

# MULTIDIMENSIONAL CHILD POVERTY IN NIGERIA

*Multiple Overlapping Deprivation Analysis (MODA)*



**2021**



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MULTIDIMENSIONAL CHILD POVERTY ANALYSIS IN NIGERIA  
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## Abbreviations & Acronyms

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AF	Alkire-Foster
CPD	Country Programme Document
CMAM	Community Management of Acute Malnutrition
CRC	Convention on the Rights of the Child
DAP	Digital Awareness Programme
ECE	Early Childhood Education
GDP	Gross Domestic Product
HDI	Human Development Index
HIV/AIDS	Human Immunodeficiency Virus infection and Acquired Immune Deficiency Syndrome
ICT	Information and Communications Technology
IYCF	Infant and Young Child Feeding
MICS	Multiple Indicator Cluster Survey
MDG	Millennium Development Goal
MNCHW	Maternal New-born and Child Health Weeks
MODA	Multiple Overlapping Deprivation Analysis
MPI	Multidimensional Deprivation Index
NBS	National Bureau of Statistics
OPHI	Oxford Poverty and Human Development Initiative
PHC	Primary Health Care
SABI	State Accelerated Broadband Initiative
SDG	Sustainable Development Goal
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation and Hygiene
WCA	West-Central Africa
WHO	World Health Organisation

## Foreword

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Nigerian children, comprising more than a half of the country's total population, are an important asset to the future of this great nation. The nature of children's rights and needs cuts across all social sectors. In recognition of the multifaceted needs, this multidimensional poverty analysis of Nigerian children identifies the interaction of multiple deprivations that limit the ability of Nigerian children to enjoy their essential rights to good health, education, nutrition, clean water and sanitation, housing, information, safe environment, and material needs within the framework of the United Nations (UN) Convention on the Rights of the Child. It provides insight into the inequities that exist, allowing us to identify and locate the most disadvantaged children, and thus complementing the monetary poverty analysis and other equity analyses provided by other poverty studies. The Ministry of Finance, Budget and National Planning is profoundly hopeful that this landmark study and its detailed recommendations, along with collaborative dialogue between Ministries, Departments, and Agencies and other key stakeholder groups nationwide, will provide the necessary input to design targeted programmes to address these evident disparities. Using the study as a baseline, we look forward to work with other MDAs and key stakeholders, including non-governmental organizations and the private sector, to gain further consensus and coordinate the implementation of recommendations and innovative solutions that advance the rights of Nigerian children. We acknowledge the dedication, commitment, and contribution of the United Nations Children's Fund (UNICEF), working collaboratively with the department of Social Development in the Planning Arm of the Ministry of Finance, Budget and National Planning, in the realization of this study. I urge all, particularly those that are directly involved in the provision of services to children, to join hands in the actualization of every Nigerian child's right to a future that is equitable, inclusive, and bright.

Prince Clem Ikanade Agba

Honourable Minister of State for Budget and National Planning

## Acknowledgements

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The Government of Nigeria is leaving no stone unturned in addressing poverty and its attendant consequences particularly among children. This is in recognition of the year 2021 – 2030 as the United Nations decade of action for accelerating the achievement of Sustainable Development Goals (SDGs). The desire to ensure an inclusive growth has put the care of the Nigerian child at the front burner of development planning in Nigeria. Hence the need for this Report which sheds light on Multidimensional Child Poverty in Nigeria. The outcome of the study provides an understanding of the complexity of child poverty in Nigeria vide the monitoring of multidimensional child poverty in the context of the SDGs.

Multidimensional child poverty Report is the outcome of the collaboration between the Budget and National Planning Arm of the Federal Ministry of Finance, Budget and National Planning and the United Nations Children’s Fund (UNICEF). It is on this note that I acknowledge the support of Mr. Peter Hawkins, UNICEF Representative in Nigeria. The doggedness of the UNICEF Chief of Social Policy, Dr. Hamidou Poufon on this Report is quite appreciated. I also appreciate the dedication and commitment of UNICEF Social Policy Specialist, Ms. Temi Esteri Fet’era, as well as UNICEF Social Policy Officer, Dr. Annie Maurice Ekanem, in the course of finalizing this important Report. I also acknowledge and appreciate the technical support of Liên Boon and Chris De Neubourg of the Social Policy Research Institute (SPRI).

I sincerely appreciate the leadership provided by the Honourable Minister of State (HMS), Budget and National Planning Prince Clem Ikanade Agba in making this Multidimensional Child Poverty a reality. The commitment of the HMS in supervising the content of the Report with particular emphasis on precision of data element that will serve as ingredients for implementation of the National Development Plan 2021 -2025 cannot be over emphasized.

Finally, I seize this opportunity to appreciate the coordination role of the Director Social Development department Dr. Sanjo Faniran, the efforts of the former Directors in the department including Mr. Bolaji Sa’adu that started the study and Mr. Omotayo Adeyemi who is the immediate past Director as well as commitment of Officers of Human Capital Division in the department in the course of finalizing this Report.

Olusola O. Idowu (Mrs)

Permanent Secretary, Budget and National Planning.

May 17, 2022.

## Executive summary

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Nigeria is a lower-middle income country in West-Africa that ranks 158<sup>th</sup> out of 189 countries in the Human Development Index (HDI) of 2018 (UNDP; 2019). The country has many natural resources and is the biggest oil exporter in Africa (Oshikoya; 2008). Therefore, Nigeria's growth depends largely on the oil prices. After the oil crisis of 2014-2016, Nigeria's GDP growth rate reduced to 2.7 per cent in 2015 and has since been considerably low ranging between 1.6 per cent in 2016 and 2 per cent in 2019. According to the World Bank (2019), still 49.9 per cent of Nigerian households lived below the international poverty line of US \$1.9 per day in 2018. Moreover, since the early 2000, Nigeria witnessed numerous religious, ethnic and cultural conflicts associated with the Boko Haram insurgency which has impeded the country's socio-economic and political development (Alimba, 2014; SitAn, 2001).

With the largest population in Africa of approximately 202 million people<sup>1</sup>, Nigeria needs to tap in its demographic dividend to contribute towards the country's future growth and progress. In 2017, 44 per cent of Nigeria's population were under 15 years old (UN; 2017). In the long-term, children will become responsible for Nigeria's social, economic and political dynamics. Investing in children today will thus ensure human capital development while simultaneously supporting poverty reduction. In order to reach children's full potential and achieve desirable capabilities and functioning, it is essential to create the best possible environment for children to develop in healthy, productive and reliable adults, especially during the child's earliest stages of life.

### Purpose of the study

The main objective of this study is to understand the complexity of child poverty in Nigeria through monitoring multidimensional child poverty in the context of the sustainable development goals. Sustainable Development Goal 1.2 aims to reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions by 2030. Moreover, this analysis will help the government and non-governmental organisations with the design and implementation of appropriate and effective child policies and programmes.

### Methodology

This report measures multidimensional child poverty in Nigeria employing UNICEF's Multiple Overlapping Deprivation Analysis (MODA) methodology. MODA is a rights'-based approach which takes the child (0-17 years old) as unit of analysis. It recognizes children's needs and their wellbeing in terms of access to basic services and goods. The dimensions included for Nigeria are Nutrition, Health, Education, Water, Sanitation, Housing and Information. A child is considered multidimensionally poor if

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<sup>1</sup> World Bank website. Available here: <https://www.worldbank.org/en/country/nigeria/overview>.

s/he is simultaneously deprived in at least three of the aforementioned dimensions of wellbeing. The analysis uses the Multiple Indicator Cluster Survey (MICS) 5 database which was collected by the National Bureau of Statistics (NBS) in 2016-17. According to the life-cycle approach, children have different needs throughout their development. Therefore, the selection of the indicators, dimensions and thresholds as well as the results are disaggregated by three age groups: 0-4 years, 5-11 years and 12-17 years.

## Key Findings

### Child poverty by its dimensions

- The **Nutrition** dimension presents a deprivation rate of 33 per cent among children aged 0-4 years old. More than 9 out of 10 children aged 0-5 months old (95.2 per cent) are not exclusively breastfed, 83.9 per cent of children aged 6-23 months do not meet the recommended meal frequency and diversity standards<sup>2</sup> and 10.8 per cent of children (0-4 years) suffer from wasting.
- Nearly 3 out of 4 children aged 0-4 years old face deprivation in the **Health** dimension (73.3 per cent). A proportion of 76.4 per cent of children aged 0-23 months old is not fully immunized whereas 59.2 per cent of children under five were not assisted by a skilled birth attendant at birth.
- Deprivation in the dimension **Education** affects 45.4 per cent of children aged 5-11 years old and 61.7 per cent of children aged 12-17 years old. More than 1 out of 3 children do not attend school in the year of the survey (35.8 per cent of children aged 5-11 years old and 36.4 per cent of children aged 12-17 years old). In addition, 19.3 per cent of children aged 8-11 years old and 39.9 per cent of children aged 12-17 years old are at least 2 years behind in schooling according to their age while 21.2 per cent of children aged 15-17 years old did not complete primary education.
- The deprivation rates in the **Water** dimension range from 37.6 per cent to 40.6 per cent across all age groups. The dimension includes the indicators “*Drinking water source*” and “*Distance to drinking water source*”.
- **Sanitation** presents one of the highest deprivations rates analysed. Nearly 4 out of 5 children aged 0-11 years old are deprived in at least one of the following indicators: “*Toilet type*”, “*Shared toilet facilities*” and/or “*Handwashing*” (79.2 per cent of children aged 0-4 years old and 78.8 per cent of children aged 5-11 years old respectively), while 3 out of 4 children aged 12-17 years old experience deprivation in the Sanitation dimension (76.3 per cent).

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<sup>2</sup> WHO defines the minimum meal frequency as: 2 times for breastfed infants 6–8 months; 3 times for breastfed children 9–23 months and 4 times for non-breastfed children 6–23 months.

- The **Housing** dimension, consisting of the indicators “Overcrowding”, “Housing materials” and “Cooking fuel”, shows a prevalence of .
- Deprivation rates in the **Information** dimension measures children’s access to information devices (radio, television, mobile phone...) in the household. The deprivation rates range from 10.8 per cent to 12.8 per cent across all age groups.

### Child poverty is multidimensional

**In Nigeria, 53.9 per cent of children are defined as multidimensionally poor, that is experiencing deprivation in at least 3 dimensions at the same time.** Very few children are not deprived in any dimension analysed (6.9 per cent) with approximately half of the children experiencing deprivation in 2 to 3 dimensions (50.1 per cent). The disaggregation of multidimensional poverty rates by age group indicates that 60.0 per cent of children aged 0-4 years old, half of children aged 5-11 years old and 52.6 per cent of children aged 12-17 years old are considered to be multidimensionally poor.

### Profile of multidimensionally poor children

With the aim to design and implement appropriate and effective child policies and programmes, this study identifies the characteristics of the multidimensionally poor children in Nigeria. The most important profiling variables are listed below.

- A larger proportion of children living in **rural areas** is multidimensionally poor (65.7 per cent) compared to children living in urban areas (29.7 per cent);
- At the regional level, **Sokoto, Kebbi** and **Zamfara** present higher multidimensional poverty rates (80.4 per cent, 74.9 per cent and 74.0 per cent respectively) opposed to children living in Edo and Lagos (19.0 per cent and 17.3 per cent respectively);
- **Households with a higher number of household members and/or children** show higher multidimensional deprivation rates than smaller household with fewer household members and/or children;
- Children living with **non-educated household heads and/or mothers** are more likely to be multidimensionally poor in relation to children whose household heads and/or mothers attained secondary or higher education levels;
- **Households belonging to the poorest wealth quintile** display higher multidimensional deprivation rates than households belonging to the richest quintile;
- The literacy status of the mother plays an important role. A larger proportion of children with **illiterate mothers** are multidimensionally poor in comparison to children with literate mothers;
- **Children (0-4 years) without a birth certificate** are more likely to be multidimensionally poor than children with a birth certificate (74.6 per cent versus 42.2 per cent);

- **Stunted and underweight children (0-4 years)** present higher multidimensional deprivation rates than children who are not stunted and/or underweight (69.5 per cent versus 53.2 per cent for stunting and 73.9 per cent versus 54.1 per cent for underweight);
- Differences based on the gender of the child are minimal and not statistically significant for the youngest age groups. However, slightly more **boys aged 12-17 years old** experience at least 3 deprivations at the same time opposed to girls this age (53.8 per cent versus 51.4 per cent);
- A larger proportion of **children involved in economic labour (5-17 years)** are multidimensionally poor opposed to children not involved in economic labour;
- **Girls who are/were married and/or pregnant (15-17 years)** indicate higher multidimensional poverty rates than girls who were never married and/or pregnant (79.3 per cent versus 45.4 per cent for early marriage and 78 per cent versus 46.9 per cent for early pregnancy).

## Recommendations

As indicated by Sustainable Development Goal 1.2, it is the objective to reduce the proportion of multidimensionally poor children in Nigeria by at least half, from 53.9 per cent to 27.0 per cent, by 2030. Given that the majority of Nigerian children suffer from deprivation in multiple dimensions simultaneously, it is crucial to provide multi-sectoral policy responses in order to guide effective child poverty reduction strategies. Priority should be given to the most vulnerable children as identified in the study based on geographical location, socio-economic characteristics and dimensional deprivations.

# Chapter 1. Introduction

---

Nigeria is a lower-middle income country in West-Africa located in the Gulf of Guinea in the Atlantic Ocean. It ranks 158<sup>th</sup> out of 189 countries in the Human Development Index (HDI) 2018 with the under-5 mortality rate of 120 deaths per 1000 live births (UNDP, 2019; World Bank, 2018<sup>3</sup>). The country has many natural resources and is the biggest oil exporter in Africa (Oshikoya; 2008). Therefore, Nigeria's growth depends largely on the oil prices. Between 2000 and 2014, the country's gross domestic product (GDP) increased at an average rate of 7 per cent<sup>4</sup>. However, after the oil crisis of 2014-2016, the GDP growth rate reduced to 2.7 per cent in 2015 and has since been considerably low ranging between 1.6 per cent in 2016 and 2 per cent in 2019. Moreover, over the years, Nigeria witnessed numerous religious, ethnic and cultural conflicts which has impeded the country's socio-economic and political growth (Alimba, 2014; SitAn, 2001). Since the early 2000, Nigeria has been dealing with the Boko Haram insurgency. Among others, the conflict has resulted in deteriorating humanitarian conditions and destructive tendencies with increased numbers of internally displaced people and worsened food insecurity (Alimba, 2014; Emmanuelar, 2015). Especially in Adamawa, Borno and Yobe, in the north-east of the country, armed conflicts between Muslim and Christian populations have largely affected the wellbeing and living conditions of its citizens (Emmanuelar, 2015; UNICEF, 2017a; Mustapha, 2014).

According to the World Bank (2019), 49.9 per cent of Nigerian households lived below the international poverty line of US \$1.9 per day in 2018. Children living in poverty can experience long term consequences with respect to their physical and psychological development (Chaudry & Wimer, 2016). Although poverty often is measured by monetary income or household expenses, it is important to distinguish child poverty from adult poverty. Children indeed have different needs from adults. For example, exclusive breastfeeding, immunization and school attendance are much more relevant and effective at a younger age. Moreover, since children generally have little or no influence on how resources are allocated in the household, wealth is often distributed disproportionately based on gender, age, ability and/or personality traits (Bourguignon & Chakravarty 2003; Gordon & Townsend 2003). Therefore, this study adopts a rights'-based approach, in line with the Convention on the Rights of the Child (CRC), and measures child poverty in Nigeria in terms of children not having access to goods and services necessary for their well-being, survival and development.

Nigeria is the most populated country in Africa with a population of approximately 202 million people<sup>5</sup>. In 2017, 44 per cent of its population were under 15 years old (UN; 2017). Tapping into Nigeria's

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<sup>3</sup> World Bank website. Available here: <https://data.worldbank.org/indicator/SH.DYN.MORT?locations=NG>

<sup>4</sup> World Bank website. Available here: <https://www.worldbank.org/en/country/nigeria/overview>.

<sup>5</sup> World Bank website. Available here: <https://www.worldbank.org/en/country/nigeria/overview>.

demographic dividend can contribute towards the country's future growth and progress. In the long-term, children will become responsible for Nigeria's social, economic and political dynamics. Therefore, investing in children today will ensure human capital development while simultaneously supporting poverty reduction. In order to reach children's full potential and achieve desirable capabilities and functioning, it is essential to create the best possible environment for children to develop in healthy, productive and reliable adults, especially during the child's earliest stages of life.

One of the main objectives of this study is to establish a baseline for measuring multidimensional child poverty in the context of the sustainable development goals. In 2015, the United Nations (UN) adopted 17 Sustainable Development Goals (SDGs) in line with the previous Millennium Development Goals (MDGs). The SDGs aim to end poverty and other deprivations through various policies tackling health, nutrition and education among others, while considering climate change and protecting our forests and oceans. Nigeria's commitment to the Sustainable Development Goals is for instance reflected by the Economic Recovery and Growth Plan (ERGP) launched by the Federal government of Nigeria in 2016 and the Country Programme Document (CPD) 2018-2022. Both programmes strive for equity for all.

First, the report discusses the MODA methodology and its application in the context of child poverty in Nigeria. Secondly, the multidimensional poverty results for all children (0-17 years) are presented followed by the disaggregated results by age groups: 0-4 years, 5-11 years, 12-17 years. According to the life cycle approach, children have different needs across various phases of their childhood. Moreover, this study identifies the demographic, geographic and household characteristics of the most vulnerable and multidimensionally poor children. Finally, the report concludes with an overview of the main findings along with some policy recommendations.

## Chapter 2. Methodology

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### 2.1 Overview of MODA methodology

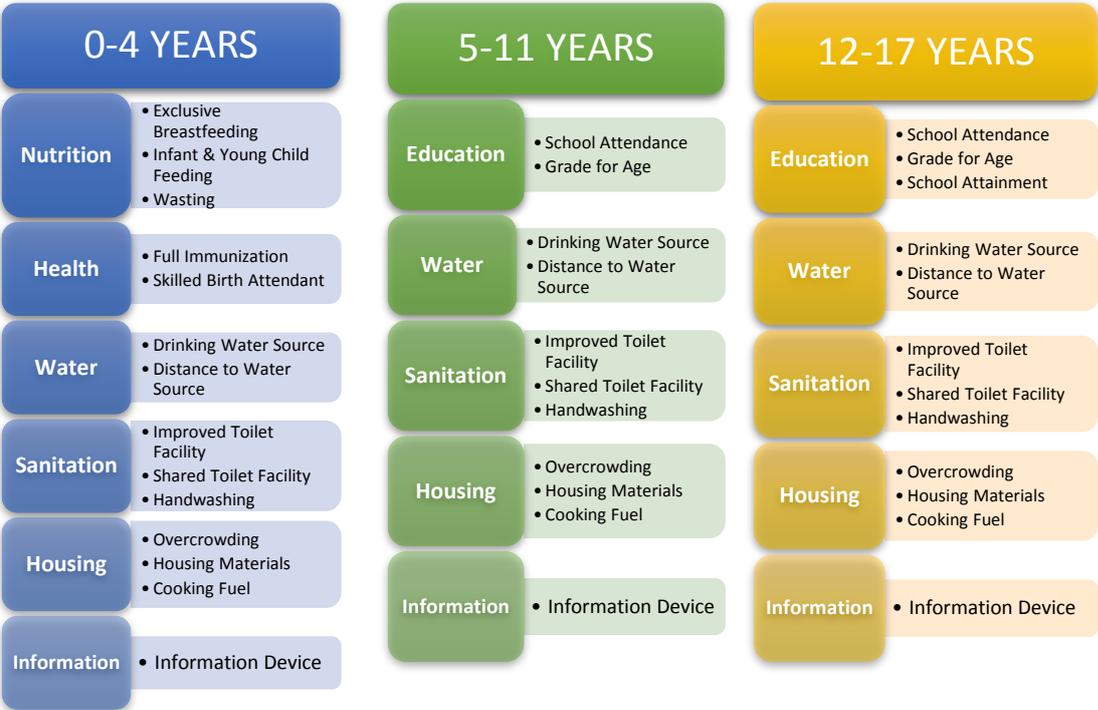
The Multiple Overlapping Deprivation Analysis (MODA) methodology is developed by UNICEF Office of Research in Florence. It expands on existing approaches of multidimensional poverty measurement, such as UNICEF's Global Study on Child Poverty and Disparities (see Gordon et al., 2003; UNICEF, 2007), the Alkire-Foster (AF) deprivation counting method and Oxford Poverty and Human Development Initiative's (OPHI) Multidimensional Poverty Index (MPI) (see Alkire and Santos, 2010; Alkire and Foster, 2011). MODA is a rights'-based approach which takes the child (0-17 years old) as unit of analysis. It recognizes children's needs and their wellbeing in terms of access to basic services and goods. The methodology employs a holistic perspective, emphasizing on the multifaceted aspect of child poverty beyond sectoral and dimensional analyses. MODA includes both the prevalence and the depth of

deprivation for each child, which enables the identification of the most vulnerable and disadvantaged children (with a higher number of deprivations) in Nigeria. Moreover, the analysis identifies geographical and socio-economic characteristics of the (multidimensionally) deprived children, allowing for better informed equity-focused policy design and implementation to enhance children’s sustainable development and well-being.

