**Arab Republic of Egypt**
Ministry of Social Solidarity

unicef

**Understanding Child Multidimensional Poverty in Egypt**

December 2017

# Table of Contents

# Figures

# Tables

# Foreword

The production of the "**Understanding Multidimensional Child Poverty**" report is a remarkable progress towards understanding the different contributors of poverty and it will be an integral reference in Egypt's efforts in addressing poverty in all its forms. With the current challenges facing children in Egypt, enhancing the government of Egypt's interventions to better address poverty requires quality evidence-generation and policy-making.

The Ministry of Social Solidarity (MoSS), the Central Agency for Public Mobilization and Statistics (CAPMAS), and UNICEF Egypt have joint their efforts to bring child related issues to the forefront of the policy debate. The report 'Understanding Child Multidimensional Poverty in Egypt' was prepared following several consultation workshops with national stakeholders to adapt the Multi-Dimensional Overlapping Deprivation Analysis (MODA) methodology. The participants included the National Council for Childhood and Motherhood, Ministry of Health and Population, Ministry of Planning, Ministry of Finance, National Nutrition Institute, and academia and international organizations. A key feature of the MODA methodology is its adaptability to the nature of child deprivations and policy priorities in a given context with the adaptation being led by national stakeholders.

Following the findings of the Arab Multidimensional Poverty Report, the National MODA (N-MODA) analysis presented in this report stands as an application of the MODA methodology to specific national contexts with customized dimensions, thresholds and indicators, utilizing richer information available from national datasets. MODA draws on the international framework of child rights to construct dimensions of child well-being in the domains of survival, development, protection and social participation.

Although child poverty remains considerably high in Egypt, the government has been directing its efforts towards addressing poverty. The 2030 National Sustainable Development Strategy (SDS) acknowledges the need to eradicate poverty in the country, and the aim to provide to provide a healthy and safe life through the application of an integrated, accessible, high quality, and nondiscriminatory health system to all children by 2030. Understanding Child Multidimensional Poverty in Egypt report aims at influencing policy-makers to develop responses that address poverty in all its dimensions that hinder child wellbeing, survival and development.

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# Acknowledgements

# Executive Summary

## Executive Summary

0.1 Poverty in Egypt, as measured in monetary terms through the National Poverty Line, has been increasing over the past 15 years, reaching 27.8 percent of the population in 2015. Notably, throughout this period, the prevalence of poverty has been higher amongst children. Furthermore, with an increase in national fertility rates from 3.1 children per woman in 2005 to 3.5 in 2014, children represent the growing majority among Egypt's poor. Poverty is a key challenge facing Egypt, and poverty eradication has become a central theme for the Government of Egypt's (GoE) ongoing social and economic reform initiatives.

0.2 In its Sustainable Development Strategy: Egypt's Vision 2030, the GoE clearly states its firm commitment to addressing poverty and advancing human development. One key pillar in this vision is social justice, with ongoing reforms focusing on the establishment of an integrated social protection system that supports the poor with targeted financial assistance and services. The emphasis of this reform is strategically placed on children and youth, and the programs underway are designed to enable vulnerable families to overcome the hurdles of poverty; to invest in children and youth; to accumulate human capital; and to break the intergenerational transmission of poverty.

0.3 It is a given that household monetary poverty has a negative impact on child wellbeing. However, there are important factors that demonstrate how poverty is experienced differently by children. Children in poor households experience deprivation in key wellbeing dimensions which have a direct impact on their ability to survive and develop. Being stunted, dropping out from school, not having clean drinking water, lacking access to health care, and/or suffering severe corporal violence are some of the manifestations of child poverty which have negative, irreversible, and long-term consequences for both the child and society at large. Therefore, focusing on poverty using a multidimensional viewpoint that explores and addresses deprivations is a more accurate way of capturing child poverty than using purely monetary measures like looking at household income. Multidimensional approaches to poverty provide the comprehensive information required for the development of effective poverty alleviation policies that target the causes of poverty; whether these are related to household financial constraints, inadequacies in the availability and quality of social services, and/or gaps in the legal and budgetary frameworks.

