.6 (p. 23 of the report) also indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the Zambia DHS 2013/14 classification. Table 2.9 on page 26 of the survey report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and the MPI estimation follows that categorization for the cooking fuel indicator. The report does not include information on whether the household owns a computer, and likewise the assets indicator does not include this variable. Survey estimates are disaggregated by rural and urban areas and age cohorts only; subnational disaggregation was not possible due to changes in the administrative division of Zambia. The new province of Muchinga, created from parts of the Northern and Eastern provinces, was included in the DHS 2013/14 survey, but it cannot be recreated in DHS 2007. The final analytical sample for Zambia (2007) covered some 33 thousand people. The global MPI for Zambia (2007) was first published in July 2010.

Zambia (DHS 2013/14): Anthropometric measurements were collected from women aged 15 to 49 and children aged under 5 years living in all sampled households. Child mortality information is provided by all women aged 15 to 49 and men aged 15 to 59 living in all households sampled. In Zambia DHS 2007, the official entry age to primary school is 6 years, and in Zambia DHS 2013/14, the official entry age to primary school is 7 years; we keep the age ranges as they are (in this case, 6 to 14 in the first survey and 7 to 15 in the second) to fully capture the range of eligible children. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. While information whether on the household owns a computer does exist in the report, we have removed this information for harmonization purposes, and therefore we do not include it as part of the assets indicator in the MPI. Survey estimates are disaggregated by rural and urban areas and age cohorts. Table 2.3 on page 18 of the survey report does not consider 'no food cooked in household' and 'other' responses to reflect inadequate clean cooking fuel, and the

MPI estimation follows that categorization for the cooking fuel indicator. Survey estimates are disaggregated by rural and urban areas and age cohorts only; subnational disaggregation was not possible due to changes in the administrative division of Zambia. The new province of Muchinga, created from parts of the Northern and Eastern provinces, was included in the DHS 2013/14 survey, but it cannot be recreated in DHS 2007. The final analytical sample for Zambia (2013/14) covered some 78 thousand people. The global MPI for Zambia (2013/14) was first published in June 2015.

Zimbabwe (DHS 2010/11): Anthropometric measurements were collected from women aged 15 to 49, men aged 15 to 54, and children aged under 5 years living in all sampled households. Child mortality information was provided by women aged 15 to 49 and men aged 15 to 54 living in all sampled households. The question classifying non-drinking water sources is not included in the survey, thus 'bottled water' was considered an improved source of drinking water. Table 2.3 on page 12 of the survey report does not consider the 'no food cooked' and 'other' responses to reflect inadequate clean cooking fuel, and the MPI estimation follows that categorization for the cooking fuel indicator. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 10 regions. The final analytical sample for Zimbabwe (2010/11) covered some 38 thousand people. The global MPI for Zimbabwe (2010/11) was first published in February 2013.

Zimbabwe (DHS 2015): Anthropometric measurements were collected from women aged 15 to 49, men aged 15 to 54, and children aged under 5 years living in all sampled households. Child mortality information was provided by women aged 15 to 49 and men aged 15 to 54 living in all sampled households. Although Table 2.1 (on p.19 of the report) also indicates that households using bottled water as the main source of drinking water were classified into improved or unimproved drinking water users according to the water source used for other purposes such as cooking and handwashing, we do not use this condition and instead code 'bottled water' as improved to match the Zimbabwe DHS 2010/11 classification. Table 2.4 on page 22 of the survey report does not consider 'no food cooked' and 'other' responses to reflect inadequate clean cooking fuel, and the MPI estimation follows that categorization for the cooking fuel indicator. Survey estimates are disaggregated by rural and urban areas, age cohorts, and for the 10 regions. The final analytical sample for Zimbabwe (2015) covered some 40 thousand people. The global MPI for Zimbabwe (2015) was first published in June 2017.

References

Alkire, S. and Foster, J.E. (2011). 'Counting and multidimensional poverty measurement', *Journal of Public Economics*, vol. 95(7), pp. 476–487.

Alkire, S. and Foster, J.E. (2007). 'Counting and multidimensional poverty measures', OPHI Working Paper 7, Oxford Poverty and Human Development Initiative, University of Oxford.

