

# CHILD POVERTY IN BOTSWANA:

UPDATING THE NATIONAL MULTIPLE  
OVERLAPPING DEPRIVATION ANALYSIS  
(N-MODA)

APRIL 2021



**STATISTICS BOTSWANA**

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## CHILD POVERTY IN BOTSWANA:

Updating the national multiple overlapping deprivation analysis (n-moda)



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HELP

# Preface

This National Multidimensional Overlapping Deprivation Analysis (N-MODA) report is the result of joint efforts by the Directorate of Socio-Demographic Statistics of Statistics Botswana and UNICEF Office in Botswana. The report was prepared by Dr. Ibrahim Kasirye, Director Research at the Economic Policy Research Centre (EPRC) specializing in child poverty, education, and health in Kampala, Uganda.

The study updates the first N-MODA using the 2015/2016 Botswana Multi-Topic Household Survey (BMTHS). Specifically, it adopts the methodology used in 2015, as proposed by UNICEF, which anchors the domains of deprivation on the Convention on the Rights of the Child (CRC). The dimensions consisted of nutrition, health, housing, water, education and sanitation are based on the Botswana context and subject to data availability. These were agreed upon during a stakeholder consultation in 2014, which consider children's needs at three different stages of their life cycle, i.e., infancy (0-4 years), middle age (5-12 years) and adolescent/teenage age (13-17 years).

The update reveals that there has been substantial reduction in the extent of deprivation across age groups during 2009/10 and 2015/16 in Botswana. The proportion of children under-18 years experiencing two or more deprivations declined from 63 to 49 percent. About 68 per cent of rural children were multidimensionally poor, while 27 and 41 per cent of children from cities and urban villages, respectively, are deprived in two or more dimensions.

The most vulnerable children resided in rural areas and in households with member who was HIV-positive. Children's access to improved drinking water is significantly improved. Sanitation, however, remains the most common form of deprivation regardless of age group. At least 7 out of every 10 children are deprived of this dimension. More detailed information on key findings, including the extent of multiple deprivations and overlapping deprivations, as well as the trends in monetary poverty re available in the full report.

In Goal 1 of the SDGs, Botswana has committed to routinely reporting on child poverty, including ending extreme child poverty and halving child poverty in alignment with national definitions by 2030. We hope that the estimated child poverty statistics provided will contribute to the implementation of this commitment, as well as to inform policy planning and decision making, serving as evidence on Botswana's progress towards achieving the priority goals of Vision 2036, the eleventh National Development Plan (NDP 11) and the 2030 Agenda for Sustainable Development.



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**Dr. Burton Mguni**  
**Statistician General**  
April 2021



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**Dr. Joan Matji, PhD**  
**UNICEF Representative**  
April 2021

# EXECUTIVE SUMMARY

The report reveals that the level of multidimensional child poverty is significantly declined from 2009/10 to 2015/16. A significant number of children under-18, about 49 per cent of the total, live in multidimensional poverty in Botswana, defined as being deprived in at least two dimensions simultaneously. About 68 per cent of rural children are multidimensionally poor, while 27 per cent and 41 per cent of children from cities/towns and urban villages, respectively, are deprived in two or more dimensions. With respect to changes in deprivations between 2009/10 and 2015/16, the health dimension registered the least reduction compared to that of other dimensions. The largest relative reduction in a single deprivation was registered for the water dimension.

During 2009/10-2015/16, the proportion of children experiencing two or more deprivations declined from 50 to 28 per cent for those aged 0-4 years, 71 to 56 per cent for those aged 5-12 years, and 73 to 63 per cent for those aged 13-17 years, respectively. In addition, the proportion of children that was poor and deprived declined—especially for older children. For children aged at least 5 years, the reduction in the proportion of children who were poor and deprived was at least 16 percentage points. Children from poor households have higher rates of deprivation and are most likely to drop out school. In 2015/16, at least 1 out of every 4 children are deprived of this dimension, while school attendance for children aged 13-17 years worsened.

This reduction of poor and deprived children was accompanied by a surge in the share of the non-poor and non-deprived; at the national level, this status increased by approximately 19 percentage points for children aged 0-4 years during the study period. The proportion of non-poor and non-deprived children increased by 16 percentage points for those aged 5-12 years. Children in urban villages registered the largest increases (20 percentage points) compared to those in either cities (7 percentage points) or rural areas (11 percentage points). For children aged 13-17 years, children who moved out of the poor and deprived

category moved mainly into the non-poor and deprived category.

Sanitation remains the most common form of deprivation regardless of age group. At least 7 out of every 10 children are deprived of this dimension. Sanitation deprivation is influenced by what is happening in rural areas, specifically, where a large population operates without any toilet facilities. In 2015/16, about 30 per cent of children in rural areas resided in households without any toilet facility. Nonetheless, children in both cities/towns and urban villages also have high rates of sanitation deprivation of approximately 40 per cent and 70 per cent, respectively. In cities/towns, there are challenges related to sharing toilet facilities. The proportion of children in urban areas aged 5-12 years who share toilet facilities increased from 8 per cent in 2009/10 to almost 22 per cent in 2015/16.

The most vulnerable children are those that reside in rural areas as well as those residing in households with at least one HIV-positive member. The high association of HIV with deprivation is explained by the higher prevalence of HIV-positive members in rural areas. Whereas nationally, 27 per cent of children reside in a household with an HIV-positive member, in rural areas, the rate is 50 per cent. The higher prevalence of HIV in rural areas may be explained by poverty and the associated socioeconomic difficulties that predispose individuals to risky sexual behaviours. With respect to overlapping deprivations, the study shows that for children aged 0-4 years, health has increasingly become more of a dimension experienced alone in 2015/16.

The other dimensions are primarily experienced simultaneously. Furthermore, between 2009/10 and 2015/16, the proportion of children facing multiple deprivation declined significantly for nutrition, health, and housing. For children aged 5-12 years, sanitation significantly increased as a standalone issue in 2015/16 compared to 2009/10.



# 1 | INTRODUCTION

Child poverty remains a matter of global concern even in middle-income countries. The 2019 global estimates by the Oxford Poverty and Human Development Initiative (OPHI) show that half of those who are multidimensionally poor are children (OPHI, 2019). Specifically, children account for 663 million of the 1.3 billion people who are considered multidimensionally poor, and young children under 10 years account for a disproportional share of the multidimensionally poor, i.e., 32 percent.

Sub-Saharan Africa accounts for approximately two out of three multidimensionally poor children globally. Although most of the poor children are concentrated in the poorest African countries, there is evidence to suggest that child poverty is also a challenge in middle-income African countries, especially in countries characterized by high rates of female unemployment, e.g., South Africa and Egypt (Nell *et al.*, 2016, UNICEF *et al.*, 2017). Botswana is no different, and previous estimates have shown that Botswana children are deprived in several respects. The first National Multidimensional Overlapping Deprivation Analysis (N-MODA) conducted in 2014/2015 revealed that children experience more poverty compared to the general population. Specifically, based on the 2009/10 Botswana Core Welfare Indicator Survey (BCWIS), monetary child poverty is 26 percent compared to only 19 percent for the whole population. Furthermore, one out of every five children are deprived in two or more dimensions (De Neubourg *et al.*, 2015). In addition, it has been found that children who are facing monetary poverty are most likely to be affected by multidimensional deprivation as well, especially in the dimensions of nutrition, housing and access to water.

Deprivation in housing—which captures the extent of overcrowding and the type of fuel used for lighting

within the household—is the most frequent dimension experienced by children under 5 years of age. On the other hand, for children aged 15-17 years, sanitation is the most frequent deprivation experienced. With respect to geographical location, the Northwest, Ghanzi and Central districts have the largest proportion of children facing multiple deprivations.

Botswana is among the few African countries that have prioritized social spending by targeting children within the national budget. During the years 2014/15-2017/18, the country on average allocated 22 percent of the national budget per annum to the education sector (UNICEF and World Bank, 2019). As such, the country allocates a substantial share of its gross domestic product (GDP) to education, averaging approximately 7.6 percent per annum since 2011/12.

Although not as high, the country's health spending is also substantial, averaging approximately 4 percent of GDP per annum during the years 2011/12- 2018/19. Furthermore, on the health front, the per capita spending amounts to USD350 per person, which is in line with that of other middle-income countries. Beyond education and health, Botswana has also registered some success in implementing social protection programmes targeting children. According to the National Development Plan 11 (NDP 11), given the critical importance of housing, significant investments have been made in both destitute housing and other district housing schemes in rural areas (Ministry of Finance & Economic Development, 2017). Nonetheless, other challenges remain. For example, malnutrition has remained significantly high. Specifically, stunting increased from 23 percent in 2000 to 30 percent in 2007 (Government of Botswana, 2009).

<sup>1</sup> With respect to education, efforts were made to improve access to early childhood education, as a means of preparing children for primary school.

<sup>2</sup> The current NDP 11 shows that the country was able to meet the millennium development goal (MDG 3) target of reducing infant mortality by two-thirds between 1990 and 2015.



This report updates the N-MODA for Botswana using data from the 2015/16 Botswana Multi-Topic Household Survey (BMTHS). There are important reasons for providing more recent estimates of childhood deprivation in the country. First, the identification of the most deprived children could help in the targeting of social protection programmes, especially the selection of the beneficiaries of such programmes. Another justification for updating the N-MODA is the current situation regarding public finances. The available public resources are declining, which may require focusing on a few childhood interventions. Indeed, in an environment of limited public resources, the government cannot embark on all required interventions. Third, the government of Botswana has been implementing supplementary feeding programs for vulnerable groups as well as in primary schools, and the updated findings could inform the continued implementation of this initiative. In addition, the Ministry of Health and Wellness (MOHW) has a strong interest in using the results to make the case for a more appropriate level of funding for child health in Botswana. This report will also provide UNICEF with an updated analysis of the situation regarding children for the development of partner programming and policy advocacy with national and local stakeholders.

This report adopts the previous N-MODA approach used by De Neubourg et al. (2015) to generate estimates on

the extent of child multiple deprivation in Botswana. The N-MODA builds upon UNICEF's Multiple Overlapping Deprivation Analysis (MODA) approach (De Neubourg et al. 2012). It considers children's needs at three different stages of their life cycle, i.e., infancy (0-4 years), middle age (5-12 years) and adolescent/teenage age (13-17 years). For young children, the Botswana N-MODA considers four dimensions, i.e., nutrition, health, housing and water. For middle-aged children, two additional dimensions are considered, i.e., education and sanitation. The same 6 dimensions are also considered for teenage children. The choice of dimensions was decided in the consultative process during the production of Botswana's first child poverty report. Box 1 in the appendix provides the details of the dimensions and how the different indicators are defined.

This report is organized as follows. The next section provides the results of most common deprivations by the three age groups: children age 0-4 years; 5-12 years; and 13-17 years. Section 3 provides estimates of the extent of multiple deprivation and the results for the overlapping deprivation. Section 4 provides the trends in overlap between monetary poverty and childhood deprivations. Section 5 provides the conclusions and implications of the study findings.