0.4 Against this backdrop, the present report Understanding Child Multidimensional Poverty in Egypt was prepared as a result of a joint effort by the Ministry of Social Solidarity (MoSS), the Central Agency for Public Mobilization and Statistics (CAPMAS), and UNICEF in Egypt. The main objective of the report is to provide practical information on child poverty to inform the design and implementation of policies and programs, and to aid GoE efforts to eradicate poverty and achieve sustainable development.
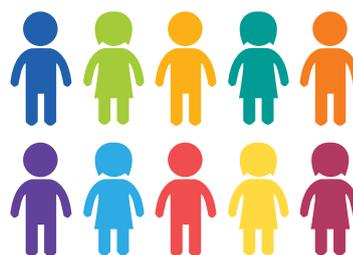


# 10 Million Children

**are multidimensionally poor in Egypt**

(severely deprived in two or more of the wellbeing dimensions).

0.5 The report uses the UNICEF Office of Research Multiple Overlapping Deprivation Analysis (MODA) methodology to analyze data from the Egypt Demographic and Health Survey of 2014, the latest available dataset covering social indicators. The MODA methodology, which is widely used at the national and regional levels, applies a multidimensional lens to child poverty and accounts for children's developmental needs throughout their childhood. The methodology is tailored for three age groups; 0 to 4, 5 to 11, and 12 to 17 years of age. As demonstrated by the recent Arab Poverty Report (2017) deprivation trends as well as policy responses in Egypt conform to and reflect what is happening in the region in the field of multidimensional child poverty.

0.6 It is important to mention that the MODA methodology used in the report was adapted to capture the situation of children in Egypt, including the challenges they face. The adaptation took place during a national consultation workshop organized by the MoSS with participants from line ministries, civil society, and academia, including the indicator selection, age-groups for study. A child is defined as multidimensionally poor when severely deprived in two or more child wellbeing dimensions including access to water, access to sanitation, access to information (devices), housing conditions, health, nutrition, education, and protection from violent disciplinary practices.

0.7 The analysis of the data presented in the report shows that when considering severe deprivation in two or more of the wellbeing dimensions, 29.4 percent of children (or about 10 million children) were multidimensionally poor in 2014. Although the prevalence of child multidimensional poverty is on par with that of child monetary poverty, this figure hides more than it reveals, as is true for most of the averages. The report reveals several important patterns. Firstly, among multidimensionally poor children, 3.0 million face a more intense form of multidimensional poverty being severely deprived in three or more dimensions. Secondly, as compared to other age groups among

children, children under-five years of age are subject to the highest prevalence of child multidimensional poverty (37.1 percent) and they represent the majority of multidimensionally poor children (41.2 percent). The prevalence of multidimensional poverty among children between 5 and 11 years of age, and those between 12 and 17 years of age, is 27.2 and 23.8 percent, respectively. Thirdly, as is the case for monetary poverty, large geographical disparities are found, however, the incidence and magnitude of child multidimensional poverty by geographic location differs considerably in comparison to monetary poverty. For example, the 'Rural disadvantage' is more pronounced, with 4 out of 5 multidimensionally poor children in Egypt residing in rural areas, and the incidence varies between governorates and across child age groups.

0.8 A strong feature of the analysis is found in the estimation of the contribution of each dimension to child multidimensional poverty. This information is key to identify the dimensions (i.e. sectors) that contribute the most to child multidimensional poverty across child age groups, as well as spatially and by household socio-economic characteristics. This evidence is crucial for informing sectoral priorities and targeting.

0.9 The analysis shows that while deprivation in protection is the main contributor to child multidimensional poverty for all children, the relevance of the contribution of other dimensions varies by age. Deprivations in nutrition and health are a significant contributor to multidimensional poverty of under-five children. For children between 5 and 11 years of age, deprivations in nutrition and housing are the second and third largest contributors to child multidimensional poverty; while for children between 12 and 17 years of age, they are education and housing. The findings for rural and urban levels reveal important information for under-five children, though the three largest contributors to child poverty are the same in urban and rural areas (deprivation in protection, nutrition, and health), the contribution of deprivations in protection and nutrition

are higher in urban areas, and deprivation in water and sanitation are higher in rural areas. For children in the 5 to 11 year age group, the differences in priorities between urban and rural areas are more prominent. While protection is the largest contributor to child multidimensional poverty in both urban and rural areas, the second and third largest contributors are different: they are nutrition and housing in urban areas; and housing and sanitation in rural areas.