## 2.2 Data, sample and parameters

This study uses data from the Multiple Indicator Cluster Survey (MICS) 5 which was collected by the National Bureau of Statistics (NBS) in 2016-17. The MICS contains detailed information on children’s wellbeing in Nigeria and exists, among others, of a module on the household responded to by the household head, a module on children under five years old responded to by the caretaker/mother and a module on all individual women aged 15-49 years old in each household. The sample includes 25.713 households consisting of 89.033 children aged 0-17 years old, as the child is the unit of analysis. According to the life-cycle approach, children have different needs throughout their development. Therefore, the selection of the indicators, dimensions and thresholds as well as the results are disaggregated by three age groups: 0-4 years, 5-11 years and 12-17 years. Figure 1 presents the selection of dimensions, indicators, thresholds and age groups. The choice is consistent with the selection made for the West-Central Africa (WCA) report.

Figure 1. Dimensions, Indicators and Age-groups in Nigeria



## 2.3 Analytical approach

The study presents the sectoral, multidimensional and overlapping deprivation results at the national level, by each age group and disaggregated by various profiling variables. The **sectoral deprivation analysis** indicates the proportion of children deprived in each of the indicators and dimensions. Deprivation in indicators is combined to measure deprivation in dimensions by using the **union approach**<sup>6</sup>. **A child is identified as a deprived in a dimension if (s)he is deprived in at least one of the indicators constituting the dimension.**

Subsequently, the **multidimensional deprivation analysis** counts the number of dimensions in which a child is deprived. The percentage of children suffering from zero, one, two, three, etc deprivations is displayed in the distribution of deprivation. In order to define a child as multidimensionally poor, a cut-off point, or “deprivation threshold” ( $k$ ) of  $k=3$  is used. This implies that **a Nigerian child is considered as multidimensionally poor if (s)he is deprived in at least 3 dimensions at the same time.** Moreover, the analysis calculates multidimensional deprivation indices: *headcount ratio (H)* reflecting the proportion of multidimensionally poor children, *intensity of deprivation (A)* showing the average number of deprivations that the multidimensionally poor children face and the *adjusted deprivation headcount (M<sub>0</sub>)* which is a product of H and A combining both the headcount and the intensity to reflect the overall situation.

The **overlapping deprivation analysis**, in addition, presents the different combinations of deprivations that are experienced together with the aim to guide sectors, ministries and departments to adopt a multi-sectoral approach and combine efforts to address the issues.

Further, the study identifies the characteristics (individual/household/geographical) of the most vulnerable children with the aim to facilitate the designing of suitable policy responses. A chi-squared test with a significance level of 5 per cent was used in order to examine whether the differences in multidimensional poverty were statistically significant across groups of children. The various characteristics analysed were subject to data availability.

## 2.4 Limitations and data constraints

Given that this study is derived from the West-Central Africa report; the selection of dimensions, indicators and thresholds is constrained by regionally comparable data availability. For example, child

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<sup>6</sup> MODA uses the union approach when combining indicators into dimensions to identify children deprived in any of the selected indicators. This approach implies that every child who is deprived in at least one indicator of a given dimension will be considered as deprived in said dimension. This approach is not sensitive, at this stage, to the severity of deprivation because it implies equal weight of indicators making deprivation in a dimension to be independent of the number of indicators a child is deprived in (De Neubourg et al, 2012).

protection, development and literacy variables, among others, are removed out of the analysis due to technical and conceptual reasons (e.g. high number of missing values). However, it would have been beneficial to include additional indicators and dimensions (e.g. HIV/AIDS) tailored to the national context of Nigeria.

Furthermore, the sample size of the Nigeria MICS 2016-17 was inadequate to estimate vaccination coverage for children aged 12-23 months old on the state level in twenty states Abia, Akwa ibom, Anambra, Bayelsa, Benue, Cross River, Delta, Edo, Ekiti, Enugu, Imo, Kogi, Kwara, Ogun, Ondo, Osun, Oyo, Plateau, Rivers and FCT (Abuja). Therefore, additional sampling was conducted as part of the NICS (National Immunization Coverage Survey) in those states.

Indicators related to children's physical development (e.g. underweight and stunting), although very important, cannot be attributed to the Nutrition dimension only. They are also linked to health, water, and sanitation conditions. Therefore, underweight and stunting are used as profiling variables.

Data on child marriage and child pregnancy are only available for girls aged 15 to 17 years old. This can lead to a slight underestimation of the phenomenon, given that younger girls can be married or experience pregnancy as well. Women aged 18-49 years old are not included in this study. Moreover, individual male questionnaires were administered to all men (15-49 years old) in 1 out of 2 households. Therefore, the sample size regarding information on child marriage for boys ages 15-17 years is too small to produce meaningful results.

# Chapter 3. Incidence and Depth Analysis of Child Poverty in Nigeria

## 3.1 Multidimensional child deprivation in Nigeria

In Nigeria, the majority of all children (0-17 years) face 2 or 3 deprivations at the same time (see Figure 2)<sup>7</sup>. Findings show that approximately 1 out of 4 children is deprived in 2 dimensions while 24 per cent experiences simultaneous deprivation in 3 dimensions. In addition, 6.9 per cent and 0.7 per cent of children are deprived in 5 and 6 dimensions respectively while 6.9 per cent face zero deprivations.

Figure 2. Distribution of simultaneous deprivations at the national level, 0-17 years

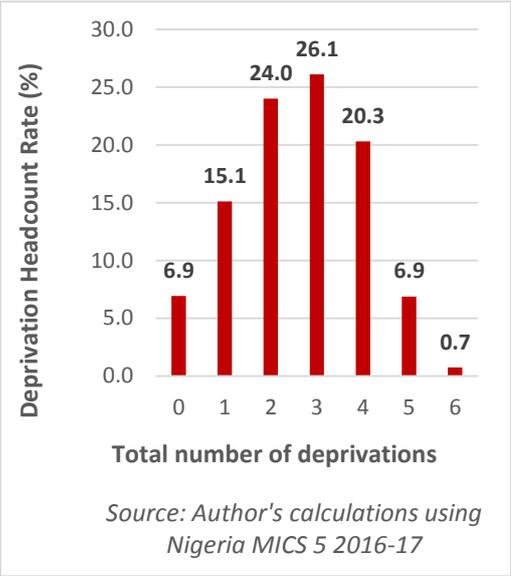
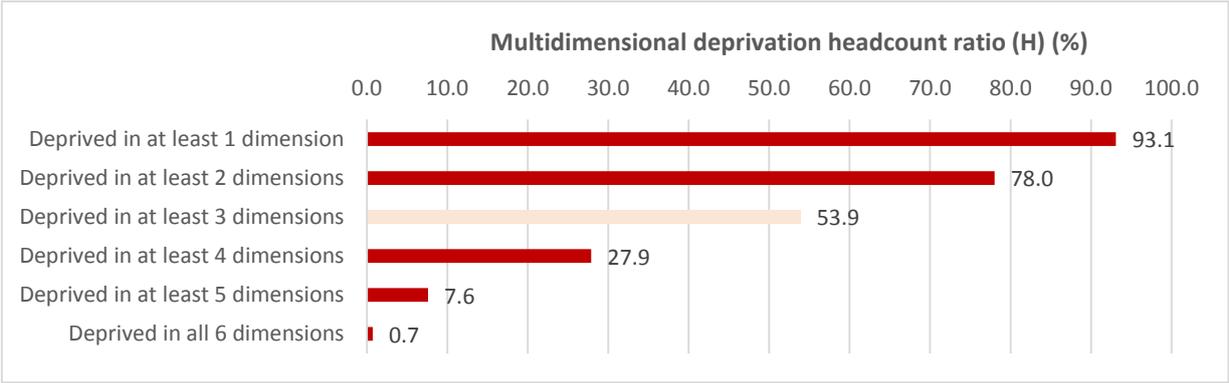


Figure 6 shows the multidimensionally deprivation rates for each threshold (k). In this study, a child is considered as multidimensionally poor if (s)he is simultaneously deprived in at least 3 dimensions at a time (k=3). Accordingly, 53.9 per cent of Nigerian children are defined as multidimensionally poor, that is, facing at least 3 deprivations simultaneously. The aim is to reduce this figure by at least half (27.0 per cent) by 2030, in line with SDG 1.2.

Figure 3. Multidimensional deprivation headcount ratio (H) (%) at the national level, 0-17 years



The multidimensional deprivation indices (H, A and Mo), based on the Alkire-Foster (AF) indices, are shown in Table 1. First, the proportion of multidimensionally poor children in Nigeria is presented by the multidimensional deprivation headcount (H) (%). Using a threshold of being deprived in at least 3

<sup>7</sup> Children aged 0-4 years old can be deprived in a maximum of 6 dimensions and children aged 5-17 years old can be deprived in a maximum of 5 dimensions.

dimensions, 53.9 per cent of Nigerian children are considered as multidimensionally poor. Secondly, A measures the average number of deprivations among the multidimensionally poor, in absolute numbers and in percentage points. On average, multidimensionally poor children in Nigeria experience 3.7 deprivations out of a total of 5-6 dimensions analysed (or i.e. 68.8 per cent). Lastly, the adjusted multidimensional deprivation headcount (Mo) is a multiplication of H and A, taking into account both the incidence and depth of deprivation. Mo is an index ranging from 0 to 1, with 0 indicating that no individual is deprived in any of the dimensions analysed and 1 indicating that all individuals are deprived in all the dimensions analysed (K=6 for children aged 0-4 years old and K=5 for children 5-17 years old). The adjusted multidimensional deprivation headcount is mainly used to make comparisons between geographical locations and different groups based on socio-economic characteristics. At the national level, Mo stands at 0.37 in Nigeria.

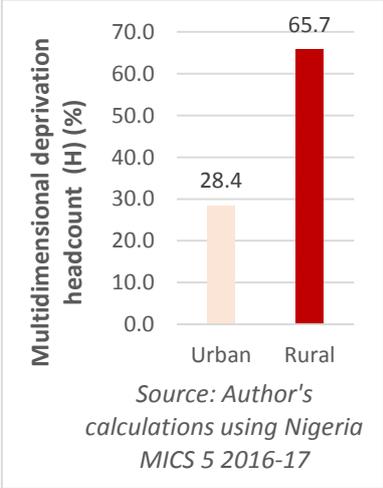
Table 1. Multidimensional deprivation indices at the national level when using a threshold of K=3, 0-17 years

Multidimensional deprivation headcount (H), %	Average no. of deprivations among the multidimensionally poor (A)	Average intensity among the multidimensionally poor (A); %	Adjusted multidimensional deprivation headcount (Mo)
53.9	68.8	3.7	0.37

Source: Author’s calculations using Nigeria MICS 5 2016-17

### 3.2 Geographical location of deprived children

Figure 4. Multidimensional deprivation headcount (H) (%) by area of residence when using a threshold of K=3, 0-17 years



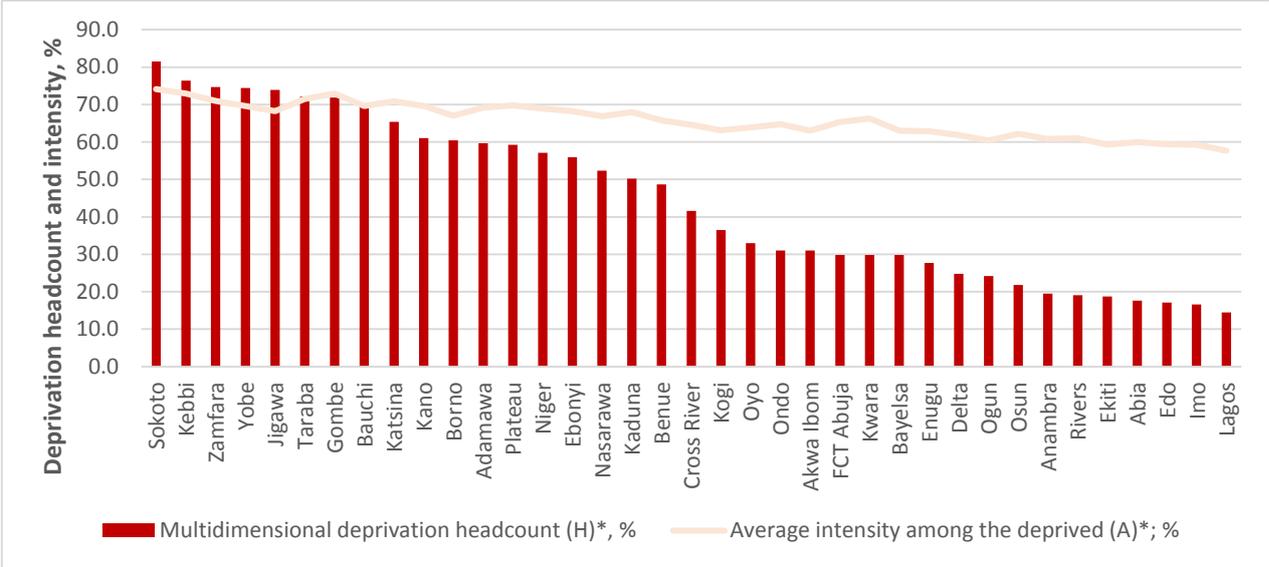
When disaggregating the deprivation headcount rate by area of residence, it is observed that children living in rural areas are worse off compared to children living in urban areas. In Nigeria, 28.4 per cent of urban children are multidimensionally poor versus 65.7 per cent of rural children (see Figure 4).

Figure 5 presents the multidimensional deprivation headcount (H) and the average intensity of deprivation among the deprived (A) according to the regional residence of children aged 0-17 years old in Nigeria. It is found that children living in Sokoto, Kebbi and Zamfara are worst off, experiencing the highest multidimensional deprivation rate (81.5 per cent, 76.4 per cent and 74.7 per cent respectively). On the other hand, less than 17 out of 100 children living in Imo or Lagos are considered to be multidimensionally poor (16.6 per cent and 14.5 per cent respectively). However,

while the multidimensional deprivation headcount largely varies across regions, smaller regional

discrepancies are observed based on the average number of deprivations experienced among the deprived (A). On average, the multidimensionally poor children living in Sokoto are deprived in 74.1 per cent of the total number of deprivations compared to 57.7 per cent for children living in Lagos (see Figure 5).

Figure 5. Multidimensional Deprivation Headcount (H) and Average Intensity Among the Deprived (A) (%) by region when using a threshold of K=3, 0-17 years



Source: Author’s calculations using Nigeria MICS 5 2016-17

## Chapter 4. Sectoral, Multidimensional and Overlapping Deprivation Analysis by each age group

### 4.1 Sectoral analysis

The next section presents the deprivation rates by each indicator and dimension for children aged 0-4 years old, children aged 5-11 years old, and children aged 12-17 years old.

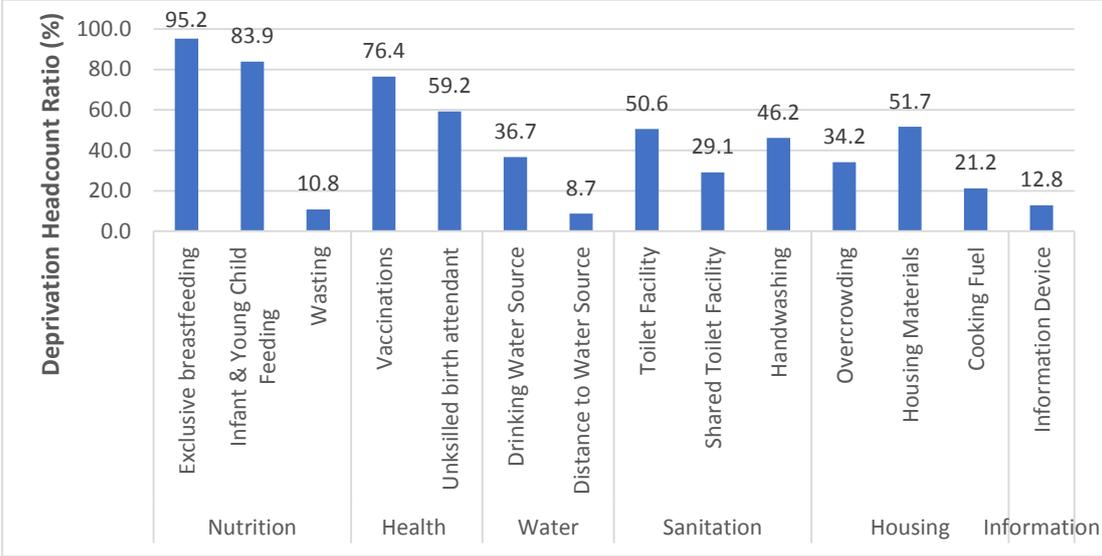
#### 4.1.1 Children aged 0-4 years

Figure 6 presents the deprivation rate by each indicator for children under five. Among children aged 0-5 months old, approximately 95 per cent is not exclusively breastfed. Moreover, 83.9 per cent of children aged 6-23 months do not attain the recommended meal frequency and diversity standards<sup>8</sup>. Around three out of four children aged 0-23 months old are not fully immunized while at birth 6 out of 10 children were not assisted by a skilled attendant. Furthermore, half of the children do not have access

<sup>8</sup> WHO defines the minimum meal frequency as: 2 times for breastfed infants 6–8 months; 3 times for breastfed children 9–23 months and 4 times for non-breastfed children 6–23 months.

to an improved toilet facility and 51.7 per cent live in households that are made out of unimproved materials.

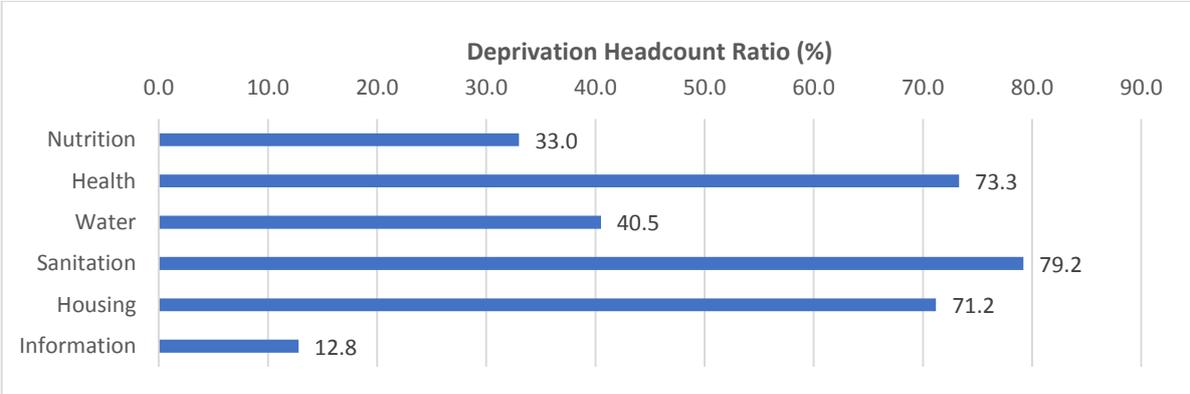
Figure 6. Deprivation Headcount Ratio (%) by each indicator at the national level, 0-4 years



Source: Author’s calculations using Nigeria MICS 5 2016-17

To aggregate the indicators into dimensions, this report employs the union approach. The union approach identifies a child as deprived in a dimension if (s)he is deprived in at least one of its indicators. For example, when a child experiences deprivation in either “Overcrowding”, “Housing materials” or “Cooking fuel”, the child is considered as deprived in the dimension Housing. Results show that nearly 3 out of 4 children aged 0-23 months old are deprived in Health whereas 79.2 per cent of children aged 0-4 years old face deprivation in the dimension Sanitation (see Figure 7). Additionally, 71.2 per cent of children experience deprivation in housing conditions. Two out of five children are deprived in the dimension Water and 1 out of 3 faces deprivation in Nutrition. The dimension Information has a deprivation rate of 12.8 per cent for children this age.

Figure 7. Deprivation Headcount Ratio (%) by each dimension at the national level, 0-4 years

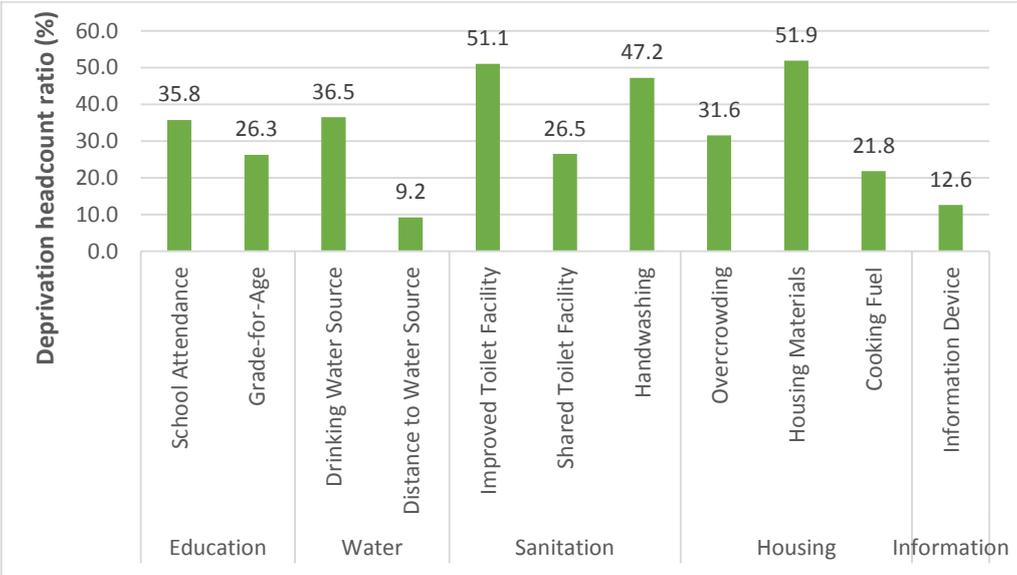


Source: Author’s calculations using Nigeria MICS 5 2016-17

4.1.2 Children aged 5-11 years

More than half of children aged 5-11 years face deprivation in the indicators “Toilet facility” and “Housing materials” (51.1 per cent and 51.9 per cent respectively) (see Figure 8). Furthermore, 35.8 per cent of children do not attend school while 26.3 per cent of children aged 8-11 years old are at least 2 years behind in schooling according to their age. The indicators “Distance to the water source” and “Access to information devices”, on the other hand, indicate deprivation rates of 9.2 per cent and 12.6 per cent respectively.