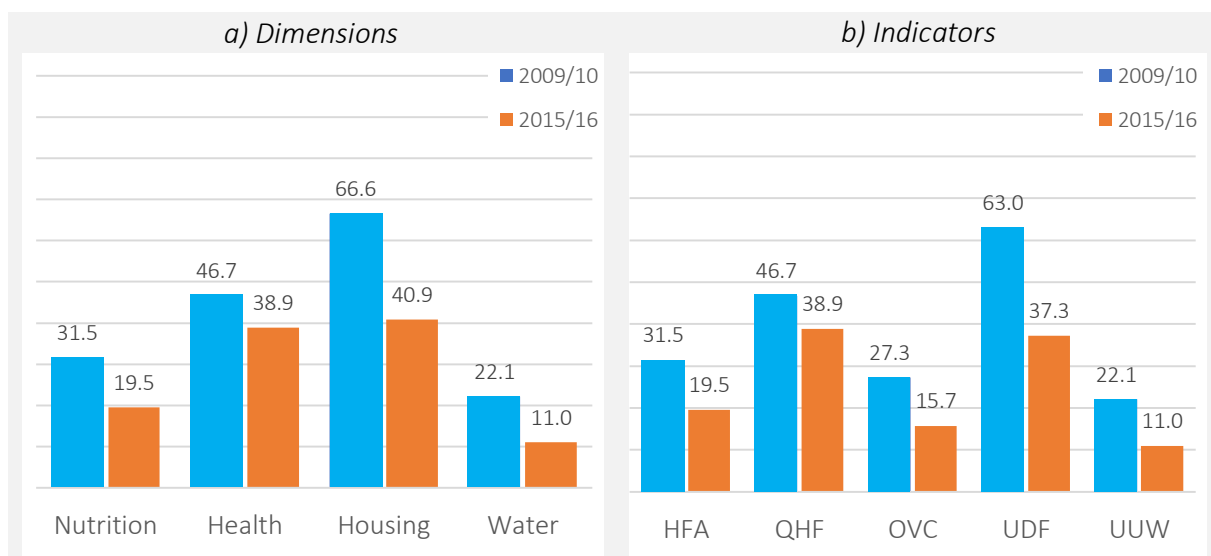


## 2 | MOST COMMON DEPRIVATIONS

### Children aged 0-4 years

Figure 1a shows the trends in deprivation by dimensions for children aged less than 5 years. The two most severe dimensions experienced by children aged less than 5 years are housing and health—the rankings remained the same between 2009/10 and 2015/16 (Figure 1). The third most severe dimension is nutrition (19.5 percent in 2015/16). In 2015/16, children below 5 years of age experienced the least amount of deprivation for water (11 percent). It is worth noting that the levels of deprivation declined for all four dimensions between 2009/10 and 2015/16. The reduction in deprivation was highest for water (50.2 percent reduction), followed by housing (38.6 percent reduction) and nutrition (38.1 percent reduction).

Figure 1. Deprivation by dimension and indicator, children aged 0-4 years



**Notes:** HFA- Height for age; QHF- Quality of nearest health facility; OVC- Overcrowding; UDF- Use of dirt fuel; UUW- Use of unimproved water.

With respect to indicators, Figure 1b shows that the two most severe indicators of deprivation are the quality of the nearest Health facility (39 percent) followed by the use of dirty fuel for lighting (37 percent). Of these two indicators, the most progress in the reduction in prevalence was made with respect to the exposure to dirty fuel for lighting rather than to the quality of the nearest health facility (41 percent versus 17 percent reduction, respectively). Additionally, the proportion of children exposed to overcrowding declined from 27 to 16 percent during the same period. Overall, the

2015/16 estimates confirm that children 0-4 years of age still must deal with an inadequate state of housing.

Other notable changes have been registered with respect to water supply, i.e., the level of deprivation nearly halved over the same period. This outcome may be partly explained by improved water resource infrastructure development and the expansion of water supply networks in cities and urban villages. However, the focus on investment in potable water infrastructure resulted in underinvestment in both

## 2 MOST COMMON DEPRIVATIONS

*Continued*

wastewater and sanitation infrastructure. On the other hand, the indicator for nutrition, i.e., stunting, declined by more than one-third, i.e., from 32 to 20 percent, during the same period. The least progress was made with respect to the quality of the nearest health facility, whose rate of deprivation only declined from 47 percent in 2009/10 to 39 percent by 2015/16.

Figure 2 shows the trends in the 4 dimensions by geographical location, i.e., whether the child resides in

either a city, an urban village or rural areas. As would be expected, rural children exhibit higher rates of deprivation regardless of the dimension. Nonetheless, it is worth mentioning that deprivation from lack of access to quality health facilities only significantly declined for rural children—from 58 percent in 2009/10 to 47 percent in 2015/16—compared to a marginal change from 38 percent to 35 percent for children in urban villages and stagnation for children in cities (at approximately 31 percent).

Figure 2. Deprivation headcount by dimension and area, children aged 0-4 years



Furthermore, Figure 3 shows that at 63 percent in 2015/16, the housing deprivation is still high in rural areas due to the high rates of the use of dirty fuel in these areas (60 percent). Nonetheless, the improvements in the housing of rural areas have been substantial—reducing from 84 percent in 2009/10 to 63 percent by 2015/16—and have been driven primarily by the substantial reduction in overcrowding in rural areas—from 33 percent to 22 percent. Large reductions in overcrowding and the use of dirty fuel—of approximately 50 percentage points—were registered in both cities and urban villages. Finally, deprivation from the water supply was eliminated in cities in 2015/16—the new estimates did not find any child residents in cities who were deprived of water.



## 2 MOST COMMON DEPRIVATIONS

*Continued*

Figure 3. Deprivation headcount by indicator and area, children aged 0-4 years



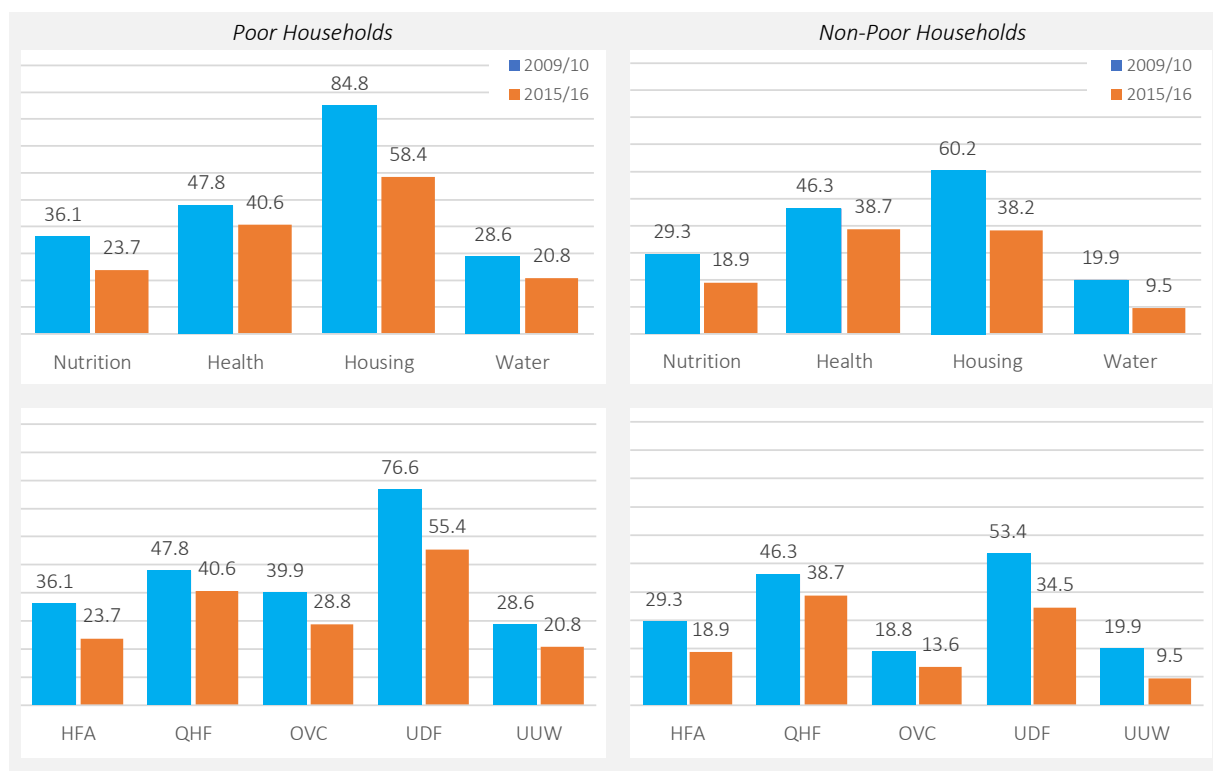
Figure 4 shows how the deprivations of children aged 0-4 years vary by a household’s monetary poverty status. It is indicated that in both 2009/10 and 2015/16, children from poor households have higher rates of deprivation. For both categories of children, the largest declines were registered for the water dimension—27 percent for poor children and 52 percent for non-poor children. On the other hand, non-poor children registered comparatively higher declines in the housing dimension compared to their poor counterparts (37 percent decline for non-poor children compared with a 31 percent decline for poor children). Overall, the chart suggests that childhood deprivation is not synonymously linked to monetary poverty, as the divergence in deprivation rates by monetary poverty status is relatively small. The only exception to this rule is regarding housing, where the deprivation rates among children from non-poor households are lower by as much as 37 percent in 2015/16, which is an increase from the gap of 29 percent in 2009/10.

## 2 MOST COMMON DEPRIVATIONS *Continued*

Children residing in households with at least one HIV-positive member have much higher rates of deprivation compared to children in households without any positive HIV members. Among children aged 0-4 years, the housing deprivation rates were 17 and 23 percentage points higher for children who reside in households with an HIV-positive member in 2009/10 and 2015/16, respectively. Within the housing dimension, children from households with HIV-positive members are more likely to be deprived with respect

to the use of dirty fuel for lighting. The high association of HIV with deprivation is explained by the higher prevalence of HIV-positive members in rural areas. Whereas nationally, 27 percent of children reside in a household with an HIV-positive member, in rural areas, the rate is 50 percent. The higher prevalence of HIV in rural areas may be explained by poverty and the associated socioeconomic difficulties that predispose individuals to risky sexual behaviours.

Figure 4. Deprivation rates by poverty status, children aged 0-4 years



**Notes:** Indicators: HFA- Height for age; QHF- Quality of nearest health facility; OVC- Overcrowding; UDF- Use of dirt fuel; UUW- Use of unimproved water.



## 2 MOST COMMON DEPRIVATIONS

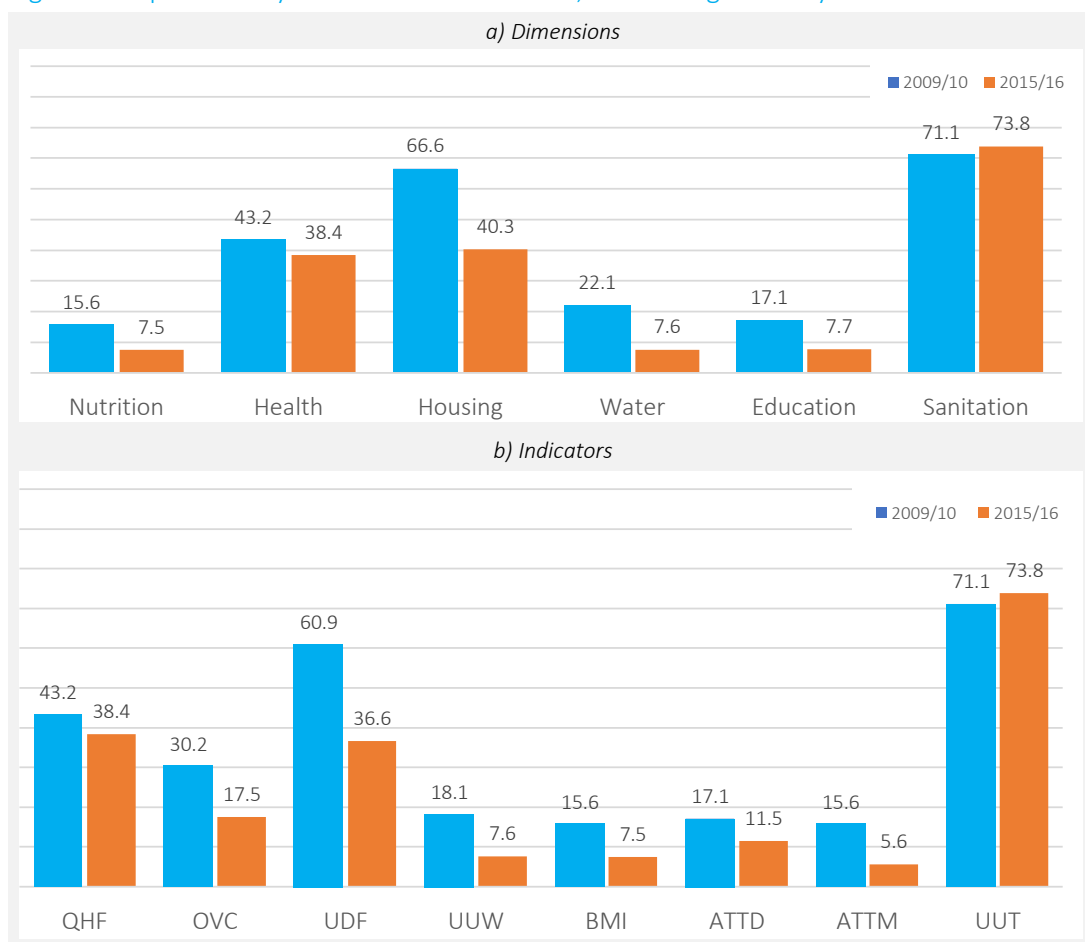
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### Children aged 5-12 years

