THE UPPR: MULTIDIMENSIONAL POVERTY INDEX 2014

A SAMPLE STUDY OF 12 TOWNS

URBAN PARTNERSHIPS FOR POVERTY REDUCTION (UPPR)

UPPR works with poor urban communities in 23 towns and cities across Bangladesh.

Our project is the result of concerted efforts between the Government of Bangladesh, the Government of the United Kingdom and the United Nations to lift three million people out of urban poverty and integrate them in the cities of Bangladesh.

Urban Partnerships for Poverty Reduction
Local Government Engineering Department

Executive Summary

The Urban Partnerships for Poverty Reduction (UPPR) understands poverty more widely than simply a lack income or consumption. The project seeks to reduce poverty by working with communities to affect change in areas including education, livelihoods, water and sanitation. UPPR has used the Multidimensional Poverty Index (MPI) methodology to measure changes in poverty in their areas of intervention.

The MPI was designed by the Oxford Poverty and Human Development Initiative (OPHI) and UNDP. It is based upon the methodology of Alkire and Foster to measure multiple dimensions of human well-being and seeks to measure acute poverty across several non-income dimensions. The MPI uses ten indicators under three dimensions: two for health; two for education; and six for living standards. Each dimension and each indicator within a dimension is equally weighted. The MPI provides a poverty headcount (number of people who are considered multi-dimensionally poor); an intensity measure of multidimensional poverty (the average proportion of indicators across which people experience deprivation); and the overall MPI score, which is determined by multiplying the Headcount by the Intensity Measure.

UPPR undertook a baseline survey in seven towns in 2009. Six of these towns had been part of the project which preceded UPPR - the Local Partnerships for Urban Poverty Alleviation Project (LPUPAP). An MPI was later calculated for this data[1]. This provided the MPI baseline data for the project.

This follow-up study took place in 2013. In order to make the study more representative of the project as a whole, 12 towns were included. To allow for some comparison with the 2009 baseline, the original seven towns were included within the full sample. While a full MPI dataset was collected in 2013, the data for the comparable sample in 2013 was also restricted over infant mortality and nutritional data to allow for comparison.

The survey was conducted following a two stage random sample selection procedure. In line with the baseline, a confidence level of 99% and a precision interval of plus or minus 5% were used. A total sample size of 1,194 beneficiaries was calculated for the full sample. The comparable sample in seven towns consisted of 744 households. The 2014 study replicates that of 2013, with 83% of the same households participating in both studies. The balance of the sample was filled using a household replacement protocol.

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[1] In 2009, data on infant mortality was missing and nutrition data was only collected for children under five years and women aged between 15 and 49 years. As one of the two health indicators was missing (infant mortality), its weighting was redistributed to the other health indicator (nutrition)

The findings for the full sample of 2014 indicated 23.5% of the surveyed population was experiencing multidimensional poverty. This was a sharp drop from the 33.3% identified in 2013. Analysis of households that were considered multidimensionally poor in 2013 but not multidimensionally poor in 2014 shows that their conditions had changed across several indicators. However, the largest drop was in nutrition. In 2013 over two thirds of these households were considered deprived with respect to nutrition (67.6%). This fell to 12% in 2014. Some of this change may be due to limitations in the collection of nutrition data in 2013 which were improved upon in 2014. The launch of UPPR's nutrition programme from late 2013 may also have contributed to this change.

The intensity of poverty in the full sample was 40.3% in 2014 compared to 44.5% in 2013. The overall MPI score for 2014 was calculated at 0.095 compared to 0.1480 on 2013.

Caution should be exercised in comparing trends in the full sample and comparable restricted sample owing to the differences in the samples but also how the indexes are constructed and calculated. In particular by excluding child mortality, an indicator on which very few households are deprived is not considered. This is verified when looking at the MPI scores for baseline towns using the full dataset and comparing them to the remaining towns. Baseline towns have lower poverty rates and that is expected as the towns UPPR entered since 2008 were seen as having greater urban poverty.

The findings for the comparable restricted sample in 2014 indicated 26.4% of households were experiencing multidimensional poverty. This compares to 28.9% in 2013 and from 41.7% in 2014. The intensity of poverty in 2014 was 44.6%, compared to 47.4% in 2013 and 50.5% in 2009. The overall MPI index in 2014 was calculated at 0.118 compared to 0.137 in 2013 and 0.21 in 2009.

Finally, it should be recalled that comparisons with the 2009 baseline study are limited as they are comparisons of two different town level samples rather than tracking households. Furthermore, in the absence of a plausible counterfactual it is not feasible to determine the extent to which change could be attributed to UPPR or whether other factors are at work.
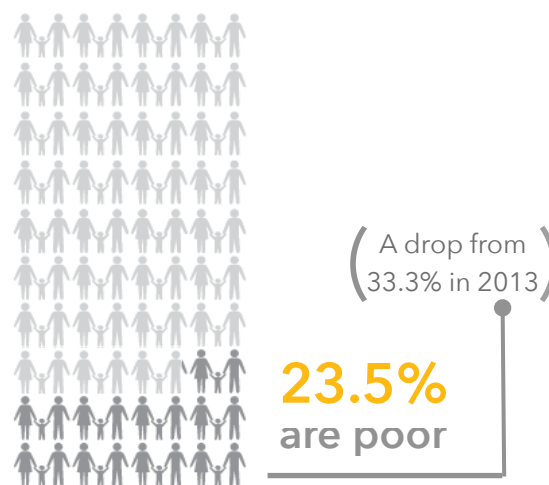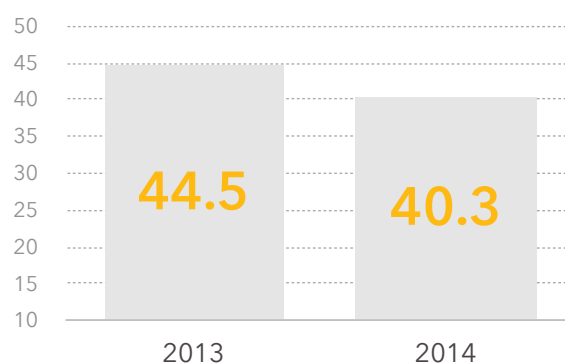
FIGURE 1: POVERTY HEADCOUNT

(A drop from 33.3% in 2013)

23.5%
are poor

FIGURE 2: INTENSITY OF POVERTY

44.5 — 2013
40.3 — 2014

Chapter 1: Introduction

1.1. Background of the Study

The Local Government Engineering Department (LGED) and UNDP have been implementing the Urban Partnerships for Poverty Reduction (UPPR) project with funding from the UK's Department for International Development (UKaid) since 2008.

UPPR'S expected outcome is the 'improved the livelihoods and living conditions of 3 million urban poor and extremely poor people especially women and girls'. UPPR seeks to reduce income and human poverty in 23 urban localities across Bangladesh, through the following four outputs:

1. Urban poor communities mobilized to form representative and inclusive groups and prepare community action plans;

2. Poor urban communities have healthy and secure living environments;

3. Urban poor and extremely poor people acquire the resources, knowledge and skills to increase their income and assets; and

4. Pro-poor urban policies and practices supported at the national and local level.

1.2. Research Questions

This outcome study was guided by the following questions:

1. What proportion of beneficiary households are multi-dimensionally poor and what is the intensity of deprivation among multi-dimensionally poor households?

2. How do MPI findings compare to those derived from the 2009 MPI baseline and 2013 follow-up study?

The 2013 MPI study asked additional questions regarding the Participatory Identification of the Poor (PIP) status of households. Since it was already clear that the relationship between PIP and MPI was limited, these questions were not included in 2014. However, analysis from the 2013 MPI on the PIP status was used to develop a detailed profile of sampled households in 2013, including their migration history and level of engagement with UPPR and other service providers over the past five years or since migrating to the community.

Chapter 2: Methodology

2.1. MPI Methodology

The MPI was designed by the Oxford Poverty and Human Development Initiative (OPHI) and UNDP in its Human Development Reports since 2010.It is based upon the methodology of Alkire and Foster to measure multiple dimensions of human well-being and seeks to measure acute poverty across several non-income dimensions. The MPI uses ten indicators under three dimensions: two for health; two for education; and six for living standards. Each dimension and each indicator within a dimension is equally weighted. The MPI provides a poverty headcount. This is the number of people who are considered multi-dimensionally poor at the chosen cut-off point, given as 30% of the weighted indicators. The MPI also provides an intensity measure of multidimensional poverty. This means the average proportion of indicators across which people experience deprivation. The overall MPI score is determined by multiplying the Headcount by the Intensity Measure.

2.2 Sources of Data

Primary data was collected through face to face interviews using the survey tool. This data was compared with the MPI study conducted in 2013 at an overall level.

In a distinction from the 2013 data, anthropometric data was only collected from children and women. Men were excluded as they were more likely to be absent from home during the day when data is collected. Furthermore male data had not been collected in 2009.