0.10 The analysis identifies the characteristics of multidimensionally poor children, i.e. the factors that increase the probability of a child becoming multidimensionally poor. Children from poor households as measured by the wealth index, those whose parents have low or no formal education, and children having several siblings (four or more children) face a higher probability of becoming multidimensionally poor. From a long-term perspective, these three factors shed light on the factors and dynamics behind the inter-generational transmission of poverty.

0.11 When wealth is measured based on the possession of different facilities and assets in the household, it is found that the highest prevalence of the multidimensionally poor is found among children from the poorest wealth quintile, with the prevalence also high in the second and middle quintiles. This finding suggests that the group of children defined as poor using a monetary poverty measure relies more on income and money earned in the household while multidimensional poverty is determined by the level of possession of assets and facilities in the household. This brings home the point that household monetary poverty analysis that provides child monetary poverty levels needs to be complemented with an analysis of child multidimensional poverty in order to form a more complete picture of child deprivations.

0.12 The report concludes with a set of policy recommendations based on this new evidence, including the following:

0.13 Integrated Response for Early Childhood Development (ECD): the situation of under-five children calls urgently for an integrated response and policies. In addition, the main contributors to child poverty (deprivations in health, nutrition, and child protection), need to be addressed through linkages between interventions to promote early childhood development. A good example of this integrated approach is the Takaful and Karama cash transfers programme, which is designed as an integrated response to the tackle the causes of child poverty. This is also seen in the focus on early childhood development and interventions in the first 1,000 days of a child's life, in ending violence against children, and in promoting inclusive quality education.

0.14 Systemic Response to End Violence Against Children: Violence against children is widespread in Egypt. The approach to end violence against children needs to address the underlying causes of such a violent practice, as well as, tackle preventative measures at home, at school, and in the street. National action plans to address malnutrition: Nutrition is the second largest cause of poverty for children under-five. Egypt has a high prevalence of severe stunting and obesity with inequities across different socioeconomic groups. Thus, it is significant to address nutrition through policy response to account for its effect on child poverty.