Figure 5 examines trends in deprivation by dimension for middle-aged children aged 5-12 years. The figure indicates that sanitation is the most common form of deprivation for this group—at least 7 out of every 10 children in this age group are deprived of this dimension. In addition, there was a slight increase in the level of sanitation deprivation, i.e., from 71.1 percent in 2009/10 to 73.8 percent by 2015/16. This change may be due to changes in the definitions of what constitutes improved sanitation in cities. Sanitation

deprivation is influenced by what is happening in rural areas, specifically, where a large population operates without any toilet facilities. Approximately one out of every three children aged 5-12 years in rural areas resides in a household without a toilet. In urban areas, there are challenges related to sharing toilet facilities. The proportion of children in urban areas aged 5-12 years who share toilet facilities increased from 8.3 percent in 2009/10 to 21.7 percent in 2015/16.

Figure 5. Deprivation by dimension and indicator, children aged 5-12 years



**Notes:** QHF- Quality of nearest health; OVC- Overcrowding; UDF- Use of dirt fuel; UUW- Use of unimproved water; BMI- Body Mass Index; School attendance- ATTD; ATTM- School attainment; UUT- Use of unimproved toilet.

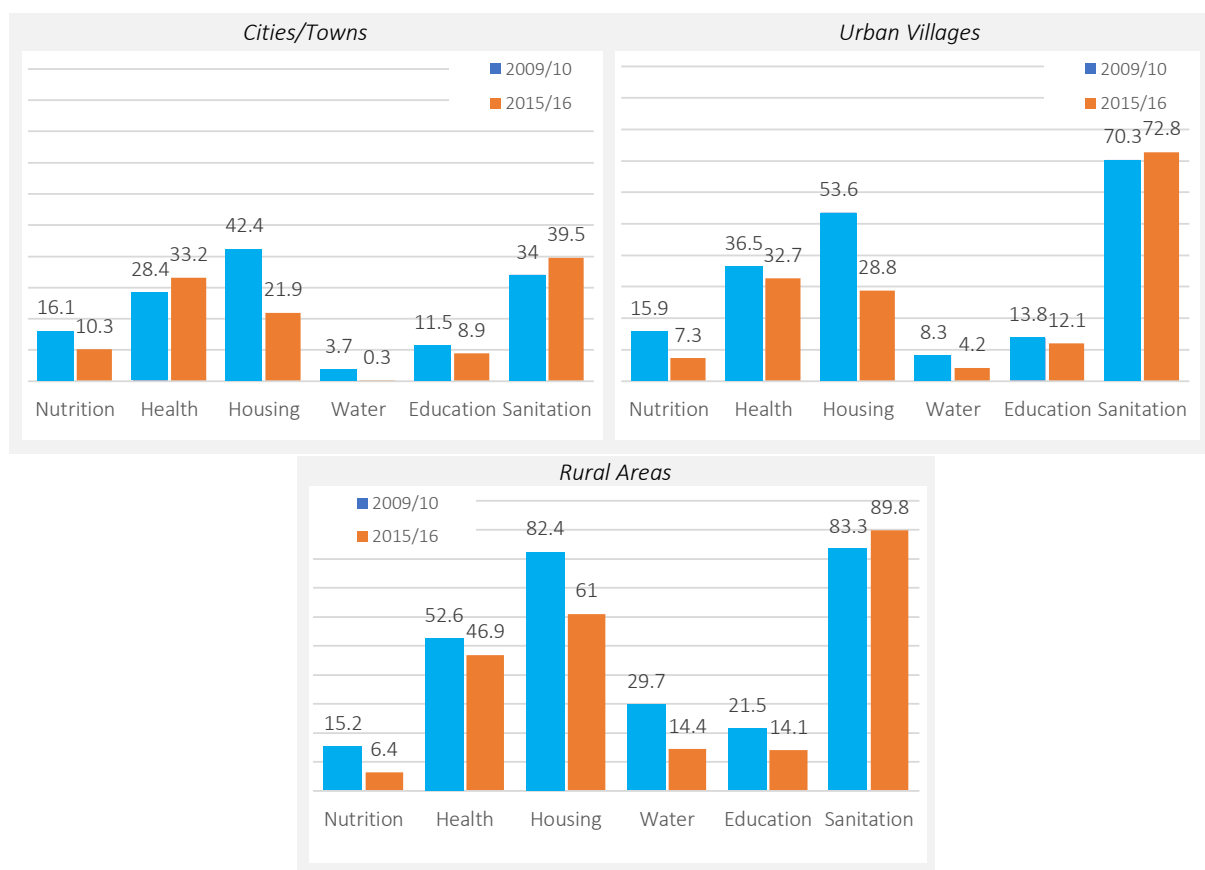
## 2 MOST COMMON DEPRIVATIONS *Continued*

On the other hand, the largest relative reduction in deprivation is in the water dimension, where the level of deprivation reduced by 65.6 percent between 2009/10 and 2015/16. Another indicator that shows a similar large reduction in deprivation is that of nutrition (a reduction of at least 52 percent). It is worth noting that the level of deprivation as well as the trends in housing deprivation for children aged 5-12 years are similar to those of infants aged less than 5 years. This suggests that all children face the same housing environment characteristics regardless of demographic category.

There are very large differences in deprivations by geographical location. Figure 6 shows that for all dimensions except for nutrition, rural children fared worst compared to

children from other areas in both 2009/10 and 2015/16. However, for nutrition, the children in rural areas fared better than their counterparts in either Cities/Towns or urban villages. Based on the body mass index indicator, 6.4 percent of rural children aged 5-12 years were deprived of nutrition in rural areas compared to 10.3 percent in cities in 2015/16. This result may indicate higher levels of nutrition lifestyle-related challenges such as obesity experienced by children in cities and urban villages compared to children in rural areas. Both charts also show that sanitation and housing deprivations are predominantly rural phenomena. On the other hand, in 2015/16, there were only marginal differences in the deprivations relating to the quality of the nearest health facilities for children in Cities/Towns and urban villages.

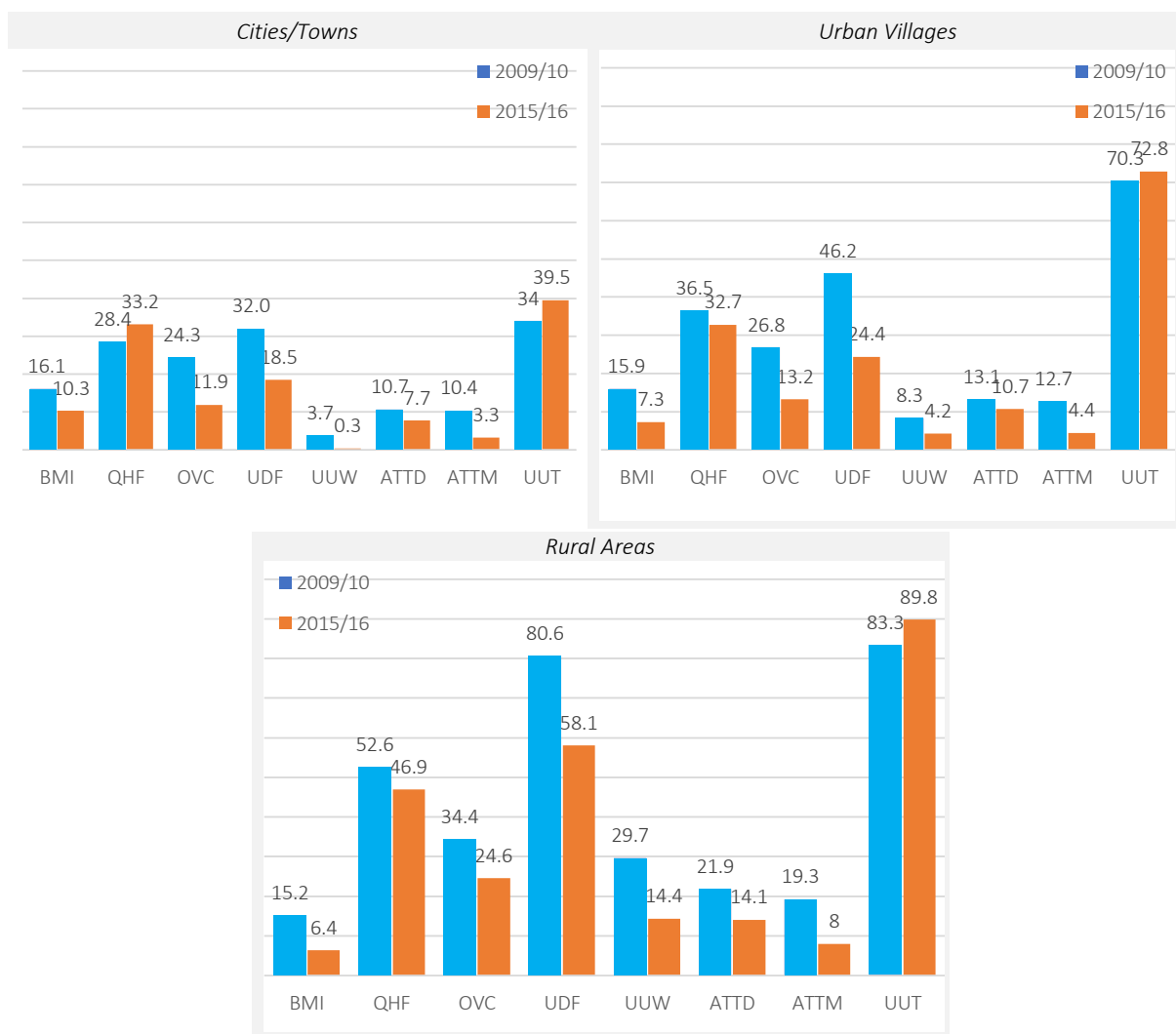
Figure 6. Deprivation headcount by dimension, indicator and area, children aged 5-12 years





## 2 MOST COMMON DEPRIVATIONS *Continued*

Figure 7. Deprivation headcount by dimension, indicator and area, children aged 5-12 years



**Notes:** QHF- Quality of nearest health; OVC- Overcrowding; UDF- Use of dirt fuel; UUW- Use of unimproved water; BMI- Body Mass Index; School attendance- ATTD; ATTM- School attainment; UUT- Use of unimproved toilet.