2.3. Study Area

The 2014 MPI Survey took place in 12 towns, namely, Narayanganj, Gopalganj, Dhaka North, Bogra, Sirajganj, Chapai Nawabganj, Khulna, Kushtia, Jessore, Comilla, Rangpur, and Sylhet. This includes a subsample of the original seven baseline towns. Towns were selected based on the following criteria:

- **Baseline Towns**: The 7 baseline towns were retained.
- **Divisions/ Geographical**: For national representation, the sample covered all the divisions.
- **Population**: For the sample to be representative and to be distributed over the regions the sample was chosen keeping both the divisional and individual town populations under consideration.
- **Old and New town**: UPPR continues to work in towns where LPUPAP had been previously. The sample included both old and new towns where UPPR commenced working.
- **City Corporation and Pourashava**: Urban characteristics differ between City Corporation and Pourashava. The services from government and other organizations are not same in the areas. Thus, for minimizing sample selection bias this criterion was considered.

Based on the above, a town sampling process was devised and implemented. As a whole the selected study areas were as follows:

2.4. Sampling

- *Sampled population*

FIGURE 3: CALCULATION OF SAMPLE SIZE

$$n = \frac{Nz^2p(1-p)}{e^2(N-1) + z^2p(1-p)} * Deff$$

Where, N = 730,835
p = Expected value of the indicator = 50%
e = Margin of error = 5%
Deff = Design effect = 2, Z-score8 = 2.33 at standard of 99% confidence interval

Primary group households within the CDCs of the selected towns formed the sample. A representative sample that reflects the population of the selected towns was required. The study was based on quantitative method hence, the sample size calculations were done for all the 12 towns following the formula in Figure 3.[2]

The required sample size for household survey worked out to be 1085. This sample size is divided as per their respective population size to all the selected project towns. The determined sample then was further adjusted with 10% non-response rate.

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[2] Design effect is adjusted by following multistage sampling suggestion. Ref: Naig, L., Winn, T. &Rusli, B. N. (2006). 'Practical Issues in Calculating the Sample Size for Prevalence Studies', Medical Statistics, Archives of Orofacial Sciences, 1, 9-14

A total sample size of 1194 beneficiaries was calculated for the 2014 MPI following the same formula used in 2013 to ensure the comparability of data. Even though the target sample for the 2014 MPI was 1194 households, due to the unavailability of some respondents, 1186 households were surveyed. Further, the attrition rate was 17.6% which indicates that, among the 1186 households, 207 households were new for this year's survey as targeted households for these samples were not available. These 207 households were replaced by the immediate next households having PIP.

- *Two Stage Random Cluster Sampling*

A strategy was then required for sample CDCs and household to maximize random selection and reduce bias. A two-stage cluster random sampling was carried out. At the first stage clusters were randomly selected with CDCs serving as clusters. At the second stage households were randomly selected from the sampled clusters.

An average of 20 households would be interviewed from each CDC, and hence a town/city wise CDC distribution was designed. Based on the sample size determined for each of the selected towns/cities, the table below shows the number of CDCs covered in each of the towns.

TABLE 1: SAMPLE SIZE

| TOWNS	# HH COVERED BY UPPR	PROPORTION HH COVERED BY UPPR	# SELECTED HH	ADJUSTMENT FOR NON-RESPONSE (10%)	# HH TO BE INTERVIEWED	# HH INTERVIEWED IN 2014
BASELINE TOWNS						
Khulna	89157	23.54%	255	26	281	281
Bogra	44778	11.82%	128	13	141	141
Sirajganj	37202	9.82%	107	11	117	117
Narayanga	23144	6.11%	66	7	73	73
Comilla	16854	4.45%	48	5	53	53
Kushtia	14128	3.73%	40	4	46	45
Gopalganj	10617	2.80%	30	3	33	33
ADDITIONAL TOWNS						
Dhaka	55464	14.65%	159	16	175	168
Rangpur	29663	7.83%	85	8	93	93
Jessore	22995	6.07%	66	7	72	72
Sylhet	20512	5.42%	59	6	65	65
Chapai Nawabganj	14192	3.75%	41	4	45	45
Total	378706	100.00%	1085	109	1194	1186

- *CDC Selection from PIP Database*

From the PIP database, all the CDCs for 12 selected towns/cities those were used in MPI 2013 were also used in MPI 2014. It is to be noted that the data collection team visited the same household guided by the PIP database; however, in case the same person was not available in the household because of migration or any other reason, any other adult available in that household was interviewed.

In case the entire household with PIP number was unavailable, Nielsen took help from the community and/or CDC leaders to know the closest household with PIP number and that "missing" household were replaced by the adjacent household with PIP number. It was also ensured by the Nielsen data collection team that the next household with PIP was the actual "next household with PIP".

2.5. Analytical Procedure

Throughout this report two sets of analysis are presented for each variable: one analysis based upon the full sample of 2013 and 2015 and the other analysis comparing the baseline (2009) with the comparable restricted sample of 2013 and 2014.

- **The MPI Approach**
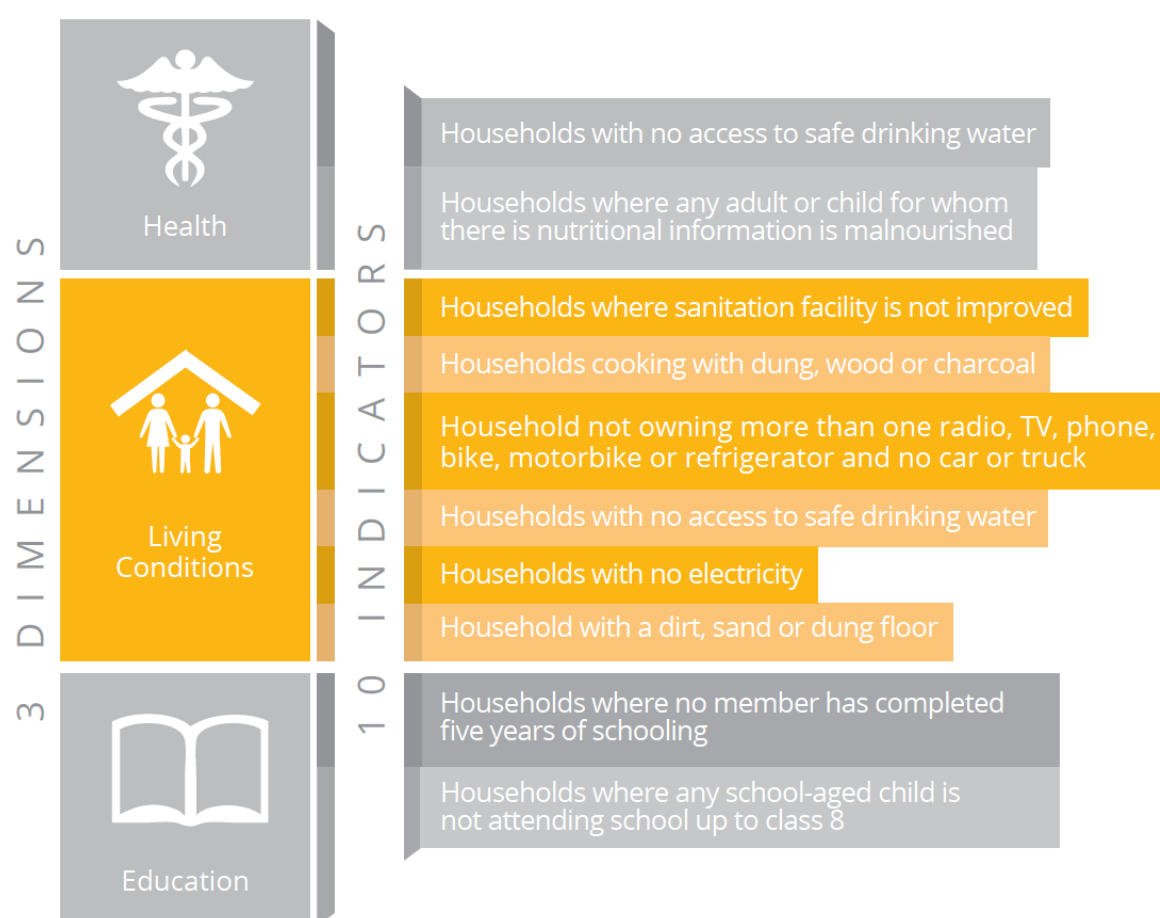
The MPI calculations are as follows:

- Headcount ratio (H) = $\frac{q}{n}$ where, q: number of people who are multidimensional poor based on the cut off;

- Intensity of Poor (A) = $\frac{\sum_1^q c_i(k)}{q}$ where, deprivation scores are added only for the one who are multidimensional poor and the score derived in the numerator is divided by the total number of indicators and the total number of household poor;

- Finally, MPI = H x A

- *Calculation of Deprivation of the Households in Each of the MPI Indicators*

To explore the percentage of deprivation in each indicator, the following formula is used:

$$Percentage\ of\ Household\ Deprived\ in\ Inidcator\ i = \frac{Number\ of\ Household\ Deprived\ in\ Indicator\ i}{Total\ Number\ of\ Household\ Surveyed}$$

- *Calculation of the Deprivation of the Poor in Each of the MPI Indicators*

Further analysis was done to understand the deprivations of the 'poor' UPPR households in each of the MPI indicators. Here the households counted as poor are those who are found to be poor in the MPI headcount. The proportion of poor UPPR households deprived in each of the MPI indicators is calculated as follows:

$$Percentage\ of\ Household\ Deprived\ in\ Inidcator\ i = \frac{Number\ of\ Poor\ Deprived\ in\ Indicator\ i}{Total\ Number\ of\ Poor\ in\ MPI\ Headcount}$$

- *Calculation of Deprivation of the Households in m% of the MPI Indicators*

During the MPI calculation the household is counted as deprived if the weighted score of the respective household is above or equal to 33.3%. In that case, with increasing deprivation cut off from 33.3% and above the poverty deepens. Understanding this fact, the proportions of household deprived in 33.3% percent or above of the indicators are assessed. On different cut-off levels the headcount of the poor households are done. The percentages of households deprived in m% or more of the MPI indicators are calculated as follows:

Percentage of Household Deprived = $\frac{q}{n}$ where, q: number of people who are multidimensional poor based on different cut off (m%).