0.15 Lastly, for policies and programmes to be efficient and effective in tackling child multidimensional poverty they need to be integrated but **tailored geographically**, with sensitivity to a range of differing child and household socio-economic characteristics. This recommendation is based on the findings of the report that clearly show that the prevalence of multidimensional poverty, the probability of a child becoming poor, and the main contributors to child poverty differ widely by child age, geography, and child and household socio-economic characteristics.
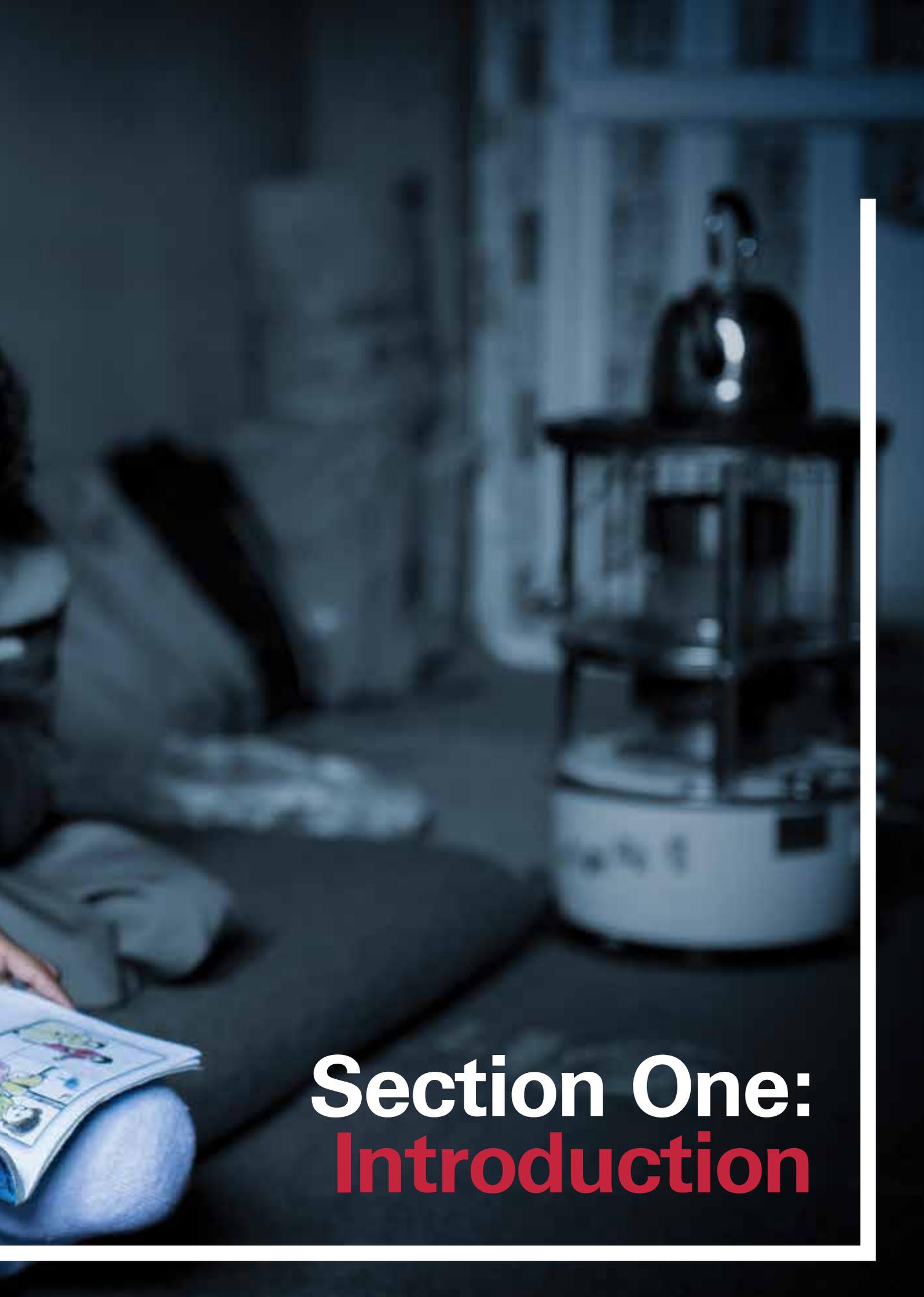
# Section One:
## Introduction

# Introduction

1.0   Egypt's population has been estimated at 94.8 million people as of January 2017, of which 52 percent are under the age of 20 (CAPMAS, 2017). The Total Fertility Rate of women of reproductive age, which increased by 17 percent in 2014 reaching 3.5 children per woman (MoHP, et al., 2015) has increased the size of the child population. The child population in 2017 has 10 million more children than in 2006.

1.1   For children, the past two decades have achieved mixed progress in terms of wellbeing. Where on the one hand impressive progress was marked in some key indicators, namely: the reduction of child and maternal mortality; the achievement of an almost universal access to basic education; and the elimination of the gender gap in education enrollment (CAPMAS & UNICEF, 2016). On the other hand, some other domains of child wellbeing witnessed deterioration, including an increase in the percentage of the population living in extreme monetary poverty (measured by the National Lower Poverty Line) from 16.7 percent in 2000 to 27.8 percent in 2015, with children facing a higher rate (CAPMAS & UNICEF, 2015); and high rates of chronic malnutrition (stunting) among under-five children, with the emergence of overweight as a prominent problem affecting all childhood age groups.

1.2   While the increase in extreme monetary poverty is of high concern to child wellbeing, as family incomes and expenditure levels have a direct impact on children, monetary poverty does not provide a complete picture of child poverty. Poverty for children is multifaceted, manifested in their deprivation in key wellbeing dimensions which are deemed essential for children to survive and develop. It is with this understanding and recognition of the special nature of poverty for children that the UN General Assembly in 2007 advanced a multidimensional definition of child poverty stating that "Children living in poverty are deprived of nutrition, water and sanitation facilities, access to basic health-care services, shelter, education, participation and protection, and that while a severe lack of goods and services hurts every human being, it is most threatening and harmful to children, leaving them unable to enjoy their rights, to reach their full potential and to participate as full members of the society". This definition not only emphasizes the multidimensional nature and interdependence of poverty facets that children endure, but also indicates that a comprehensive and

multidimensional response is needed to address the underlying causes of child poverty. Children are the most vulnerable group in society and are often subject to different types of deprivation related to fulfilling their basic needs of health, nutrition and other aspects. Leaving their deprivations unattended today not only means intergenerational transmission of poverty and inequality, but also has a bearing on achieving the SDGs by 2030 and other country specific goals and targets.