## 2 MOST COMMON DEPRIVATIONS

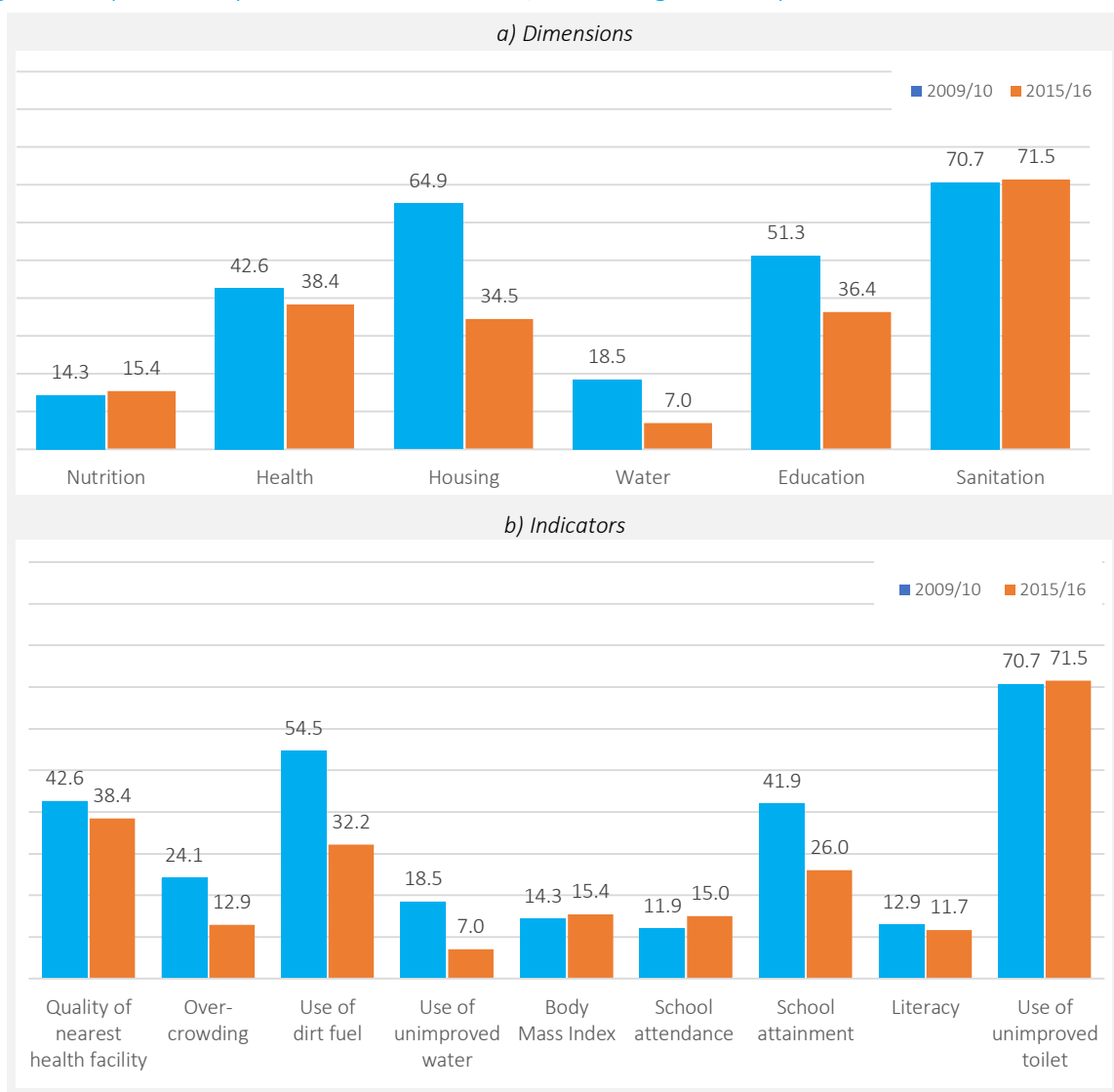
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### Children aged 13-17 years

For adolescent children, deprivations are measured using the same indicators as those used for middle-aged children (aged 5-12 years); the only new indicator included is that of literacy within the education dimension. Figure 8 shows that for children aged 13-17 years, deprivation relating to sanitation is the most pressing. In 2015/16, sanitation deprivation was followed by that of health, education and

housing. Worth noting is the large proportion of children aged 13-17 years who are deprived of education compared to those in the 5-12-years category. Given the automatic promotion system that is operational in Botswana, the jump in education deprivation for those aged 13-17 years may be linked to performance at the end of junior school.

Figure 8. Deprivation by dimension and indicator, children aged 13-17 years



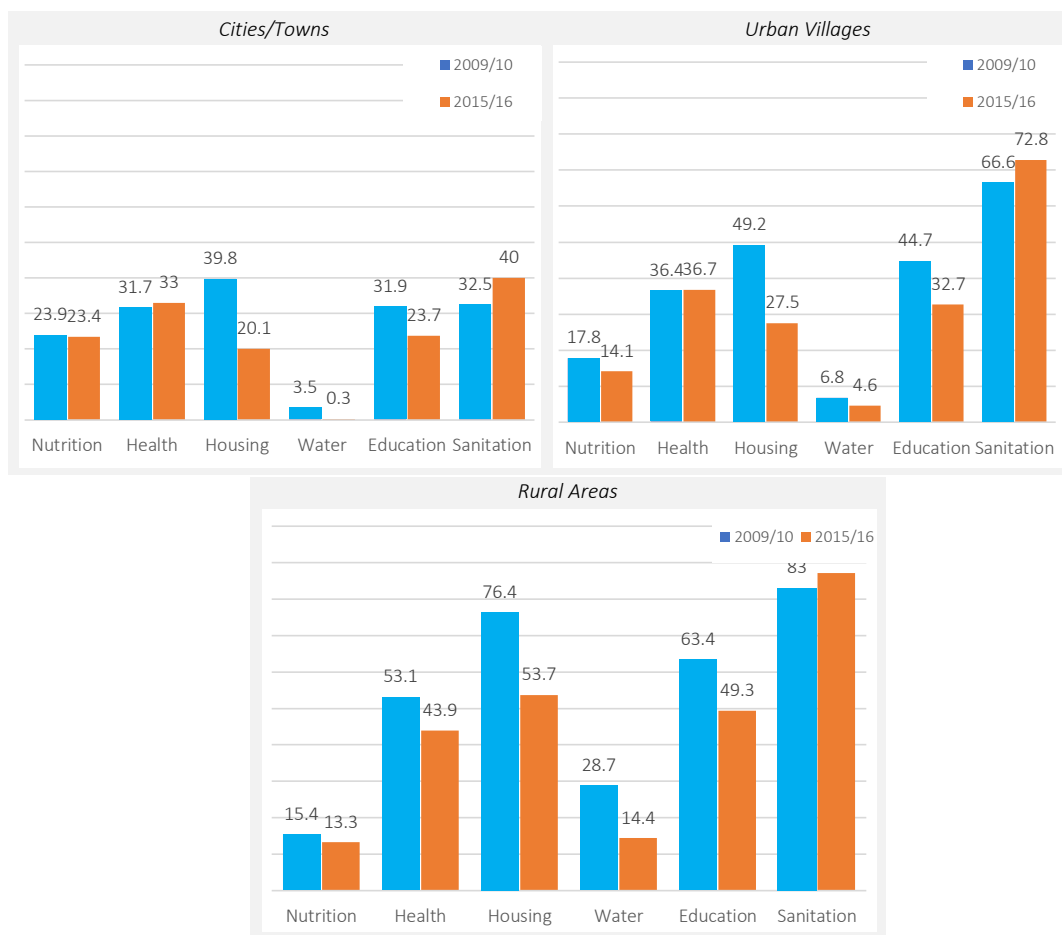
## 2 MOST COMMON DEPRIVATIONS *Continued*

Students who perform poorly have restricted alternatives for further schooling. Figures from the Botswana Examination Council (BEC) indicate that only 35 percent of the children can pass the JCE, and the rest must fend for themselves in some way. For those who can join either secondary school or a training/vocational institution, they continue to receive a public subsidy. Those who miss out on these options do not receive any subsidy. However, attending vocational schools is not available to all since such facilities are not very close; they are mainly accessible in urban villages, towns and cities. On the other hand, the largest reductions in deprivation were registered for water supply and housing, which declined by 62 percent and 47 percent, respectively. There was a slight increase in the extent of nutrition deprivation—from 14.3 percent to 15.4

percent. With respect to geographical location, the bottom part of Figure 7 shows that while rural areas and urban villages registered a reduction in nutrition deprivation, in cities, the extent of nutrition deprivation stagnated. On the other hand, whereas the level of nutrition deprivation declined for children from poor households (39 percent reduction), this dimension increased by 27 percent for non-poor children.

Figure 10 shows the trends in the prevalence of indicators for children aged 13-17 years by location. The prevalence of overcrowding was reduced by 60 percent in cities/town, 43 percent in urban villages and 41 percent in rural areas. The overall education deprivation declined between 2009/10 and 2015/16 across strata.

Figure 9. Deprivation headcount by dimension and area, children aged 13-17 years





## 2 MOST COMMON DEPRIVATIONS

*Continued*

The extent of the use of dirty fuel was reduced by approximately 45 percent in cities and urban villages, while rural areas managed a reduction of only 31 percent (Figure 10). The lack of improved water was nearly eliminated in cities—a reduction by more than 91 percent—while that in urban villages and rural areas was reduced by 32 and 50 percent, respectively. School attendance deprivation for 13-17-year-old children increased by 16, 46, and 32 percent in cities, urban villages and rural areas, respectively.

Figure 10. Deprivation headcount by indicator and area, children aged 13-17 years