- *Calculation of the Composition of MPI*

The composition of the dimensions to the overall MPI is also checked. In such place the calculations on the contribution of each dimensions to MPI is done using the following methods[3]:

$$MPI = w_1 CH_1 + w_2 CH_2 + \cdots + w_{10} CH_{10}$$

Where,

W_1 = weight of the respective indicators, i = 1, 2, ..., 10

CH_1 = Censored headcount of the indicator obtained by adding up the number of people found to be poor and deprived in that indicator and dividing that by total population. i = 1, 2, ..., 10

Thus,

$$Contribution\ of\ indicator\ i\ to\ MPI = \frac{w_i CH_i}{MPI}$$

In that place, the contribution of any dimension to the MPI turns out to be the sum of the contribution of the indicators under that dimension.

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[3] HDR Guideline Modules: The Multidimensional Poverty Index, 2014

2.6. Challenges and Limitations of the Survey

The data collection team faced challenges in locating respondents in Dhaka city due to a combination of migration and evictions.

It was not possible to measure the heights and weights of all household members as they were not present in the home during the interview. This missing height and weight data affects the calculation of how nutrition contributes to the MPI score. A total of 612 persons were unavailable. In addition due to limitations in the collection of some height and weight data in 2013 owing to inconsistent use of measurement devices by some enumerators, there are likely fluctuations in the data as more accurate data was collected in 2014.

It was possible to compare the overall indicator and MPI scores for the 2009 baseline and the 2014 comparable restricted sample using the Technical Note prepared by UPPR and the baseline data set. However, at the level of individual questions which made up indicators it was not always possible to disaggregate the data from the baseline dataset due to ambiguity in the labeling of variables in the original dataset. For instance, since the baseline raw data was not available with Nielsen, it was not possible to have a comparative analysis of all the variables. Where possible the baseline data for individual questions within indicators has been provided.

Finally it should be recalled that comparisons with the 2009 baseline study are limited as they are comparisons between two different town level samples rather than tracking households. Furthermore in the absence of a plausible counterfactual it is not feasible to determine the extent to which change could be attributed to UPPR or whether other factors are at work.

Chapter 3: Demographic and Socio Economic Analysis of the Household

Chapter three of this report illustrates the demographic and socio economic status of the full and restricted comparable samples of 2013 and 2014 and also with baseline information where applicable.

3.1. Status of Household Replacement

This study sought to engage with as many as the same households as the 2013 study as possible. Of the 1,186 households interviewed in 2014, 977 households were interviewed in 2014. The remaining households were replaced following an agreed replacement protocol using the PIP list.

A little less than half of the unavailable households (45.0%) was due to no eligible respondent being present to interview. This is typically as no adult household member was present.

Just over one third of the unavailable households (38.8%) were replaced because the home no longer existed. This is possible because the CDCs consist of temporary housing.

The remaining 16.3% of unavailable households was due to outward migration of the families.

3.2 Household Head among Respondents and Sex of the Respondents

- *Household Head among Respondents and Sex of the Respondents in Full Sample*

There was a substantial change in who responded to the survey between 2013 and 2014. Almost a third of respondents in 2013 were household heads (32.1%) but this dropped to 13.8% in 2014. It is likely that the high number of hartals during the 2013 study contributed to more household heads being at home during the day when surveys were undertaken. Subsequently, the rate of female respondents increased in 2014 to 94.7%.

3.3. Household Size

- *Household Size in Full Sample*

TABLE 2: HEAD OF HOUSEHOLD & SEX OF THE RESPONDENTS IN COMPARABLE RESTRICTED SAMPLE

Response	MPI 2013		MPI 2014	
	Comparable Restricted Sample Frequency	Comparable Restricted Sample Percentage	Comparable Restricted Sample Frequency	Comparable Restricted Sample Percentage
Head of Household				
Yes	247	33.2	105	14.1
No	497	66.8	638	85.9
Sex of the Respondent				
Male	146	19.6	42	5.7
Female	598	80.4	701	94.3
Total (N)	**744**	**100.0**	**743**	**100.0**

TABLE 3: HOUSEHOLD SIZE IN COMPARABLE RESTRICTED SAMPLE (FREQUENCY AND PERCENTAGE)

Household Size	MPI 2013		MPI 2014	
	Comparable Restricted Sample Frequency	Comparable Restricted Sample Percentage	Comparable Restricted Sample Frequency	Comparable Restricted Sample Percentage
2 or less	48	6.4	46	6.2
3-4 member	320	43.1	317	42.7
5 members	376	50.5	380	51.1
Total (N)	**744**	**100.0**	**743**	**100.0**
Average Number	4.8	-	4.8	-

The average household size was 4.8 members in the full sample both in 2013 and 2014, in line with the national household size of Bangladesh (4.85). In the full sample of 2014, half of the households had 5 members and less than half of the households had 3-4 members.

• *Status of Households' involvement with the Primary Group*

More than half of the households (54.8%) reported to be involved with the primary group since 2008-10 which can be said to be the UPPR early phase. A further 23.0% of the households reported to be involved with the primary group since 2011; whereas, 22.1% of the households mentioned that their involvement with the primary group was since 2001-07 (LPUPAP phase).

Households were asked if they have received support from UPPR. More than two in five households (44%) mentioned that UPPR constructed footpath for them. More than one in three households

received a latrine (35.0%) and a further third of households received a drain (32%). Other supports received from UPPR by the households were a block/business grant (20.6%), an education grant (17.8%), a tube well (14.1%) and an apprenticeship grant (10.0%). One in five households reported that they did not receive any direct support from UPPR.

3.5. Education Status of Household Members

The education status of the household members was extended to include madrasa education.

• *Education Status of Household Members in Full Sample*

There was broad consistency between the education status of household members in both 2013 and 2014. The biggest difference being fewer children under five years reported as attending pre-school or a nursery and more attending classes one to five. However it is possible that children have moved from one category to another over the course of a year. The number of people who have never attended school remains around one in five household members (21.3% in 2013 and 20% in 2014).

3.6. School Aged Children Attending School

• *School Aged Children Attending School in Full Sample*

The MDG Bangladesh Progress Report 2012 shows that primary school enrollment rate has increased to 98.7% in 2011 from 94.8% in 2010. In this study, the rate of school aged children attending school also turned out to be high. In the full sample, 88.1% of the school aged children was found to be attending school at the time of survey which was 81.2% in 2013. In case of 83% of the retained surveyed population who were interviewed both in 2013 and 2014, 88% of the surveyed school aged children are found to be attending school. This figure is consistent with national data although the high level of hartals during data collection in 2013 may have resulted in some households reporting that their children were not attending school when normally they would be.

TABLE 4: % SCHOOL AGED CHILDREN IN SCHOOL IN COMPARABLE RESTRICTED SAMPLE

Response	MPI 2013		MPI 2014	
	Frequency	%	Frequency	%
Yes	668	82.6	684	88.1
No	141	17.4	92	11.9
Total (N)	809	100.0	776	100.0

•*School Aged Children Attending School in Comparable Restricted Sample*

In the comparable restricted sample, the same trend was identified with an increase from 82.6% in 2013 to 88.1% in 2014.
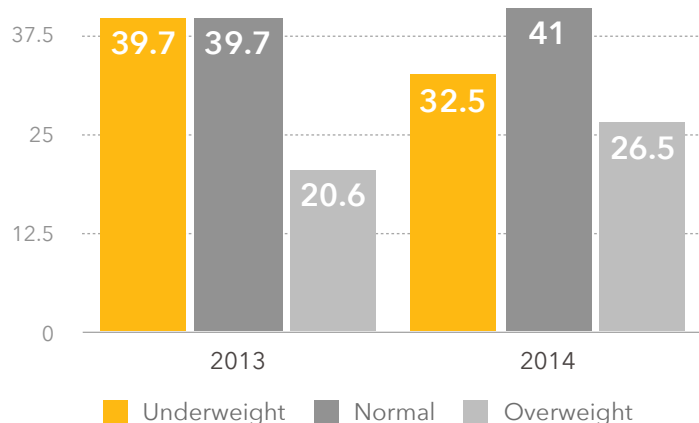
3.7. Nutrition Status of Household Members

The nutrition status of the household members was measured based on the height and weight data of the members. This year adult male household members were excluded from height and weight measurement as they tend to be absent in the house during the day time for the purpose of work. Hence, this time height and weight of all the female household members and male household members under 18 years was measured. However, height and weight data of 612 eligible members were not possible to collect due to unavailability of the members in their house during the survey. It can be

noted that compare to the previous year, in 2014 as the staff were better trained and skilled in collecting the nutrition data, so we believe this figure is more accurate.