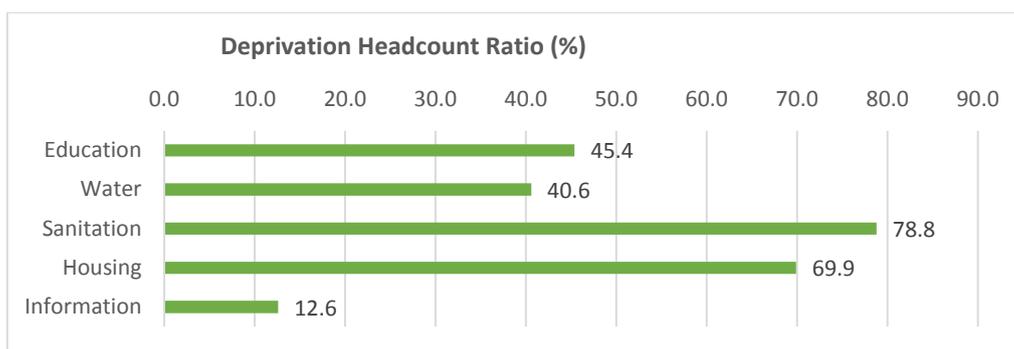
Figure 8. Deprivation Headcount Ratio (%) by each indicator at the national level, 5-11 years



Source: Author’s calculations using Nigeria MICS 5 2016-17

When aggregating the indicators into dimensions (see Figure 9), it can be found that nearly 4 out of 5 children experience deprivation in the dimension Sanitation, being deprived in at least one of the following indicators: “Toilet facility”, “Shared toilet facility” and “Handwashing”. Secondly, approximately 7 out of 10 children face deprivation in the dimension Housing. Moreover, 45.4 per cent are deprived in Education, consisting of the indicators “School attendance” and “Grade-for-Age”. Two out of five children are deprived in the dimension Water and 12.6 per cent of children do not have access to information.

Figure 9. Deprivation Headcount Ratio (%) by each dimension at the national level, 5-11 years

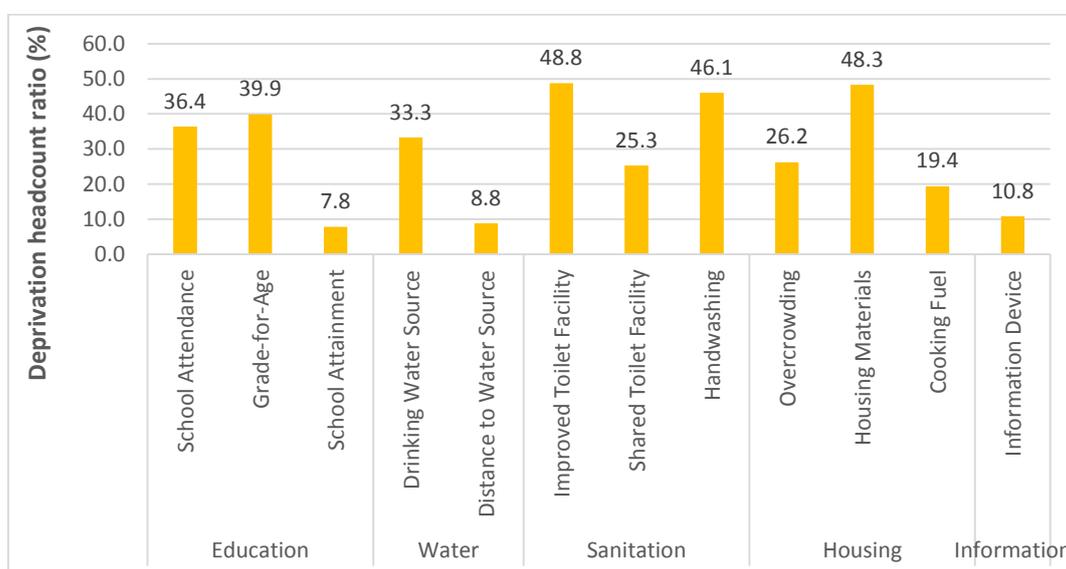


Source: Author's calculations using Nigeria MICS 5 2016-17

#### 4.1.3 Children aged 12-17 years

Figure 10 displays the deprivation headcount rates by each indicator for children aged 12-17 years old. Similar to previous age groups, approximately half of children this age do not have access to an improved toilet facility and/or live in a household made out of unimproved materials (48.8 per cent and 48.3 per cent respectively). In addition, 2 out of 5 children are at least 2 years behind in schooling according to their age while 36.4 per cent do not attend school at all. Around 7.8 per cent of children aged 15-17 years old did not finish primary education. The deprivation rates for “Distance to water source” and “Access to information devices” stand at 8.8 per cent and 10.8 per cent respectively.

Figure 10. Deprivation Headcount Ratio (%) by each indicator, 12-17 years

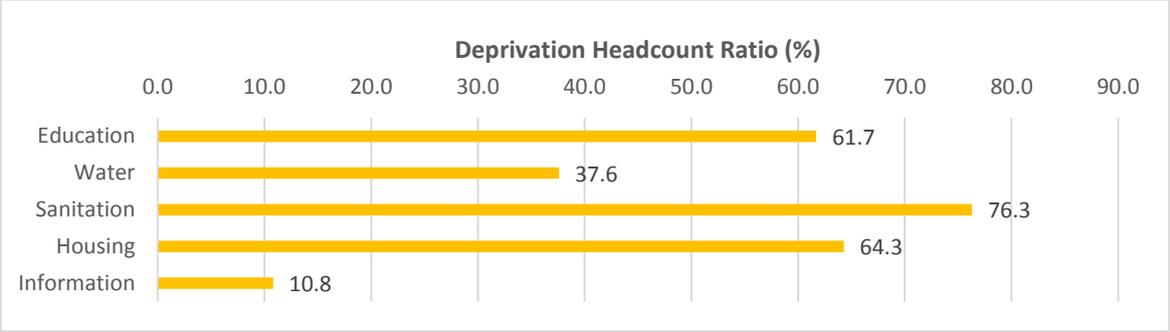


Source: Author's calculations using Nigeria MICS 5 2016-17

The deprivation rates by dimension for children aged 12-17 years old can be found in Figure 11. More than 3 out of 4 children face deprivation in the dimension Sanitation and 64.3 per cent of children are deprived in Housing. Moreover, approximately 6 out of 10 children this age experience deprivation in

the dimension Education (61.7 per cent). The dimension Water presents a deprivation rate of 37.4 per cent while around 1 in 10 children does not have access to information.

Figure 11. Deprivation Headcount Ratio (%) by each dimension, 12-17 years



Source: Author’s calculations using Nigeria MICS 5 2016-17

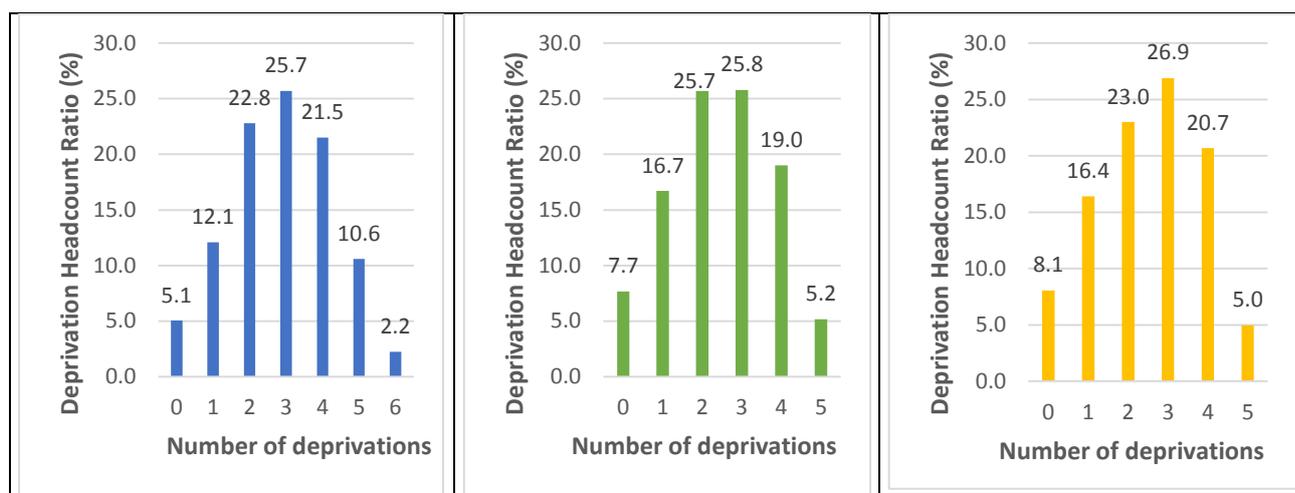
## 4.2 Multidimensional deprivation analysis

The following section discusses the multidimensional deprivation results. First, the deprivation distribution at the national level by each age-group is presented, showing the level of deprivation for each threshold (k). Secondly, the multidimensional deprivation indices (H, A and M0) are demonstrated for multidimensionally poor children (being deprived in at least 3 dimensions) in Nigeria. Lastly, the decomposition of the adjusted multidimensional deprivation index (M0) is studied by age group when using a threshold of k=3.

### 4.2.1 Deprivation distribution analysis by age-group

Figure 12 displays the deprivation distribution at the national level for each age group. Across all age groups, the proportion of children deprived in 0 or 1 deprivation is relatively low (17.2 per cent of children aged 0-4 years, 23.4 per cent of children aged 5-11 years and 24.5 per cent of children aged 12-17 years). The majority of children, thus, face deprivation in 3 or more deprivations simultaneously, with the highest peak of the distribution at 3 deprivations. More than 1 out of 4 children of all ages experiences deprivation in 3 dimensions (25.7 per cent of children aged 0-4 years old, 25.8 per cent of children aged 5-11 years old and 26.9 per cent of children 12-17 years old). Among children aged 0-4 years old, 2.2 per cent is deprived in all 6 dimensions analysed. Additionally, 5.2 per cent of children aged 5-11 years and 5 per cent of children aged 12-17 years old are deprived in all 5 dimensions studied.

Figure 12. Distribution of simultaneous deprivations at the national level, by age-group



Source: Author's calculations using Nigeria MICS 5 2016-17

#### 4.2.2 Multidimensional deprivation indices by age-group

The multidimensional indices (H, A and M<sub>0</sub>) measure both the incidence and the depth of child deprivation. The results disaggregated by age group are shown in Table 2. The proportion of the multidimensionally poor children (H) (%) stands at 60.0 per cent for children aged 0-4 years. In addition, half of the children aged 5-11 years are considered multidimensionally poor while 52.6% of children aged 12-17 years are simultaneously deprived in at least 3 out of 5 dimensions analysed.

On average, multidimensionally poor children aged 0-4 years old experience deprivation in 3.8 dimensions (63.7 per cent out of a total of 6 deprivations). The older children (5-17 years old) present an average number of 3.6 deprivations among the multidimensionally poor (A), which is 71.7 per cent out of a total of 5 deprivations.

Table 2. Multidimensional Deprivation Indices (H, A and M<sub>0</sub>, k=3), by age-group

Multidimensional Deprivation Headcount (H), %, K=3	Age-Group 0-4 years	60.0
	Age-group 5-11 years	50.0
	Age-group 12-17 years	52.6
Average Intensity among the deprived (A), %, k=3	Age-Group 0-4 years	63.7
	Age-group 5-11 years	71.7
	Age-group 12-17 years	71.7
Average No. of deprivations among the deprived, k=3	Age-Group 0-4 years	3.8
	Age-group 5-11 years	3.6
	Age-group 12-17 years	3.6
Adjusted Deprivation Headcount Ratio (M <sub>0</sub> ), k=3	Age-Group 0-4 years	0.38
	Age-group 5-11 years	0.36
	Age-group 12-17 years	0.38

Source: Author's calculations using Nigeria MICS 5 2016-17

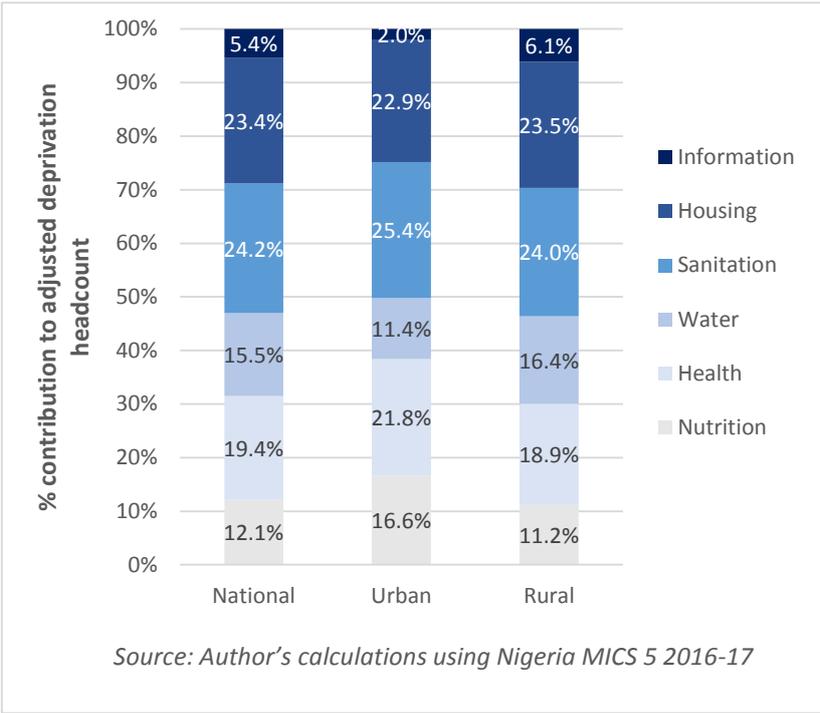
The adjusted multidimensional deprivation headcount (M<sub>0</sub>) is an index ranging from 0 to 1 that combines both the incidence (H) and intensity (A) of deprivation. M<sub>0</sub> has a value of 0.38, 0.36 and 0.38

for children aged 0-4 years old, children age 5-11 years old and children aged 12-17 years old respectively (Table 2).

### 4.2.3 Decomposition of the adjusted deprivation headcount (M0)

The decomposition of M0 indicates which dimensions are more relevant in determining the index. The chart below reveals that Sanitation and Housing contribute the most to M0 for children aged 0-4 years

Figure 13. Decomposition of M0 for children aged 0-4 years old



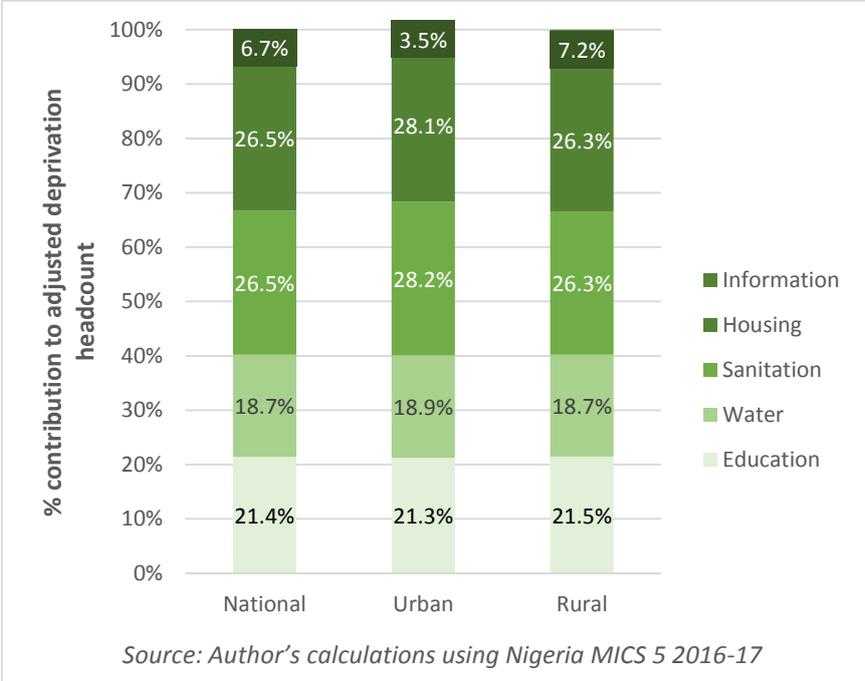
old (24.2 per cent and 23.4 per cent respectively). The decomposition is similar across both rural and urban areas. However, the dimensions Information and Water have a larger influence in rural areas (6.1 per cent versus 2.0 per cent for the Information dimension and 16.4 per cent versus 11.4 per cent for the Water dimension) while the dimensions Health and Nutrition play a larger role in urban areas (21.8 per cent versus 18.9 per cent for the dimension Health and 16.6 per cent versus 11.2 per cent for the dimension Nutrition).

versus 18.9 per cent for the dimension Health and 16.6 per cent versus 11.2 per cent for the dimension Nutrition).

As can be observed from the chart below, the dimensions Housing and Sanitation are also most relevant to Mo for children aged 5-11

Figure 14. Decomposition of Mo for children aged 5-11 years old

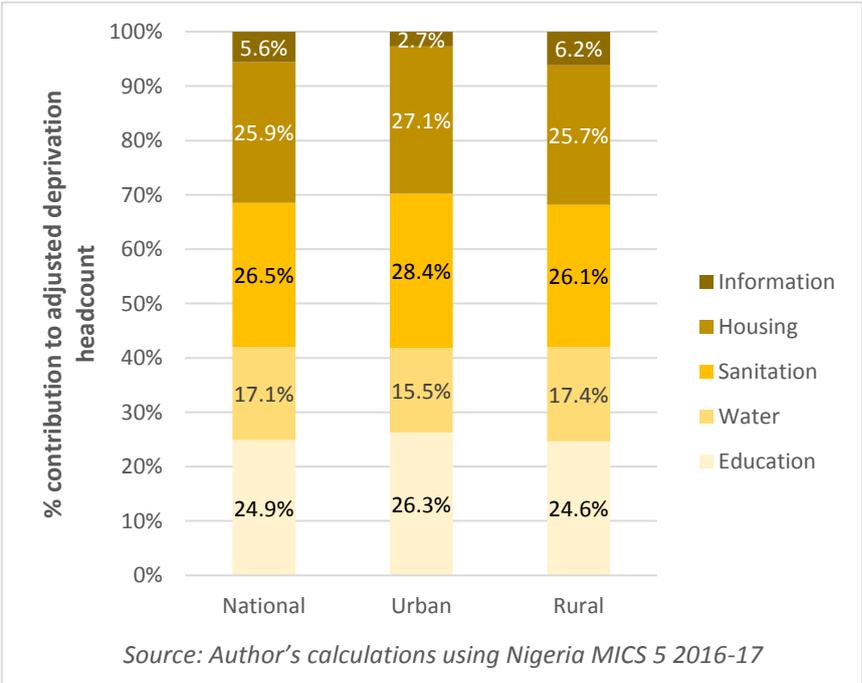
years old. They each contribute 26.5 per cent to the adjusted multidimensional deprivation index. When disaggregating the decomposition by area of residence, it is found that the Information dimension is twice as important to Mo in rural areas opposed to urban areas (7.2 per cent versus 3.5 per cent). Furthermore, Housing and Sanitation are slightly more relevant in urban areas than in rural areas (28.1 versus 26.3 per cent for the Housing dimension and 28.2 per cent versus 26.3 per cent for the Sanitation dimension).



The decomposition of Mo for

children aged 12-17 years old is presented in the chart below. Once more, the dimensions Sanitation

Figure 15. Decomposition of Mo for children aged 12-17 years old



and Housing are the largest contributors to the adjusted multidimensional deprivation index (Mo) (26.5 per cent and 25.9 per cent respectively). Differences in decomposition by area of residence are minimal, with Information and Water being more relevant in rural areas in comparison to urban areas. Housing, Sanitation and Education, on the other hand, are

slightly more important in urban areas.

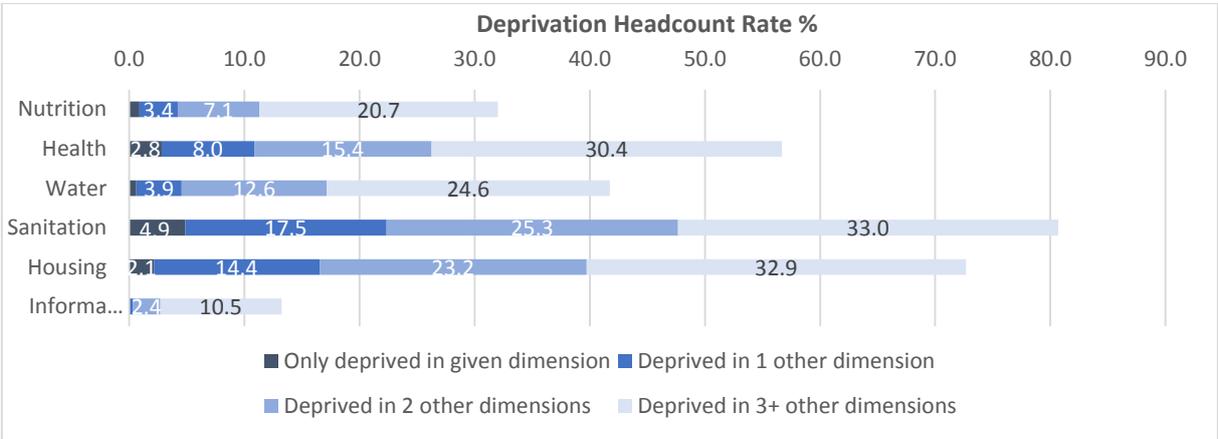
### 4.3 Overlapping deprivation analysis

#### 4.1.1 Children aged 0-4 years

##### Overlap by dimension

Figure 16 shows the overlap by each dimension for children aged 0-4 years old. As discussed above, the majority of deprived children experience deprivation in multiple dimensions at the same time. For example, out of the 79.2 per cent of children deprived in Sanitation, 33.0 per cent face deprivation in 3 or more additional dimensions. Similar results are found for all other dimensions. Moreover, very few children are only deprived in a given dimension.