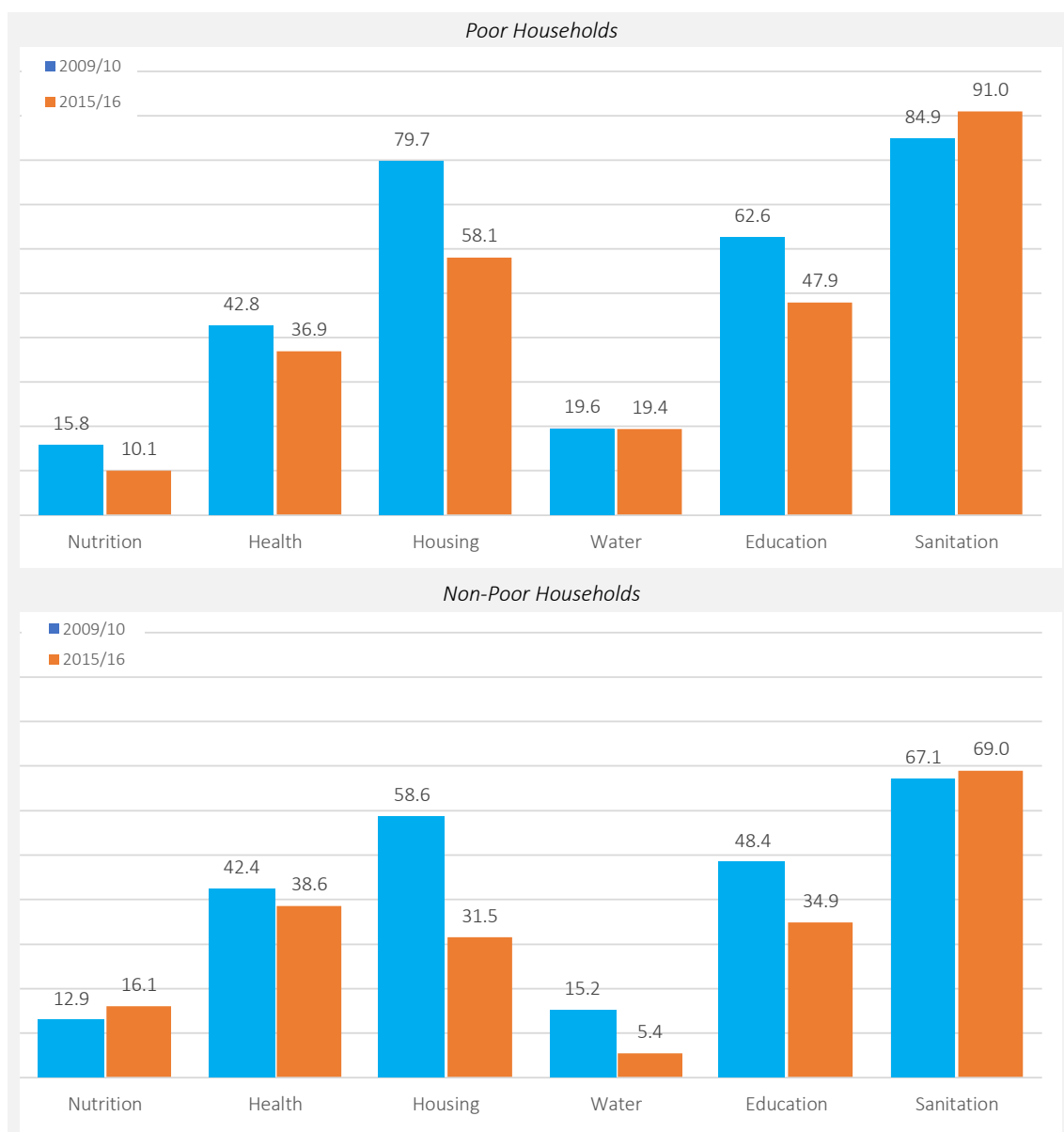


## 2 MOST COMMON DEPRIVATIONS

*Continued*

Figure 12 shows that it was children from poor households who were responsible for the increase in deprivation from school attendance. Specifically, the extent of school attendance deprivation among poor children aged 13-17 years increased by 45 percent compared to an increase of only 32 percent for their non-poor counterparts (Figures 12). Furthermore, school attendance deprivation increased the most for female-headed households. This suggests that poor children aged 13-17 years residing in female-headed households dropped out of school more in 2015/16 than in 2009/10 (Figure 12).

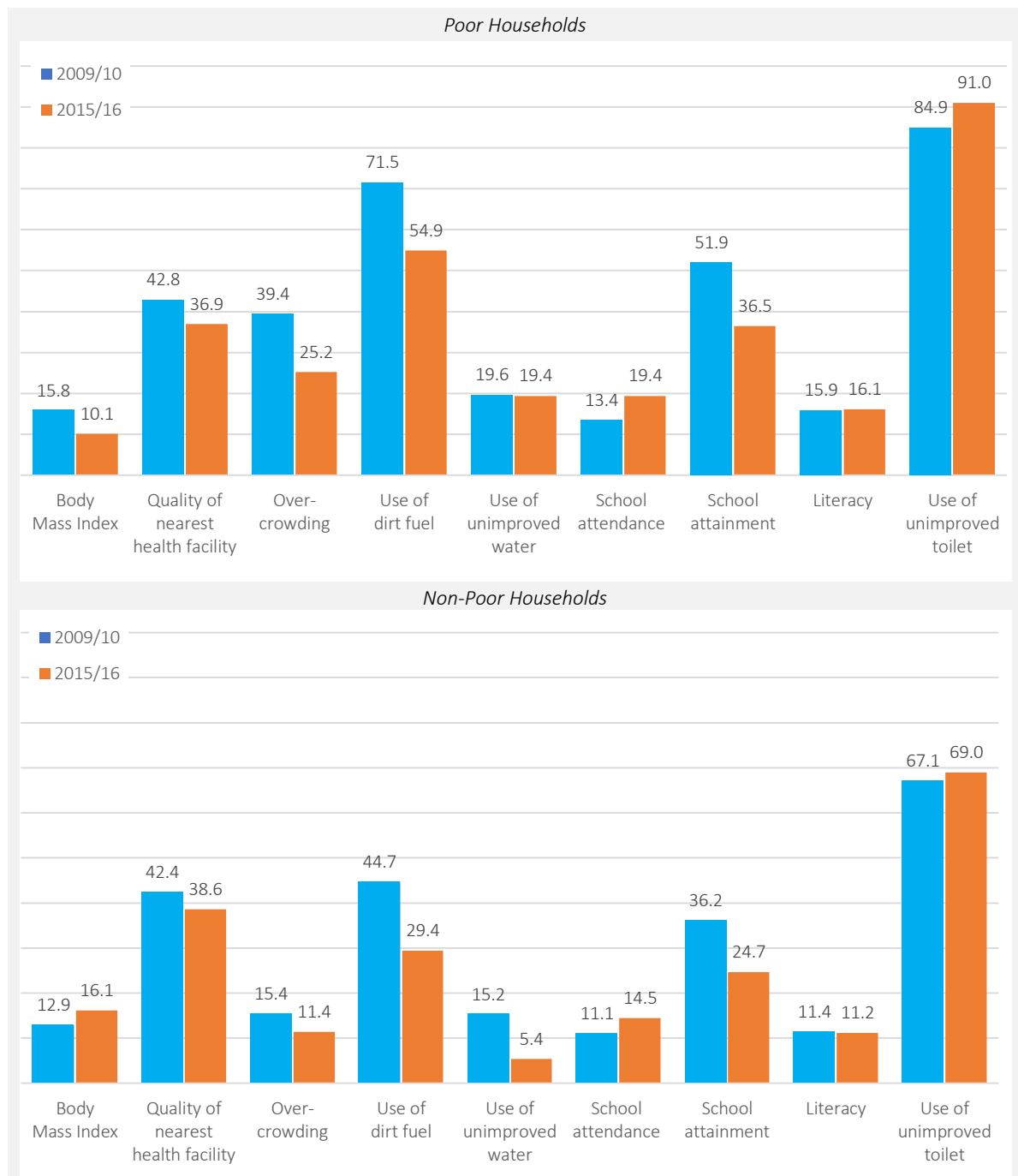
Figure 11. Deprivation rates by poverty status, children aged 13-17 years



## 2 MOST COMMON DEPRIVATIONS

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Figure 12. Deprivation rates by poverty status, children aged 13-17 years





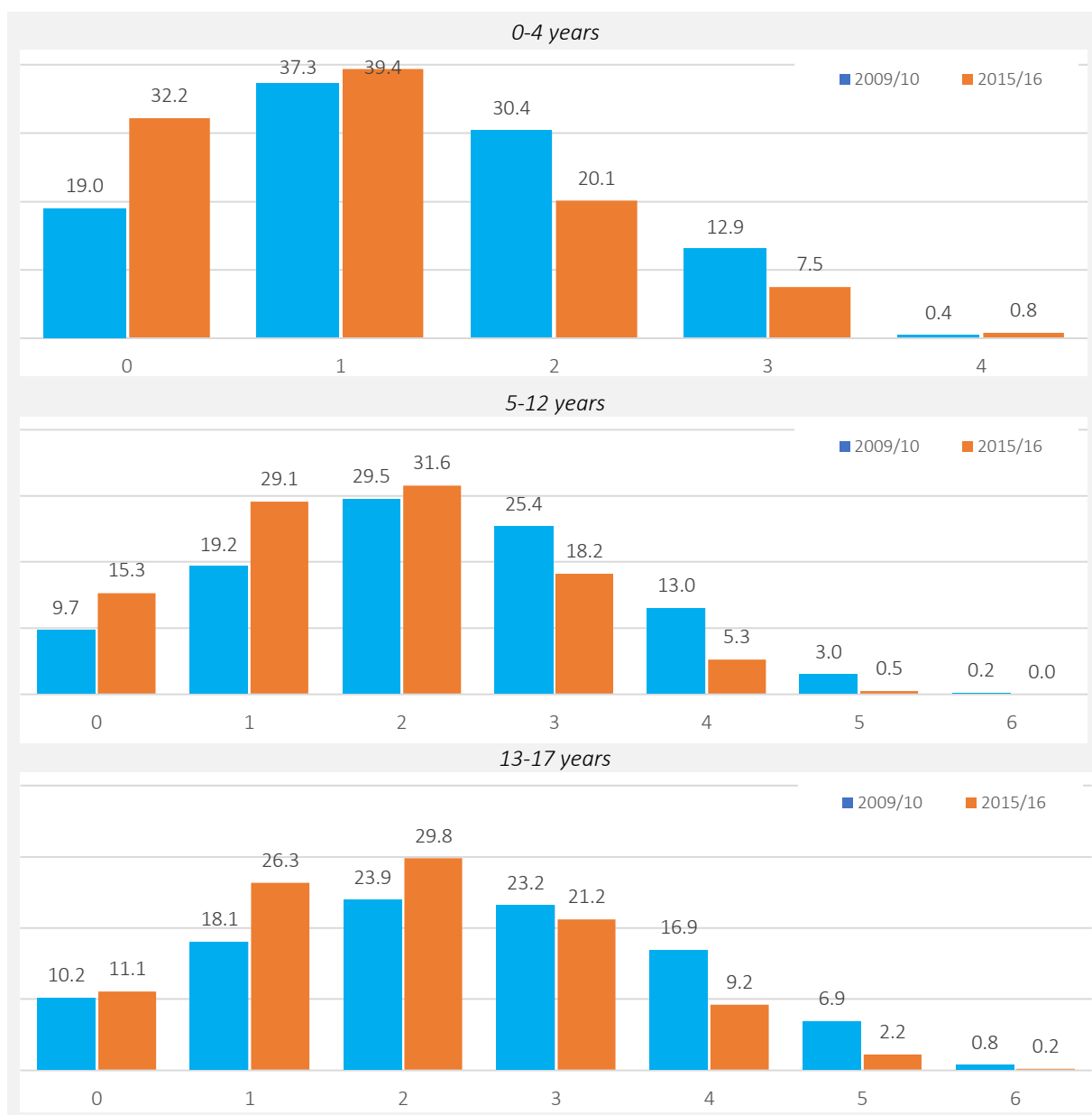


# 3 | MULTIPLE AND OVERLAPPING DEPRIVATIONS

## Multiple deprivations

Figure 13 shows the percentages of all children who are deprived by the number of deprivations per child for the three demographic age groups. There is variation across the age groups in both the number as well as the most frequent number of deprivations experienced. For the 0-4-year age group, one deprivation per child is the most prevalent number.

Figure 13. Deprivation headcount by age group



## 3 | MULTIPLE AND OVERLAPPING DEPRIVATIONS

*Continued*

For the 5-12-years and 13-17-years categories, two deprivations per child is the most prevalent number. The same charts show that having no deprivation at all is most prevalent among children 0-4 years of age, followed by children 5-12 years and 13-17 years of age. With respect to trends between 2009/10 and 2015/16, The proportion of children without any deprivations increased the most for children aged 0-4 years—from 17.6 to 32.2 percent, respectively.

Overall, the trends indicate a substantial decline in the level of multiple deprivation from 2009/10 to 2015/16, with the proportion of children experiencing two or more deprivations declining from 50 to 28.4 percent for those aged 0-4 years, 71 to 55 percent for those aged 5-12 years, and 73 to 62.6 percent for those aged 13-17 years, respectively. Even based on the severe deprivation criteria, i.e., deprived in at least half of the total applicable dimensions simultaneously, Figure 13 indicates that the proportion of children deprived in 3 or more dimensions declined from 42 to 24 percent and 48 to 33 percent for children aged 5-12 years and 13-17 years, respectively. The above trends suggest an improvement in the overall living conditions of children between the two surveys.