- *Nutrition Status of Household Members in Full Sample*

Based on the available data on height and weight, in the full sample a similar percentage of household members had normal weight both in 2013 (39.0) and 2014 (39.0%). However, status of underweight had falling from 42.6% in 2013 to 35.2% in 2014. On the contrary, the percentage of overweight household members rose to 24.8% in 2014 from 18.4% in 2013. From those 83% of the retained households, 40.9% of the household members had normal weight; whereas, 35.2% of the members were found to be underweight.

FIGURE 4: NUTRITION STATUS OF HOUSEHOLD MEMBERS IN COMPARABLE RESTRICTED SAMPLE (%)

- *Nutrition Status of Household Members in Comparable Restricted Sample*

A similar trend was seen with the comparable restricted sample, with a smaller proportion of household members considered to be underweight.

3.8 Under 5 Child Mortality

- *Under 5 Child Morality in Full Sample*

Bangladesh has shown tremendous progress in reducing under-5 child mortality. As per the BDHS 2011, in 1993-94 the under-5 child mortality was 133 per 1000 live births which came down to 53 in 2011. In the full sample, 2.3% of the households in 2013 said that children under the age of 5 years had died in last five years which. This was recorded as 1.9% in 2014.

- *Under 5 Child Morality in Comparable Restricted Sample*

The same percentage of households in 2013 and 2014 reported no child mortality in the last five years, that is 97.8%.

3.9. Status of Child Marriage in the Households

Data on early marriage was also collected although it was not used as part of the MPI itself. It was found that that 46.5% of the households had female household members under the age of 30. Among these female household members, 70.6% was reportedly married off before reaching 18 years.

3.10. Types of Latrines the Household use

- *Types of Latrines the Household use in Full Sample*

The households were asked about the type of sanitation they use and whether they share the toilets with the neighbors. In 2013, 81.5% of the households were using hygienic latrines which include water sealed/slab latrine and also the pit latrine in full sample; whereas, in 2014 91.1% of the households

were found using hygienic latrines. This may coincide with a high rate of investment by UPPR in 2014 in water and sanitation activities, as well as a greater drive to complete outstanding works.

- *Types of Latrines the Household Use in Comparable Restricted Sample*

In the baseline survey 2009, 61.4% of the households were found to have used hygienic latrine (591 households). In 2013, 82.9% used the hygienic latrine (617 households). By 2014, 93.0% of the households used hygienic latrine (689 households).

FIGURE 5: TYPE OF LATRINE THE HOUSEHOLDS USE IN BASELINE & COMPARABLE RESTRICTED SAMPLE (%)
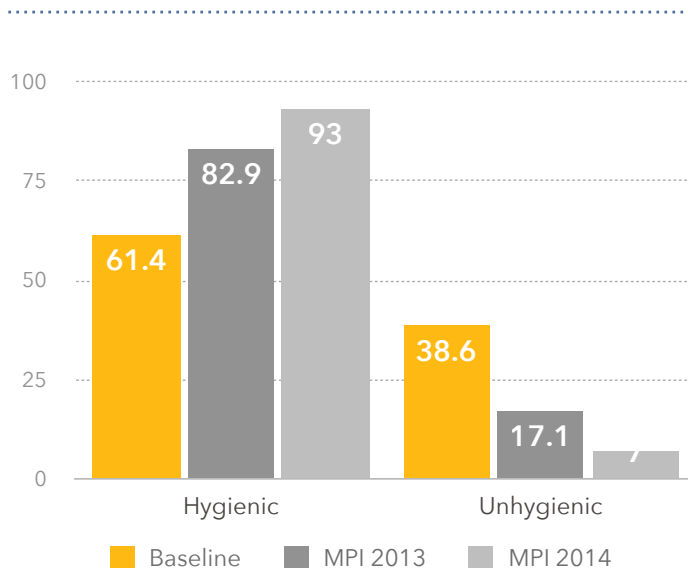
3.11 Household Sharing Latrine

- *Household Sharing Latrine in Full Sample*

The number of households sharing latrines was consistent between 2013 (58.3%) and 2014 (59.5%). While sharing a latrine is considered deprived by the global MPI standard, the UPPR guideline for the construction of latrines is that up to three households may share one latrine. Overall 54.0% of those households that shared latrine a latrine did so with up to three households. Yet 46.0% of the households who shared their latrine did so with more than three households.

- *Household Sharing Latrine in Comparable Restricted Sample and Baseline*

In 2013, half the households were found to have shared the latrine with their neighbors. Somewhat unexpectedly this increased to 56.4% of households in 2014. Of those households who shared in 2014, 58% did so with up to three households while 42.0% shared with more than three households. The fluctuation may be due to actual changes in household use of facilities although the change in who responds to the survey may also have an impact. This is because how separate households are defined can often be subjective given that extended families may live in close proximity to each other.

3.12. Main Source of Drinking Water

- *Main Source of Drinking Water in Full Sample*

Three quarters of households in 2013 and 2014 use tube wells as their main source of drinking water. Just over a fifth of households have a piped water supply.

- *Main Source of Drinking Water in Comparable Restricted Sample and Baseline*

Fewer households in the comparable restricted sample have piped water but in the vast majority in 2013 and 2014 have access to a tube well (87.6% and 86.4%).

3.13. Mud, Discoloration, Iron and Bad Smell in Drinking Water in Full Sample

The 2013 and 2014 asked households for their perception of their drinking water. In response, 81.0% of the households from 2013 and 83.8% of the households from 2014 said there was no mud, discoloration, iron, or bad smell in their drinking water. This, however, does not mean that the water is safe.

3.14. Arsenic in Drinking Water

- *Arsenic in Drinking Water in Full Sample*

Only one in three households reported that their water had been tested for arsenic in 2013 and 2014. These tests found that 93.3% of the tube wells in 2013 and 92.4% of the tube wells in 2014 were free of arsenic. This is consistent with UPPR's own water quality testing study in 2014.

- *Arsenic in Drinking Water in Comparable Restricted Sample*

Two in five baseline households reported that their tube well had been tested for arsenic and again more than 90% of these were found to be arsenic free. The 2009 baseline asked only if the tube well was believed to be arsenic free rather than if the tube well had been tested.

### 3.15. Time needed to Collect Water

- *Average Time to Collect Water in Full Sample*

In 2013 and 2014, households were asked regarding the time needed to collect water. Households in the full sample needed on an average 2 minutes to walk to the nearest clean drinking water source in both years. On average, it was necessary to wait 1.3 minutes in 2013 and 1.7 minutes in 2014. It also took 1.4 minutes to pump water in 2013 and 1.3 minutes to do in 2014. This makes a total of 6.7 minutes in 2013 and 7.0 minutes in 2014. However given that these are rough estimates by households members the difference is negligible and both are considerably less than the MPI threshold of 30 minutes.

- *Average Time to Collect Water in Comparable Restricted Sample*

In the comparable restricted sample, it took an average of 2.1 minutes in 2013 and 2.0 minutes in 2014 to walk to the nearest clean drinking water source as reported by the households. Queuing took 0.7 minutes in 2013 and 1.2 minutes in 2014. Pumping water was estimated at an average of 1 minute in 2013and 1.3 minutes in 2014. This gives a total of 5.9 minutes in 2013 and 5.6 minutes in 2014. Again as these are rough estimates, the difference is negligible.

FIGURE 6: AVERAGE TIME TO COLLECT WATER IN FULL SAMPLE AGAINST MPI THRESHOLD

MPI THRESHOLD - - - - - - - - -> 30 MINS

2014 - - -> 7 MINS
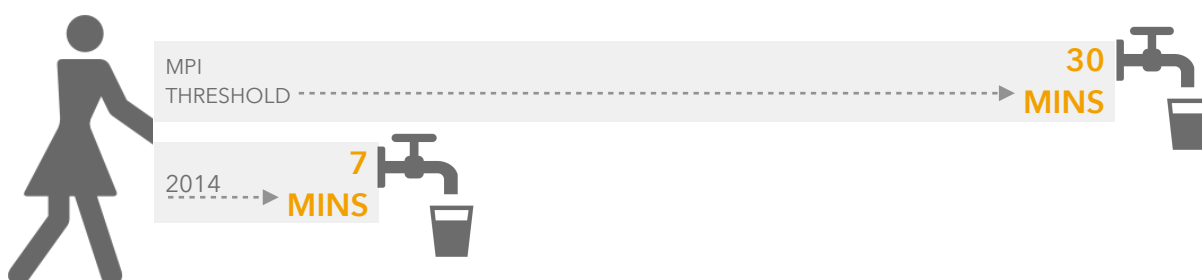
3.16. Type of Fuel Used for Cooking

- *Type of Fuel Used for Cooking in Full Sample*

Wood, cow dung, and charcoal are all considered to be an unimproved fuel type for cooking. In the full sample of 2013, 69.4% of the respondents were found to have used firewood as the cooking fuel.

- *Type of Fuel Used for Cooking in Comparable Restricted Sample and Baseline*

Nearly three quarters of households in the comparable restricted sample were found to be using firewood as their main source of fuel for cooking. This is an increase on 69.4% in 2013 and a greater share than if found amongst the full sample.

## 3.17. Assets Status of the Households

- *Assets Status of the Households in Full Sample*

There was consistency between asset ownership in 2013 and 2014 with high rates of both television and mobile phone ownership.