1.3   **In light of the above, what is the status of child poverty in Egypt?** The picture of mixed progress in child wellbeing indicators does not help in answering the question. Furthermore, the answer becomes more inconclusive when accounting for the regional and socio-economic disparities which remain substantial and for some indicators have further worsened. For instance, monetary poverty is highest in Rural Upper Egypt at 57 percent and as low as 10 percent in Urban Lower Egypt. Another example of geographical disparities is found in the under-five mortality rate; at a rate of 42 deaths per 1,000 live births, a child in Rural Upper Egypt is only half as likely to survive until the age of five in comparison to a child born in Urban Governorates, where the rate is 20.

1.4   Since 2014, following a popular vote, the Government of Egypt (GoE) has enacted a new constitution with child-rights guarantees; introduced a comprehensive economic reform strategy; and in early 2016, adopted and began implementing the Vision 2030 National Sustainable Development Strategy, which is aligned with the global Sustainable Development Goals (SDGs). These concrete steps embody the GoE's vision of breaking the intergenerational transmission of poverty and promoting human development with poor children at its core. A key component in the reforms lies on the social protection front, with the government's introduction of Budget Law 2014/15, a major reform of the national social protection system. It progressively shifts public expenditure from fuel subsidies, and introduces a new cash grant program (Takaful and Karama), specifically targeting people living in extreme poverty. The main scheme of the program implemented by the Ministry of Social Solidarity (MoSS) is a Conditional Cash Transfer program targeting children in households living below the lower national poverty line, and with linkages to access to health and education services.

1.5 Understanding the levels of child poverty and analyzing the profile of poor children are crucial inputs in designing and implementing effective policies for improving children's living conditions. Building on earlier national efforts to measure child poverty (ISDF & UNICEF, 2013; CEFRS & UNICEF, 2010), the present study was developed jointly by the Central Agency for Public Mobilization and Statistics (CAPMAS) and the MoSS, with technical support from the UNICEF-Egypt Country Office. The study uses the UNICEF Office of Research's Multiple Overlapping Deprivation Analysis (MODA) methodology to analyze data from the Egypt Demographic and Health Survey 2014. Guided by the MODA methodology the study accounts for the specific situation and challenges children face in Egypt, and takes into account the objectives and vision embedded in the ongoing institutional reforms and national strategies. In particular, the MODA methodology used in the report (including the selection of indicators, deprivation thresholds, and definition of poverty), was contextualized during a national consultation workshop organized by the MoSS with participants from line ministries, civil society, and academia. The analysis of child poverty provided in the study goes beyond estimating the levels of poverty by analyzing the profile of poor children, and most importantly by assessing which overlapping deprivations contribute to multidimensional poverty. The aim of the study is to inform government policies on geographical, socio-economic, and sectoral priorities in order to reach and benefit poor children.

1.6 The Egypt N-MODA comes at an excellent time and reflects on a topic that is of prominent relevance in the region. Recently, a report on multidimensional household and child poverty incidence in 11 Arab countries (Algeria, Comoros, Egypt, Iraq, Jordan, Mauritania, Morocco, Palestine, Sudan, Tunisia and Yemen) has been published under the title of Arab Poverty Report (APR). The APR brings out another useful measure of child multidimensional poverty for the countries in the region and Egypt, the estimates based on the report use the same MODA methodology but choose different indicators and therefore cannot be compared the Egypt NMODA report. Nevertheless, the APR provides useful evidence on looking at the multidimensional aspect of child poverty using a slightly different lens compared to the NMODA and also gives the opportunity to have a regional perspective of the measure.

## Methodology and Data

1.7 The analysis uses data from the latest round of the Egypt Demographic and Health Survey (EDHS) implemented in 2014 (MoHP, et al., 2015). Following a review of available national household surveys done by CAPMAS in consultation with national partners, the EDHS was selected as the data source to develop the analysis. The choice was based on the recognition that EDHS provides the most comprehensive, accurate as well as internationally comparable set of child wellbeing indicators necessary for the analysis of child multidimensional poverty.