### Overlapping deprivation

It is important to understand whether children predominantly experience a single dimension or multiple dimensions simultaneously. This type of analysis can provide ways through which interventions can be targeted. Figure 14 shows the trends in the extent of the overlap of dimensions for nutrition, health, housing and water for children aged 0-4 years. The blue bars show the proportion of children who are deprived in only the specified dimension, while the subsequent bars show the proportion of children who are deprived in the specified dimension and both other and no other dimensions, while the other parts of each bar show

how many children are deprived in the specified dimension and other dimensions concurrently. The larger the blue bar is in comparison to the other bars shows that the specified dimension is a unique issue.

The chart shows that health has increasingly become more of a standalone issue in 2015/16. The other dimensions are primarily experienced simultaneously. Furthermore, between 2009/10 and 2015/16, the proportion of children facing multiple deprivation declined significantly for nutrition, health, and housing. Only for the dimension of water did the proportion of children deprived in other dimensions remain the same. The proportion deprived of water only increased from 2 percent in 2009/10 to 6 percent by 2015/16. For example, of the 11 percent of children deprived of water in 2015/16, 4 percent were deprived in one other dimension, while 6 percent were deprived in two or more dimensions in addition to water. As such, water cannot be addressed in isolation. Similarly, out of the 41 percent children deprived of housing in 2015/16, 17 percent were deprived in one other dimension, while 8.2 percent were deprived in at least 2 dimensions in addition to housing.

Figure 15 shows the trends in multiple deprivations for children aged 5-12 years. The chart shows that sanitation significantly increased as a standalone issue in 2015/16 compared to 2009/10. On the other hand, the proportion of children faced with sanitation deprivation and the deprivation of at least one other dimension declined from 65 percent in 2009/10 to 54 percent by 2015/16. For health, the proportion of children facing multiple deprivations combined with that of health declined from 38 percent in 2009/10 to 29 percent by 2015/16. On the other hand, the proportion of children deprived of housing in combination with any other dimensions declined from 62 percent in 2009/10 to 39 percent by 2015/16.



### 3 MULTIPLE AND OVERLAPPING DEPRIVATIONS *Continued*

Figure 14. Deprivation rates by poverty status, children aged 0-4 years

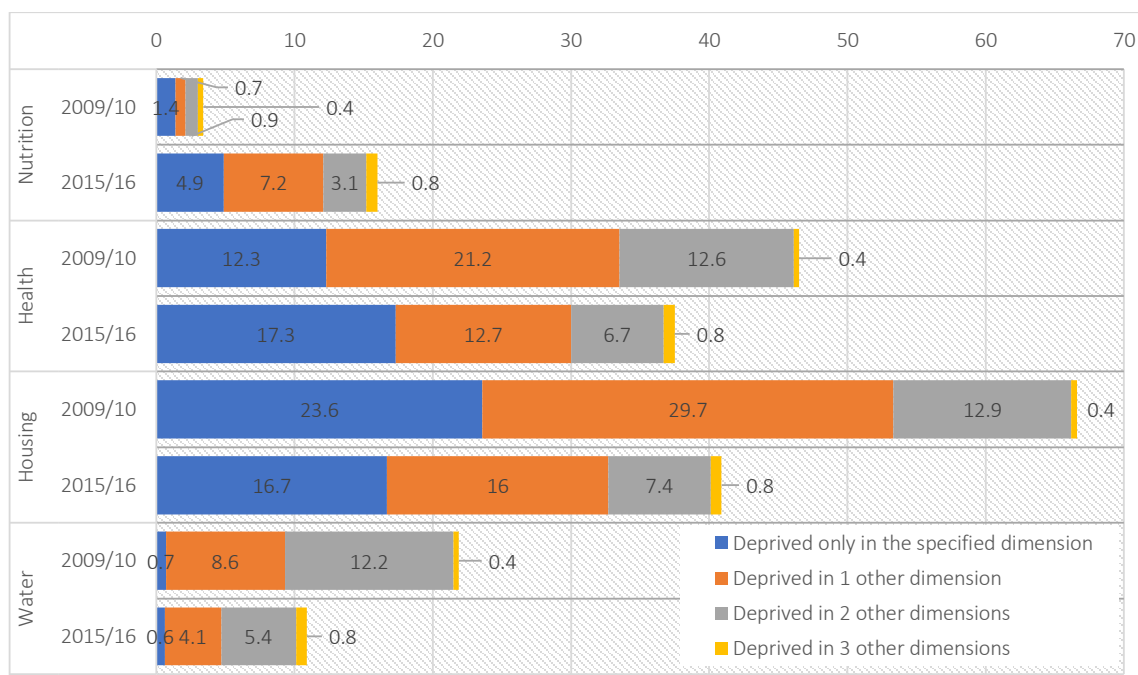
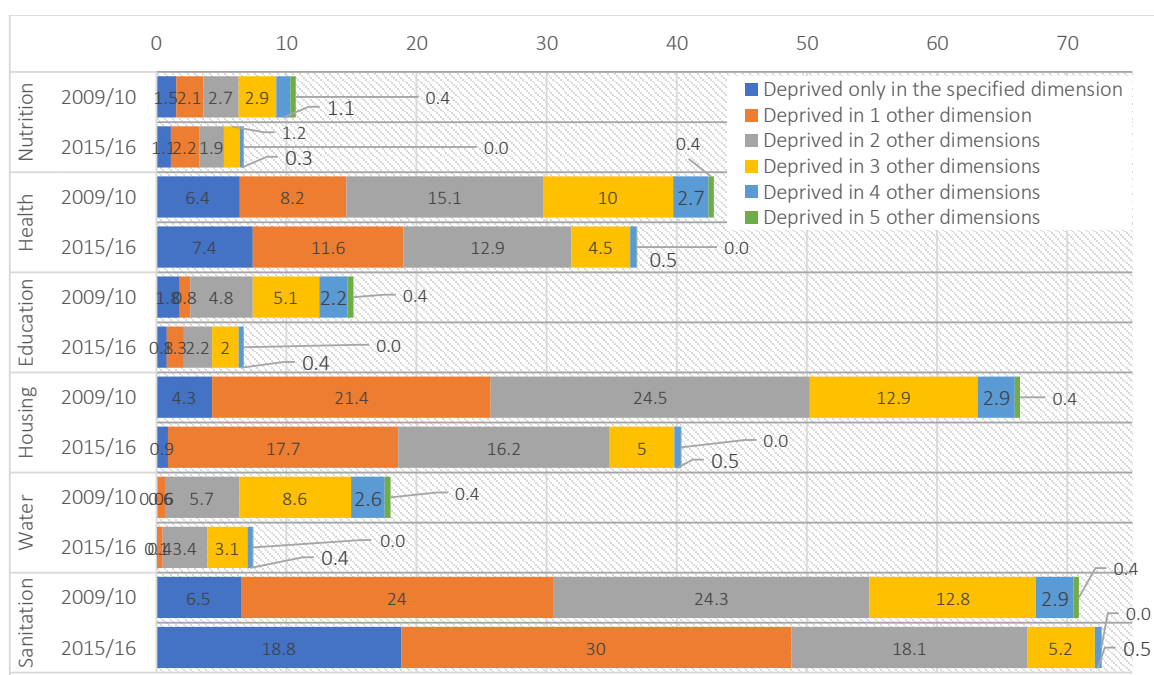


Figure 15. Deprivation rates by poverty status, children aged 5-12 years



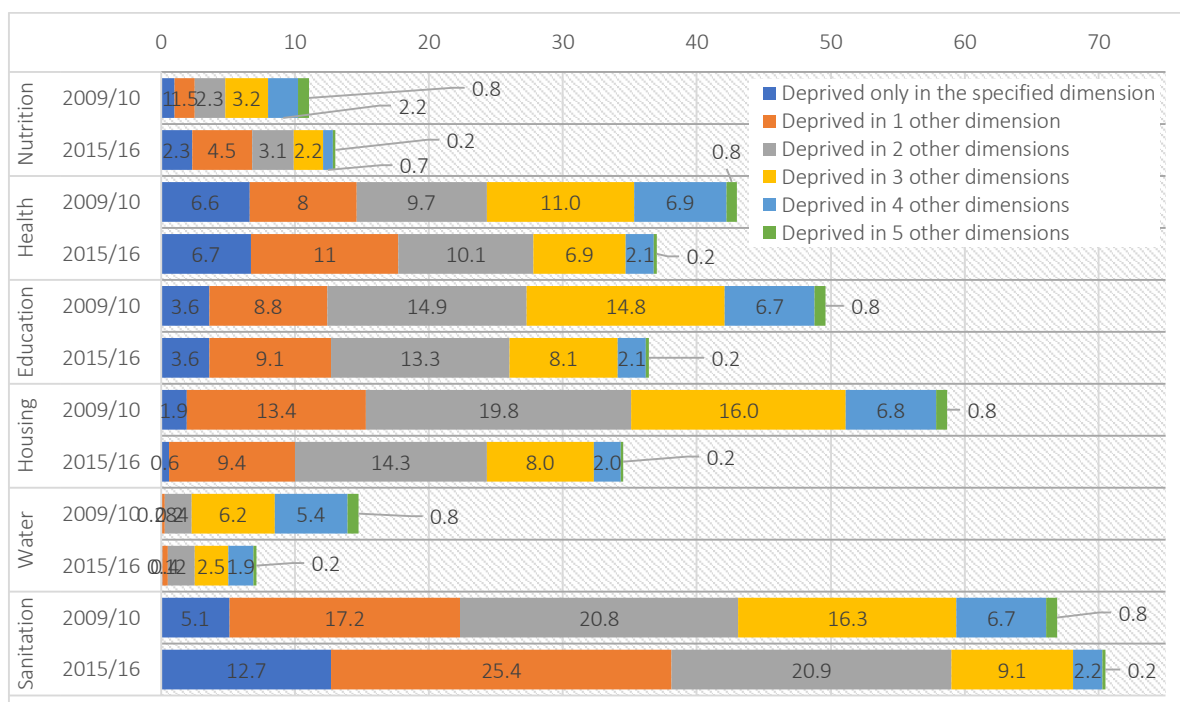
### 3 | MULTIPLE AND OVERLAPPING DEPRIVATIONS

*Continued*

The trends in overlapping deprivations for children aged 13-17 years are similar to those for children 5-12 years, with the exception of the education dimension. Specifically, Figure 16 shows that the share of educationally deprived children who were also deprived in one other dimension increased from 16 percent in 2009/10 to 25 percent in 2015/16, while the percentage of those who were deprived in two other dimensions in addition to education increased from 31 percent to 37 percent during the same period.

Hence, education for secondary school-going children cannot be addressed in isolation. Overall, the charts show that the number of overlapping deprivations decreased in 2015/16. However, it is worth noting that a high overlap between any two dimensions may not necessarily suggest any relationship between the two dimensions. However, these results do point to the need for integrated approaches to address the various aspects of childhood deprivation.

