



# UNDP's Multidimensional Poverty Index: 2014 Specifications

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## Contents

1 - Definitions of poverty states

2- Deprivations in three dimensions

3- Outputs

4- Treatment of households with missing observations in at least one indicator

5- Treatment of households with non-eligible population

6- Rules for different households types

7- Treatment of remaining indicators when one indicator (or more) is missing

8- Adjustment of sampling weights to account for the exclusion of non-eligible households and missing observations

Annex I: Non eligible households and calculation of the contribution of each indicator to the overall MPI

Annex II: Approximation of group sizes (sums) to account for persons with missing values in one or more classification variables

## 1 - Definitions of poverty states

1. A household is considered multidimensionally poor (or MPI poor) if the total of weighted deprivations (deprivation score) is equal to  $1/3$  or more.
2. A household is considered severely multidimensionally poor if the deprivation score is  $1/2$  or more.
3. A household is considered near-MPI poor if the deprivation score is  $1/5$  or more but less than  $1/3$ .
4. A household is considered deprived but not near-MPI poor if the deprivation score is positive but less than  $1/5$ .
5. If a household is deprived, then all its members are deprived.
6. Dimensions included in the MPI are education, health, and living standards; all are equally weighted by  $1/3$  each.

Note: Only usual members of the household are considered, visitors are excluded.

## 2 - Deprivations in three dimensions

1. **Education** indicators are: a) school attendance for school-age children; and b) school attainment for household members:

- a) A household is deprived in school attendance<sup>1</sup> if at least one child of age between the primary school entering age +1 and the primary school entering age +8 is not attending school. For example, in Burkina Faso the school entering age is 7, so if a child of age between 8 and 15 is not attending school, the household is deprived in this indicator.
- b) A household is deprived in school attainment if no one in the household has 6 years or more of education among those who are old enough to have achieved 6 years of education. For example, in Burkina Faso, anyone of age 13+ could theoretically have 6+ years of education.<sup>2</sup>

Weighting: Each indicator is weighted by  $1/6$ . See Section 5 for more details.

2. **Health** indicators are: a) child mortality; and b) nutrition:

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<sup>1</sup> Be aware about the question on attendance – whether it refers to the current or to the previous year. The age criterion should be adjusted appropriately. For example, if the school age is 6-14 years and the question refers to the previous year, the question applies to children who are 7-15 years old at the time of the survey; if it refers to current year then it applies to age 6-14. Information on the age at which children start school in each country was taken from UNESCO, Institute for Statistics database.

<sup>2</sup> A child who enters school at age 7 can achieve 6 years of education by age of 13.

- a) A household is deprived in child mortality if there was a child death (no matter of child age) in the household
  - within last 5 years (60 months) from the date (month, year) of the survey (if such information is available), or
  - to a woman of age 35 or less (if information on time of death was not collected which is the case in older MICS)<sup>3</sup>,
- b) A household is deprived in nutrition if at least one of the following two conditions are satisfied:
  - (1) There is a child, 0-59 months of age, who is shorter for the age (height-for-age z score) according to the WHO standards<sup>4</sup>,
  - (2) There is an adult (15 or older) with the Body Mass Index (BMI) <18.5.

**Note:** In most of DHS only women of age 15-49 were measured for BMI computation. In some DHS men were measured too. MICS has information only on children nutritional status. Method used for classifying a child to be stunted is the MGRS (see Alkire, Santos, 2010) and can be found at <http://www.who.int/childgrowth/software/en>.

Weighting: Each indicator is weighted by 1/6. See Section 5 for more details.

- 3. The Living Standards indicators are:** a) electricity; b) drinking water; c) sanitation; d) cooking fuel; e) type of floor; and f) assets:
- a) A household is deprived in electricity if the dwelling has no electricity.
  - b) A household is deprived in drinking water if it does not have access to improved drinking water sources (MDG indicator 7.8)<sup>5</sup> or if a source of safe drinking water is a 30 minute or more walk from home, roundtrip.
  - c) A household is deprived in sanitation if it does not have access to improved sanitation (MDG indicator 7.9)<sup>6</sup>, or the household sanitation is improved but shared with other households.

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<sup>3</sup> Information about child mortality is provided by the mother (a woman of ages 15-49). Note that in some DHS surveys, men can provide information about child mortality in the household, however without time reference. Such information cannot be used because it is not known if the death of the child happened within 5 years prior to the survey.

<sup>4</sup> Children are considered undernourished if their z-score of height-for-age is below minus two standard deviations from the median of the reference population.

<sup>5</sup> The following types of water supply for drinking are considered improved: piped water into dwelling, plot or yard; public tap/standpipe; borehole/tube well; protected dug well; protected spring; rainwater collection and bottled water (if a secondary available source is also improved). It does not include: unprotected well, unprotected spring, water provided by carts with small tanks/drums, tanker truck-provided water and bottled water (if secondary source is not an improved source or if there is no information on the secondary source) or surface water taken directly from rivers, ponds, streams, lakes, dams, or irrigation channels. Definitions and a detailed description of these facilities can be found at the website of the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation at [www.wssinfo.org](http://www.wssinfo.org).

<sup>6</sup> Improved sanitation facilities include: flush/pour flush toilets or latrines connected to a sewer, -septic tank, or -pit, ventilated improved pit latrines, pit latrines with a slab or platform of any material which covers the pit entirely (except for the drop hole), and composting toilets/latrines. Unimproved facilities include public or shared facilities of an otherwise acceptable type,

- d) A household is deprived in cooking fuel if it cooks with dung, wood, charcoal or coal (non-MDG indicator related to target 7).
- e) A household is deprived in floor if the dwelling does not have a finished floor (non-MDG indicator related to target 7)<sup>7</sup>.
- f) A household is deprived in assets if it does not have assets that:
  - (1) allow access to information (radio, TV, telephone)
  - (2) support mobility (bike, motorbike, car, truck, animal cart, motorboat)
  - (3) support livelihood (refrigerator, own agricultural land<sup>8</sup>, own livestock<sup>9</sup>)

A household is not deprived in assets if it has at least one asset from group (1) and at least one asset from groups (2) or (3).

Weighting: each living standard indicator is weighted by 1/18.

### 3 - Outputs:

We calculate:

- a) headcounts (share of poor people in the population, share of severely poor in the population, share of the near-poor in the population)
- b) intensity of poverty (average deprivation score for the poor)
- c) MPI (product of headcount and intensity)
- d) Contribution of deprivations in each dimension to overall poverty.

Note that all estimates are obtained by weighting the observations with the individual sampling weights.