1.8 In fact, the EDHS sample was designed to provide estimates of population and health indicators at the national level, as well as for the six major regions (Urban Governorates, urban Lower Egypt, rural Lower Egypt, urban Upper Egypt, rural Upper Egypt, and the Frontier Governorates). The sample for the EDHS 2014 did not include North Sinai and South Sinai Governorates of the Frontier Governorates, which together represent less than 1% of the child population and hence have no significant effect on the indicator values (CAPMAS, 2017). Furthermore, the EDHS expanded the questionnaire design to integrate questionnaires from the Multiple Indicators Cluster Survey (MICS) covering issues related to child wellbeing, such as the questionnaire on child labor and child disciplining methods.

1.9 The analysis uses the MODA methodology advanced by the UNICEF Office of Research in 2012 (De Neuborg, et al., 2012). As highlighted in De Neubourg et al. (2012), the MODA methodology has four distinguishing features in measuring and analyzing child multidimensional poverty: first, MODA concentrates on the child as the unit of analysis, rather than on the household, recognizing that children experience deprivations differently from adults with regard to developmental needs, which if not addressed can have long lasting and even irreversible effects (UNICEF, 2000). Second, MODA adopts a life-cycle approach that acknowledges that children' needs are not homogenous across early childhood, school age, and adolescence. Third, MODA enhances the knowledge of single dimension approaches with an overlapping deprivation analysis giving insight to the severity of child deprivations, and identifying deprivations that need to be addressed jointly. Fourth, the MODA methodology and analysis tools are designed to be flexible and can be tailored to national contexts with regards to development and policy objectives. The latter underlines

a pivotal feature of the MODA analysis and brings the measurement of child multidimensional poverty closer to the priorities that are important to the country and consistent with the recent reforms being adopted.

1.10 In order to illustrate the details of the methodology to all relevant stakeholders and adapt the MODA methodology to the situation of children in Egypt, the MoSS hosted a national consultation workshop with national stakeholders including the National Council for Childhood and Motherhood (NCCM), the Ministry of Planning and Administrative Reform (MoPAR), the Ministry of Health and Population (MoHP), the National Nutrition Institute (NNI), the Ministry of Finance (MoF), the World Food Programme (WFP), the United Nations Resident Coordinator Office (UNRCO), the European Union (EU), and members of civil society and academia. The national consultation was geared towards discussing and reaching consensus on methodological elements to collectively contextualize the methodology and bring it closer to a national definition of child multidimensional

poverty. Methodological choices covered the following: selection of child age groups, identifying deprivation dimensions per age group, identifying deprivation indicator(s) for each dimension, and setting the threshold defining deprivation for each indicator.

1.11 Table 1 below summarizes the resulting MODA methodology adapted for Egypt, where child multidimensional poverty is measured through eight dimensions. As detailed in the table, four dimensions are measured at the household level and are considered for children of all age groups; namely access to water, sanitation, housing, and information devices. The remaining four dimensions are measured at child level and include nutrition, health, education, and protection from violence. To account for age-specific developmental needs while accounting for the availability of indicators from the EDHS, the methodology varies across three distinct age groups: a) children under-five, b) children between 5 to 11 years of age, and c) children between 12 and 17 years of age.

**Table 1** Adaptation of MODA for Egypt: Child Multidimensional Poverty Dimensions, Dimension- Indicators, and Deprivation Definition, by Age Group