Figure 16. Deprivation rates by poverty status, children aged 13-17 years



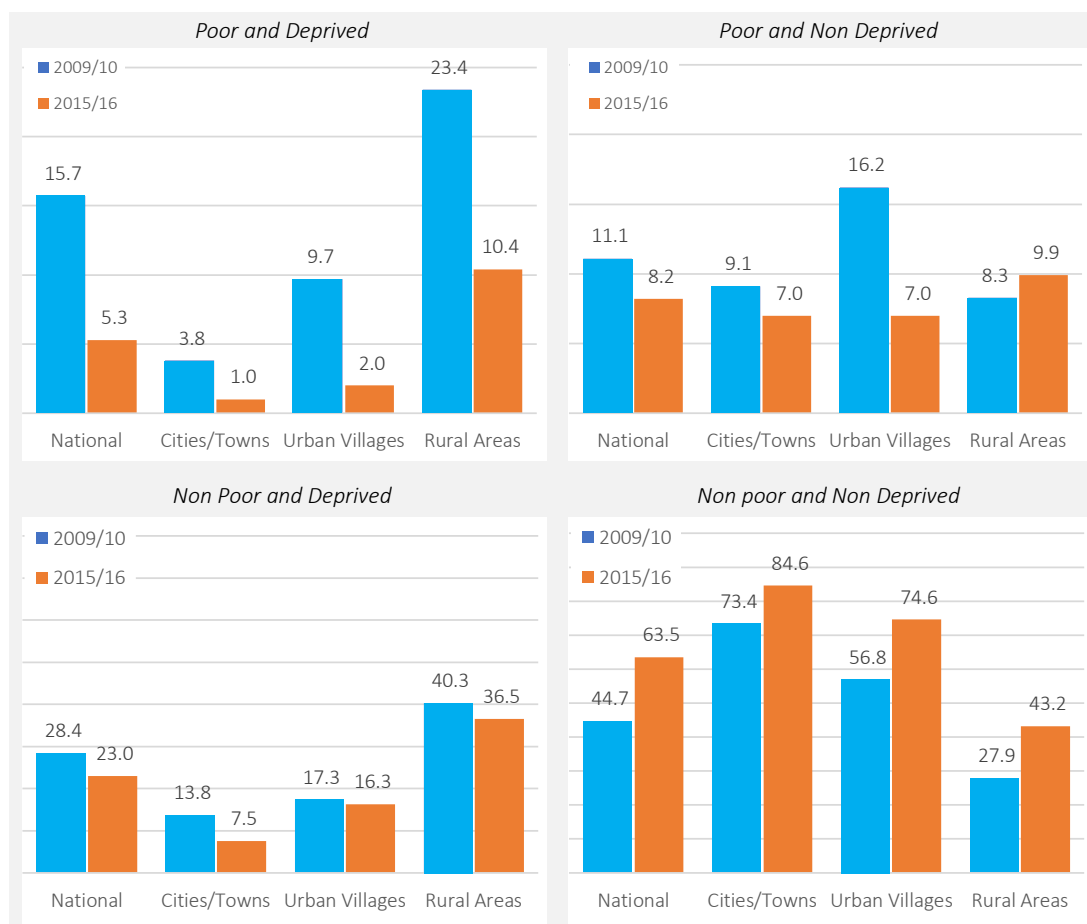
# 4 | MONETARY POVERTY VERSUS DEPRIVATIONS

Figure 17 shows the trends in the overlap between poverty and deprivation in 2009/10 and 2015/16. Four statuses are considered, i.e., (i) poor and deprived, (ii) poor and non-deprived, (iii) non-poor and deprived, and (iv) non-poor and non-deprived. For children aged 0-4 years, the proportion that was poor and deprived declined from 24 percent in 2009/10 to 5.3 percent by 2015/16. Most of the above changes were driven by children in residents in rural areas, where the abovementioned rate declined from 33 percent to 10 percent during the same period.

proportion of children who were poor and deprived from households with at least one HIV member reduced from 32 percent to 8 percent during the study period. This reduction of poor and deprived children was accompanied by a surge in the share of the non-poor and non-deprived; at the national level, this status increased by approximately 19 percentage points during the study period. By location, the largest increase was for children residing in urban villages, i.e., 18 percentage points compared to increases of 11 and 15 percentage points registered in cities and rural areas, respectively.

Other profiling variables that showed a similar decline include the HIV status of the households; specifically, the

Figure 17. Poverty and multidimensional deprivation overlap by area, children aged 0-4 years



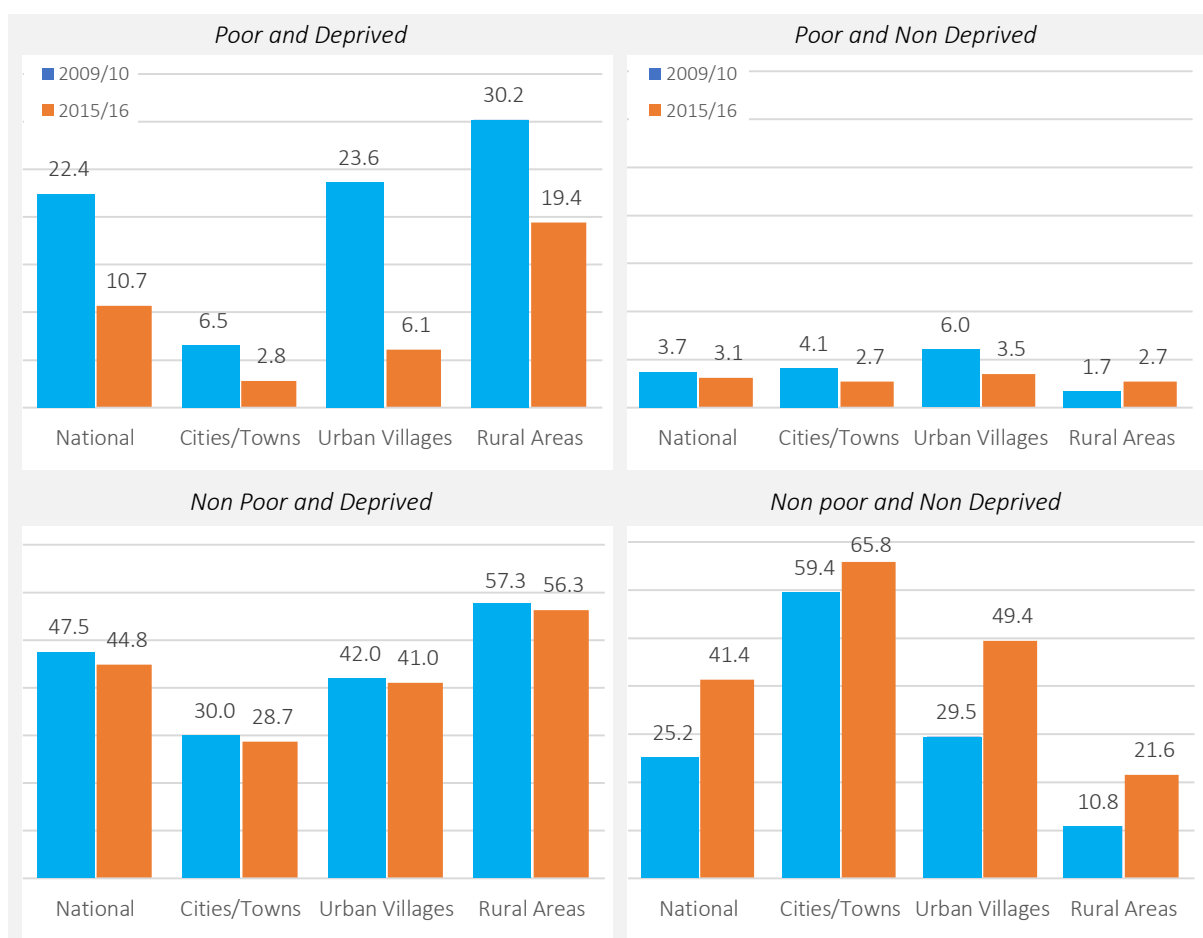
## 4 | MONETARY POVERTY VERSUS DEPRIVATIONS

*Continued*

For children aged 5-12 years, the reduction in the proportion of children who were poor and deprived was much larger at 10.7 percentage points compared to that of children aged 0-4 years (Figure 18). By location, the reduction in this status was the highest among urban villages and rural areas. Also, worth noting is the fact that the reduction was highest among female-headed households, i.e., a decline of 21 percentage points compared to 15 percentage points for male-headed households. Even much larger declines were registered for children residing in households with at least one HIV-positive member (24 percentage points)

compared to those without any HIV-positive members (18 percentage points). Overall, the proportion of non-poor and non-deprived children increased by 16.2 percentage points for those aged 5-12 years. Children in urban villages registered the largest increases (20 percentage points) compared to those in either cities (7 points) or rural areas (11 points). Finally, while there was only a slight reduction in the proportion of poor and non-deprived children (by 0.6 percentage points), the change was significantly much higher among children residing in cities 2.5 percentage point reduction.

Figure 18. Poverty and multidimensional deprivation overlap by area, children aged 5-12 years





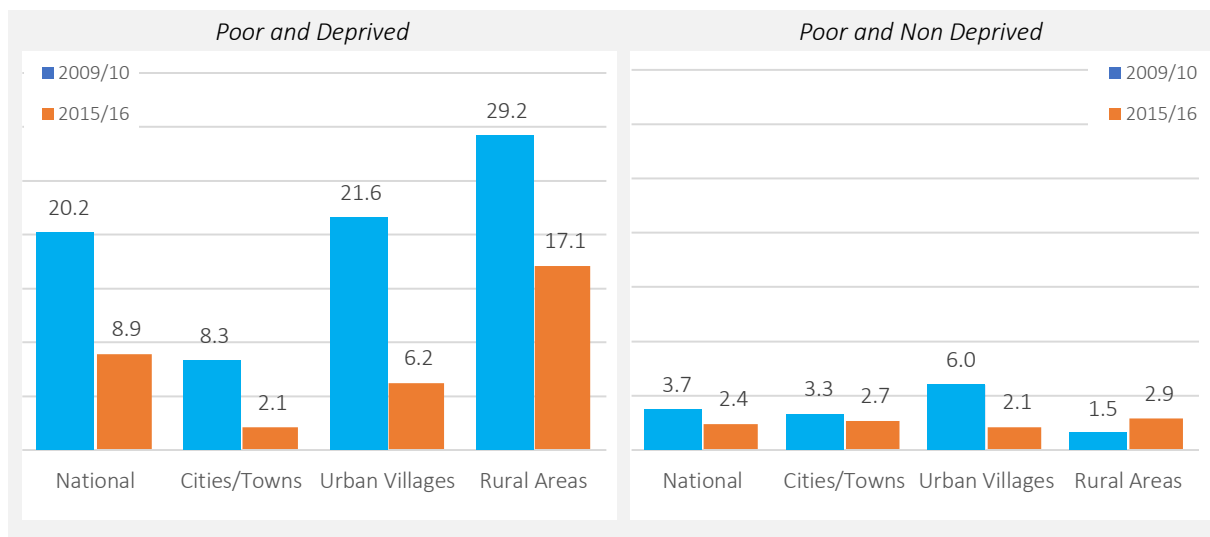
## 4 | MONETARY POVERTY VERSUS DEPRIVATIONS

*Continued*

The magnitude of the reduction in the proportion of children aged 13-17 years in the poor and deprived category was similar to that of the 5-12-year age group at approximately 11 percentage points. Most of this reduction was recorded among children residing in households with at least one HIV-positive member (24-point reduction) and among female-headed households (21-point reduction). The children who moved out of the poor and deprived category moved mainly into the non-poor and deprived category. Specifically, the proportion of the latter category increased by 3.4 percentage points nationally but increased at much higher rates among HIV-positive households (12.7-point increase) and female-headed households (9.6-point increase).