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flush/pour-flush toilets or latrines which discharge directly into an open sewer or ditch, pit latrines without a slab, bucket latrines, hanging toilets or latrines which directly discharge in water bodies or in the open and the practice of open defecation in the bush, field or bodies or water. Definitions and a detailed description of these facilities can be found at the website of the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation at [www.wssinfo.org](http://www.wssinfo.org).

<sup>7</sup> Floor is made of dirt, sand or dung.

<sup>8</sup> Any size.

<sup>9</sup> A horse, or a cattle, or two goats, or two sheep, or 10 chicken.

## 4- Treatment of households with missing observations in at least one indicator

A household is excluded from the MPI calculation if there is missing information for one or more indicators. This refers to the situation when the indicator was collected in the survey but the respondent refused to provide information or simply did not know the answer. For the estimation purpose we assume that the households are missing at random, that is the missingness mechanism does not depend on the unobserved data. This further implies that the MPI estimates can be based only on the sample of households with available information in all 10 indicators. See Section 8 and Annex II for more details on how to take into account the sampling weights of these excluded households.

## 5- Treatment of households with non-eligible population

A household is considered non-eligible for the MPI estimation if estimation of its deprivation in the health dimension is not possible. This happens when the household does not have women of age between 15 and 49 and it does not have children of age under 60 months (under-5), and the BMI measurements were not taken for men. In this situation, it is not possible to observe any deprivation in the health dimension. Thus, such a household is non-eligible for the MPI estimation and, thus, excluded from the calculation. However, the sampling weights of the members of these non-eligible households are used for adjustment of marginal distributions. See Annex I for a numerical example on how to compute the MPI and Section 8 and Annex II for more details on how to adjust the sampling weights.

## 6- Rules for different household types

### 1. Education dimension

There are 2 types of households:

- a) Households with children of school age, and
- b) Households without children of school age.

## a) Households with children of school age

School attainment			School attendance		
Response obtained from	Condition	Weight	Response obtained from	Condition	Weight
At least 2/3 of the household members who can theoretically have 6 years of schooling	(Deprived or not deprived)	1/6	At least 2/3 of school age children in the household	(Deprived or not deprived)	1/6
Less than 2/3 of the household members who can theoretically have 6 years of schooling	At least one has 6 years of schooling or more (not deprived)	1/6	Less than 2/3 of school age children in the household	At least one is not attending (deprived)	1/6
	No one has 6 years or more	Missing		All are attending	Missing

## b) Households without children of school age are assumed to be not-deprived in school attendance

School attainment		
Response obtained from	Condition	Weight
At least 2/3 of the household members who can theoretically have 6 years of schooling	(Deprived or not deprived)	1/6
Less than 2/3 of the household h members who can theoretically have 6 years of schooling	At least one has 6 years of schooling or more (not deprived)	1/6
	No one has 6 years or more	Missing

**Example 1:** Household A has 6 members: 2 school-age children (9 and 11 years old), third child (age 18), mother (age 40), father (age 45) and grandmother (age 65). There are 4 members that can have 6 or more years of education. If one of them has 6 or more years of education, the household is not deprived in school attainment. If we have information about school attainment only for 3 (of these 4) members, this is sufficient to make a conclusion about deprivation in school attainment. If information is available only for 2 (of these 4) members and none of them has 6 years or more of education, the information about school attainment of this household is incomplete and the household is treated as missing. This is a similar situation to the one described in Section 4 and, thus, this household is excluded from the MPI calculation.

## 2. Health dimension

The health dimension includes two indicators: child mortality and nutrition. As a general rule, when the deprivation status about one of these indicators is not observed for certain household types (i.e. the demographic structure of these households is such that they do not have the applicable member), the remaining indicator within the same health dimension receives the entire dimension weight of 1/3. These special situations are described in full detail in the rest of this section.

### 2.1 Child mortality indicator

There are two types of households for the child mortality indicator:

- a) Households with women of ages 15-49 for which this indicator can be calculated, and
- b) Households without women in this age category for which information about the deprivation status in child mortality is not observed. Section 2.2 explains how we solve the lack of child mortality information for the second type of households.

- a) Households with women of ages 15-49

<b>Mortality: child death within last 5 years (DHS) or to a mother of age under 35 years (older MICS)</b>		
<b>Response obtained from</b>	<b>Condition</b>	<b>Weight</b>
At least 1/2 of the women (15-49) in the household	(Deprived or not deprived)	1/6
Less than 1/2 of the women (15-49) in the household	There was a child death (deprived)	1/6
	There was no child death	Missing

**Note:** In MICS surveys, anthropometric information was only collected for children under-5. Therefore, when there are no children under-5 in the household, we cannot observe the nutritional status of any member. In this situation, child mortality receives the full dimension weight of 1/3. See Section 2.2.3 b) for more details.

### 2.2 Nutrition indicator

As mentioned in Section 2, DHS collects anthropometric information for women of ages 15-49 and for children under-5. In some countries, DHS also collects anthropometric information for men usually of ages 15-59 (though in some cases of ages 15-54). MICS only collects anthropometric information for children under-5. Therefore, we have to define different scenarios depending on the demographic structure of the household and the type of survey.



## 2.2.1 Surveys (DHS) where women and children were measured for anthropometrics

There are four types of households:

- a) Households with women of ages 15-49 and children below age 5,
- b) Households with women (15-49) but no children below age 5,
- c) Households with children below age 5 but no women (15-49), and
- d) Households with no women (15-49) and no children below age 5 (these are the non-eligible households described in Section 5).

a) Households with women (15-49) and children under-5

Children (under-5)			Women (15-49)		
Measured	Condition	Weight	Measured	Condition	Weight
At least ½ of children	(Deprived or not deprived)	1/6	At least ½ of women	(Deprived or not deprived)	1/6
Less than ½ of children	There is a child stunted (deprived)	1/6	Less than ½ of women	There is a woman with BMI<18.5 (deprived)	1/6
	No child is stunted	Missing		No woman is underweight	Missing

**Note 1:** A household is deprived in nutrition if at least one child is stunted or one woman is underweight.

Nutrition is coded as missing if information on undernourishment is missing for both children and women, or if it is missing only for one and other is not undernourished.

b) Households with women (15-49) but without children under-5

Measured	Condition	Weight
At least ½ of women	(Deprived or not deprived)	1/6
Less than ½ of women	There is a woman with BMI<18.5 (deprived)	1/6
	No woman underweight	Missing

**Note 2:** A household is deprived in nutrition if at least one woman is underweight.

c) Household with children under-5 but without women 15-49

Measured	Condition	Weight
At least ½ of children	(Deprived or not deprived)	1/3
Less than ½	There is a child stunted (deprived)	1/3
	No child is stunted	Missing

**Note 3:** A household is deprived in nutrition if at least one child is stunted.

The key characteristic of this type of households is that the absence of women 15-49 does not allow for the construction of the child mortality indicator. There are two options for dealing with the lack of child mortality information. We could treat these households as not deprived in mortality which will bias the estimates, in particular for older households (Dotter and Klasen 2014<sup>10</sup>). Or we could adjust the indicator weight and assign 100% of the dimension weight to nutrition. We believe the second approach is more appropriate and, therefore, the nutrition indicator receives a weight of 1/3 (instead of 1/6).