- *Assets Status of the Households in Comparable Restricted Sample and Baseline*

Similarly consistency was found in the comparable restricted sample though the 2009 baseline reflects the rapid growth of mobile phone ownership in urban Bangladesh. This growth is in line with national level trends.

FIGURE 7: HOUSEHOLD WITH ASSETS IN COMPARABLE RESTRICTED SAMPLE & BASELINE (%)
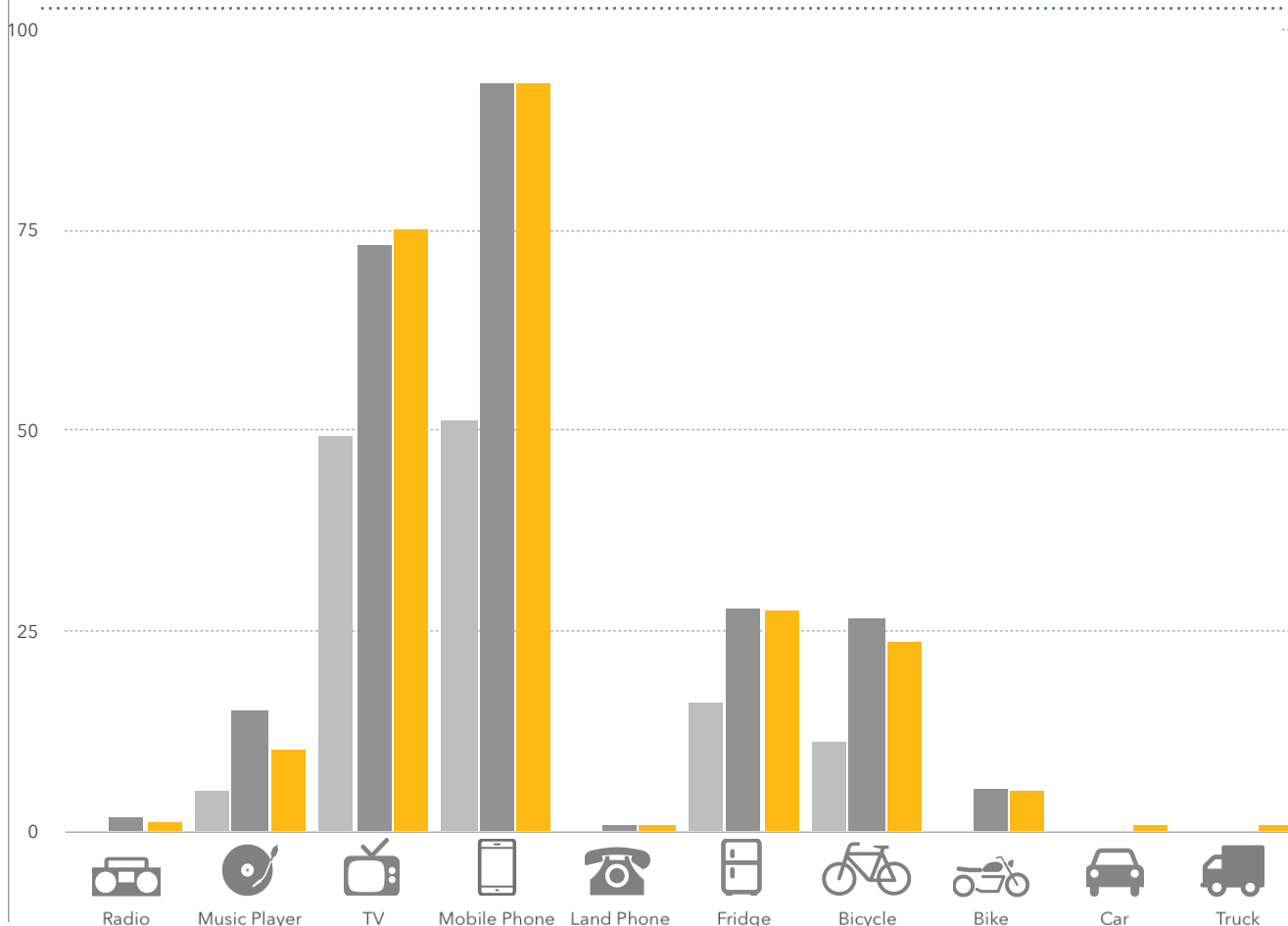
3.18. Access to Electricity

In 2014, 97.0% of the households in the full sample had access to electricity, similarly to the 96.8% in 2013. This is consistent with the findings among the comparable restricted sample which was 96.5% and 96.5% respectively.

- *Presence of Solar Power at the Household*

This year's survey tried to explore the status of solar power usage in the sampled households. The study findings suggested that both in the full (4.6%) and comparable restricted samples (4.7%), less than one in twenty households had solar power in their houses.

- *Type of Electricity Connection in the Household*

This survey also gathered information on the type of electricity connection that the households have. As a part of gathering this information, households were asked if they have an electricity connection with electric meter reader. In response, more than half of the households (62.6%) in full samples reported that they have an electricity connection with electric meter reader. Contrasting the prior mentioned information, it was also found that 33.9% of the households in full sample had electricity connection with no electric meter reader which might indicate the wide usage of illegal electricity connection in the sampled households.

3.19. Construction Material of the Floor

- *Construction Material of the Floor in Full Sample*

Lastly, to understand the households' poverty situation, the construction materials of the floor of the households were observed and recorded. Floor made of earth/sand is considered as the nonstandard ones. In the full sample two thirds of the households were found to have house with floor of cement in 2013 and 2014. In addition a third of households had floor of earth/sand in 2013 and 2014.

- *Construction Material of the Floor in Comparable Restricted Sample and Baseline*

In the 2009 baseline, 54.5% of the households had floor constructed of earth/sand. By 2014, this has reduced to 37.3% of the households while 61.5% were found to have floor constructed of cement.

Chapter 4: Multidimensional Poverty Situation

4.1. MPI Indicators

- *MPI Indicators in Full Sample*

MPI has 10 indicators to measure poverty. In the full sample all 12 towns surveyed were considered. In this chapter, following the Alkire and Foster, the MPI was calculated using the indicators with their respective weights. The table below summarizes the MPI indicators for the full sample.

TABLE 5: MPI INDICATORS AND THEIR RESPECTIVE WEIGHTS IN FULL SAMPLE

DIMENSION	INDICATORS	DATA AVAILABILITY IN THE 2013 RANDOMIZED TWO STAGE HOUSEHOLD SURVEY	WEIGHTS
EDUCATION	Years of Schooling	Data was available on completed years of schooling for all household members	16.7%
	Child School Attendance	Data was available for children aged 6-16 years, attending class 1 to 8.	16.7%
HEALTH	Nutrition	Data on height and weight to calculate the Body Mass Index (BMI) was available for all the households. The height and weight of some members of the household could not be calculated for various reasons. If the BMI number was under 18.5 for the adult member (aged 15 years and above), the person was considered to be malnourished. For the children aged less than 15 years, BMI for age (WHO suggested) were used. For that age group, less than -2 standard deviation (SD) considered as the malnourished. Any adult or child for whom there is nutritional information if were found to be malnourished, that household was considered to be deprived.	16.7%
	Mortality	Data on child mortality were available for all the households where if one or more children of aged under 5 have died in the last 5 years the household is considered to be deprived	16.7%
STANDARD OF LIVING	Electricity	Data on electricity connection were available for all the households. Household was considered deprived if it has no access to electricity	5.6%
	Water	Data on drinking water source was available for all the households. A household is considered deprived if the household does not use piped water, tube well and well which are the improved sources. Alongside if the water contains mud, iron and is discoloured, or if it takes 30 minutes or above to collect the clean drinking water or the water contains arsenic then the household is considered to be deprived.	5.6%

DIMENSION	INDICATORS	DATA AVAILABILITY IN THE 2013 RANDOMIZED TWO STAGE HOUSEHOLD SURVEY	WEIGHTS
STANDARD OF LIVING	Sanitation	Data on sanitation facilities were available for all the households where the household is considered deprived if it uses unhygienic latrine. All the types of latrines are unhygienic except for pit and water slab latrine. But even if it uses hygienic latrine they can still be deprived if they share the toilet with neighbours.	5.6%
	Floor	Data on floor construction materials on all the households were available where the household was considered deprived if it has earth/sand floor.	5.6%
	Cooking Fuel	Data on all the cooking fuel were available and the households were considered deprived if it uses wood, charcoal, leaf or dung.	5.6%
	Assets	Once again the data on all the households were available where the household were considered deprived if it had less than or equal to one of radio, TV, telephone, bike, motorbike or refrigerator and does not own a car or truck.	5.6%

- *MPI Indicators in Comparable Restricted Sample*

The UPPR MPI result of 2014 is also compared to the UPPR MPI 2014 and baseline result of 2009. In that case, the baseline result of UPPR MPI in 2009 has followed certain adjustments for data unavailability. To have a like-to-like comparison among 2009, 2013, and 2014 results the MPI was calculated with the following adjustments which are called the comparable restricted sample. In this comparable restricted sample the following adjustments were done:

- 2009 MPI was based on 7 towns. For the comparison of 2009, 2013, and 2014, only those 7 towns were considered for readjustment of the MPI calculation in 2014.

- In case of marking the deprivation in the nutritional indicator of the MPI, the nutrition measurement (BMI) of only women of aged above 15 years and below 49 years and children aged under-5 years were considered.