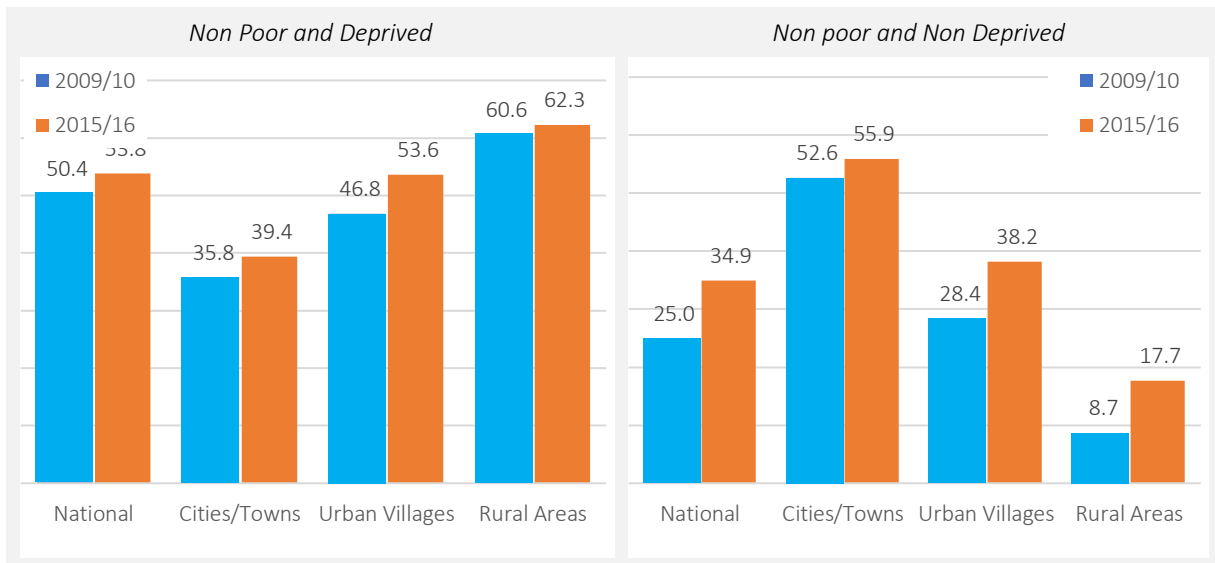
The share of children in the non-poor but deprived category increased for rural areas, i.e., by at least 1.7 percentage points for children 13-17 years. Indeed, the status of non-poor but deprived remains prevalent in rural areas; at least two out of three children in the rural areas are categorized in this status in 2015/16. Overall, in 2015/16, the largest proportion of children were in the preferred category of non-poor and non-deprived, with a larger share of children aged 0-4 years in this category compared to older age groups. Hence, substantial progress has been registered in Botswana in reducing children’s experiences of both monetary poverty and deprivation.

Figure 19. Poverty and multidimensional deprivation overlap by area, children aged 13-17 years



## 4 | MONETARY POVERTY VERSUS DEPRIVATIONS

*Continued*



## 5 | CONCLUDING REMARKS

This report set out to update the N-MODA for Botswana using the 2015/16 BMTHS. A similar exercise was conducted in 2014 based on the 2009/10 BCWIS. The trends between 2009/10 and 2015/16 show a substantial reduction in the extent of deprivation across age groups. The largest relative reduction in a single deprivation was registered for the water dimension—to the extent that water deprivation in cities was eliminated. Another notable change was the overall reduction in housing deprivation—by at least 26 percentage points for all age groups. Similarly, the education dimension was reduced by 9.4 and 14.9 percentage points for children aged 5-12 and 13-17 years, respectively.

With respect to changes in deprivations between 2009/10 and 2015/16, the results indicate that the health dimension registered the least amount of reduction compared to that of other dimensions. Health deprivation declined by only 7.2, 4.8, and 4.2 percentage points for children aged 0-4, 5-12, and 13-17 years, respectively. Given that the health dimension measures the quality of the nearest health facility used, it is possible for the government to address two areas regarding such quality, i.e., the availability of both professional staff and drugs at health facilities. One way to improve the availability of professional staff is through the expansion of the hard-to-reach incentive scheme or the top-up approach for health workers. However, beyond the expansion of the coverage of the incentive scheme, there is also a need to change the existing value of the incentive, i.e., from a fixed or uniform amount based on one's cadre within the health professional to one that is likely calculated as a share of one's salary.

There is also a need to address the shortage of accommodations for health workers, which affects the overall staff presence at the health facilities. Addressing this need may entail overhauling the current procurement

mechanism used by the Botswana Housing Corporation that relates to the construction of health staff houses. Overall, the health deprivation results suggest that access to quality health services has not changed much between the two periods. This is a cause of concern given the widespread inefficiency regarding health sector spending—especially that regarding budget absorption (on average, approximately 60 percent of the health budget is absorbed). On the other hand, the current health spending consisting of 12 percent of the national budget, although quite substantial, remains below the expected norm on the African continent, i.e., 15 percent based on the 2001 Abuja declaration on health spending.

Education deprivation increases significantly as children move from the 5-12-year age group to the 13-17-year age group. In both 2009/10 and 2015/16, the proportion of children aged 13-17 years who were deprived of education was more than fourth fold that for children aged 5-12 years—51.3 percent vs. 17.1 percent in 2009/10 and 36.4 percent vs. 7.7 percent for 2015/16. These large gaps are explained by the limited transition to secondary school after the completion of the Junior Certificate Examinations (JCE). Deprivation due to the lack of appropriate school attainment substantially increases after the JCE. A lack of appropriate school attainment for one's age is experienced for the 13-17-year age group although education accounts for the largest share of the budget—averaging 22 percent of the total budget between 2014/15 and 2018/19, followed by spending for economic (20 percent) and public services (18 percent). Indeed, spending on education has averaged approximately 7.6 percent of the GDP since 2011, although approximately 90 percent of the spending is on teachers' salaries. The failure of the government to support children who have not passed the JCE is a cause for concern. There is a need to address the plight of children who fail the JCE.

## 5 | CONCLUDING REMARKS

*Continued*

For all age groups, sanitation is the leading single dimension deprivation; more than seven out of every ten children in Botswana in 2015/16 were deprived of sanitation. Sanitation deprivation is the most prevalent in rural areas, where nearly nine out of every ten children in rural areas do not have access to an improved sanitation source. Furthermore, a significant proportion of rural sanitation deprivation is due to the lack of any toilet facility. In 2015/16, approximately 30 percent of children in rural areas resided in households without any toilet facility, which was down from 32 percent in 2009/10. Nonetheless, children in both cities and urban villages also have high rates of sanitation deprivation of approximately 40 percent and 70 percent, respectively, in both 2009/10 and 2015/16. In cities and urban villages, the key sanitation challenge is the communal use or sharing of toilet facilities. In 2015/16, at least 34 percent of the children in cities and 21 percent of the children in urban villages were accessing shared facilities.

The large prevalence of sanitation deprivation has several implications. First, it is important to place the lack of sanitation in rural areas in context. For geographically dispersed rural areas, households have the responsibility of meeting the cost of setting up the sanitation infrastructure, e.g., septic tanks, which is unlike the case in cities and towns.

This cost is very substantial. Second, a significant proportion of rural areas are cattle posts that are characterized by non-permanent residencies, which may explain the high prevalence of no toilets in rural areas. As such, to address the lack of toilets, there is a need to encourage rural households—especially those engaged in crop farming in both the lands and ranches—to have at least a pit latrine to start with. Third, the lack of appropriate sanitation in rural areas will continue to pull down the overall child deprivation indicators for Botswana. Given the very large outlay in terms of establishing infrastructure, it is possible that the government can make a dent in the sanitation deprivation by reducing the rates of the communal use of sanitation. This can be achieved through the enforcement of building regulations that restrict landlords without sufficient sanitation facilities from accepting tenants or by extending the sewage systems so that it becomes cost effective to connect to the national systems. In addition, ordinances can be passed by local authorities regarding the provision of permits for the construction of would-be rented premises.



## 6 | REFERENCES

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## Appendix: Dimensions, Indicators and Deprivation Thresholds

INDICATOR	AGE GROUP	THRESHOLD DEPRIVED IF	REASON FOR CONSIDERATION
<b>Dimension 1: Nutrition</b>			
Height for Age	0-4 years	Height for age is more than 2 standard deviations below the median of the international reference population (WHO standard).	The HAZ score reflects any sustained experience of inadequate nutrient intake coupled with untreated illnesses, which can result in stunted growth (Mosley and Chen 1984). For children under 5 years, it is a long-term measure of nutritional health as opposed to underweight or wasting status which is a short-term measure of nutrition. Stunted children face impaired growth, which may not be reversed in adulthood.
Body Mass Index (BMI)	5-17 years	Underweight/Overweight (using BMI) i.e. -2SD from the median of the reference population.	For age-appropriateness, indicators on thinness (moderate and severe, BMI, -2SD) and obesity (BMI, +2SD) was used. The BMI captures adequacy of feeding practices (diets) for children aged at least 5 years.
<b>Dimension 2: Health</b>			
Problematic nearest health facility	0-17 years	The nearest health facility has the following problems: (i) facility is too far; (ii) facility is not clean or in poor condition; (iii) few trained professionals on staff; (iv) staff frequently absent; (v) lack of drugs, (vi) does not offer all services; and (vii) limited hours open.	A measure of the quality of health facility used by household.
<b>Dimension 3: Housing</b>			
Over crowding	0-17 years	More than 3 people sleeping per rooms (UN-HABITAT). Children under 5 are given a weight of 0.5.	Shows the extent to which children are exposed to the risks of airborne diseases such as TB and respiratory infections such as pneumonia.

## Appendix: Dimensions, Indicators and Deprivation Thresholds

INDICATOR	AGE GROUP	THRESHOLD DEPRIVED IF	REASON FOR CONSIDERATION
<b>Dimension 1: Nutrition</b>			
Fuel for lighting	0-17 years	Household usually uses dirty fuel for lighting purposes. Clean fuels include: (i) electricity, (ii) solar power, (iii) LPG, and (iv) biogas. Dirty fuels include: (i) wood, (ii) paraffin, (iii) candle, (iv) cow dung, (v) charcoal, (vi) coal and (vii) crop waste.	Shows the extent of exposure to CO2 emissions and overall indoor pollution.
<b>Dimension 4: Education</b>			
School attendance	6-12 years	Child 6-12 years not attending school if school is open and child is not sick.	Individual measure of compulsory school attendance.
	13-17 years	Or not attending school or training of any type for a child 12-17 years if junior secondary or training of any type was not completed by age 15 years.	
School attainment	6-12 years	Child is not in primary (6-12 years) or in junior secondary (13-17 years) or more than 2 grades behind for age.	Only relevant for children aged 6-15 years.
	13-15 years		
Literacy	15-17 years	Child did not finish junior secondary school or attend/ complete training of any type and is not able to read a short sentence in any language.	The ability to read and write is fundamental to unlocking the would-be knowledge and skills of children.
<b>Dimension 5: Sanitation</b>			
Toilet facility	5-12 years	Household uses an unimproved toilet facility (i.e. pit latrine, flush communal toilet, VIP communal toilet, Pit latrine communal, neighbours, or none).	Exposure to unhealthy environments that can lead to the spread of diarrhoea diseases.
<b>Dimension 6: Water</b>			
Water Supply	0-17 years	Household's main source of water is unimproved (i.e. bowser/tanker, well, borehole, river/stream, dam/pan, water tanker, spring water) and if the improved drinking water source is more than 30 minutes in travel time from the household (WHO).	Exposure to water-borne illnesses.

Source: De Neubourg, C., A. Dangeot., N. Ramful et al (2015) Child Poverty in Botswana, A Multiple Overlapping Deprivation Analysis.



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**for every child**

**UNICEF BOTSWANA**

Plot 27, Dalale House  
Matsitama Road, P O Box 20678  
Gaborone, Botswana  
**Tel:** (+267) 3951909/3952752  
**Fax:** (+267) 3951233  
**Website:** [www.unicef.org](http://www.unicef.org)

**STATISTICS BOTSWANA**

Plot 54350 PG Matante Road CBD,  
Four Thirty Square  
Private Bag 0024, Gaborone, Botswana  
**Tel:** (+267) 3671300  
**Fax:** (+267) 3952201  
**Website:** [www.statsbots.org.bw](http://www.statsbots.org.bw)