Although the same indicator (nutrition in this case) receives different weights (1/6 or 1/3) for different household types (whether there is a presence of at least a woman 15-49 or not), it is still possible to calculate the contributions to the MPI of each individual indicator. A numerical example and additional details are presented in Annex I.

d) A household without children under-5 and without women 15-49 is treated as non-eligible and excluded for the MPI calculation (see Section 5). Section 8 describes how the sample weights are adjusted to take into account the exclusion of these households.

## 2.2.2 Surveys (DHS) where women, men and children were measured for anthropometrics

There are eight types of households:

- a) Households with women (15-49), men of ages (15-59) and children below age 5,
- b) Households with women (15-49) and men (15-59) but no children below age 5,
- c) Households with children below age 5 but no women (15-49) nor men of ages (15-59),
- d) Households with men (15-59) and children under-5 but no women (15-49),
- e) Households with men (15-59) but no women (15-49) and no children under-5,
- f) Households with no women (15-49) nor men (15-59) and no children below age 5 (these are the non-eligible households described Section 5),
- g) Households with no men (15-59) and only women (15-49) and children under-5, and
- h) Households with only women (15-49) and no men (15-59) or children under-5.

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<sup>10</sup> Dotter, C. and Klasen, S. (2014) The Multidimensional Poverty Index: Achievements, Conceptual and Empirical Issues. *UNDP Human Development Report Office Occasional Paper*.  
[http://hdr.undp.org/sites/default/files/mpi\\_dotter\\_and\\_klasen.pdf](http://hdr.undp.org/sites/default/files/mpi_dotter_and_klasen.pdf)

## a) Households with women, men and children under-5

Children (under-5)			Women and men		
Measured	Condition	Weight	Measured	Condition	Weight
At least ½ of children	(Deprived or not deprived)	1/6	At least ½ of women or ½ of men	(Deprived or not deprived)	1/6
Less than ½ of children	There is a child stunted (deprived)	1/6	Less than ½ of women and less than 1/2 of men	There is a woman or a man with BMI<18.5 (deprived)	1/6
	No child is stunted	Missing		No woman and no men is underweight	Missing

**Note 1:** A household is deprived in nutrition if at least one child is stunted or at least one adult (woman or man) is undernourished.

## b) Households with women and men but without children under-5

Measured	Condition	Weight
At least ½ of women or 1/2 of men	(Deprived or not deprived)	1/6
Less than ½ of women and less than 1/2 of men	There is a woman or a man with BMI<18.5 (deprived)	1/6
	No woman and no man underweight	Missing

**Note 2:** A household is deprived in nutrition if at least one woman or one man is underweight.

## c) Households with children under-5 but without women or men

Measured	Condition	Weight
At least ½ of children	(Deprived or not deprived)	1/3
Less than ½	There is a child stunted (deprived)	1/3
	No child is stunted	Missing

**Note 3:** A household is deprived in nutrition if at least one child is stunted.

This type of households is identical to the one described in Section 2.2.1 c) where 100% of the dimension weight is assigned to the nutrition indicator because we cannot observe any information about child mortality.

d) Households with men and children under-5 but no women

Children (under-5)			Men (15-49)		
Measured	Condition	Weight	Measured	Condition	Weight
At least ½ of children	(Deprived or not deprived)	1/3	At least ½ of men	(Deprived or not deprived)	1/3
Less than ½ of children	There is a child stunted (deprived)	1/3	Less than ½ of men	There is a man with BMI<18.5 (deprived)	1/3
	No child is stunted	Missing		No man is underweight	Missing

**Note 4:** A household is deprived in nutrition if at least one child is stunted or one man is undernourished.

The only difference with this type of household compared to the previous one is the presence of at least a man that provides anthropometric information. However, the absence of women does not allow for the construction of the child mortality indicator, and therefore, 100% of the dimension weight is assigned to the nutrition indicator.

e) Households with men but no women and no children under-5

Measured	Condition	Weight
At least ½ of men	(Deprived or not deprived)	1/3
Less than ½ of men	There is a man with BMI<18.5 (deprived)	1/3
	No man is underweight	Missing

**Note 5:** A household is deprived in nutrition if there is at least one man who is underweight.

Again, the absence of women 15-49 does not allow for the construction of the child mortality indicator. Thus, we assign 100% of the dimension weight to the nutrition indicator which receives a weight of 1/3 (instead of 1/6).

f) Households without children under-5 and without women and men are treated as non-eligible and, thus, excluded for the MPI calculation (see Section 5 for more details).

g) Households with no men and only women and children under-5  
This situation is identical to the one described in Section 2.2.1 a).

h) Households with only women and no men or children under-5  
 This situation is identical to the one described in Section 2.2.1 b).

### 2.2.3 Surveys (MICS) where only children under-5 were measured for anthropometrics

There are again four types of households:

- a) Households with women of ages 15-49 and children below age 5,
- b) Households with women (15-49) but no children below age 5,
- c) Households with children below age 5 but no women (15-49), and
- d) Households with no women (15-49) and no children below age 5 (these are the non-eligible households described in Section 5).

a) Households with women (15-49) and children under-5

Children (under-5)		
Measured	Condition	Weight
At least ½ of children	(Deprived or not deprived)	1/6
Less than ½ of children	There is a child stunted (deprived)	1/6
	No child is stunted	Missing

**Note 1:** A household is deprived in nutrition if at least one child is stunted.

b) Households with women (15-49) but without children under-5

When children under-5 are not present in MICS surveys, we cannot observe the nutritional status of any household member and, thus, we cannot make any inference about deprivations in this indicator. Instead of assuming that this type of households is not deprived in nutrition, we assign the full dimension weight of 1/3 to child mortality.

c) Households with children under-5 but without women 15-49

Measured	Condition	Weight
At least ½ of children	(Deprived or not deprived)	1/3
Less than ½	There is a child stunted (deprived)	1/3
	No child is stunted	Missing

**Note 3:** A household is deprived in nutrition if at least one child is stunted.

The key characteristic of this type of households is that the absence of women 15-49 does not allow for the construction of the child mortality indicator. Thus, the nutrition indicator receives a weight of 1/3 (instead of 1/6) for households with children under-5 but without women 15-49. This situation is identical to the one described in 2.2.1 c).

d) A household without children under-5 and without women 15-49 is treated as non-eligible and excluded for the MPI calculation (see Section 5). Section 8 describes how the sample weights are adjusted to take into account the exclusion of these households.