- There was no child mortality found in baseline survey of 2009. In 2013 and 2014, even though child mortality data were available for all the households, this indicator is not included in the MPI of comparable restricted sample.

- Following 2009 MPI, as child mortality was removed from the 10 indicators and the MPI remained with only 9 MPI indicators, the weight of this child mortality indicator is redistributed to the nutrition indicator. The weight of the nutrition indicator is then turned out to be 33.3% after the adjustment instead of 16.7 which was the weight of nutrition indicator before the adjustment.

TABLE 6: MPI INDICATORS AND THEIR RESPECTIVE WEIGHTS IN COMPARABLE SAMPLE

DIMENSION	INDICATORS	DATA AVAILABILITY IN THE 2013 RANDOMIZED TWO STAGE HOUSEHOLD SURVEY	WEIGHTS
EDUCATION	Years of Schooling	Data was available on completed years of schooling for all household members	16.7%
	Child School Attendance	Data was available for children aged 6-16 years, attending class 1 to 8.	16.7%

DIMENSION	INDICATORS	DATA AVAILABILITY IN THE 2013 RANDOMIZED TWO STAGE HOUSEHOLD SURVEY	WEIGHTS
HEALTH	Nutrition	The height and weight of male members of the household are excluded. The nutrition measurement (BMI) of only women of aged above 15 years and below 49 years and children aged under-5 years were considered If the BMI number was under 18.5 for the adult member (aged 15 years and above), the person was considered to be malnourished. For the children aged less than 15 years BMI for age (WHO suggested) were used. For that age group, less than -2 standard deviation (SD) considered as the malnourished. Any adult or child for whom there is nutritional information if were found to be malnourished, that household was considered to be deprived.	33.3%
STANDARD OF LIVING	Electricity	Data on electricity connection were available for all the households. Household was considered deprived if it has no access to electricity	5.6%
	Water	Data on drinking water source was available for all the households. A household is considered deprived if the household does not use piped water, tube well and well which are the improved sources. Alongside if the water contains mud, iron and is discoloured, or if it takes 30 minutes or above to collect the clean drinking water or the water contains arsenic then the household is considered to be deprived.	5.6%
	Sanitation	Data on sanitation facilities were available for all the households where the household is considered deprived if it uses unhygienic latrine. All the types of latrines are unhygienic except for pit and water slab latrine. But even if it uses hygienic latrine they can still be deprived if they share the toilet with neighbours.	5.6%
	Floor	Data on floor construction materials on all the households were available where the household was considered deprived if it has earth/sand floor.	5.6%
	Cooking Fuel	Data on all the cooking fuel were available and the households were considered deprived if it uses wood, charcoal, leaf or dung.	5.6%
	Assets	Once again the data on all the households were available where the household were considered deprived if it had less than or equal to one of radio, TV, telephone, bike, motorbike or refrigerator and does not own a car or truck.	5.6%

4.2. Multidimensional Headcount Ratio

- ### Multidimensional Headcount Ratio in Full Sample

The Multidimensional Headcount ratio indicates the proportion of people who are experiencing multidimensional deprivations. In the process a poverty cut-off of 33.3% is used. The MPI study conducted in 2014 found that 23.5% of the surveyed population was multidimensionally poor compared to 33.3% in 2013. From the 83% of households who were surveyed in both 2013 and 2014, 23.3% was found to be poor at the cut-off point in 2014 compared to 32.5% in 2013.

Further analysis was conducted on households that participated in both studies but were found to have moved from poor to non-poor between 2013 and 2014. Out of the 330 households that were poor in 2013, 142 became non-poor in 2014 which is 11.9% of the total sample. While follow-up engagement with these households would be the best way to understand what changed between both years or whether there were errors in the share shared or collected over both years, looking at the data does provide some insights. Seven of the ten indicators reported notable drops. However two thirds of those households were deprived in nutrition in 2013 compared to just over one in ten in 2014. As has been highlighted previously, this may be a combination of improved collection of nutrition data in 2014 and the roll-out of UPPR's nutrition programming since late 2013. This large change however goes some way to explaining the shift in headcount from 2013 to 2014.

FIGURE 8: STATUS OF MOVEMENT FROM POOR TO NON-POOR (2013 TO 2014) (FREQUENCY)
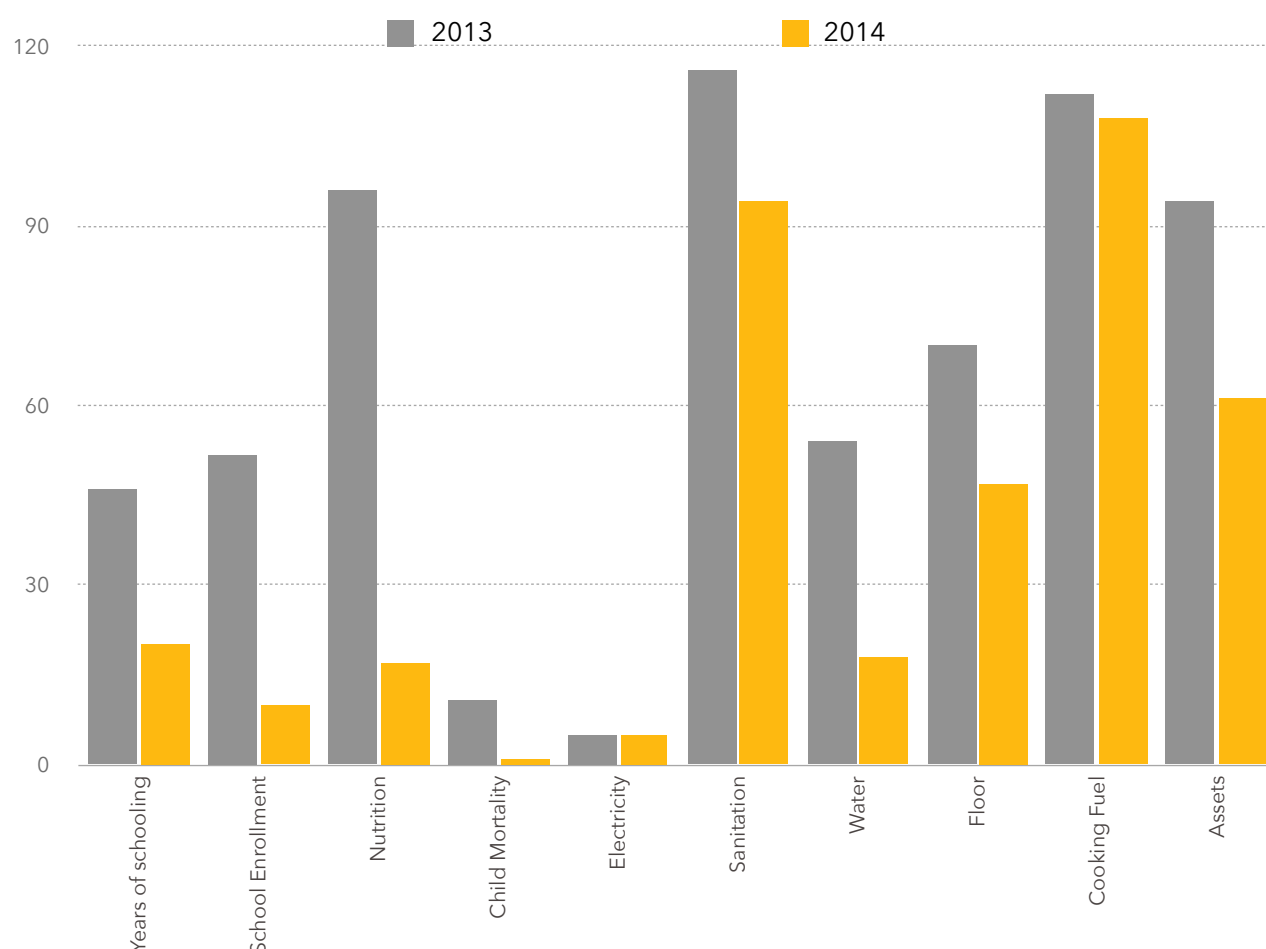
TABLE 7: HEADCOUNT, INTENSITY, & MPI AS PER THE HH STATUS OF SUPPORT FROM UPPR IN FULL SAMPLE

Indicators	Status: Support from UPPR?	
	Received	Did not receive
#household members	4,459	1,190
Censored score (All)	1,104.00	223.00
Intensity (All)	442.28	91.94
Head Count (H)	0.247589	0.187395
Intensity (A)	0.400614	0.412307
MPI=H*A	0.099188	0.077264

Additional analysis was also carried out on the headcount between those who reported receiving UPPR support and those that say they did not. This showed a higher headcount amongst UPPR households. While this finding would require a follow-up, it suggests that the project is targeting the poorest households but that there is also unmet need within primary groups.