Figure 16. Overlap by each dimension, 0-4 years



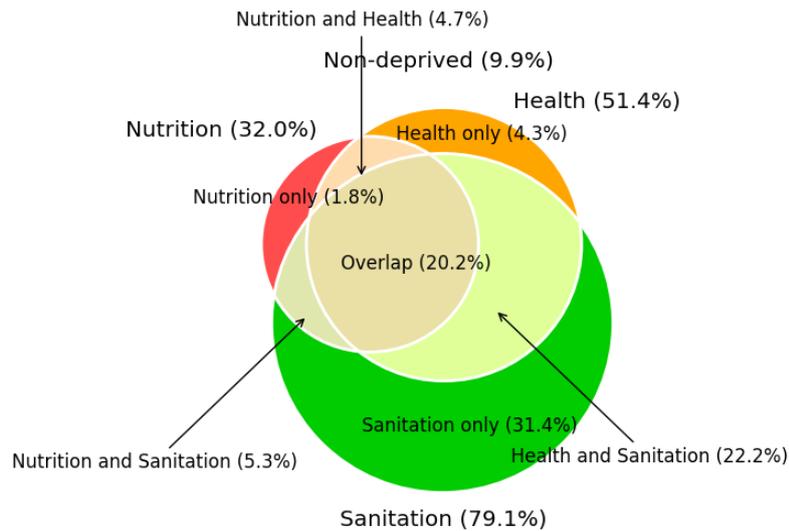
Source: Author’s calculations using Nigeria MICS 5 2016-17

##### Three-way overlap

All possible combinations of deprivation overlap between three dimensions were analysed for this study (see Annex D). However, only an example is presented here in the form of a Venn Diagram that provides the following information: (1) deprivation rates for each dimension separately; (2) deprivation overlap between any two dimensions; (3) deprivation overlap between all dimensions; and (4) the proportion of children that are not deprived in any of the included dimensions.

The graph below (Figure 17) indicates the overlap between the dimensions Nutrition, Health and Sanitation for children aged 0-4 years old. Among children this age, 20.2 per cent face deprivation in all three dimensions studied. Very few children are deprived in Nutrition or Health only (1.8 per cent and 4.3 per cent respectively) while 42.4 per cent of children experience deprivation in both Health and Sanitation. Around 1 in 10 children do not suffer from any of the three dimensions analysed (see Figure 17).

Figure 17. Three-way overlap between the dimensions Nutrition, Health and Sanitation at the national level, 0-4 years



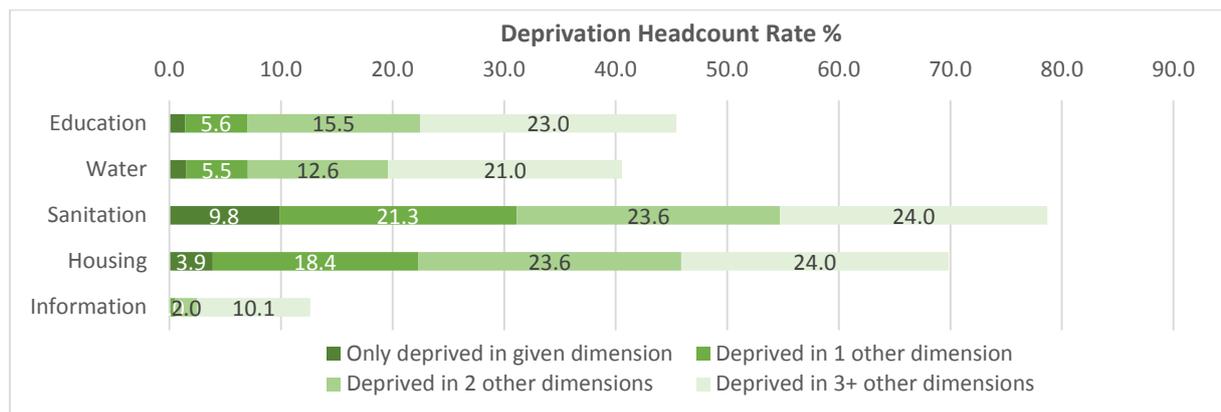
Source: Author's calculations using Nigeria MICS 5 2016-17

#### 4.1.2 Children aged 5-11 years

##### Overlap by dimension

Figure 18 presents the overlap by each dimension for children aged 5-11 years old. More than 20 per cent of children deprived in Education, Water, Sanitation and Housing respectively are deprived in 3 or more additional dimensions. Furthermore, nearly 8 out of 10 children deprived in Information also experience deprivation in 3 or more other dimensions (10.1 per cent out of 12.6 per cent). With the exception of the Sanitation dimension, less than 4 per cent of children are only deprived in a given dimension.

Figure 18. Overlap by each dimension, 5-11 years



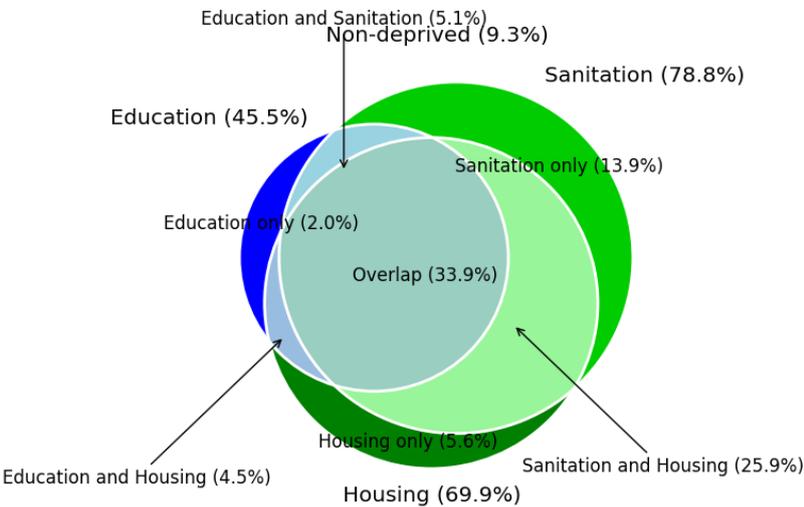
Source: Author's calculations using Nigeria MICS 5 2016-17

##### Three-way overlap

An example of deprivation overlap of three dimensions for children aged 5-11 years old is displayed in Figure 19. Approximately, 1 in 3 children this age face deprivation in the dimensions Education, Sanitation and Housing at the same time. Moreover, 59.8 per cent suffer from deprivation in both the dimensions Sanitation and Water and very few children experience deprivation in only one dimension.

In particular, a proportion of 2.0 per cent is deprived in solely the Nutrition dimension and 5.6 per cent face deprivation in Housing conditions only. Less than 1 in 10 children aged 5-11 years old are not deprived in any of the three dimensions studied (see Figure 19).

Figure 19. Three-way overlap between the dimensions Education, Sanitation and Housing at the national level, 5-11 years



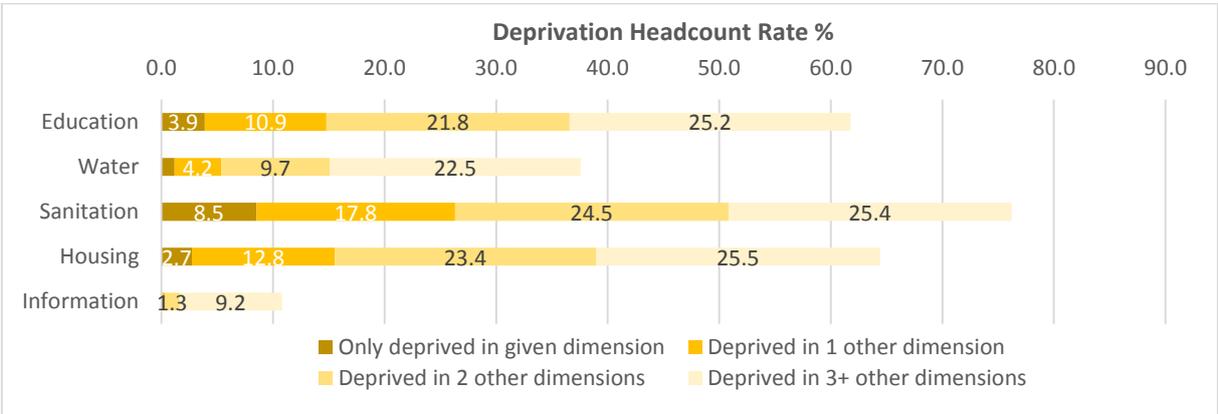
Source: Author's calculations using Nigeria MICS 5 2016-17

4.1.3 Children aged 12-17 years

Overlap by dimension

For the oldest age group, approximately 25 per cent of children deprived in Education, Sanitation and Housing respectively, experience deprivation in 3 or more other dimensions (see Figure 20). The proportion of children deprived in a given dimension only is fairly low across all dimensions (ranging from 0 per cent in the dimension Information to 8.5 per cent in the Sanitation dimension).

Figure 20. Overlap by each dimension, 12-17 years

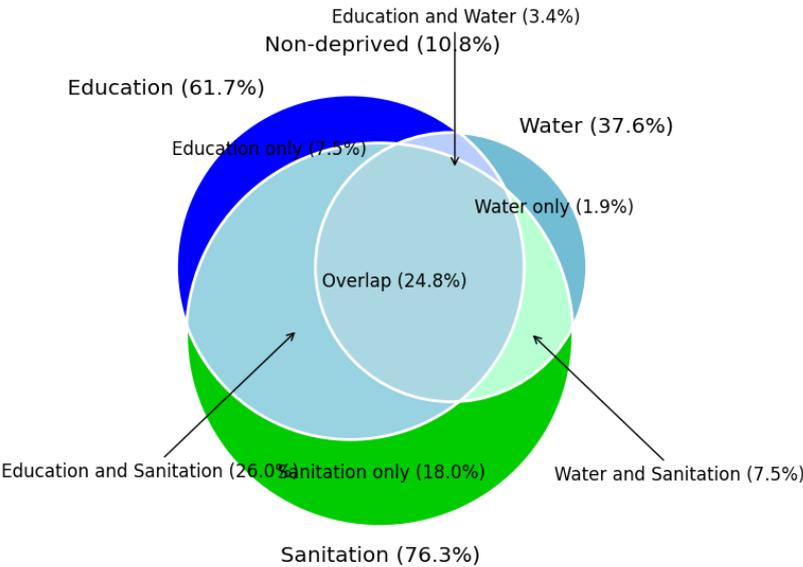


Source: Author's calculations using Nigeria MICS 5 2016-17

Three-way overlap

Figure 21 shows the overlap between the dimensions Education, Water and Sanitation at the national level for children aged 12-17 years old. Nearly 1 out of 4 children are deprived in all three dimensions analysed. In addition, 50.8 per cent of children this age experience deprivation in both the dimensions Education and Sanitation. The proportion of children suffering from deprivation in the Water dimension only stands at 1.9 per cent while 10.8 per cent are being deprived in neither Education, Water or Sanitation (Figure 21).

Figure 21. Three-way overlap between the dimensions Education, Water and Sanitation at the national level, 12-17 years



Source: Author's calculations using Nigeria MICS 5 2016-17

### 4.4 Profile of the deprived children in Nigeria

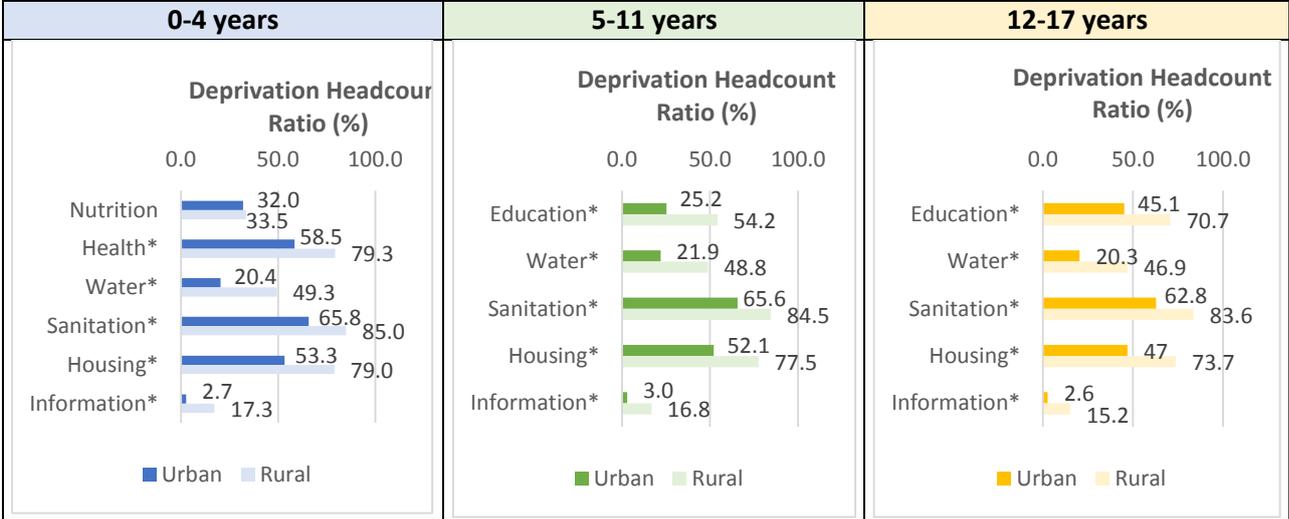
This report helps identifying the characteristics of the most vulnerable and multidimensionally poor children in Nigeria. Results are disaggregated by variables at the geographical, household and individual level among others.

#### 4.4.1 Profile of the deprived children

Results show that children living in rural areas are worse off and experience higher deprivation rates opposed to children living in urban areas. Figure 22. Deprivation Headcount Ratio (%) by dimension and area of residence for each age group. Figure 22 presents the deprivation rates by dimension disaggregated by area of residence for each age group. More than twice as many rural children aged 5-11 years old face deprivation in Education compared to urban children this age (54.2 per cent versus 25.2 per cent). The distinction between children living in rural and urban areas is the largest for the Housing dimension (25.7 percentage points for children aged 0-4 years, 25.4 percentage points for children aged 5-11 years and 26.7 percentage points for children aged 12-17 years old). Approximately 8 out of 10 children (79.3 per cent) aged 0-4 years old living in rural areas experience deprivation in the dimension Health whereas

the deprivation rate stands at 58.5 per cent for children living in urban areas. All discrepancies found are statistically significant, except for the difference in Nutrition for children aged 0-4 years old (see Figure 22).

Figure 22. Deprivation Headcount Ratio (%) by dimension and area of residence for each age group



Source: Author’s calculations using Nigeria MICS 5 2016-17. Note: \* p<0.10 in Chi-squared test of independence

The regional disaggregation of results for each age group can be found in Table 3. Children of all ages living in Lagos are better off in terms of Water, Sanitation and Information compared to other regions in Nigeria. Moreover, children aged 0-4 years old living in Lagos experience the lowest deprivation rates in the dimension Health (43.8 per cent) while children aged 5-11 years old and 12-17 years old living in Lagos present the lowest derivation rates in Education (5.0 per cent and 26.9 per cent respectively). With regards to housing, a proportion of 34.6 per cent and 35.6 per cent of children under five living in Edo and Enugu respectively face deprivation in housing conditions. Approximately 3 out of 10 children aged 5-11 years old living in Edo and Abia experience deprivation in the Housing dimension (30.7 per cent and 27.7 per cent respectively) whereas around one out of four children aged 12-17 years old living in Edo and Abia are deprived in the same dimension (25.3 per cent and 25.7 per cent respectively).

On the other hand, children of all ages living in Sokoto display the highest deprivation rate in the Water dimension, ranging from 66.0 per cent for children aged 12-17 years old to 70.8 per cent for children aged 0-4 years old. In addition, more than half of children living in Zamfara, Plateau, Taraba, Gombe and Borno suffer from poor water conditions. The proportion of children deprived in Sanitation is high across all regions; with deprivation rates of more than 90 per cent in Jigawa, Zamfara and Ebonyi (except for Zamfara for children aged 15-17 years old). Furthermore, approximately 9 out of 10 children under five living in Yobe and Kebbi suffer from deprivation in the Housing dimension. Older children (aged 5-17

years old) living in Kebbi and Jigawa present deprivation rates ranging from 89.1 per cent in Kebbi for children aged 12-17 years old to 92.1 per cent in Kebbi for children aged 5-11 years old.

The deprivation rates for Information are relatively low overall, with the largest proportion of children deprived living in Kebbi (27.0 per cent for children aged 0-4 years old and 27.4 per cent of children aged 5-11 years old) and Jigawa (25.2 per cent for children aged 12-17 years old). In Yobe, 43.2 per cent and 89.6 per cent of children under five are deprived in Nutrition and Health respectively. In the Education dimension, more than two thirds of children aged 5-11 years old living in Sokoto and Borno (68.5 per cent and 66.8 per cent) face deprivation. The deprivation rates for Education are higher for children aged 12-17 years old compared to children aged 5-11 years old, given that the indicator "*Primary attainment*" was added for children aged 15-17 years. Around 87.5 per cent of children aged 12-17 years old living in Sokoto experience deprivation in Education, with also more than 8 out of 10 children living in Kebbi, Jigawa, Gombe and Bauchi deprived in this dimension.

Table 3. Deprivation Headcount Ratio (%) by dimension and area of residence for each age group