#### Treatment of nutrition when the child mortality indicator was not collected in the survey

In a few MICS surveys<sup>11</sup>, the child mortality indicator was not collected. In this case, the full dimension weight of 1/3 is assigned to nutrition (see Section 7). However, MICS surveys only collect anthropometric measures for children under-5 and, therefore, no health information is observed for households without children of these ages. The MPI could still be calculated using only households with children under-5 but this will significantly reduce the sample size. We decided to make a special assumption and treat households without children as not deprived in nutrition when the child mortality indicator is missing in the entire survey.

## 7- Treatment of remaining indicators when one (or more) indicator is missing:

We call an indicator as missing when information was excluded from the data collection as opposed to missing observation in one indicator. The latest refers to the situation when information about an indicator was collected but the household member refused to provide an answer (Section 4). In the cases where 1 or 2 indicators are missing from the survey, the weight for the remaining indicators in the same dimension is adjusted to add up to 1/3. For instance, if the missing indicator is nutrition, child mortality receives a weight of 1/3; if the missing indicator is electricity, the remaining 5 indicators in the living standard dimension receive a weight of 1/15.

The MPI was not calculated when all the indicators within a dimension or when 50% or more out of the 10 indicators are missing, i.e. excluded from the data collection<sup>12</sup>.

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<sup>11</sup> These countries are: Bosnia 2006 and 2012, Cameroon 2006, Lao People's Democratic Republic 2006, Montenegro 2006, Serbia 2006, Suriname 2010 and The former Yugoslav Republic of Macedonia 2011.

<sup>12</sup> This is the reason why the MPI cannot be calculated using the following MICS surveys: Argentina 2011/12, Belarus 2012, Costa Rica 2011, Cuba 2014 and 2010/11, Panama 2013 and Uruguay 2012/13.

## 8- Adjustment of sampling weights to account for the exclusion of non-eligible households and missing observations

1. When a household does not have a child under-5 year of age and no woman of age between 15 and 49, it is not possible to observe whether such a household is deprived in health dimension. The 2010 MPI treats such a household as being non-deprived in health. The new proposal declares such a household non-eligible, which implies a reduction of the sample available for estimation of the MPI.
2. Similarly, when a household is missing because a dimension is missing the sample size is reduced.
3. The reduction of the sample may result with marginal distributions different from the marginal distributions of the original panel. We would like to keep the marginal distributions across major population groups unchanged by adjusting the sampling weights of people who remain in the sample.
4. We are interested in keeping the distribution unchanged across the following 16 cross-classified population groups:

Age groups: (0, 5], [6,14],[15,49], [50, +)

Sex (Female, Male)

Type (Urban, Rural).

5. Let the sum of all individual (sampling) weights ( $w_i$ ) in the group  $g$  ( $g=1,\dots,16$ ), before discarding non-eligible and missing households, be equal to

$$\hat{N}_g = \sum_{i \in S} w_i \cdot I\{i \in g\}$$

6. After discarding non-eligible and missing households we have a reduced sample, say subsample  $s_0$ . The size of groups (corresponding sum of weights) estimated from the subsample is:

$$\hat{N}_{0g} = \sum_{i \in s_0} w_i \cdot I\{i \in g\}.$$

7. In order to keep the original distribution across these population groups, we adjust the weight ( $w_i$ ) of each person in subsample  $s_0$ , who also belongs to group  $g$ , ( $g=1,\dots,16$ ), by multiplying it with the ratio

$$\frac{\hat{N}_g}{\hat{N}_{0g}}$$

Thus, for such a person the adjusted weight is equal to

$$w_i \cdot \frac{\hat{N}_g}{\hat{N}_{0g}}, \quad i \in s_0 \cap g$$

( $g=1,\dots,16$ ). This weight should be used for estimation of the MPI and all its components.

8. Practically, there will be 16 adjustments for 16 groups. The resulting person weights may differ across individuals in the same household because individuals belong to different groups.
9. In a rare case that a person from the sample cannot be classified into a population group because of missing information on one, two or all three classification variables (type, age group, gender) we first approximate the group size (sum) and then do the weight adjustment. The full account of these approximations is given in Annex II.



## Annex I

### Non eligible households and calculation of the contribution of each indicator to the overall MPI

It is not possible to construct the child mortality indicator when there are no women of ages between 15 and 49 (15-49) in the household since both DHS and MICS surveys are designed to collect such information from these women. If, in addition, there are no children under-5 years of age (under-5), the nutritional indicator is also unknown and, thus, both indicators in the health dimension become unobservable for this type of households. Our approach is to exclude them from the MPI calculation but their sampling weights are recovered (see Annex II). On the other hand, it is possible to find households with children under-5 but without women 15-49. In this case, both DHS and MICS surveys allow the construction of the nutrition indicator but not the child mortality one. To overcome the lack of information in the mortality indicator, we assign the full dimension weight of 1/3 to nutrition. Nutrition and child mortality are still assigned a weight of 1/6 each to households in which there are women 15-49 and children under-5. Nonetheless, it is still possible to calculate the contribution to the MPI of each individual indicator.

Although the same indicator (nutrition in this case) receives different weights (1/6 or 1/3) for different household types (whether there is a presence of at least a woman 15-49 or not), it is still possible to calculate the contributions to the MPI of each individual indicator.

Note that this exact approach applies for MICS surveys and households in which there are women between 15-49 but no children under-5. This situation allows only for the construction of the child mortality indicator but not the nutrition indicator (DHS but not MICS surveys collect information about women's BMI), therefore, child mortality is assigned a weight of 1/3 for this household type. Again, nutrition and child mortality are still assigned a weight of 1/6 each to households in which there are women 15-49 and children under-5.

The following numerical example will illustrate the calculation of the contribution of each indicator to the overall MPI when the same indicator receives different weights depending on the household type.