- *Multidimensional Headcount Ratio in Baseline and Comparable Restricted Sample of 2013 and 2014*

In the headcount, 41.7% of the households were poor in the baseline which declined to 28.9% in 2013. In 2014 it decreased to 26.4%.
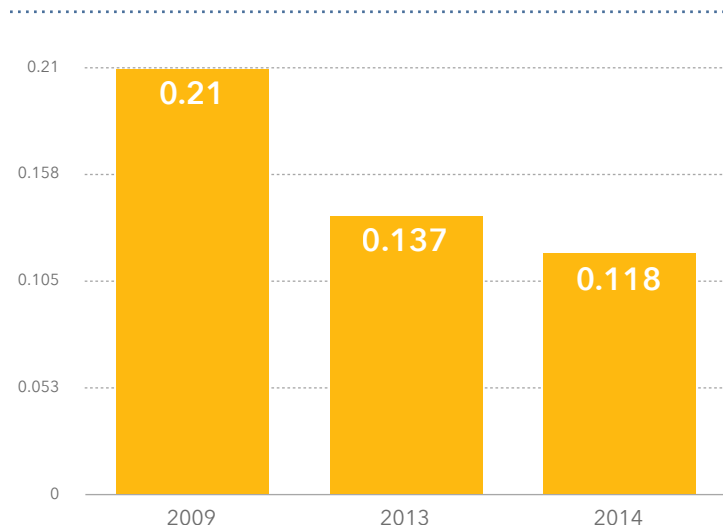
4.3. Intensity of Poverty

The intensity of the poverty relates to the average number of indicators in which a poor household is deprived. The 2014 study found that the intensity of poverty in the full sample declined to 40.3% from 44.5% in 2013. In the 83.0% of the surveyed population that did the study in both years, the intensity was 40.4% in 2014 and 44.4% in 2013.

In the comparable restricted sample, the 2009 baseline found poor people to be deprived in 50.5% of the indicators. This fell to 47.4% in comparable restricted sample of 2013. It dropped further to 44.6% of the indicators.

4.4. Multidimensional Poverty Index

FIGURE 9: MPI IN BASELINE & COMPARABLE SAMPLE

The MPI incorporates both the headcount and the intensity of the poverty. It was calculated as 0.095 in 2014 full sample, a drop from 0.1480 in 2013. For the 83.0% retained sample, the MPI was 0.094 in 2014 and 0.144 in 2013.
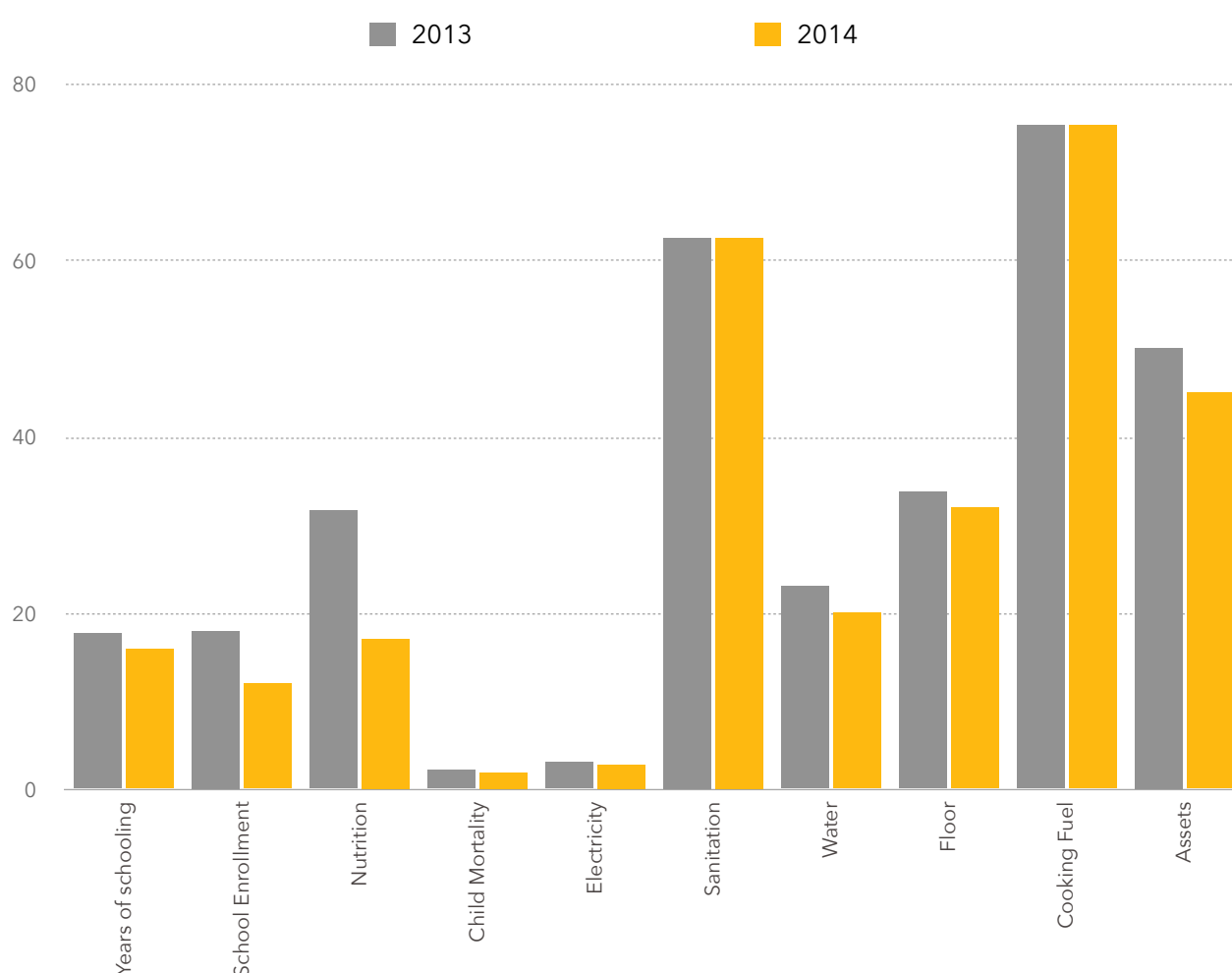
In the comparable restricted sample the overall MPI score fell from 0.210 in 2009 to 0.137 2013. It fell to 0.118 in 2014.

4.5. Deprivation of the Household in Each of the MPI Indicators

• *Deprivation of the Household in Each of the MPI Indicators in Full Sample*

The greatest deprivation was found under the standard of living dimension both in 2013 and 2014. From the figure below it can be seen that, 75.4% of the surveyed households were deprived in the indicator of cooking fuel both in 2013 and 2014. In case of the interview with the same household 76.4% of the households were deprived in cooking fuel.

FIGURE 10: UPPR HOUSEHOLD DEPRIVED IN EACH OF THE MPI INDICATORS IN FULL SAMPLE (%)

• *Household Deprivation in Each of the MPI Indicators in Baseline and Comparable Restricted Sample of 2009, 2013 and 2014*

In the comparable restricted sample, the percentage of households deprived in 2014 was lower than that of 2013 in most of the indicators. In cooking fuel 85.1% of the households were found to be deprived in MPI 2014 which was 80.6% in MPI 2013.

4.6. Deprivation of the Poor in Each of the MPI Indicators

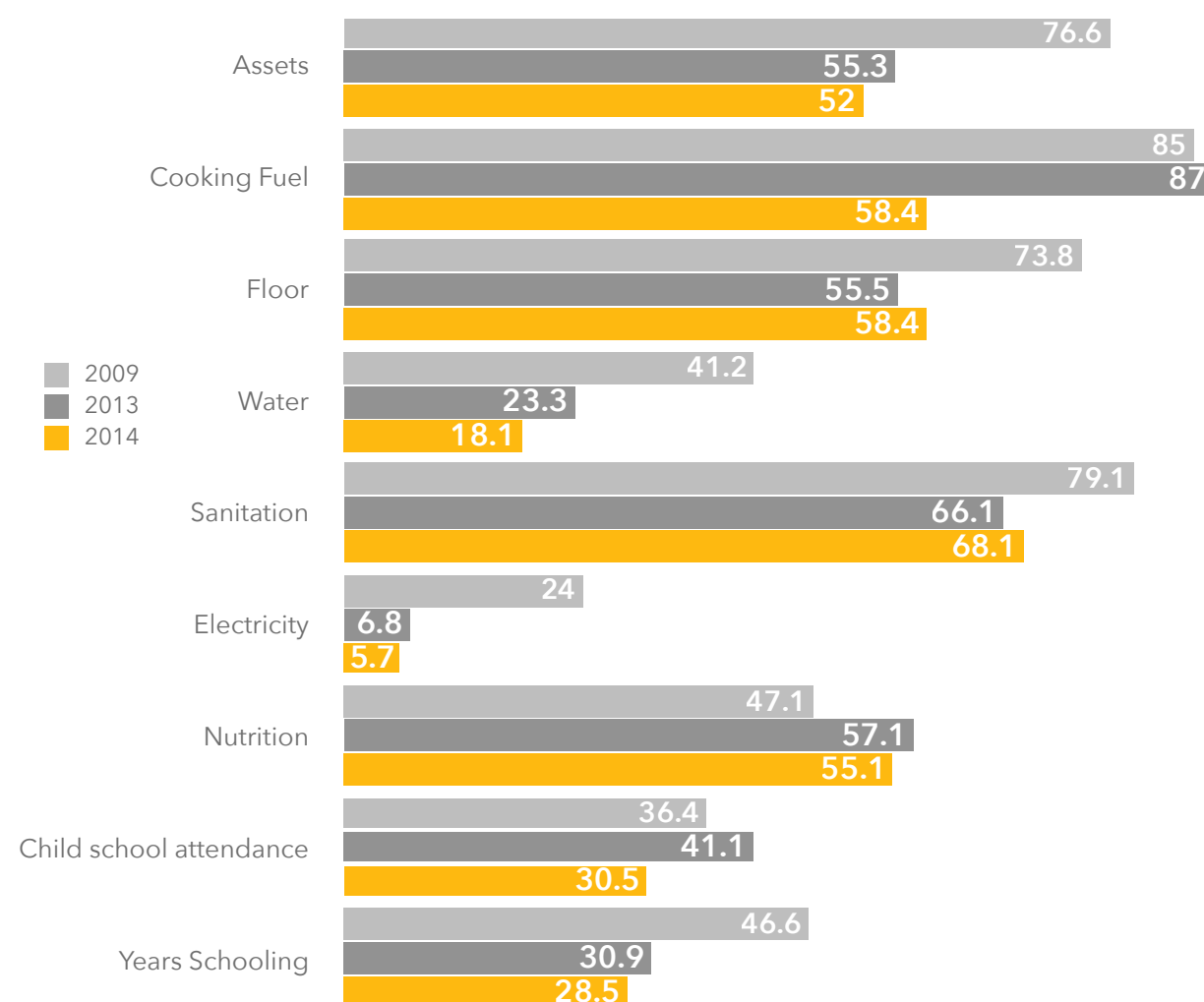### • Deprivation of the Poor in Each of the MPI Indicators in Full Sample