Alkire, S., Foster, J.E., Seth, S., Santos, M.E., Roche, J.M. and Ballon, P. (2015). *Multidimensional Poverty Measurement and Analysis*, Oxford: Oxford University Press.

Alkire, S., Jindra, C., Robles, G. and Vaz, A. (2017). 'Multidimensional Poverty Reduction among Countries in sub-Saharan Africa', *Forum for Social Economics*, vol. 46(2), pp. 178–191.

Alkire, S., Jindra, C., Robles, G. and Vaz, A. (2016). 'Multidimensional Poverty Index 2016: Brief methodological note and results', OPHI Briefing 42, Oxford Poverty and Human Development Initiative, University of Oxford.

Alkire, S., Kanagaratnam, U. and Suppa, N. (2020). 'The global Multidimensional Poverty Index (MPI): 2020 revision', OPHI MPI Methodological Note 49, Oxford Poverty and Human Development Initiative, University of Oxford.

Alkire, S., Kanagaratnam, U. and Suppa, N. (2019). 'The global Multidimensional Poverty Index (MPI): 2019 revision', OPHI MPI Methodological Note 47, Oxford Poverty and Human Development Initiative, University of Oxford.

Alkire, S., Kanagaratnam, U. and Suppa, N. (2018). 'The global Multidimensional Poverty Index (MPI): 2018 revision', OPHI MPI Methodological Note 46, Oxford Poverty and Human Development Initiative, University of Oxford.

Alkire, S., Kovesdi, F., Mitchell, C., Pinilla-Roncancio, M. and Scharlin-Pettee, S. (2019). 'Changes over time in the global Multidimensional Poverty Index: A ten-country study', OPHI MPI Methodological Note 48, Oxford Poverty and Human Development Initiative, University of Oxford.

Alkire, S., Oldiges, C. and Kanagaratnam, U. (2018). 'Multidimensional poverty reduction in India 2005/6–2015/16: Still a long way to go but the poorest are catching up', OPHI Research in Progress 54a, Oxford Poverty and Human Development Initiative, University of Oxford.

Alkire, S. and Roche, J.M. (2013). 'How multidimensional poverty went down: Dynamics and comparisons', OPHI Briefing 16, Oxford Poverty and Human Development Initiative, University of Oxford.

Alkire, S., Roche, J.M. and Vaz, A. (2017). 'Changes over time in multidimensional poverty: Methodology and results for 34 countries', *World Development*, vol. 94 (Supplement C), pp. 232–249.

Alkire, S. and Santos, M.E. (2010). 'Acute multidimensional poverty: A new index for developing countries', OPHI Working Paper 38, Oxford Poverty and Human Development Initiative, University of Oxford.

Alkire, S. and Santos, M.E. (2014). 'Measuring acute poverty in the developing world: Robustness and scope of the Multidimensional Poverty Index', *World Development*, vol. 59, pp. 251–274

Alkire, S. and Seth, S. (2015). 'Multidimensional poverty reduction in India between 1999 and 2006: Where and how?', *World Development*, vol. 72, pp. 933–108.

IIPS and ICF (2017). *National Family Health Survey (NFHS-4), 2015–16: India*, Mumbai: International Institute for Population Sciences.

IIPS and Macro International (2007). *National Family Health Survey (NFHS-3), 2005–06: India: Volume I*, Mumbai: International Institute for Population Sciences.

UNDESA (2019). *World Population Prospects: The 2019 Revision*. New York: United Nations, Department of Economic and Social Affairs, Population Division.

UNDP (2010). *The Real Wealth of Nations: Pathways to Human Development, Human Development Report 2010*, Basingstoke: Palgrave Macmillan.

UNESCO, Institute for Statistics database, Table 1. Education Systems [UIS, http://data.uis.unesco.org/?ReportId=163].

UNICEF and WHO (2019). *Progress on Household Drinking Water, Sanitation and Hygiene 2000–2017, Special Focus on Inequalities*, New York: UNICEF and WHO.

USAID (2014). *The Peru Continuous DHS Experience*, Rockville, MD: ICF International, https://dhsprogram.com/pubs/pdf/OP8/OP8.pdf.

WHO (2014). *WHO Indoor Air Quality Guidelines: Household Fuel Combustion*, Geneva: WHO.

Note: DHS and MICS surveys maybe found at https://dhsprogram.com/ and https://mics.unicef.org/surveys, respectively.