Let's assume the survey consists of 8 households and the number of members in each household is presented in column 2 in the table below. The total number of persons in this hypothetical sample is 27. The 2 education indicators are ED1 and ED2 and the 2 health indicators are H1 and H2. Let's also assume for simplicity that there are only 2 indicators within the living standards dimension called LS1 and LS2. Thus, each of the 6 indicators receive a weight of 1/6. Let's denote by 1 if the household is deprived in a particular indicator and 0 if not. Finally, let's denote by a dot (.) if one or both health indicators cannot be calculated because of the lack of eligible members in the household. For instance, household 7 does not have eligible members that allow the construction of the nutrition and mortality indicators (i.e. there are no women 15-49 and no children under-5), thus, this household is excluded from the

calculation of the MPI but its sampling weight is taken into account following an approach described in Annex II. To clearly illustrate the calculation of the contribution to the MPI of each individual indicator let's omit in this Annex the use of sampling weights but refer to Annex II for the explanation on how to properly estimate the MPI using the sampling weights of all the persons in the survey. As a result of excluding all 3 members living in household 7, the number of individuals used for the calculation of the MPI is 24.

Furthermore, households 6 and 8 do not have eligible members for the construction of indicator H1. For example, H1 can refer to child mortality and those households lack the presence of women 15-49. Indicator H2, nutrition, can in fact be constructed for households 6 and 8 implying the presence of at least a child under-5 who provided information about stunting. We can observe that household 6 is deprived in nutrition while household 8 is not.

### Deprivation matrix

Household	Household size	ED1	ED2	H1	H2	LS1	LS2
1	3	0	1	1	1	0	1
2	3	0	0	1	0	0	0
3	5	1	1	1	1	1	1
4	4	0	0	0	1	1	1
5	5	0	1	1	0	0	1
6	2	0	0	.	1	1	0
7	3	0	1	.	.	1	0
8	2	0	1	.	0	0	1

Sample size 27

Sample size without household 7 24

The table below presents the weighting matrix which shows the weight assigned to each individual indicator regardless the deprivation status of the household. The key characteristic is that while the weights assigned to ED1, ED2, LS1 and LS2 are constant across households, the weights assigned to H1 and H2 are not. H1 and H2 receive a weight of 1/6 for households 1 to 5 because they have eligible members for both indicators. However, H1 receive a weight of 0 for households 6 and 8 because they lack women 15-49 and H2 receives the full dimension weight of 1/3. Note that for each household, the sum of the weights for H1 and H2 is always 1/3.

**Weight matrix**

Household	ED1	ED2	H1	H2	LS1	LS2
1	0.167	0.167	0.167	0.167	0.167	0.167
2	0.167	0.167	0.167	0.167	0.167	0.167
3	0.167	0.167	0.167	0.167	0.167	0.167
4	0.167	0.167	0.167	0.167	0.167	0.167
5	0.167	0.167	0.167	0.167	0.167	0.167
6	0.167	0.167	0.000	0.333	0.167	0.167
7	excluded	excluded	excluded	excluded	excluded	excluded
8	0.167	0.167	0.000	0.333	0.167	0.167

The weighted deprivation matrix below is obtained by multiplying the deprivation status of each household with the weight of each individual indicator. For example, household 1 is not deprived in ED1, thus, the corresponding value in the weighted deprivation matrix is 0. But household 1 is deprived in ED2, therefore, the corresponding value is 1/6.

**Weighted deprivation matrix**

Household	ED1	ED2	H1	H2	LS1	LS2	Deprivation vector	Censored deprivation vector
1	0.000	0.167	0.167	0.167	0.000	0.167	0.667	0.667
2	0.000	0.000	0.167	0.000	0.000	0.000	0.167	0.000
3	0.167	0.167	0.167	0.167	0.167	0.167	1.000	1.000
4	0.000	0.000	0.000	0.167	0.167	0.167	0.500	0.500
5	0.000	0.167	0.167	0.000	0.000	0.167	0.500	0.500
6	0.000	0.000	0.000	0.333	0.167	0.000	0.500	0.500
7	.	.	.	.	.	.	.	.
8	0.000	0.167	0.000	0.000	0.000	0.167	0.333	0.333

The deprivation vector, or deprivation score, above is the weighted sum of the deprivations experienced by each household. A deprivation score below 1/3 implies that the household is not considered multidimensionally poor and this is the situation of household 2. The censored deprivation vector above shows the deprivation score only for the households that are considered multidimensionally poor, i.e. with a deprivation score of 1/3 or more (households 1, 3, 4, 5, 6, 8).

The MPI headcount is calculated as the ratio of the number of people who are MPI poor (those living in households 1, 3, 4, 5, 6, 8 and the total sample size (excluding household 7). Thus, the MPI headcount is  $21/24 = 0.875$  or 87.5%. The intensity of the MPI is the average deprivation score of those who are poor:  $(0.667*3 + 1*5 + 0.5*4 + 0.5*5 + 0.5*2 + 0.333*2)/21 = 0.627$  or 62.7%. The MPI value is therefore 0.549.

The censored deprivation matrix below (note that the deprivations of household 2 are excluded because it was classified as non-poor) helps the construction of the partial indices first and subsequently the calculation of the contribution of each indicator to the overall MPI.

**Censored deprivation matrix and indicator contributions**

Household	Household size	ED1	ED2	H1	H2	LS1	LS2
1	3	0	1	1	1	0	1
2	3	0	0	0	0	0	0
3	5	1	1	1	1	1	1
4	4	0	0	0	1	1	1
5	5	0	1	1	0	0	1
6	2	0	0	.	1	1	0
7	3						
8	2	0	1	.	0	0	1

<b>Partial index</b>	0.035	0.104	0.090	0.111	0.076	0.132
<b>Indicator contribution</b>	6.33	18.99	16.46	20.25	13.92	24.05

The calculation of the partial index for ED1 can be obtained as the proportion of people who are poor and deprived in ED1 multiplied by the indicator weight:  $(5/24) * 1/6 = 0.035$ . The same procedure can be applied to calculate the partial indices for ED2, LS1, and LS2. However, the calculation of the contribution of the health indicators involves the use of different indicator weights for different household types. Therefore, for H2 it is calculated as  $((3*(1/6))+(5*(1/6))+(4*(1/6))+(2*(1/3)))/24 = 0.111$ ; while for H1 it is  $((3+5+5)/24)*(1/6) = 0.090$ . Note that the weight for H1 is 0 for households 6 and 8. The MPI can be derived as the sum of all 6 partial indices:  $0.035+0.104+0.090+0.111+0.076+0.132 = 0.549^{13}$ .

<sup>13,14</sup> Slight difference is due to rounding.

Finally, the contribution of each indicator to the overall MPI is computed as the indicator partial index divided by the overall MPI. For instance, the contribution of H2 is  $0.111/0.549 = 0.2025$  or 20.25%<sup>14</sup>. The sum of all 6 indicator contributions adds to 100%.