When looking at the deprivation amongst the poor, you are not necessarily comparing the same households but rather those households that are considered poor in each survey. As a result, even if there are improvements on indicators within the full population, there may be entrenched problems amongst persistently poor households.

In the full sample 87.7% (2013) and 85.6% (2014) of poor households were found to be deprived in the indicators of cooking fuel. In addition, 87.3% (2013) and 79.4% (2014) of the poor households were found to be deprived in sanitation. Furthermore 50.7% (2013) and 39.0% (2014) of the poor households were found to be deprived in child school attendance, and 72.5% (2013) and 44.8% (2014) of the poor households had at least one malnourished member.

• Deprivation of the Poor Household in each of the MPI Indicators in the Baseline and Comparable Restricted Sample of 2013 and 2014
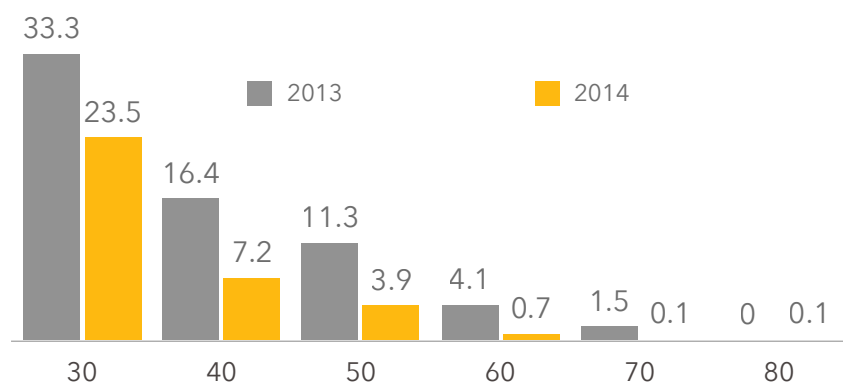
Cooking fuel, sanitation, and nutrition represent entrenched areas of deprivation for those who are poor within the comparable restricted sample.

FIGURE 11: PROPORTION OF POOR DEPRIVED IN EACH INDICATOR (COMPARATIVE SAMPLE)

4.7. Deprivation of the Households in m% of the MPI Indicators

•*Deprivation of Household in m% of the MPI Indicators in Full Sample*

Figure 12 shows the percentage of poor UPPR household lowers with increasing deprivation cut-off points. The higher the deprivation cut-off point, the worse the poverty situation becomes. This suggests over 10% of households are deprived in more than 40% of indicators.

• *Household Deprivation in m% of the MPI Indicators in the baseline & Comparable Restricted Sample*

The rate is higher for the comparable restricted sample but the difference in the structure should be recalled, with over 25% of the poor deprived in more than 40% f indicators by this measure.

4.8. Composition of MPI
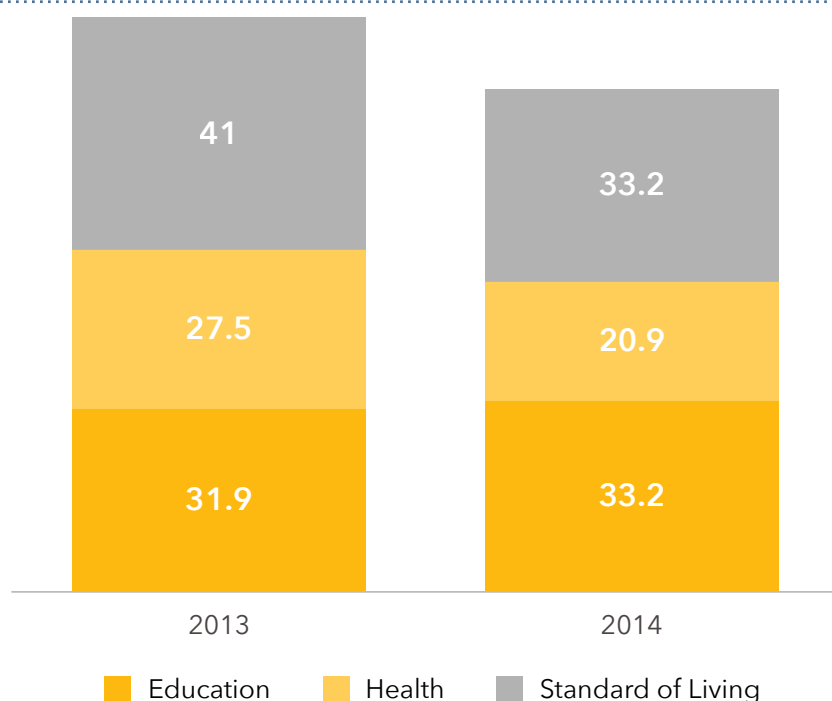
•*Composition of MPI in Full Sample*

Looking at the MPI composition based on the 3 broad categories: education, health and living standard, it can be seen that both standard of living contributed and education highly to MPI in 2014. In 2013, 41% of the MPI was composed of standard of living which came down to 33.2% in 2014, still having a higher share in MPI. This again can be said to be like as the households were found to be deprived mostly in the indicator of cooking fuel,

floor and sanitation. The contribution of standard of living to MPI was 45.0% in MPI 2014 with the 83.0% of the retained data.

- *Composition of MPI in the baseline and Comparable Restricted Sample*

After comparing the baseline and the comparable restricted samples of 2013 and 2014, it can be said that the contribution of standard of living to MPI has reduced from the baseline level in 2013 and it has again shown a fall in 2014. In 2013 the contribution of standard of living to MPI was 35.0% which reduced to 34.0% in comparable restricted sample in 2014. It can be seen that the contribution of nutrition to MPI increased from 40.6% in 2013 to 43.0% in 2014. In addition, education has contributed 27.5% to MPI in baseline, 25.6% in comparable restricted sample in 2013 and 23.0% in comparable restricted sample of 2014. Hence, education has shown further reduction in contribution to the MPI value from baseline to 2014; with health has shown 2.4 percentage point increment in its contribution to MPI and living standard has shown 1 percentage point reduction in its contribution in 2014 compare to 2013.

Chapter 5: Conclusion

Multidimensional Poverty Index Survey 2014 looked into poverty from the dimensions of health, education, and standard of living. These three dimensions are comprised of ten indicators; namely, nutrition, child mortality, years of schooling, children's school enrollment, cooking fuel, latrine, drinking water, electricity, and assets. Therefore, this study tried to explore the shift of poverty from 2009 baseline to 2013 and 2014. The intention was to measure poverty in the twelve UPPR towns as a whole and also in terms of the prior mentioned ten deprivation indicators.

The headcount for the full 12 town sample was found to have reduced by almost 10.0% as in 2013 it was 33.3% which came down to 23.5% in the year of 2014. Comparative restricted sample also experienced a drop by around 2.5% from 2013 and around 15.3% from baseline. MPI headcount quoted in this study is higher than the (non-comparable) money-based headcount recorded by the Household Income and Expenditure Survey (HIES) in 2010, a value of 21.3%. The 2010 HIES urban poverty rate is consumption based and estimated using the Cost of Basic Needs method. The MPI provides a non monetary poverty measure, highlighting a fuller and wider different set of deprivation.

Turning to time comparisons from baseline to 2013 and then to 2014, this study also showed that the number of households who were found to be poor has reduced for most of the indicators. Based on the restricted sample of 7 towns, the MPI fell from 0.210 to 0.1371 in 2013 and 0.118 in 2014. The intensity has also indicated a decline as from baseline (50.5%) to 2013 (47.4%). The intensity from 2013 to 2014 came down to 44.6% in 2014.

To conclude, it can be said that, even though there has been a reduction of deprivation in 2014 as a whole and also in most of the indicators from 2013 and 2014; still there are some indicators which showed a rise in deprivation. For overall UPPR households the deprivation has seen to be high in terms of cooking fuel, sanitation, and floor construction material. This suggests that the type of accommodation in which poor urban households live remains an important issue and one that is closely associated with improving the tenure security of the urban poor.