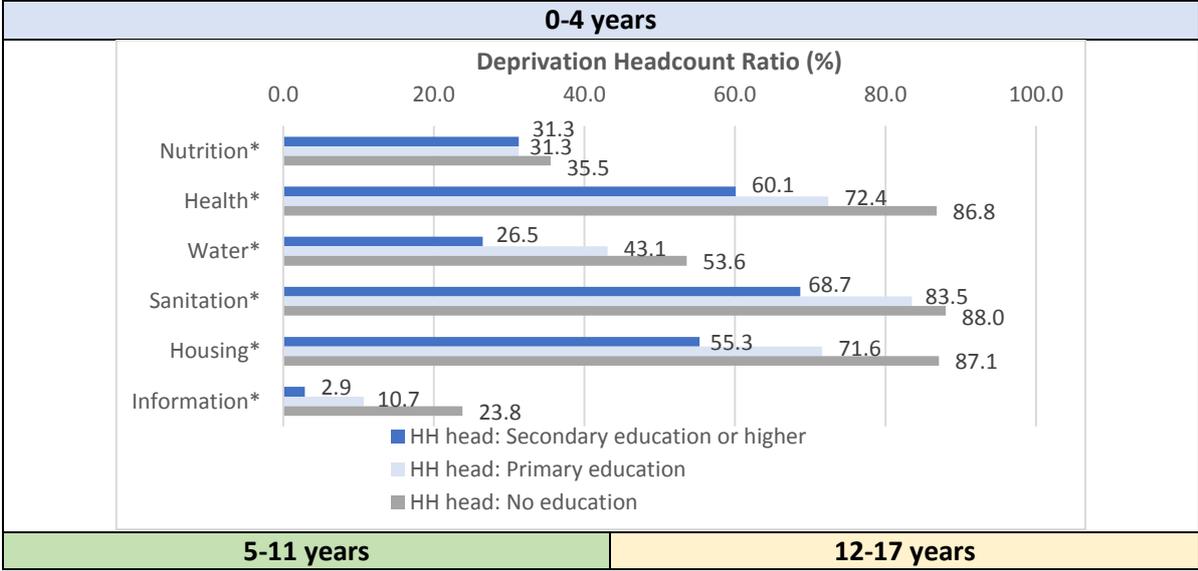
		0-4 years						5-11 years					12-17 years				
		Nutrition	Health	Water	Sanitation	Housing	Information	Education	Water	Sanitation	Housing	Information	Education	Water	Sanitation	Housing	Information
Region	FCT Abuja	27.9	58.6	20.6	71.0	42.7	5.7	21.6	24.0	72.3	42.6	9.4	52.3	22.8	70.9	37.6	8.1
	Zamfara	35.5	88.5	51.7	<b>90.9</b>	83.7	19.3	66.4	52.6	<b>90.0</b>	82.9	17.0	74.9	50.7	89.5	79.2	14.6
	Yobe	<b>43.2</b>	<b>89.6</b>	41.9	87.6	<b>89.4</b>	17.4	<b>69.9</b>	39.4	86.6	88.8	18.3	79.5	38.3	87.1	83.8	16.7
	Taraba	29.6	78.8	63.5	87.2	83.4	18.6	50.3	65.0	88.7	78.0	20.9	72.0	64.5	87.9	77.8	18.5
	Sokoto	38.5	84.5	<b>70.8</b>	88.3	87.8	22.5	75.1	<b>68.5</b>	88.2	88.5	21.3	<b>87.5</b>	<b>66.0</b>	86.6	86.8	17.9
	Rivers	<b>22.3</b>	48.1	16.1	62.7	37.2	<b>1.5</b>	10.1	17.7	72.5	43.1	1.8	34.7	16.2	61.9	<b>17.9</b>	1.2
	Plateau	23.5	70.7	52.2	79.3	68.7	12.4	34.7	53.8	80.9	70.4	13.7	65.0	55.5	83.9	65.2	14.5
	Oyo	25.5	54.3	23.5	87.7	65.6	5.1	26.6	19.9	86.1	57.7	3.8	39.6	17.3	82.3	49.0	5.1
	Osun	31.7	56.6	14.6	84.1	46.3	2.4	20.2	11.5	80.4	41.9	2.1	41.1	8.4	77.1	34.1	2.0
	Ondo	26.5	57.9	26.2	85.9	51.3	6.2	14.5	27.9	85.3	51.0	5.6	32.6	21.5	75.5	41.0	5.2
	Ogun	31.0	49.7	<b>9.4</b>	79.2	56.9	3.7	16.6	13.8	73.3	51.7	2.6	37.3	9.9	66.8	37.8	1.4
	Niger	32.0	76.1	46.7	77.1	69.7	10.2	56.8	49.3	76.3	66.4	10.0	71.2	45.2	72.1	62.4	7.4
	Nasarawa	28.3	70.3	47.9	86.2	62.8	9.9	39.7	45.5	86.9	57.0	8.8	63.4	43.4	85.7	55.9	10.0
	Lagos	31.6	<b>43.8</b>	<b>3.1</b>	<b>60.8</b>	55.5	<b>0.8</b>	<b>5.0</b>	<b>3.0</b>	<b>64.0</b>	54.6	<b>0.9</b>	<b>26.9</b>	<b>2.6</b>	<b>60.3</b>	46.5	<b>0.6</b>
	Kwara	26.7	64.2	17.4	84.7	51.1	9.1	24.6	23.2	83.6	44.6	10.1	42.8	16.7	80.9	35.3	11.1
	Kogi	25.6	52.1	29.7	88.1	54.6	5.3	21.5	31.7	86.8	51.8	6.0	52.2	27.8	85.0	50.3	5.6
	Kebbi	36.2	<b>88.0</b>	46.4	82.4	<b>91.1</b>	<b>27.0</b>	72.6	46.4	85.4	<b>92.1</b>	<b>27.4</b>	81.4	41.7	80.3	<b>89.1</b>	<b>24.3</b>
	Katsina	38.9	86.9	47.0	77.7	82.9	22.7	54.7	43.8	75.2	83.0	19.4	69.3	44.1	73.8	81.9	17.3
	Kano	37.8	85.8	44.9	73.4	79.2	17.5	55.6	44.3	72.5	77.9	17.4	66.8	41.3	68.1	72.4	13.6
	Kaduna	31.9	68.2	40.2	81.5	62.1	6.0	40.7	41.2	79.9	66.0	8.3	65.1	36.4	75.2	61.8	7.5
Jigawa	37.9	84.8	25.4	<b>90.1</b>	89.7	23.9	65.8	24.6	<b>90.0</b>	<b>91.2</b>	24.8	84.0	25.1	<b>91.5</b>	<b>89.8</b>	<b>25.2</b>	
Imo	32.2	<b>44.8</b>	11.6	64.9	46.0	2.4	6.6	13.6	56.8	41.5	1.8	<b>27.1</b>	18.9	56.3	32.2	3.6	
Gombe	37.3	74.5	61.8	70.3	87.2	<b>23.6</b>	<b>69.8</b>	65.3	70.5	85.9	23.8	80.4	60.9	68.8	83.9	18.7	
Enugu	24.9	45.3	36.9	79.3	<b>35.6</b>	3.8	16.1	42.2	72.4	32.3	5.0	43.0	41.6	74.2	31.3	5.3	

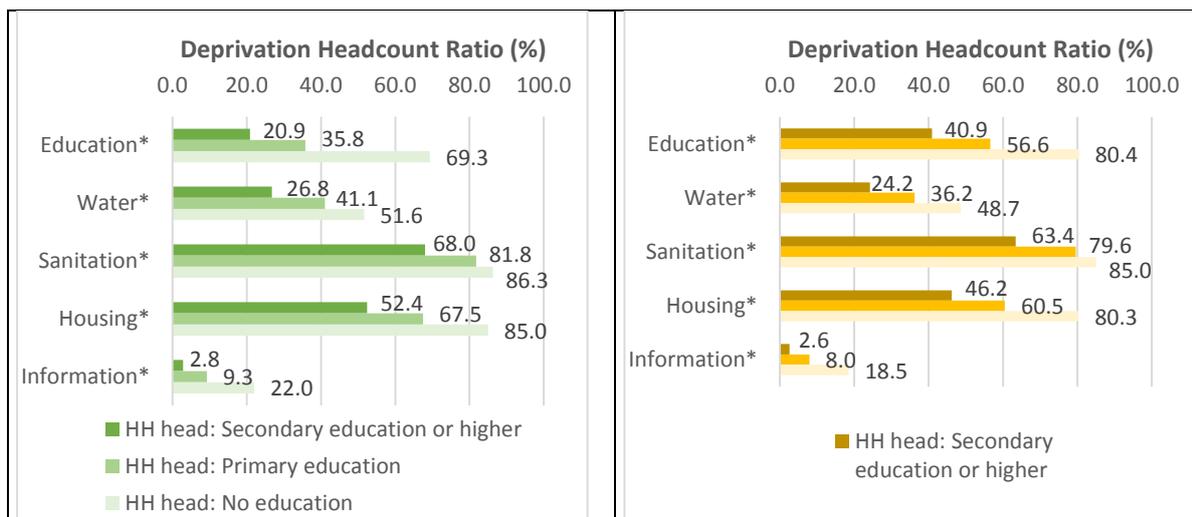
Ekiti	25.2	51.5	10.5	79.4	53.4	2.6	6.5	12.7	76.2	42.4	1.1	29.8	13.3	81.4	38.6	2.0
Edo	30.6	46.7	16.3	70.3	<b>34.6</b>	3.3	10.6	13.8	71.0	30.7	2.9	30.7	11.4	65.4	25.3	2.9
Ebonyi	30.4	53.8	37.0	<b>95.0</b>	66.8	16.8	30.4	40.8	<b>94.5</b>	62.6	19.9	62.8	41.8	<b>94.7</b>	64.7	18.0
Delta	28.7	55.0	19.7	72.5	52.1	5.9	9.2	16.0	67.3	46.6	5.5	37.7	14.0	63.7	31.7	4.7
Cross River	24.8	62.0	49.8	80.8	57.4	8.9	13.1	48.7	80.5	53.4	10.4	34.2	46.7	75.1	44.5	9.7
Borno	34.6	69.2	64.4	70.0	70.9	3.0	52.4	66.8	70.6	70.8	2.3	67.8	61.7	72.5	71.6	3.0
Benue	26.7	58.3	40.6	87.0	72.0	6.5	38.2	38.5	84.6	67.0	7.6	61.2	33.7	79.3	59.2	5.7
Bayelsa	23.5	73.3	15.1	86.8	58.2	6.5	13.6	15.1	85.1	54.4	7.7	35.5	16.3	86.0	49.3	11.3
Bauchi	33.8	85.6	44.8	78.0	85.3	20.8	<b>69.0</b>	44.0	75.7	82.8	19.0	83.3	44.1	74.6	83.2	15.1
Anambra	24.9	35.9	20.6	64.1	42.6	2.6	7.6	17.2	59.5	43.7	4.1	32.9	15.6	56.9	37.2	2.9
Akwa Ibom	29.3	77.4	28.2	68.3	52.6	5.8	15.6	28.9	65.8	53.9	5.4	37.9	27.6	61.6	41.7	4.7
Adamawa	35.0	64.6	47.7	88.1	73.8	10.6	49.9	48.5	88.9	75.4	10.5	67.2	45.1	88.2	72.5	9.0
Abia	34.6	46.5	19.3	65.5	37.7	2.8	9.9	22.1	<b>63.9</b>	<b>27.7</b>	2.8	34.7	16.3	62.1	25.7	1.5

Source: Author's calculations using Nigeria MICS 5 2016-17. Note: All results are statistically significant at the  $p < 0.10$  level when using the Chi-squared test of independence

Children living with household heads and/or parents who attained secondary or higher education have statistically significant higher deprivation rates in all dimensions analysed than children whose household head and/or parents did not achieve any education level. The higher the education level of the household head, mother and/or father, the lower the deprivation rates experienced by children. Figure 23 presents the deprivation rates by dimension and education level of the household head for each age group. Similar results can be found when disaggregating the figures by the education level of the mother and the father. The Housing dimension shows a distinction of more than 30 percentage points between household heads with secondary or higher education and household heads with no education (31.8 percentage points for children aged 0-4 years old, 32.6 percentage points for children aged 5-11 years old and 34.1 percentage points for children aged 12-17 years old). Also, the dimensions Water, Sanitation and Information present large discrepancies whereas differences in Nutrition are relatively small (4.2 percentage points among children aged 0-4 years old). Moreover, more than three times as many children aged 5-11 years old with household heads who achieved secondary or higher education levels are deprived in the Education dimension compared to children with non-educated household heads (69.3 per cent versus 20.9 per cent). For children aged 12-17 years old, 40.9 per cent of higher educated household heads are deprived versus 80.4 per cent of household heads with no education (see Figure 23).

Figure 23. Deprivation Headcount Ratio (%) by dimension and education level of the household head for each age group

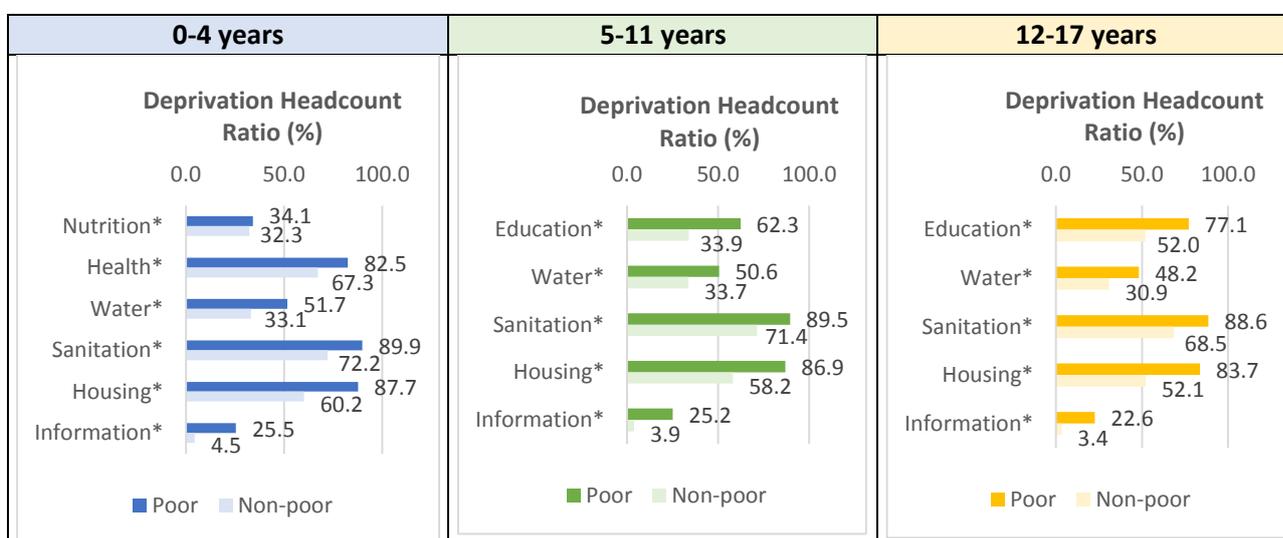




Source: Author's calculations using Nigeria MICS 5 2016-17. Note: \*  $p < 0.10$  in Chi-squared test of independence

Poor households<sup>9</sup> are more likely to experience higher deprivation rates in all dimensions than non-poor households (see Figure 24). Moreover, all disparities are statistically significant. For example, 62.3 per cent of children aged 5-11 years old living in poor households face deprivation in the Education dimension compared to 33.9 per cent of children living in non-poor households. The Housing dimension presents the largest discrepancies with differences of 27.5 per cent, 28.7 per cent and 31.6 per cent for children aged 0-4 years old, 5-11 years old and 12-17 years old respectively (see Figure 24).

Figure 24. Deprivation Headcount Ratio (%) by dimension and poverty status (poor & non-poor), 0-4 years



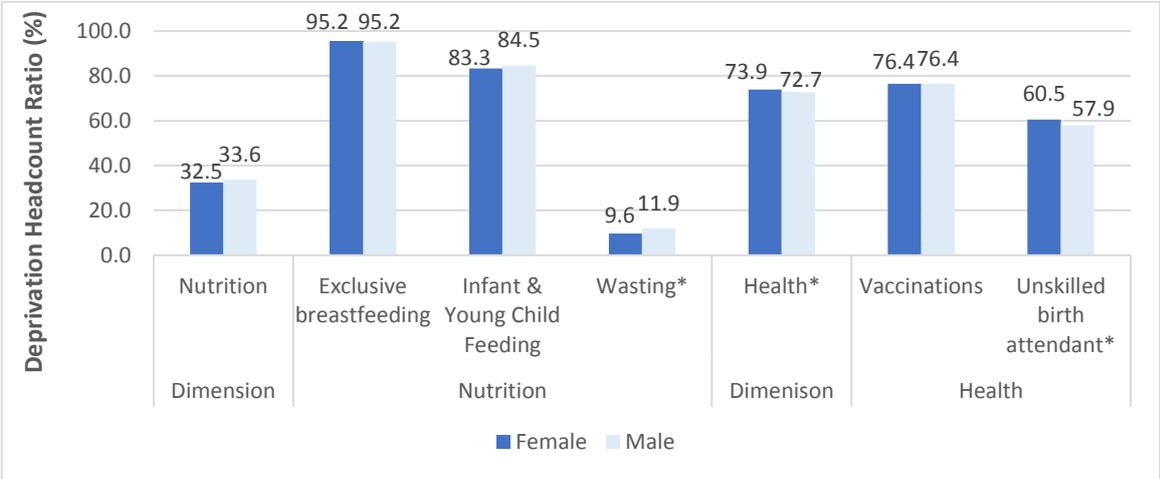
Source: Author's calculations using Nigeria MICS 5 2016-17. Note: \*  $p < 0.10$  in Chi-squared test of independence

The sectoral deprivation rates by sex of the child for children under five are displayed in Figure 25. Only the dimensions and indicators at the individual level are shown and discussed. **Most distinctions based**

<sup>9</sup> The poverty status of the household is based on the wealth index. Details on the assets included in the wealth index are discussed in Annex B.

on the gender of the child are not statistically significant for the youngest children. However, a statistically significant difference between boys and girls this age is observed in the Health dimension. The deprivation rate for girls is slightly higher than for boys (73.9 per cent versus 72.7 per cent). At the indicator-level, both the indicators “Wasting” and “Unskilled birth attendant” present statistically significant differences, even though discrepancies remain minimal. Nearly 12 per cent of boys experience deprivation in the indicator “Wasting” versus 9.6 per cent of girls while for “Unskilled birth attendant” girls indicate slightly higher deprivation rates compared to boys (60.5 per cent versus 57.9 per cent) (see Figure 25).

Figure 25. Deprivation Headcount Ratio (%) by each dimension and indicator at the individual-level and sex of the child, 0-4 years

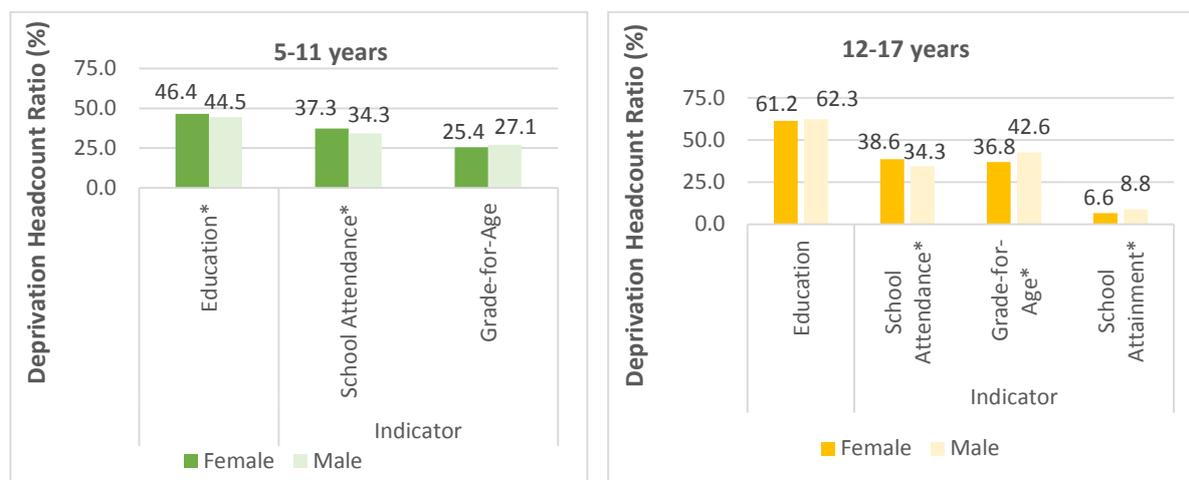


Source: Author’s calculations using Nigeria MICS 5 2016-17. Note: \*  $p < 0.10$  in Chi-squared test of independence

When looking at the gender differences for the older age groups, varying results are found. Girls aged 5-11 years old are more likely to be deprived in the Education dimension compared to boys this age (46.4 per cent versus 44.5 per cent) (see Figure 26). Moreover, boys aged 12-17 years old show higher deprivation rates than girls in the indicators “Grade-for-age” and “School attainment”<sup>10</sup>. On the other hand, slightly more girls this age experience deprivation in the indicator “School attendance” with regards to boys (38.6 per cent versus 34.3 per cent). All differences mentioned are statistically significant at a value of  $p < 0.10$  when using a Chi-squared test of independence.

<sup>10</sup> The indicator school attainment is analysed for children age 15-17 years old.

Figure 26. Deprivation Headcount Ratio (%) by each dimension and indicator at the individual-level and sex of the child, 5-11 years and 12-17 years

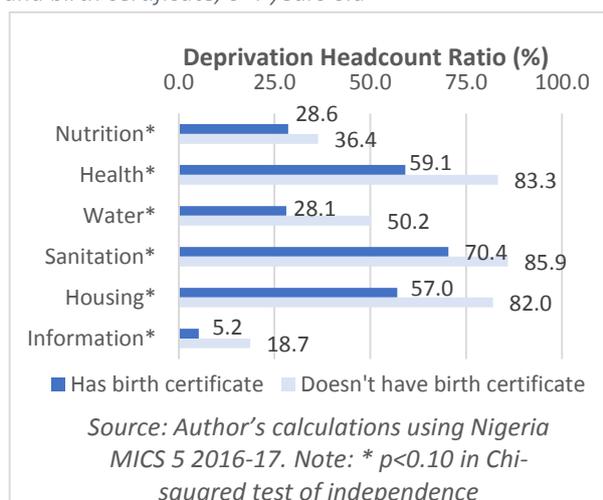


Source: Author's calculations using Nigeria MICS 5 2016-17. Note: \*  $p < 0.10$  in Chi-squared test of independence

Children aged 0-4 years old without birth certificate are more vulnerable and show higher deprivation rates in all dimensions studied (see Figure 27).

Especially the dimensions Water and Housing show high discrepancies of 22.1 percentage points and 25 percentage points respectively. More than 3 times as many children without birth certificate are deprived in the Information dimension compared to children with birth certificate. All differences are statistically significant (see Figure 27).

Figure 27. Deprivation Headcount Ratio (%) by dimension and birth certificate, 0-4 years old

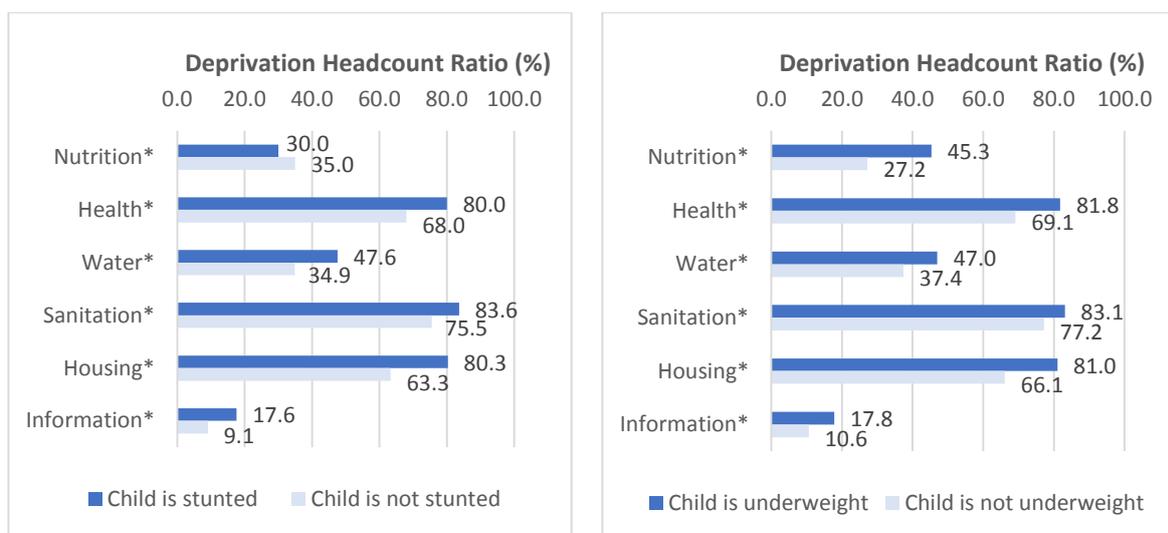


Except for Nutrition, stunted<sup>11</sup> children aged 0-4 years old experience higher deprivation rates in comparison to non-stunted children (see Figure 28). In addition, underweight<sup>12</sup> children face higher deprivation rates than non-underweight children in all dimensions. For example, 80.0 per cent of stunted children are deprived in the Health dimension opposed to 68.0 per cent of non-stunted children. Almost half of the underweight children (45.3 per cent) experience deprivation in Nutrition whereas only 27.2 per cent of non-underweight children are deprived in the same dimension (see Figure 28).