## Annex II

### Approximation of group sizes (sums) to account for persons with missing values in one or more classification variables

Let us denote group  $g$  as  $(t,a,g)$  where  $t,a,g$  refers to type, age group and gender, respectively. The size of the group (sum) estimated from the original and from the reduced sample is denoted as  $\widehat{N}_{tag}$  and  $\widehat{N}_{0tag}$ , respectively

#### Case 1:

Without loss of generality, suppose that for person  $i$  information on type (rural/urban) is missing. Such a person belongs to the union of two groups denoted by  $(*,a,g)$  defined by her age group and gender.

1. The original sampling weight,  $w_i$ , should be added to the sum of group sizes  $\widehat{N}_{*ag} = \widehat{N}_{Urban,ag} + \widehat{N}_{Rural,ag}$ , so that the new sum,  $\widehat{N}'_{*ag} = \widehat{N}_{*ag} + w_i$ , accounts for this weight. If there are more persons with the same variable missing we add their weights too.
2. The new approximate sizes of the two corresponding groups are obtained by proportional adjustment as

$$\widehat{N}'_{Urban,ag} = \widehat{N}_{Urban,ag} \cdot \frac{\widehat{N}'_{*ag}}{\widehat{N}_{*ag}},$$

$$\widehat{N}'_{Rural,ag} = \widehat{N}_{Rural,ag} \cdot \frac{\widehat{N}'_{*ag}}{\widehat{N}_{*ag}}$$

3. If person  $i$  also belongs to subsample,  $s_0$ , the corresponding approximate sizes of two groups are obtained in the same way as:

$$\widehat{N}'_{0Urban,ag} = \widehat{N}_{0Urban,ag} \cdot \frac{\widehat{N}'_{0*ag}}{\widehat{N}_{0*ag}}$$

$$\widehat{N}'_{0Rural,ag} = \widehat{N}_{0Rural,ag} \cdot \frac{\widehat{N}'_{0*ag}}{\widehat{N}_{0*ag}}$$

Case 2:

Without loss of generality, suppose that for person  $i$  information on the type (rural/urban) and the age group is missing. Such a person belongs to the union of eight groups denoted by  $(*, *, g)$  defined by her gender only.

4. The original sampling weight,  $w_i$ , should be added to the sum of group sizes  $\hat{N}_{**g} =$

$$\hat{N}_{Urban,a1,g} + \hat{N}_{Urban,a2,g} + \hat{N}_{Urban,a3,g} + \hat{N}_{Urban,a4,g} + \hat{N}_{Rural,a1,g} + \hat{N}_{Rural,a2,g} +$$

$$\hat{N}_{Rural,a3,g} + \hat{N}_{Rural,a4,g}, \text{ so that the new sum, } \hat{N}'_{**g} = \hat{N}_{**g} + w_i, \text{ accounts for this weight. If}$$

there are more persons with the same variables missing we add their weights too.

5. The new approximate sizes of eight corresponding groups are obtained as

$$\hat{N}'_{Urban,a1,g} = \hat{N}_{Urban,a1,g} \cdot \frac{\hat{N}'_{**g}}{\hat{N}_{**g}}, \dots,$$

$$\hat{N}'_{Rural,a4,g} = \hat{N}_{Rural,a4,g} \cdot \frac{\hat{N}'_{**g}}{\hat{N}_{**g}}$$

6. If person  $i$  also belongs to subsample  $s_0$ , the corresponding approximate sizes of two groups are obtained in the same way as:

$$\hat{N}'_{0Urban,a1,g} = \hat{N}_{0Urban,a1,g} \cdot \frac{\hat{N}'_{0**g}}{\hat{N}_{0**g}}, \dots,$$

$$\hat{N}'_{0Rural,a4,g} = \hat{N}_{0Rural,a4,g} \cdot \frac{\hat{N}'_{0**g}}{\hat{N}_{0**g}}$$

Case 3:

Suppose that for person  $i$  information on all three classification variables -type (rural/urban), age group, and gender are missing. Such a person belongs to the union of all sixteen groups denoted by  $(*, *, *)$ .

7. The original sampling weight,  $w_i$ , should be added to the sum of all 16 groups  $\hat{N}_{***}$ , so that the new sum,  $\hat{N}'_{***} = \hat{N}_{***} + w_i$ , accounts for this weight. If there are more persons with all three classification variables missing we add their weights too.

8. The new approximate sizes of sixteen corresponding groups are obtained as

$$\widehat{N}'_{Urban,a1,f} = \widehat{N}_{Urban,a1,f} \cdot \frac{\widehat{N}'_{***}}{\widehat{N}_{***}}, \dots,$$

$$\widehat{N}'_{Rural,a4,m} = \widehat{N}_{Rural,a4,m} \cdot \frac{\widehat{N}'_{***}}{\widehat{N}_{***}}$$

9. If person *i* also belongs to subsample  $s_0$ , the corresponding approximate sizes of two groups are obtained in the same way as:

$$\widehat{N}'_{0Urban,a1,f} = \widehat{N}_{0Urban,a1,f} \cdot \frac{\widehat{N}'_{0***}}{\widehat{N}_{0***}}, \dots,$$

$$\widehat{N}'_{0Rural,a4,m} = \widehat{N}_{0Rural,a4,m} \cdot \frac{\widehat{N}'_{0***}}{\widehat{N}_{0***}}$$

Order of application

10. If there are persons with missing one, two and three variables, the approximation of sums should be done first by accounting the weights of those that are missing all three classification variables, then such adjusted group sizes (sums) should be adjusted to account for those persons that are missing two classification variables, and finally such adjusted group sizes (sums) should be adjusted to account for those persons that are missing one classification variable.
11. These final group sizes (sums) should be used for weight adjustment as described in paragraph 7, section on weight adjustments.

**A simulated example:**

The sums of weights for 16 groups based on the initial sample and on the MPI sample (without non-eligible and missing households) are given in the table below. If there are no people with missing classification dimensions the weight adjustments for the MPI sample is as given in the third column:

	Group (sex, type, age-group)	Sum of weights		Weight adjustments
		Original sample	MPI respondents	
1	Male, Rural, Age-group 1	40	38	40/38=1.0526
2	Male, Rural, Age-group 2	45	44	1.0227
3	Male, Rural, Age-group 3	50	50	1
4	Male, Rural, Age-group 4	45	45	1
5	Male, Urban, Age-group 1	35	33	1.0606
6	Male, Urban, Age-group 2	40	37	1.0811
7	Male, Urban, Age-group 3	45	45	1
8	Male, Urban, Age-group 4	35	32	1.0938
9	Female, Rural, Age-group 1	45	45	1
10	Female, Rural, Age-group 2	50	49	1.0204
11	Female, Rural, Age-group 3	55	54	1.0185
12	Female, Rural, Age-group 4	50	45	1.1111



13	Female, Urban, Age-group 1	40	40	1
14	Female, Urban, Age-group 2	45	43	1.0465
15	Female, Urban, Age-group 3	50	50	1
16	Female, Urban, Age-group 4	40	38	1.0526
	Total weight	710	688	

Suppose that there are 5 persons with missing one, two or three classification variables.