| Dimensions | Children Age Groups | | |
|---|---|---|---|
| | 0 to 4 Years Old | 5 to 11 Years Old | 12 to 17 Years Old |
| Water | Access to water: a child (0 to 17 years of age) is deprived in access to water if s/he lives in a household without access to piped water in the dwelling, yard, or plot | | |
| Sanitation | Access to sanitation: a child (0 to 17 years of age) is deprived if s/he lives in a household that does not have access to an improved sanitation facility, or is sharing the sanitation facility with another household. | | |
| Housing | Crowding in the dwelling: a child (0 to 17 years of age) is deprived if s/he lives in a household where on average there are 4 or more household members per bedroom. | | |
| Information | Access to information and communication devices: a child (0 to 17 years of age) is deprived if s/he lives in a household that does not have at least one information device (TV, radio, computer) and one communication device (fixed phone, mobile phone). | | |
| Health | A child is deprived in access to health if during pregnancy the mother did not receive regular antenatal care or the birth was not assisted by a skilled health provider. | N/A[*] | N/A[*] |
| Nutrition | A child is deprived if s/he is suffering from stunting (moderate or severe; -2SD) and/or obesity (+3SD). | A child is deprived if s/he is suffering moderate or severe thinness (BMI; -2SD), or is obese (BMI; +2SD). | |
| Education | N/A[*] | A child (6 to 11 years of age) is deprived if s/he is not attending primary school or is attending a primary grade that is two grades or more behind the age appropriate grade. A 5 year old child was considered as 'not deprived' in the analysis, irrespective of her/his participation in education. | A child is deprived if s/he is not attending secondary school. |
| Protection | A child (0 to 17 years of age) is deprived if s/he suffer severe physical punishment** | | |

[*] N/A: Information not available from the EDHS survey;

**Indicator for children between 1 and 14 years old, used as a proxy for children in the age group 0 to 17 years of age.

1.12 The selection of deprivation indicator(s) for each dimension needed to reflect the headline priority for children in that dimension and to meet the following criteria: a) relevance: indicate levels of child wellbeing and child deprivation deemed as the child priority for that dimension; b) attribution: indicate a core deprivation to a policy domain; c) variance: indicate differences and gaps in child wellbeing and deprivation in that dimension; and d) coverage and homogeneity for children within the age group: indicating a deprivation for all children within the age group to allow sound assessment of overlapping deprivations and child wellbeing within the same age group.

1.13 Based on the above criteria and subject to the availability of information and indicators, the Egypt MODA were finalized. Annex (A) provides the detailed methodology note documenting the results of the national consultation. The different options that were discussed with regards to each indicator are presented below :

- **Water:** Two criteria were considered regarding water: 'access to' ; and 'sustainability of access to' improved drinking water to households. The more restrictive indicator that captured the availability of infrastructure to sustain access to water: 'access to piped water into dwelling, yard or plot' was preferred over availability of only the source of water within the dwelling.

- **Sanitation:** The two options for measuring sanitation and hygiene facilities were 'availability of improved sanitation facility' and 'availability of handwashing place in the household together with soap'. The indicator on 'access to improved sanitation facility' was given preference.

- **Housing:** to capture the conditions of the dwelling where the child spends a large amount of time studying, sleeping, playing, and interacting with parents and siblings, the indicator that captures the element of overcrowding inside the household was given preference over the indicator on the quality of housing (floor material). The criterion of '4 or more members staying in a bedroom' was taken as the measure of 'overcrowding', for the study.

- **Information:** As this dimension aims at capturing children and household access to information and ability to communicate, an indicator depicting deprivation of availability of at least one information or one communication device was used.

- **Health:** The issue of availability of quality health services and interventions which is crucial for child survival and is key to assure healthy physical and cognitive development, especially during pregnancy, childbirth, and the first years of life, was given priority. Accordingly, the two indicators that capture access to health care: access to regular antenatal care, following a minimum of four visits is required and skilled attendance at birth, were considered and a combined indicator, covering these two indicators, was used for the 0 to 4 year old age group.

- **Nutrition:** The adequacy, age-appropriateness, and diversity of children's diets affect their growth and their physical, cognitive, and health status. Hence indictors on undernutrition and malnutrition were given priority with different measures for the different age-groups. For under 5 children (0 to 4 year-olds) a combination of indicators on stunting (moderate and severe, -2SD) and obesity (severe, +3SD) were identified to capture deprivation in nutrition. While for the age group of 5 to 17 year-olds, a combination of indicators on thinness (moderate and severe, BMI, -2SD) and obesity (BMI, +2SD) was used.

- **Education:** School attendance was considered to measure child deprivation in education. Five year old children were considered not deprived as they are not of compulsory school age. A child in the 6 to 11 year old age group was considered deprived if s/he was not attending primary school or was attending a primary grade two or more grades below the age appropriate grade. A child in the 12 to 17 year old age group was considered deprived if s/he was not attending secondary school.