<sup>11</sup> A child is considered as stunted if (s)he has a height-for-age that is more than 2 standard deviations below the median of the reference population.

<sup>12</sup> A child is considered as underweight if (s)he has a weight-for-age that is more than 2 standard deviations below the median of the reference population.

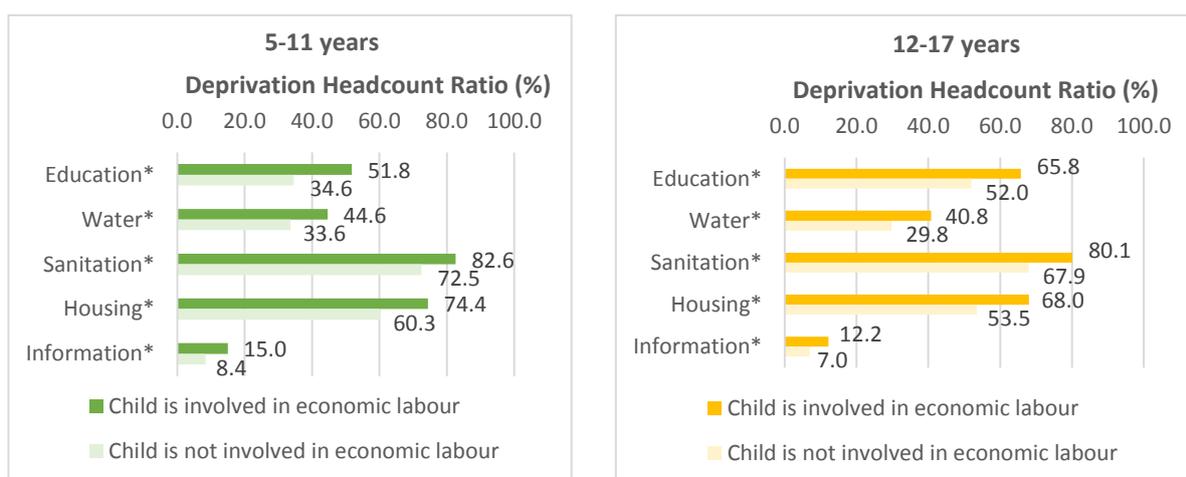
Figure 28. Deprivation Headcount Ratio (%) by dimension and child's stunting and underweight status, 0-4 years



Source: Author's calculations using Nigeria MICS 5 2016-17. Note: \*  $p < 0.10$  in Chi-squared test of independence

**Children's involvement in economic labour is unfavourable for their wellbeing.** Figure 29 presents higher deprivation rates for children (5-17 years old) involved in economic labour in all dimensions compared to children who are not involved. Moreover, all differences are statistically significant. Approximately half of children aged 5-11 years old involved in economic labour are deprived in Education as opposed to 34.6 per cent of children not involved in economic labour. The largest discrepancies are found in the Housing dimension, with differences of 14.1 percentage points for children aged 5-11 years old and 14.5 percentage points for children aged 12-17 years old (see Figure 29).

Figure 29. Deprivation Headcount Ratio (%) by dimension and economic labour, 5-17 years

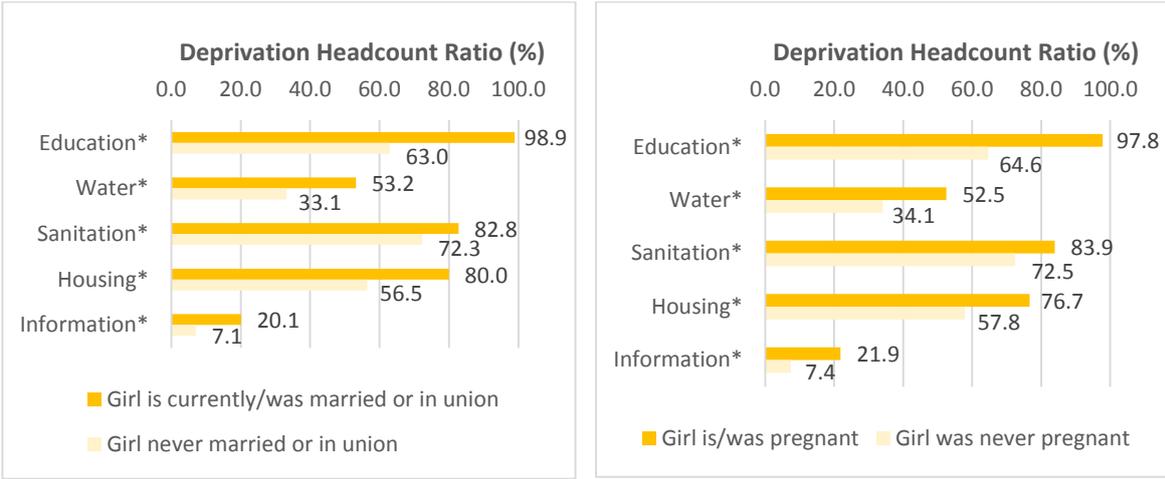


Source: Author's calculations using Nigeria MICS 5 2016-17. Note: \*  $p < 0.10$  in Chi-squared test of independence

Girls (15-17 years old) who are currently or were previously in marriage or union and girls (15-17 years old) who are or were ever pregnant show higher deprivation levels than girls who were never married or

in union and girls who were never pregnant (see Figure 30). While all differences are statistically significant, the dimension Education indicates the largest discrepancy of 35.9 percentage points between girls who are or were ever married or in union and girls who were never married or in union. Similarly, nearly all (97.8 per cent) girls who are or were ever pregnant experience deprivation in the Education dimension opposed to 64.6 per cent of girls who were never pregnant (see Figure 26).

Figure 30. Deprivation Headcount Ratio (%) by dimension and girls' early marriage and early pregnancy, 15-17 years



Source: Author's calculations using Nigeria MICS 5 2016-17. Note: \*  $p < 0.10$  in Chi-squared test of independence

#### 4.4.1 Profile of the multidimensionally deprived children

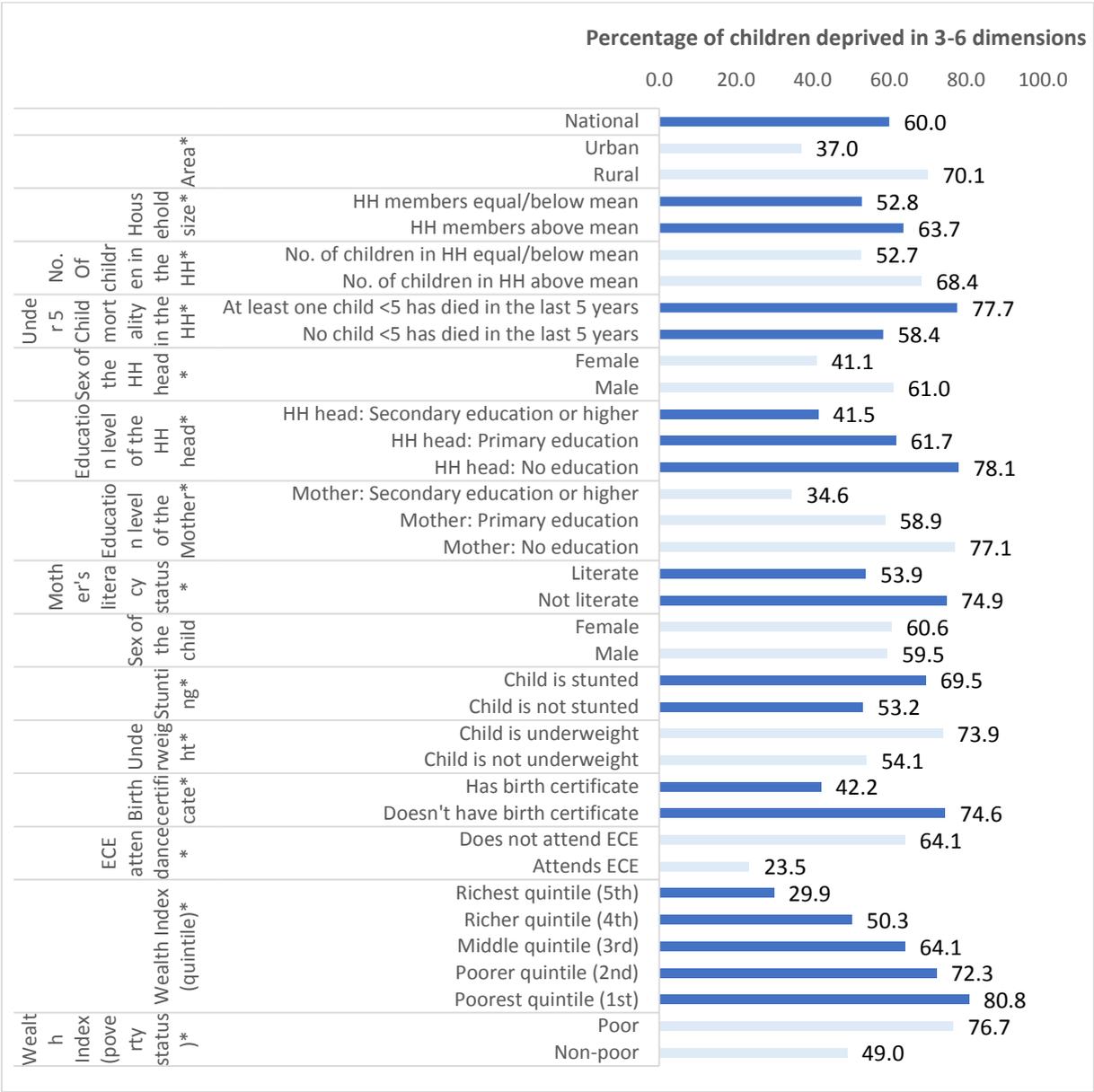
##### Children 0-4 years

The proportion of multidimensional poor children this age is higher in rural areas, larger households, households with a larger number of children and in households who experience at least one under-five mortality in the last 5 years (see Figure 31). Especially the difference between rural and urban areas is significant, with 70.1 per cent of rural children facing at least 3 deprivation compared to 37.0 per cent of urban children. Moreover, children with a higher educated household head and/or mother are less likely to be multidimensionally poor. Also the literacy status of the mother plays a role, with illiterate mothers showing higher multidimensional deprivation rates than literate mothers (74.9 per cent versus 53.9 per cent). Differences based on the gender of the child are not statistically significant.

Furthermore, a higher proportion of stunted and underweight children experience at least 3 deprivations opposed to children who are not stunted and/or underweight. Nearly 7 out of 10 (69.5 per cent) stunted children are multidimensionally poor in comparison to 53.2 per cent of non-stunted children. In addition, 73.9 per cent of underweight children are considered as multidimensionally poor in contrast to 54.1 per cent of children who are not underweight. Another important characteristic is whether or not the child possesses a birth certificate. In particular, 74.6 per cent of children without a birth certificate are multidimensionally poor versus 42.2 per cent of children with a birth certificate.

Similarly, children aged 3-4 years old who attend an Early Childhood Education (ECE) programme show lower multidimensional deprivation rates in contrast to children who do not attend an ECE programme (23.5 per cent versus 64.1 per cent). Finally, children living in households belonging to the poorest wealth quintiles present higher multidimensional deprivation rates than children belonging wealthier households. Approximately 8 out of 10 (80.8 per cent) children belonging to the poorest households face at least 3 deprivations at the same time whereas only 29.9 per cent of children belonging to the richest households are multidimensionally poor (see Figure 31).

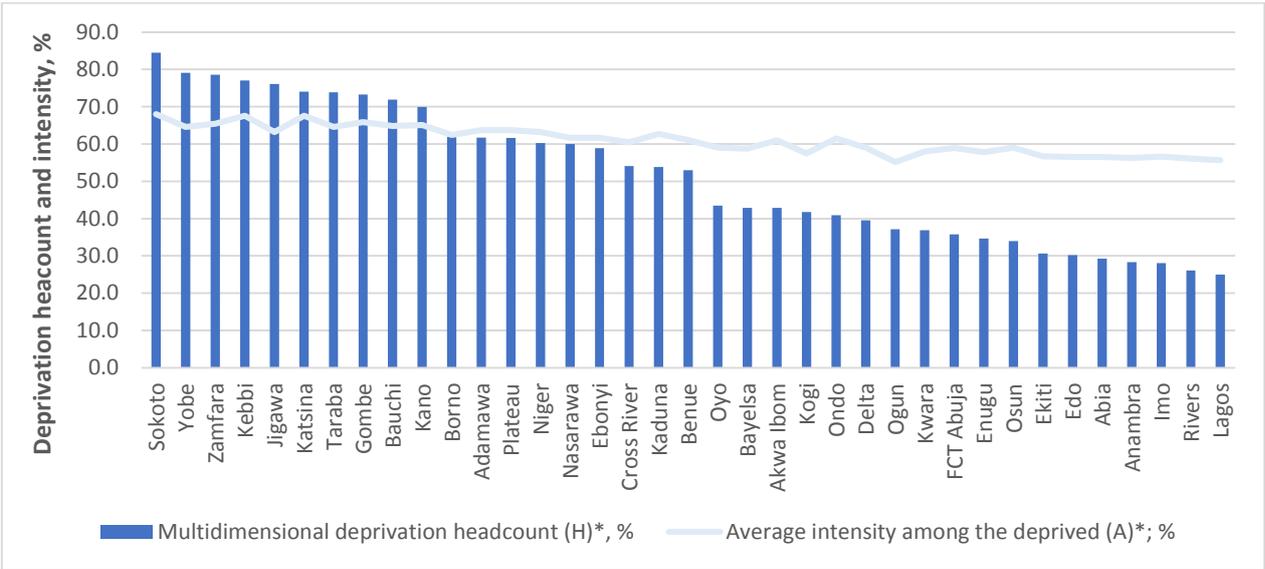
Figure 31. Multidimensional Deprivation Headcount (H) (%) by various profiling variables when using a threshold of K=3, 0-4 years



Source: Author's calculations using Nigeria MICS 5 2016-17. Note: \* p<0.10 in Chi-squared test of independence

Figure 32 shows both the multidimensional deprivation headcount (H) and the average intensity of deprivation among the deprived (A) disaggregated by region for children aged 0-4 years old. Children living in Lagos and Rivers present the lowest multidimensional deprivation rates (25.0 per cent and 26.1 per cent) in Nigeria while children living in Sokoto, Zamfara and Gombe are worst off (84.5 per cent, 79.1 per cent and 78.6 per cent respectively). Furthermore, the average intensity of deprivation among the deprived (A) ranges from 55.2 per cent in Ogun to 68.0 per cent in Sokoto (see Figure 32).

Figure 32. Multidimensional Deprivation Headcount (H) and Average Intensity Among the Deprived (A) (%) by region when using a threshold of K=3, 0-4 years



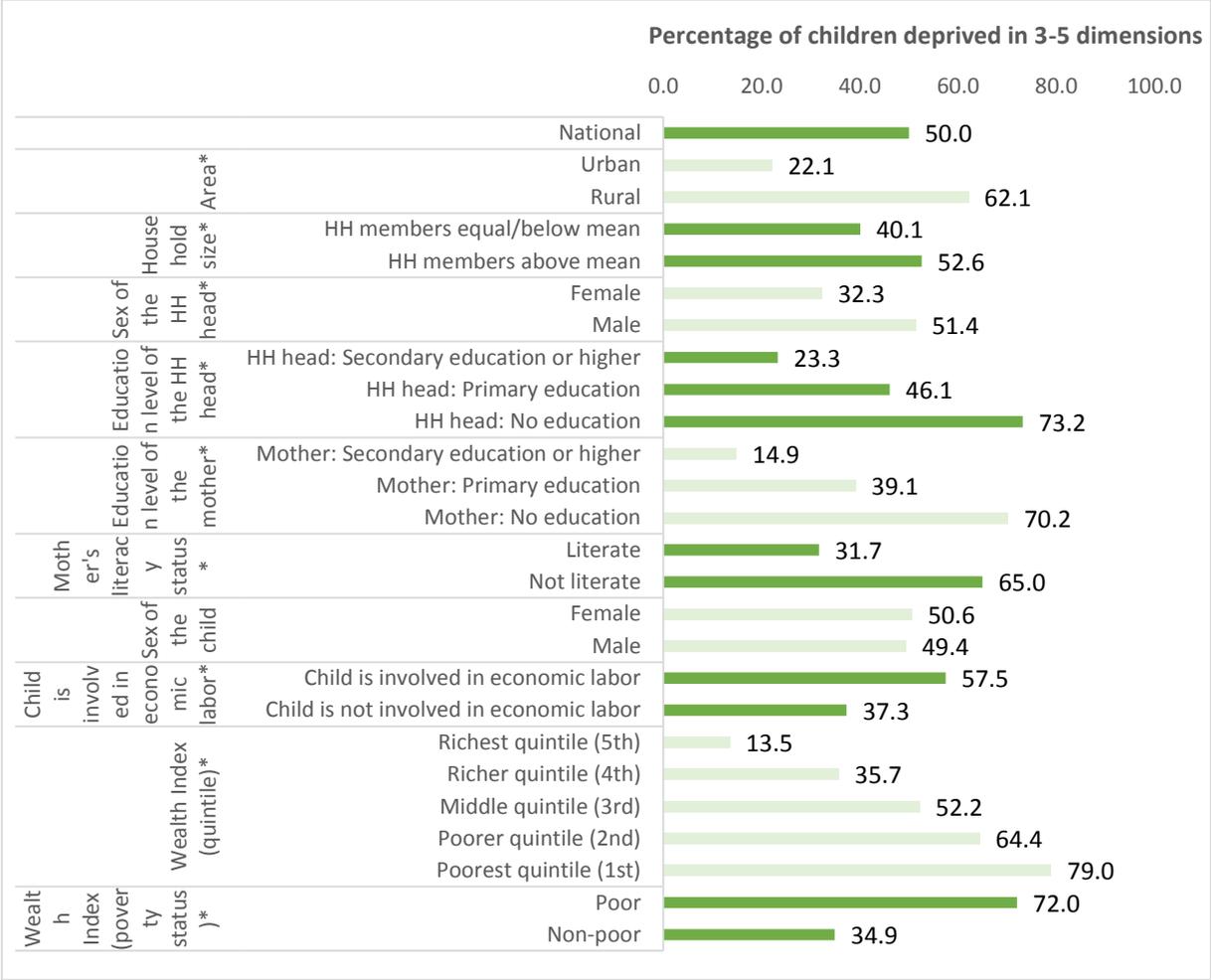
Source: Author’s calculations using Nigeria MICS 5 2016-17. Note: \* p<0.10 in Chi-squared test of independence

Children 5-11 years

Figure 33 displays the proportion of multidimensional deprived children across various profiling variables for children aged 5-11 years old. It is observed that children living in rural areas, larger households, male-headed households and households belonging to the poorest wealth quintile shows higher multidimensional deprivation rates than children living in urban areas, smaller households, female-headed households and households belonging to the richest wealth quintile. All differences mentioned are statistically significant. For example, the proportion of deprived children is almost three times higher in rural areas compared to urban areas (62.1 per cent versus 22.1 per cent). Additionally, the percentage of children deprived in at least 3 deprivations is 73.2 per cent for children with a non-educated household head, whereas only 23.3 per cent of children with a higher educated household head are multidimensionally poor. Similar results are found for the education level of the mother. Moreover, children with illiterate mothers tend to have higher multidimensional deprivation rates than children with literate mothers (65 per cent versus 31.7 per cent). There are no statistically significant differences between boys and girls this age. Furthermore, children involved in economic labour are

more vulnerable, presenting a higher multidimensional deprivation rate than children not involved in economic labour (57.5 per cent versus 37.3 per cent).