	Gender	Age-group	Urban/Rural	In the MPI sample?	Weight
Person 1	Male	2 (14 years old)	Missing	Yes	1.721
Person 2	Female	Missing	Rural	No	0.375
Person 3	Missing	Missing	Urban	Yes	1.235
Person 4	Missing	4 (59 years old)	Missing	Yes	0.978
Person 5	Missing	Missing	Missing	No	1.100

We need to adjust the sum of weights for groups to account for weights of these 5 persons.

1. We begin with the person who is missing all three classification variables. This person is not in the MPI sample, so we adjust the weights in the original sample only.

The adjusted total weight is  $710+1.1=711.1$ . The sum of weights of 16 groups (the original sample only) are then adjusted proportionally.

	Group (sex, type, age-group)	Sum of weights	
		Original sample	MPI respondents
1	Male, Rural, Age-group 1	$(40/710)*711.1$ =40.0620	38
2	Male, Rural, Age-group 2	$(45/710)*711.1$ =45.0697	44
3	Male, Rural, Age-group 3	50.0775	50
4	Male, Rural, Age-group 4	45.0697	45
5	Male, Urban, Age-group 1	35.0542	33
6	Male, Urban, Age-group 2	40.0620	37
7	Male, Urban, Age-group 3	45.0697	45
8	Male, Urban, Age-group 4	35.0542	32
9	Female, Rural, Age-group 1	45.0697	45
10	Female, Rural, Age-group 2	50.0775	49
11	Female, Rural, Age-group 3	55.0852	54
12	Female, Rural, Age-group 4	50.0775	45
13	Female, Urban, Age-group 1	40.0620	40
14	Female, Urban, Age-group 2	45.0697	43
15	Female, Urban, Age-group 3	50.0775	50
16	Female, Urban, Age-group 4	40.0620	38
	Total weight	711.1	688

2. Next we adjust the sums of weights to account for persons who are missing two classification variables.

a) The weight of person 4 will be added to the sum of weights for age-group 4 for both –the original sample and the MPI sample. The marginal sum for age group 4 is obtained as

	Group (sex, type, age-group)	Sum of weights	
		Original sample	MPI respondents
4	Male, Rural, Age-group 4	45.0697	45
8	Male, Urban, Age-group 4	35.0542	32
12	Female, Rural, Age-group 4	50.0775	45
16	Female, Urban, Age-group 4	40.0612	38
	Marginal sum for Age-group 4	170.263	160

The two marginal sums are enlarged for the weight of Person 4:  $0.978+170.263=171.241$  and  $0.978+160=160.978$ .

The sum of weights for corresponding groups will be proportionally adjusted to the new margins:

	Group (sex, type, age-group)	Sum of weights	
		Original sample	MPI respondents
4	Male, Rural, Age-group 4	$(45.0697/170.263)*171.241$ =45.3286	$(45/160)*160.978$ =45.2751
8	Male, Urban, Age-group 4	35.2556	32.1956
12	Female, Rural, Age-group 4	50.3651	45.2751
16	Female, Urban, Age-group 4	40.2921	38.2323
	Marginal sum for Age-group 4	171.241	160.978

After this step the sum of weights for 16 groups are (the adjustments are red):

	Group (sex, type, age-group)	Sum of weights	
		Original sample	MPI respondents
1	Male, Rural, Age-group 1	40.0620	38
2	Male, Rural, Age-group 2	45.0697	44
3	Male, Rural, Age-group 3	50.0775	50
4	Male, Rural, Age-group 4	<b>45.3286</b>	<b>45.2751</b>
5	Male, Urban, Age-group 1	35.0542	33
6	Male, Urban, Age-group 2	40.0612	37
7	Male, Urban, Age-group 3	45.0697	45
8	Male, Urban, Age-group 4	<b>35.2556</b>	<b>32.1956</b>
9	Female, Rural, Age-group 1	45.0697	45

10	Female, Rural, Age-group 2	50.0775	49
11	Female, Rural, Age-group 3	55.0852	54
12	Female, Rural, Age-group 4	<b>50.3651</b>	<b>45.2751</b>
13	Female, Urban, Age-group 1	40.0620	40
14	Female, Urban, Age-group 2	45.0697	43
15	Female, Urban, Age-group 3	50.0775	50
16	Female, Urban, Age-group 4	<b>40.2921</b>	<b>38.2323</b>
	Total weight	712.078	688.978

- b) The weight of person 3 will be added to the sum of weights for urban for both –the original sample and the MPI sample. The marginal sum for urban is obtained as

	Group (sex, type, age-group)	Sum of weights	
		Original sample	MPI respondents
5	Male, Urban, Age-group 1	35.0542	33
6	Male, Urban, Age-group 2	40.0620	37
7	Male, Urban, Age-group 3	45.0697	45
8	Male, Urban, Age-group 4	<b>35.2556</b>	<b>32.1956</b>
13	Female, Urban, Age-group 1	40.0620	40
14	Female, Urban, Age-group 2	45.0697	43
15	Female, Urban, Age-group 3	50.0775	50
16	Female, Urban, Age-group 4	<b>40.2921</b>	<b>38.2323</b>
	Marginal sum for Urban	330.943	318.428

The two marginal sums are obtained as  $1.235+330.943=332.178$  and  $1.235+318.428=319.663$ .