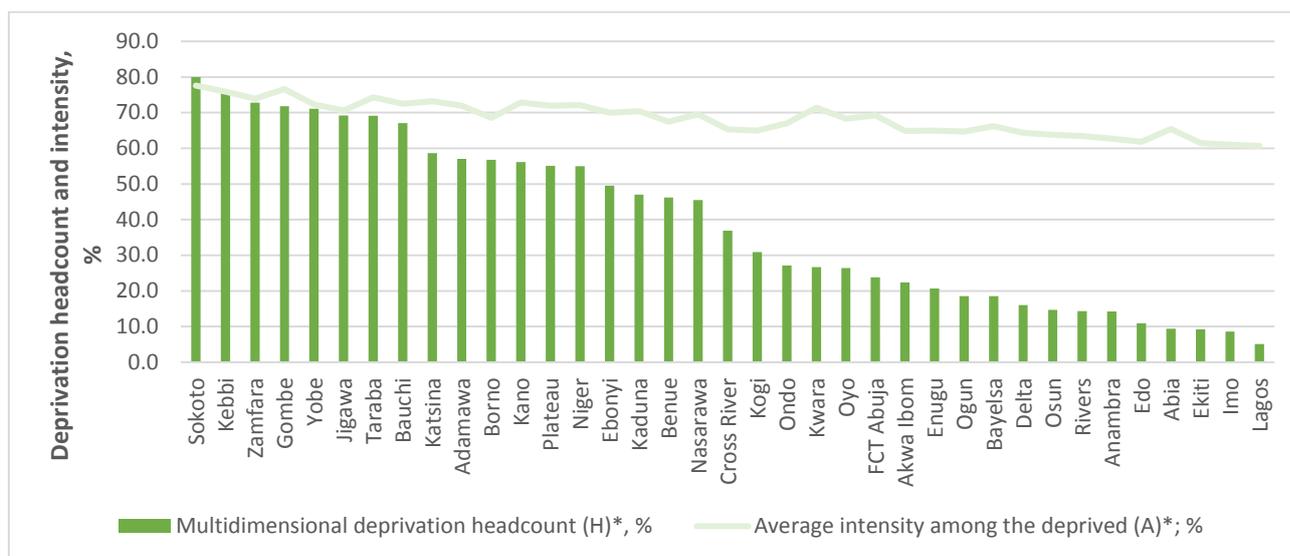
Figure 33. Multidimensional Deprivation Headcount (H) (%) by various profiling variables when using a threshold of K=3, 5-11 years



Source: Author's calculations using Nigeria MICS 5 2016-17. Note: \* p<0.10 in Chi-squared test of independence

The results disaggregated by region for children aged 5-11 years old are displayed in Figure 34. Sokoto, Kebbi and Zamfara present the highest multidimensional deprivation rates of 80.0 per cent, 76.2 per cent and 72.8 per cent respectively. The lowest proportion of multidimensionally poor children is found in Lagos, Imo, Ekiti and Abia, with less than 1 out of 10 children being multidimensionally poor. The average intensity of deprivation among the deprived (A), on the other hand, is the highest in Sokoto (77.6 per cent) and the lowest in Lagos (60.7 per cent).

Figure 34. Multidimensional Deprivation Headcount (H) and Average Intensity Among the Deprived (A) (%) by region when using a threshold of K=3, 5-11 years

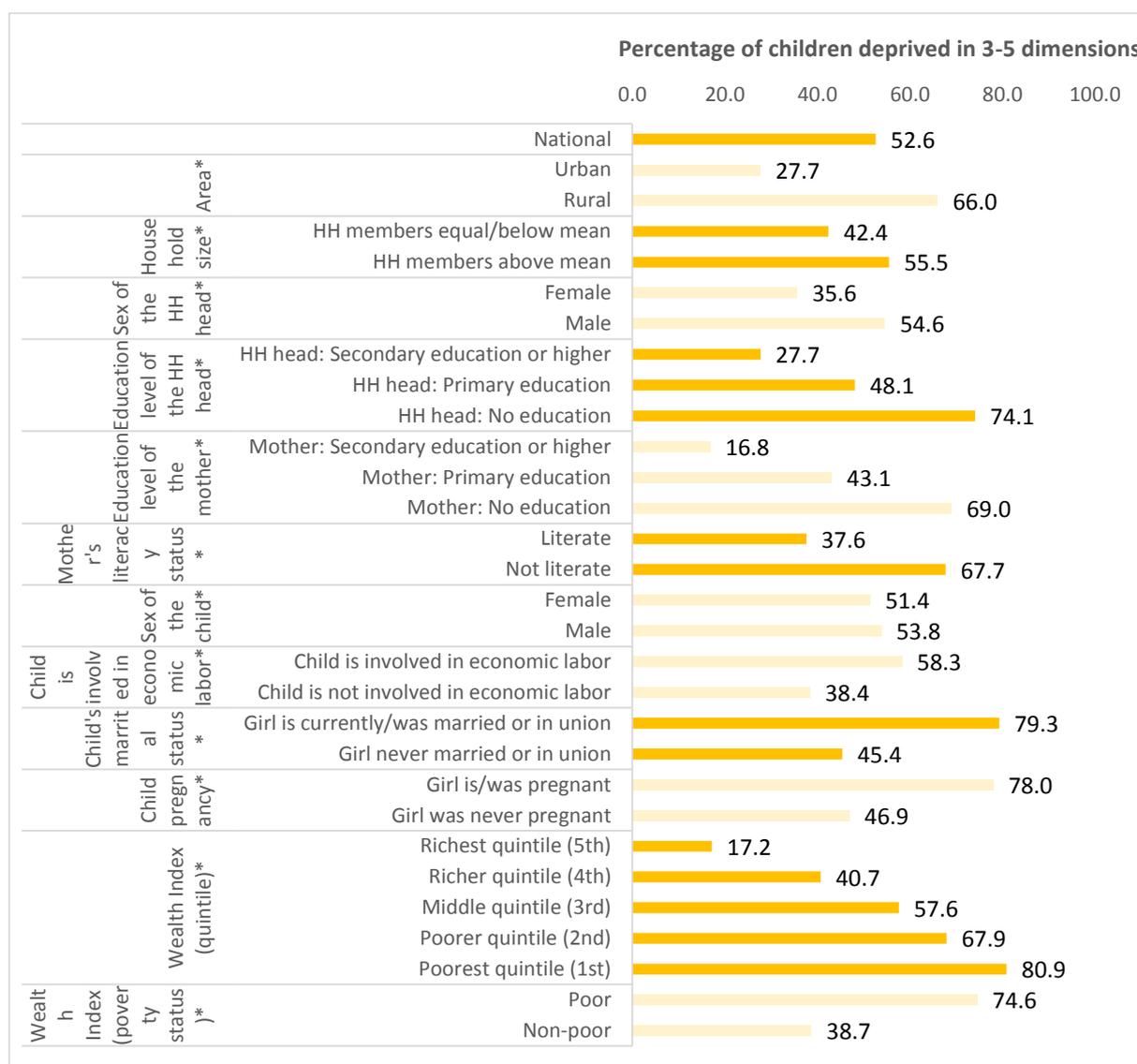


Source: Author's calculations using Nigeria MICS 5 2016-17. Note: \*  $p < 0.10$  in Chi-squared test of independence

#### Children 12-17 years

The profile of multidimensionally poor children aged 12-17 years old is discussed below. Figure 35 demonstrates the multidimensional deprivation rates according to various profiling variables for the oldest age group. In line with previous age groups, a higher proportion of children living in rural areas, larger households, male-headed households and households belonging to the poorest wealth quintile are multidimensionally poor compared to children living in urban areas, smaller household, female-headed households and households belonging to the richest wealth quintile. Moreover, children with non-educated household heads and/or mothers indicate higher multidimensional deprivation rates than children with households' heads and/or mothers who attained secondary or higher education. Although the difference is fairly small, a slightly higher proportion of boys' experience at least 3 deprivations at the same time opposed to girls this age (53.8 per cent versus 51.4 per cent). In addition, children involved in economic labour are more likely to be multidimensionally poor in comparison to children who are not involved (58.3 per cent versus 38.4 per cent). Finally, girls who are/were married and/or pregnant show higher multidimensional deprivation rates than girls who were never married and/or pregnant (79.3 per cent versus 45.4 per cent for early marriage and 78 per cent versus 46.9 per cent for early pregnancy) (see Figure 35).

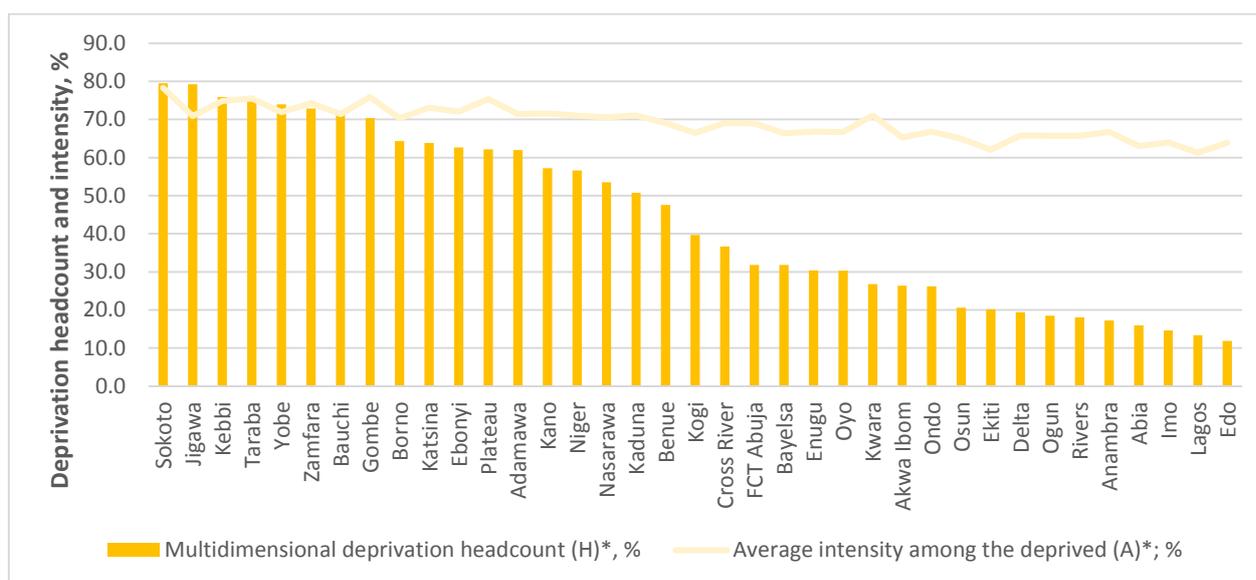
Figure 35. Multidimensional Deprivation Headcount Ratio (H) (%) by various profiling variables when using a threshold of K=3, 12-17 years



Source: Author's calculations using Nigeria MICS 5 2016-17. Note: \*  $p < 0.10$  in Chi-squared test of independence

Figure 36 presents the multidimensional deprivation headcount (H) and average intensity of deprivation among the deprived (A) disaggregated by region for children aged 12-17 years old. Nearly 8 out of 10 children this age living in Sokoto or Jigawa are multidimensionally poor (79.5 per cent and 79.3 per cent respectively). Moreover, on average, the multidimensionally poor children in Sokoto, experience deprivation in 78.3 per cent out of the total number of dimensions. In addition, children living in Edo, Lagos and Imo are best off, with multidimensional deprivation rates of 11.9 per cent, 12.4 per cent and 14.6 per cent respectively. Similar to previous age groups, the average intensity of deprivation among the deprived (A) indicates smaller discrepancies across region compared to the multidimensional deprivation headcount (H). The highest deprivation intensity is found in Sokoto whereas Lagos shows the lowest deprivation intensity (61.3 per cent out of the total number of dimensions) (see Figure 36).

Figure 36. Multidimensional Deprivation Headcount (H) and Average Intensity Among the Deprived (A) (%) by region when using a threshold of K=3, 12-17 years



Source: Author's calculations using Nigeria MICS 5 2016-17. Note: \*  $p < 0.10$  in Chi-squared test of independence

## Chapter 5. Conclusion & Recommendations

This report analyses multidimensional child poverty in Nigeria by employing UNICEF's MODA methodology. It uses data from the Multiple Indicator Cluster Survey (MICS) 5 collected in 2016-17. Adopting the life-cycle approach, children are divided into 3 age groups: 0-4 years, 5-11 years and 12-17 years. In order to identify the most vulnerable children, results are disaggregated by various geographical, household and individual characteristics. The key findings are presented below.

### 5.1 Child poverty is multidimensional

***In Nigeria, 53.9 per cent of children are defined as multidimensionally poor, that is facing deprivation in at least 3 dimensions simultaneously.*** As indicated by Sustainable Development Goal 1.2, it is the objective to reduce this proportion of multidimensionally poor children by at least half, to 27.0 per cent, by 2030. Very few children are not deprived in any dimension analysed (6.9 per cent) with approximately half of the children experiencing deprivation in 2 to 3 dimensions (50.1 per cent). Moreover, on average, multidimensionally poor children, are deprived in 3.7 dimensions out of a total of 5 or 6 dimensions<sup>13</sup>. The disaggregation of multidimensional poverty rates by age group indicates that 60.0 per cent of children aged 0-4 years old, half of children aged 5-11 years old and 52.6 per cent of children aged 12-17 years old are considered to be multidimensionally poor.

<sup>13</sup> Children aged 0-4 years old can be deprived in a maximum of 6 dimensions and children aged 5-17 years old can be deprived in a maximum of 5 dimensions.

### *Multisectoral recommendations*

It is essential to provide multi-sectoral policy responses to guide child poverty reduction strategies in Nigeria, given that the majority of children face deprivation in multiple dimensions at the same time. Moreover, when limited resources are available, cross-sectoral efforts are more cost-effective. Few examples are listed below:

- Promote the National Home Grown School Feeding Programme which provides children with school meals by using locally grown and produced food. It simultaneously improves the nutritional conditions of children and tackles , among others, the high school drop-out rates in Nigeria (Adekunle & Christiana; 2016);
- Promoting adequate sanitation and hygiene practices in schools (e.g. Daily Group Handwashing; increasing provision of tippy-taps...) can alleviate the risk of communicable diseases such as diarrhoea and respiratory tract diseases (UNICEF; 2017b). Subsequently, the prevalence of school absenteeism and school drop-out will decrease which can have short- and long-term impacts on children’s school performance (Baxter et al. 2011). Moreover, providing separate sanitary facilities for boys and girls in schools has proven to be beneficial for girls’ educational attendance (Sommer; 2010);
- Strengthen birth registration systems (e.g. digitization) and raise awareness on the importance of obtaining a birth certificate through sensitization campaigns at the community level.

## 5.2 Profile of the multidimensionally poor

With the aim to design and implement appropriate and effective child policies and programmes, this study identifies the characteristics of the multidimensionally poor children in Nigeria. The most important profiling variables are listed below.

- A larger proportion of children living in **rural areas** is multidimensionally poor (65.7 per cent) compared to children living in urban areas (29.7 per cent);
- At the regional level, **Sokoto, Kebbi** and **Zamfara** present higher multidimensional poverty rates (80.4 per cent, 74.9 per cent and 74.0 per cent respectively) opposed to children living in Edo and Lagos (19.0 per cent and 17.3 per cent respectively);
- **Households with a higher number of household members and/or children** show higher multidimensional deprivation rates than smaller household with fewer household members and/or children;

- Children living with *non-educated household heads and/or mothers* are more likely to be multidimensionally poor in relation to children whose household heads and/or mothers attained secondary or higher education levels;
- *Households belonging to the poorest wealth quintile* display higher multidimensional deprivation rates than households belonging to the richest quintile;
- The literacy status of the mother plays an important role. A larger proportion of children with *illiterate mothers* are multidimensionally poor in comparison to children with literate mothers;
- *Children (0-4 years) without a birth certificate* are more likely to be multidimensionally poor than children with a birth certificate (74.6 per cent versus 42.2 per cent);
- *Stunted and underweight children (0-4 years)* present higher multidimensional deprivation rates than children who are not stunted and/or underweight (69.5 per cent versus 53.2 per cent for stunting and 73.9 per cent versus 54.1 per cent for underweight);
- Differences based on the gender of the child are minimal and not statistically significant for the youngest age groups. However, slightly more *boys aged 12-17 years old* experience at least 3 deprivations at the same time opposed to girls this age (53.8 per cent versus 51.4 per cent);
- A larger proportion of *children involved in economic labour (5-17 years)* are multidimensionally poor opposed to children not involved in economic labour;
- *Girls who are/were married and/or pregnant (15-17 years)* indicate higher multidimensional poverty rates than girls who were never married and/or pregnant (79.3 per cent versus 45.4 per cent for early marriage and 78 per cent versus 46.9 per cent for early pregnancy).

### 5.3 Child poverty by dimensions of wellbeing

The multidimensional child poverty analysis in Nigeria includes the following dimensions of well-being: Nutrition, Health, Education, Water, Sanitation, Housing and Information.

- Among children aged 0-4 years old, 1 out of 3 is deprived in the **Nutrition** dimension (33 per cent). Approximately 95.2 per cent of children aged 0-5 months old are not exclusively breastfed while 83.9 per cent of children aged 6-23 months do not attain the recommended meal frequency and diversity standards<sup>14</sup>. In addition, 10.8 per cent of children (0-4 years) suffer from wasting.

#### Recommendations

- Inform, encourage and support women and their families to adopt adequate feeding practices and dietary habits;

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<sup>14</sup> WHO defines the minimum meal frequency as: 2 times for breastfed infants 6–8 months; 3 times for breastfed children 9–23 months and 4 times for non-breastfed children 6–23 months.

- Enhance community-based Infant and Young Child Feeding (IYCF) services in line with the National Policy on Food and Nutrition;
  - Expand and strengthen the Community Management of Acute Malnutrition (CMAM) programme.
- The **Health** deprivation rate is 73.3 per cent among children aged 0-4 years old. Around 3 out of 4 children aged 0-23 months old (76.4 per cent) are not fully immunized and 59.2 per cent of children under five were not assisted by a skilled birth attendant at birth.

*Recommendations*

- Strengthen the primary health care (PHC) system by raising awareness of service availability, increasing community mobilisation and providing a higher number of service points (UNICEF, 2017a);
  - Promote equity-based Maternal New-born and Child Health Weeks (MNCHW) at the communal level in order to reach the most disadvantaged;
  - Provide an integrated information system in order to identify and track children's vaccination status and invest in sustainable routine immunization schedules (WHO; 2016).
- The deprivation rate in the dimension **Education** affects 45.4 per cent of children aged 5-11 years old and 61.7 per cent of children aged 12-17 years old. More than 1 out of 3 children do not attend school in the year of the survey (35.8 per cent of children aged 5-11 years old and 36.4 per cent of children aged 12-17 years old) while 19.3 per cent of children aged 8-11 years old and 39.9 per cent of children aged 12-17 years old are at least 2 years behind in schooling according to their age. Moreover, 21.2 per cent of children aged 15-17 years old did not attain primary education.

*Recommendations*

- Ensure equal access to educational opportunities;
  - Organize sensitivity campaigns to promote the importance of education and increase the attractiveness of the school environment in order to stimulate school participation and address the high incidence rates of school absenteeism and drop-out;
  - Support school feeding programmes (e.g. National Home Grown School Feeding Programme).
- The deprivation rates in the **Water** dimension concerns 40.5 per cent, 40.6 per cent and 37.6 per cent of children aged 0-4 years old, 5-11 years old and 12-17 years old respectively. The

dimension includes the indicators “*Drinking water source*” and “*Distance to drinking water source*”. SDG 6.1 aims to achieve universal and equitable access to safe and affordable drinking water for all.

#### Recommendations

- Increase access to improved and reliable water at community level, especially in rural areas;
  - Scale-up the WASH Management Information System (WASHIM) as a national system available at all levels to collect comprehensive data for decision making and enable progress tracking (UNICEF; 2017).
- **Sanitation** presents one of the highest deprivations rates analysed. Nearly 4 out of 5 children aged 0-11 years old are deprived in at least one of the following indicators: “*Toilet type*”, “*Shared toilet facilities*” and/or “*Handwashing*” (79.2 per cent of children aged 0-4 years old and 78.8 per cent of children aged 5-11 years old respectively), while 3 out of 4 children aged 12-17 years old experience deprivation in the Sanitation dimension. According to SDG 6.2, Nigeria needs to achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations by 2030.

#### Recommendations

- Raise awareness of the increased health risks (e.g. diarrhoea) when using shared toilet facilities;
  - Provide separate sanitation facilities in schools for girls;
  - Organize sensitisation campaigns on the use of soap and/or other materials for handwashing. Encourage good handwashing practices in schools and homes through the set-up of tippy taps<sup>15</sup>;
- The deprivation rates in the **Housing** dimension range from 64.3 per cent to 71.2 per cent across all age groups. Housing consists of the indicators “*Overcrowding*”, “*Housing materials*” and “*Cooking fuel*”.

#### Recommendations

- Create awareness on the consequences of overcrowding (e.g. in terms of health);

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<sup>15</sup> “A tippy tap works by using the foot to tap a lever to tip water out from a container. It means hands can be washed without touching the stand – therefore stopping the spread of dirt and bacteria.” (Wateraid)

- Encourage private sector (formal and informal) participation in the provision of affordable and sustainable housing materials (Bello; 2019).
- The **Information** dimension measures children’s access to information devices (radio, television, mobile phone...) in the household. The deprivation rates range from 10.8 per cent to 12.8 per cent across all age groups.

*Recommendations*

- The Government needs to attract more private sector investment in order to increase access to information through ICT initiatives such as the Digital Awareness Programme (DAP), the Universal Service Provision and the State Accelerated Broadband Initiative (SABI) (Akanbi & Akanbi; 2012);
- Provide telecommunication facilities at all district and community levels (Ogunlade; 2005).