The sum of weights for corresponding groups will be proportionally adjusted to the new margins:

	Group (sex, type, age-group)	Sum of weights	
		Original sample	MPI respondents
5	Male, Urban, Age-group 1	$(35.0542/330.943)*332.178=$ 35.1850	33.1280
6	Male, Urban, Age-group 2	40.2115	37.1435
7	Male, Urban, Age-group 3	45.2379	45.1745
8	Male, Urban, Age-group 4	35.3872	32.3205
13	Female, Urban, Age-group 1	40.2115	40.1551
14	Female, Urban, Age-group 2	45.2379	43.1668
15	Female, Urban, Age-group 3	50.2643	50.1939
16	Female, Urban, Age-group 4	40.4425	38.3806
	Marginal sum for Urban	332.178	319.663

After this step the sum of weights for 16 groups are (the newly adjusted sums are in blue):

	Group (sex, type, age-group)	Sum of weights
--	------------------------------	----------------

		Original sample	MPI respondents
1	Male, Rural, Age-group 1	40.0620	38
2	Male, Rural, Age-group 2	45.0697	44
3	Male, Rural, Age-group 3	50.0775	50
4	Male, Rural, Age-group 4	<b>45.3286</b>	<b>45.2751</b>
5	Male, Urban, Age-group 1	<b>35.1850</b>	<b>33.1280</b>
6	Male, Urban, Age-group 2	<b>40.2115</b>	<b>37.1435</b>
7	Male, Urban, Age-group 3	<b>45.2379</b>	<b>45.1745</b>
8	Male, Urban, Age-group 4	<b>35.3872</b>	<b>32.3205</b>
9	Female, Rural, Age-group 1	45.0697	45
10	Female, Rural, Age-group 2	50.0775	49
11	Female, Rural, Age-group 3	55.0852	54
12	Female, Rural, Age-group 4	<b>50.3651</b>	<b>45.2751</b>
13	Female, Urban, Age-group 1	<b>40.2115</b>	<b>40.1551</b>
14	Female, Urban, Age-group 2	<b>45.2379</b>	<b>43.1668</b>
15	Female, Urban, Age-group 3	<b>50.2643</b>	<b>50.1939</b>
16	Female, Urban, Age-group 4	<b>40.4425</b>	<b>38.3806</b>
	Total weight	713.313	690.213

3. Then we adjust the sum of weights to account for persons who are missing one classification variable.

a) The weight of person 2 will be added to the sum of weights for female, rural, only for the original sample. The marginal sum for female, urban is

	Group (sex, type, age-group)	Sum of weights	
		Original sample	MPI respondents
9	Female, Rural, Age-group 1	45.0697	45
10	Female, Rural, Age-group 2	50.0775	49
11	Female, Rural, Age-group 3	55.0852	54
12	Female, Rural, Age-group 4	<b>50.3651</b>	<b>45.2751</b>
	Marginal sum of weights	200.5975	193.275

The new marginal sum for the original sample is  $0.375+200.5975=200.973$ . The sum of weights for corresponding groups will be proportionally adjusted to the new margins:

	Group (sex, type, age-group)	Sum of weights	
		Original sample	MPI respondents
9	Female, Rural, Age-group 1	$(45.0697/200.598)*200.973$ =45.1540	45
10	Female, Rural, Age-group 2	50.1711	49
11	Female, Rural, Age-group 3	55.1882	54
12	Female, Rural, Age-group 4	50.4593	<b>45.2751</b>
	Total weight	200.973	193.275

After this step the sums of weights for 16 groups are (newly adjusted sums are in green):

	Group (sex, type, age-group)	Sum of weights	
		Original sample	MPI respondents
1	Male, Rural, Age-group 1	40.0620	38
2	Male, Rural, Age-group 2	45.0697	44
3	Male, Rural, Age-group 3	50.0775	50
4	Male, Rural, Age-group 4	45.3286	45.2751
5	Male, Urban, Age-group 1	35.1850	33.1280
6	Male, Urban, Age-group 2	40.2115	37.1435
7	Male, Urban, Age-group 3	45.2379	45.1745
8	Male, Urban, Age-group 4	35.3872	32.3205
9	Female, Rural, Age-group 1	45.1540	45
10	Female, Rural, Age-group 2	50.1711	49
11	Female, Rural, Age-group 3	55.1882	54
12	Female, Rural, Age-group 4	50.4593	45.2751
13	Female, Urban, Age-group 1	40.2115	40.1551
14	Female, Urban, Age-group 2	45.2379	43.1668
15	Female, Urban, Age-group 3	50.2643	50.1939
16	Female, Urban, Age-group 4	40.4425	38.3806
	Total weight	713.688	690.213

- b) The weight of person 1 will be added to the sum of weights for male, age-group 2 for both the original sample and the MPI sample. The marginal sum for male, age-group 2 is

	Group (sex, type, age-group)	Sum of weights	
		Original sample	MPI respondents
2	Male, Rural, Age-group 2	45.0697	44
6	Male, Urban, Age-group 2	40.2115	37.1435
	Marginal sum of weights	85.281	81.144

The new marginal sums for the original and the MPI samples, respectively, are:  $1.721+85.281=87.002$ ,  $82.865$ . The sum of weights for corresponding groups will be proportionally adjusted to the new margins:

	Group (sex, type, age-group)	Sum of weights	
		Original sample	MPI respondents
2	Male, Rural, Age-group 2	$45.0697/85.281) * 87.002 = 45.9792$	44.9332
6	Male, Urban, Age-group 2	41.0230	37.9313
	Marginal sum of weights	87.002	82.865

After this step the sums of weights for 16 groups are as given in the table below (the latest adjustments are in purple). The adjustments of weights of people in the MPI sample are given in the third column:

	Group (sex, type, age-group)	Sum of weights		Weight adjustment
		Original sample	MPI respondents	
1	Male, Rural, Age-group 1	40.0620	38	40.062/38=1.054263
2	Male, Rural, Age-group 2	<b>45.9792</b>	<b>44.9332</b>	1.023279
3	Male, Rural, Age-group 3	50.0775	50	1.00155
4	Male, Rural, Age-group 4	<b>45.3286</b>	<b>45.2751</b>	1.001182
5	Male, Urban, Age-group 1	<b>35.1850</b>	<b>33.1280</b>	1.062092
6	Male, Urban, Age-group 2	<b>41.0230</b>	<b>37.9313</b>	1.081508
7	Male, Urban, Age-group 3	<b>45.2379</b>	<b>45.1745</b>	1.001403
8	Male, Urban, Age-group 4	<b>35.3872</b>	<b>32.3205</b>	1.094884
9	Female, Rural, Age-group 1	<b>45.1540</b>	45	1.003422
10	Female, Rural, Age-group 2	<b>50.1711</b>	49	1.0239
11	Female, Rural, Age-group 3	<b>55.1882</b>	54	1.022004
12	Female, Rural, Age-group 4	<b>50.4593</b>	<b>45.2751</b>	1.114504
13	Female, Urban, Age-group 1	<b>40.2115</b>	<b>40.1551</b>	1.001405
14	Female, Urban, Age-group 2	<b>45.2379</b>	<b>43.1668</b>	1.047979
15	Female, Urban, Age-group 3	<b>50.2643</b>	<b>50.1939</b>	1.001403
16	Female, Urban, Age-group 4	<b>40.4425</b>	<b>38.3806</b>	1.053722
	Total weight	715.409	691.934	

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