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## Annexes

### A. Definitions of the Dimensions, Indicators and Deprivation Thresholds

Table A. 1 Dimensions, Indicators and Deprivation Thresholds in Nigeria

<i>Dimension</i>	<i>Indicator</i>	<i>Threshold</i>
<i>Nutrition</i>	<i>Exclusive breastfeeding</i>	<i>0-5 months: Child is not exclusively breastfed</i>
	<i>Infant &amp; Young Child Feeding</i>	<p><i>6-23 months: Child is not meeting standards for meal frequency &amp; food diversity.</i></p> <p><i>Minimum meal frequency is defined:</i>  <i>2 times for breastfed infants 6–8 months</i>  <i>3 times for breastfed children 9–23 months</i>  <i>4 times for non-breastfed children 6–23 months</i></p> <p><i>Dietary diversity refers to the child receiving 4 or more of the following food groups:</i></p> <ol style="list-style-type: none"> <li><i>1. grains, roots and tubers</i></li> <li><i>2. legumes and nuts</i></li> <li><i>3. dairy products (milk, yogurt, cheese)</i></li> <li><i>4. flesh foods (meat, fish, poultry and liver/organ meats)</i></li> <li><i>5. eggs</i></li> <li><i>6. vitamin A rich fruits and vegetables</i></li> <li><i>7. other fruits and vegetables</i></li> </ol>
	<i>Wasting (weight for height)</i>	<i>0-4 years: Child's weight for height is &lt; -2 SD from international median (WHO 2006)</i>
<i>Health</i>	<i>Full Immunization</i>	<i>0-23 months: Child did not receive all recommended vaccinations</i>
	<i>Skilled birth attendant</i>	<i>0-23 months: Unskilled birth attendant assisted with child's birth (traditional birth attendant; relatives or friends; no one; other)</i>
<i>Education</i>	<i>School attendance</i>	<i>5-17 years: Child of compulsory school age is not attending school (UNESCO Compulsory school age)</i>
	<i>Grade-for-age</i>	<i>5-17 years: Child is 2 or more years behind in schooling</i>
	<i>Primary school attainment</i>	<i>15-17 years: Child is beyond primary school age and has no or incomplete primary education.</i>
<i>Housing</i>	<i>Overcrowding</i>	<i>0-17 years: HH has on average more than four people per sleeping rooms</i>
	<i>Housing materials</i>	<i>0-17 years: The exterior walls, roof and floor are made of natural or rudimentary materials</i>

	<i>Cooking fuel</i>	<i>0-17 years: Cooking fuel is solid (wood; straw/shrubs/grass; other) AND/OR cooking happens inside of the household</i>
<i>Sanitation</i>	<i>Improved Toilet Facility</i>	<i>0-17 years: HH uses an unimproved toilet facility</i>
	<i>Shared toilet facility</i>	<i>0-17 years: HH does not share toilet facilities with others who are not members of the household</i>
	<i>Handwashing</i>	<i>0-17 years: HH has no soap or other cleansing detergent in the household</i>
<i>Water</i>	<i>Drinking water source</i>	<i>0-17 years: HH main source of drinking water is unimproved (WHO)</i>
	<i>Distance to drinking water source</i>	<i>0-17 years: Time needed to go, get water, and come back is more than 30 minutes (WHO)</i>
<i>Information</i>	<i>Access to information devices</i>	<i>0-17 years: HH has access to information devices (radio, television, mobile phone...)</i>

## B. List of assets used to create the wealth index

Given that the Nigeria MICS 6 survey does not provide reliable measurements of monetary income at the household or individual levels, a proxy for the wealth of the household was calculated using an asset index. The asset index is based on 20 assets measured at the household level on a continuous scale and is built using the principal component analysis (pca). PCA is a statistical procedure that uses an orthogonal transformation to convert a set of observations of possibly correlated variables (entities each of which takes on various numerical values) into a set of values of linearly uncorrelated variables called principal components. The different assets used as a proxy for wealth are shown in Table B.1. The wealth assets are used to classify households into five wealth quintiles. Children living in households belonging to the two lowest wealth quintiles are identified as 'poor'.

*Table B. 1 Assets used at the national and rural level to create the wealth index*

<i>National</i>	<i>Rural specific</i>
<i>Air conditioner</i>	<i>Big land</i>
<i>Bank account</i>	<i>Large stock</i>
<i>Bed (manufactured)</i>	
<i>Blender/mixer/food processor</i>	
<i>Car/truck</i>	
<i>Chair(cushioned)</i>	
<i>Clock</i>	
<i>Computer</i>	
<i>Electricity</i>	
<i>Fan</i>	
<i>Generator</i>	
<i>Motorcycle/scooter</i>	
<i>Refrigerator</i>	
<i>Sewing machine</i>	
<i>Tricycle</i>	
<i>VRC/CD/DVD player</i>	

### C. Deprivation Headcount Ratio (%) by each dimension and various profiling variables for each age group

Table C. 1 Deprivation Headcount Ratio (%) by each dimension and various characteristics, 0-4 years

		Nutrition	Health	Water	Sanitation	Housing	Information
Area	Urban	32.0	70.5*	20.4*	65.8*	53.3*	2.7*
	Rural	33.5	84.7*	49.3*	85.0*	79.0*	17.3*
Household size	HH members equal/below mean	34.0	74.2*	33.8*	78.6	66.5*	13.2
	HH members above mean	32.5	83.2*	43.9*	79.5	73.5*	12.7
No. Of children in the HH	No. of children in HH equal/below mean	32.3*	75.7*	35.0*	78.3	64.7*	12.7
	No. of children in HH above mean	33.8*	85.3*	46.8*	80.2	78.6*	13.0
Under 5 Child mortality in the HH	At least one child <5 has died in the last 5 years	38.4*	88.2*	48.6*	85.3*	80.1*	17.5*
	No child <5 has died in the last 5 years	33.0*	78.9*	39.6*	78.1*	69.8*	11.8*
Sex of the HH head	Female	24.9*	74.7*	28.1*	80.6	51.7*	12.0
	Male	33.4*	80.3*	41.1*	79.1	72.2*	12.9
Education level of the HH head	HH head: Secondary education or higher	31.3*	72.7*	26.5*	68.7*	55.3*	2.9*
	HH head: Primary education	31.3*	79.5*	43.1*	83.5*	71.6*	10.7*
	HH head: No education	35.5*	89.7*	53.6*	88.0*	87.1*	23.8*
Education level of the Father	Father: Secondary education or higher	31.8*	72.9*	27.4*	68.5*	55.7*	2.9*
	Father: Primary education	31.9*	81.0*	44.7*	84.6*	74.9*	11.0*
	Father: No education	34.4*	87.6*	50.3*	86.5*	83.1*	21.9*
Education level of the Mother	Mother: Secondary education or higher	30.8*	69.4*	21.8*	65.7*	47.6*	2.1*
	Mother: Primary education	30.4*	79.3*	38.9*	82.8*	72.3*	8.5*
	Mother: No education	35.3*	89.3*	53.3*	87.0*	86.3*	21.2*
Mother's age at first union	18 or more	31.7*	62.4*	32.6*	73.8*	60.8*	8.4*
	Less than 18 years old	35.9*	81.7*	47.8*	83.4*	80.4*	16.3*
Mother's literacy status	Literate	31.3	70.7*	29.4*	79.8*	68.3*	4.5*
	Not literate	35.5	82.7*	50.3*	86.4*	83.7*	18.9*
Stunting	Child is stunted	30.0*	84.0*	47.6*	83.6*	80.3*	17.6*
	Child is not stunted	35.0*	77.2*	34.9*	75.5*	63.3*	9.1*
Underweight	Child is underweight	45.3*	85.7*	47.0*	83.1*	81.0*	17.8*
	Child is not underweight	27.2*	77.5*	37.4*	77.2*	66.1*	10.6*
Birth certificate	Has birth certificate	28.6*	72.5*	28.1*	70.4*	57.0*	5.2*
	Doesn't have birth certificate	36.4*	86.7*	50.2*	85.9*	82.0*	18.7*
	Does not attend ECE	5.2	85.1*	50.9*	84.2*	82.4*	17.7*

<b>ECE attendance (3-4 years)</b>	Attends ECE	5.0	70.1*	23.5	71.7*	52.7*	4.2*
<b>Wealth Index (quintile)</b>	Richest quintile (5th)	30.9*	70.7*	21.2*	54.7*	38.0*	0.12*
	Richer quintile (4th)	32.4*	75.9*	35.0*	75.9*	63.5*	2.3*
	Middle quintile (3rd)	33.3*	82.7*	41.5*	83.6*	76.2*	10.3*
	Poorer quintile (2nd)	34.0*	85.1*	47.3*	87.9*	82.9*	17.9*
	Poorest quintile (1st)	34.3*	86.8*	55.9*	91.7*	92.1*	32.5*
<b>Wealth Index (poverty status)</b>	Poor	34.1*	86.0*	51.7*	89.9*	87.7*	25.5*
	Non-poor	32.3*	76.5*	33.1*	72.2*	60.2*	4.5*

Source: Author's calculations using Nigeria MICS 5 2016-17

Table C. 2 Deprivation Headcount Ratio (%) by each dimension and various characteristics, 5-11 years

		Education	Water	Sanitation	Housing	Information
<b>Area</b>	Urban	25.2*	21.9*	65.6*	52.1*	3.0*
	Rural	54.2*	48.8*	84.5*	77.5*	16.8*
<b>Household size</b>	HH members equal/below mean	35.1*	32.3*	79.9	61.7*	14.9*
	HH members above mean	48.1*	42.8*	78.5	72.0*	12.0*
<b>No. Of children in the HH</b>	No. of children in HH equal/below mean	36.5*	34.1*	78.3	61.5*	13.0
	No. of children in HH above mean	52.4*	45.7*	79.1	76.3*	12.3
<b>Sex of the HH head</b>	Female	26.3*	26.4*	78.6	54.5*	14.2
	Male	47.0*	41.7*	78.8	71.1*	12.5
<b>Education level of the HH head</b>	HH head: Secondary education or higher	20.9*	26.8*	68.0*	52.4*	2.8*
	HH head: Primary education	35.8*	41.1*	81.8*	67.5*	9.3*
	HH head: No education	69.3*	51.6*	86.3*	85.0*	22.0*
<b>Education level of the Father</b>	Father: Secondary education or higher	21.2*	28.0*	68.2*	53.7*	2.8*
	Father: Primary education	38.7*	43.5*	82.8*	70.7*	9.3*
	Father: No education	62.2*	47.5*	84.0*	79.4*	19.6*
<b>Education level of the Mother</b>	Mother: Secondary education or higher	13.3*	20.8*	64.1*	44.3*	1.9*
	Mother: Primary education	28.7*	36.0*	80.8*	65.8*	8.0*
	Mother: No education	66.1*	51.7*	85.1*	83.3*	19.2*
<b>Mother's age at first birth</b>	35+ years old	44.7*	40.4*	79.4	67.2*	13.6*
	20-34 years old	42.5*	39.8*	78.4	69.9*	11.3*
	<20 years old	57.0*	47.7*	81.2	77.2*	15.0*
<b>Mother's age at first marriage</b>	18 or more	33.2*	34.1*	75.9*	61.4*	9.0*
	Less than 18 years	54.6*	46.7*	81.0*	78.0*	14.3*
<b>Mother's literacy status</b>	Literate	27.5*	27.2*	79.3	60.7*	5.2*
	Not literate	59.2*	49.2*	84.7	81.1*	16.5*
	Child is involved in economic labour	51.8*	44.6*	82.6*	74.4*	15.0*

<b>Child is involved in economic labour</b>	Child is not involved in economic labour	34.6*	33.6*	72.5*	60.3*	8.4*
<b>Wealth Index (quintile)</b>	Richest quintile (5th)	17.5*	21.0*	54.3*	36.3*	0.1*
	Richer quintile (4th)	33.6*	36.5*	75.8*	59.7*	2.4*
	Middle quintile (3rd)	48.0*	41.9*	81.9*	75.3*	8.6*
	Poorer quintile (2nd)	57.4*	47.2*	87.6*	82.8*	17.0*
	Poorest quintile (1st)	66.8*	53.8*	91.2*	90.8*	32.7*
<b>Wealth Index (poverty status)</b>	Poor	62.3*	50.6*	89.5*	86.9*	25.2*
	Non-poor	33.9*	33.7*	71.4*	58.2*	3.9*

Source: Author's calculations using Nigeria MICS 5 2016-17

Table C. 3 Deprivation Headcount ratio (%) by each dimension and various characteristics, 0-4 years

		Education	Water	Sanitation	Housing	Information
<b>Area</b>	Urban	45.1*	20.3*	62.8*	47.0*	2.6*
	Rural	70.7*	46.9*	83.6*	73.7*	15.2*
<b>Household size</b>	HH members equal/below mean	54.2*	29.3*	77.1	52.4*	13.3*
	HH members above mean	63.9*	40.0*	76.1	67.8*	10.1*
<b>No. Of children in the HH</b>	No. of children in HH equal/below mean	53.8*	30.2*	74.4*	53.2*	10.6
	No. of children in HH above mean	68.6*	44.0*	78.0*	73.9*	11.0
<b>Sex of the HH head</b>	Female	46.9*	25.1*	76.9	47.3*	11.7
	Male	63.6*	39.1*	76.2	66.4*	10.7
<b>Education level of the HH head</b>	HH head: Secondary education or higher	40.9*	24.2*	63.4*	46.2*	2.6*
	HH head: Primary education	56.6*	36.2*	79.6*	60.5*	8.0*
	HH head: No education	80.4*	48.7*	85.0*	80.3*	18.5*
<b>Education level of the Father</b>	Father: Secondary education or higher	39.4*	25.9*	63.5*	48.4*	2.5*
	Father: Primary education	58.0*	39.8*	80.6*	63.1*	8.0*
	Father: No education	73.1*	42.5*	81.1*	72.0*	15.4*
<b>Education level of the Mother</b>	Mother: Secondary education or higher	29.2*	18.0*	58.5*	36.0*	1.4*
	Mother: Primary education	50.8*	31.1*	77.8*	59.9*	6.7*
	Mother: No education	77.4*	47.0*	82.5*	76.3*	15.6*
<b>Mother's age at first birth</b>	35+ years old	51.6*	33.4*	80.0*	62.2*	12.6*
	20-34 years old	57.6*	36.6*	75.6*	64.6*	9.5*
	<20 years old	68.8*	44.3*	80.5*	76.7*	12.3*
<b>Mother's age at first marriage</b>	18 or more	49.5*	31.4*	72.9*	57.3*	8.2*
	Less than 18 years	67.8*	43.5*	79.4*	74.4*	11.8*
	Literate	44.6*	27.0*	72.9*	55.5*	2.2*

<b>Mother's literacy status</b>	Not literate	72.8*	45.5*	83.7*	78.2*	14.1*
<b>Child is involved in economic labour</b>	Child is involved in economic labour	65.8*	40.8*	80.1*	68.0*	12.2*
	Child is not involved in economic labour	52.0*	29.8*	67.9*	53.5*	7.0*
<b>Child's marital status (girls 15-17 years)</b>	Girl is currently/was married or in union	98.9*	53.2*	82.8*	80.0*	20.1*
	Girl never married or in union	63.0*	33.1*	72.3*	56.5*	7.1*
<b>Child pregnancy (girls 15-17 years)</b>	Girl is/was pregnant	97.8*	52.5*	83.9*	76.7*	21.9*
	Girl was never pregnant	64.6*	34.1*	72.5*	57.8*	7.4*
<b>Wealth Index (quintile)</b>	Richest quintile (5th)	38.2*	19.7*	50.9*	30.7*	0.1*
	Richer quintile (4th)	53.6*	33.0*	73.3*	53.1*	1.7*
	Middle quintile (3rd)	64.0*	39.6*	81.1*	72.1*	8.2*
	Poorer quintile (2nd)	74.2*	44.6*	85.6*	79.2*	15.4*
	Poorest quintile (1st)	79.7*	51.5*	91.4*	88.0*	29.3*
<b>Wealth Index (poverty status)</b>	Poor	77.1*	48.2*	88.6*	83.7*	22.6*
	Non-poor	52.0*	30.9*	68.5*	52.1*	3.4*

Source: Author's calculations using Nigeria MICS 5 2016-17

#### D. Three-way overlap between all combinations of dimensions for children aged 0-4 years, 5-11 years and 12-17 years

Table D. 1 Three way overlap between all combinations of dimensions for children aged 0-4 years old

Combination of three dimensions	Overlap between all dimensions	Overlap between first two dimensions	Overlap between first and third dimensions	Overlap between second and third dimensions	Deprivation in only first dimension	Deprivation in only second dimension	Deprivation in only third dimension	Deprived in none of the three dimensions
Sanitation, Housing, Information	11.2%	50.0%	0.7%	0.8%	17.3%	9.1%	0.1%	10.7%
Water, Housing, Information	7.5%	25.6%	0.4%	4.5%	7.0%	33.5%	0.4%	21.0%
Water, Sanitation, Information	7.4%	27.9%	0.5%	4.5%	4.7%	39.4%	0.5%	15.1%
Water, Sanitation, Housing	29.8%	5.5%	3.3%	31.5%	1.8%	12.4%	6.6%	9.0%
Health, Housing, Information	6.7%	32.5%	0.4%	5.3%	14.6%	26.6%	0.4%	13.5%
Health, Sanitation, Information	6.5%	36.3%	0.7%	5.4%	10.7%	31.0%	0.3%	9.1%
Health, Sanitation, Housing	33.5%	9.3%	5.7%	27.7%	5.7%	8.7%	4.2%	5.2%
Health, Water, Information	4.4%	17.9%	2.8%	3.5%	29.2%	14.8%	2.2%	25.3%
Health, Water, Housing	18.3%	3.9%	20.9%	14.8%	11.1%	3.5%	17.1%	10.4%
Health, Water, Sanitation	19.3%	3.0%	23.5%	16.0%	8.4%	2.2%	20.4%	7.2%
Nutrition, Housing, Information	4.3%	19.3%	0.2%	7.7%	8.3%	39.9%	0.6%	19.7%
Nutrition, Sanitation, Information	4.2%	21.4%	0.3%	7.7%	6.2%	45.9%	0.6%	13.7%
Nutrition, Sanitation, Housing	20.3%	5.3%	3.3%	40.9%	3.3%	12.7%	6.7%	7.6%
Nutrition, Water, Information	2.8%	10.7%	1.7%	5.0%	16.8%	21.9%	3.3%	37.7%
Nutrition, Water, Housing	11.3%	2.3%	12.3%	21.8%	6.3%	5.1%	25.8%	15.2%
Nutrition, Water, Sanitation	11.8%	1.7%	13.7%	23.5%	4.8%	3.5%	30.2%	10.8%
Nutrition, Health, Information	3.9%	21.2%	0.6%	3.2%	6.3%	25.8%	5.1%	33.8%
Nutrition, Health, Housing	19.1%	6.1%	4.5%	20.2%	2.4%	8.9%	27.4%	11.4%
Nutrition, Health, Sanitation	20.3%	4.8%	5.2%	22.5%	1.7%	6.6%	31.1%	7.7%
Nutrition, Health, Water	11.0%	14.2%	2.5%	11.3%	4.4%	17.8%	15.7%	23.2%

Source: Author's calculations using Nigeria MICS 5 2016-17

Table D. 2 Three-way overlap between all combinations of dimensions for children aged 5-11 years old

Combination of three dimensions	Overlap between all dimensions	Overlap between first two dimensions	Overlap between first and third dimensions	Overlap between second and third dimensions	Deprivation in only first dimension	Deprivation in only second dimension	Deprivation in only third dimension	Deprived in none of the three dimensions
Sanitation, Housing, Information	10.9%	49.0%	0.8%	0.8%	18.1%	9.2%	0.1%	11.1%
Water, Housing, Information	6.8%	25.9%	0.4%	4.8%	7.5%	32.3%	0.5%	21.7%
Water, Sanitation, Information	6.8%	28.3%	0.4%	4.9%	5.1%	38.8%	0.5%	15.2%
Water, Sanitation, Housing	29.2%	5.8%	3.5%	30.6%	2.0%	13.1%	6.5%	9.2%
Education, Housing, Information	8.9%	29.5%	0.4%	2.8%	6.6%	28.6%	0.5%	22.6%
Education, Sanitation, Information	8.8%	30.3%	0.6%	2.9%	5.8%	36.8%	0.4%	14.5%
Education, Sanitation, Housing	33.9%	5.1%	4.5%	25.9%	2.0%	13.9%	5.6%	9.3%
Education, Water, Information	5.7%	18.2%	3.7%	1.6%	18.0%	15.2%	1.7%	36.0%
Education, Water, Housing	21.2%	2.6%	17.2%	11.6%	4.4%	5.2%	19.9%	17.9%
Education, Water, Sanitation	21.3%	2.5%	17.7%	13.7%	3.9%	3.1%	26.0%	11.7%

Source: Author's calculations using Nigeria MICS 5 2016-17

Table D. 3 Three-way overlap between all combinations of dimensions for children aged 12-17 years old

Combination of three dimensions	Overlap between all dimensions	Overlap between first two dimensions	Overlap between first and third dimensions	Overlap between second and third dimensions	Deprivation in only first dimension	Deprivation in only second dimension	Deprivation in only third dimension	Deprived in none of the three dimensions
Sanitation, Housing, Information	9.3%	45.6%	0.9%	0.6%	20.6%	8.9%	0.1%	14.1%
Water, Housing, Information	5.8%	23.7%	0.3%	4.1%	7.7%	30.8%	0.6%	26.9%
Water, Sanitation, Information	5.8%	26.5%	0.3%	4.3%	5.0%	39.7%	0.4%	18.0%
Water, Sanitation, Housing	26.4%	5.9%	3.1%	28.5%	2.2%	15.5%	6.4%	12.0%
Education, Housing, Information	8.7%	38.0%	0.6%	1.1%	14.5%	16.5%	0.3%	20.2%
Education, Sanitation, Information	8.8%	42.0%	0.6%	1.4%	10.4%	24.1%	0.1%	12.7%
Education, Sanitation, Housing	40.7%	10.1%	6.0%	14.2%	5.0%	11.3%	3.5%	9.3%
Education, Water, Information	5.5%	22.7%	3.8%	0.6%	29.7%	8.8%	0.9%	28.0%

Education, Water, Housing	23.9%	4.3%	22.8%	5.6%	10.8%	3.8%	12.0%	16.8%
Education, Water, Sanitation	24.8%	3.4%	26.0%	7.5%	7.5%	1.9%	18.0%	10.8%

*Source: Author's calculations using Nigeria MICS 5 2016-17*



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