- **Protection:** Violence, exploitation, and abuse have harmful, and in many instances irreversible, effects on child development, including hampering the full realization of a child's potential. Relevant data covered by EDHS 2014 include aspects of child labour, female circumcision, early marriage and pregnancy, violent child discipline, and birth registration; accordingly, during the consultation, 'severe physical punishment' was considered to measure child deprivation in protection. Severe physical punishment included hitting or slapping the child on the face head or ears, and beating the child repeatedly and strongly. Though information on severe physical punishment was only available for children 1 to 14 years of age, the indicator was used as a proxy for all children between 0 and 17 years of age.

**Child Well-Being Dimensions**

Protection · Access to Water · Access to Sanitation · Access to Information (Devices) · Housing Conditions · Health · Nutrition · Education

1.14 The MODA analysis framework followed in this report starts by estimating the prevalence of children deprived in each dimension for the respective child age groups and examining their profile; i.e. identifying groups of children who are at a higher risk of deprivation. While the MODA methodology follows the Multidimensional Poverty Index methodology, it deviates from it by not using an equal weighting approach (where each dimension and each indicator has the same weight, subject to a fixed threshold of 33 percent to identify a household as poor (Alkire & Foster, 2011). In order to fully respect the child rights framework approach, the MODA methodology uses the Union Approach in which deprivation in one dimension is defined by deprivation in at least one of the indicators selected for the dimension (in case the dimension has more than one indicator such as in nutrition). (De Neuborg, et al., 2012). By virtue of this methodological choice the MODA would yield a more conservative poverty headcount, but would at the same time be more sensitive to improvement in single dimensions that decree poverty.

1.15 After discussing single dimension deprivations, the analysis charts the extent of overlap between deprivations in dimensions to identify those which impact children and overlap the most. Initially, the multidimensionality of child deprivations is explored by examining the distribution of children by the number of deprivations suffered simultaneously by different child age groups. This analysis offers a comprehensive view of the intensity of child deprivations in the child population, going over a continuum, ranging from children who suffer no deprivation to children suffering a deprivation in one, two, and up to seven dimensions. In order to identify children suffering multidimensional poverty a cut-off point stated in terms of the number of deprivations in dimensions suffered simultaneously was established. The report uses a cut-off point of two, where a child is considered multidimensionally poor if s/he suffers deprivation in two or more dimensions simultaneously. Furthermore, and in order to account for higher intensity of poverty, another cut-off point of three is used in some parts of the analysis. As can be noticed, the multidimensional poverty analysis is based on counting the deprivations, implicitly indicating the equal weight given to the different dimensions.

1.16 Three main indices are produced using the MODA methodology, which are used to analyze child multidimensional poverty. First, the headcount ratio (H) measures how many children are multidimensionally poor, which is to say how many children in a given age group suffer multidimensional poverty according to a particular cut-off point, and as a percentage of all children in that age group. To be considered multidimensionally poor a child must be deprived in at least two of the eight dimensions the MODA measures. Second, the average deprivation intensity (A) measures the depth or level of poverty of multidimensionally poor children across all age groups, which is calculated as the number of deprivations that children who are multidimensionally poor suffer, divided by the maximum number of dimensions studied (d), averaged out across all the multidimensionally poor children in the relevant age group. While the headcount ratio is useful to capture the prevalence of multidimensional poverty, it is insensitive to the intensity and depth of poverty among children (i.e. the number of deprivations simultaneously suffered by one child). To account for both incidence and intensity of poverty in a single number Alkire and Foster (2011) developed a third measure that adjusts the headcount ratio (H) by the average intensity (A). The aforementioned calculations result in an index; ($M_O$) called Multidimensional Poverty Index (MPI), which is calculated as follows:

$$M_O = H * A$$

1.17 In the following sections the study will apply the MODA methodology to describe and analyze: a) the incidence of deprivations in single dimensions of child wellbeing and the socio-economic profile of deprived children; b) the overlap between deprivations in single dimensions; c) the incidence of child multidimensional poverty; d) different multidimensional child poverty components by socio-economic and geographical subgroups; e) the contribution of single deprivation dimensions to overall multidimensional child poverty; and f) the socio-economic profile of multidimensionally poor children. Each section includes a summary box of the main findings.
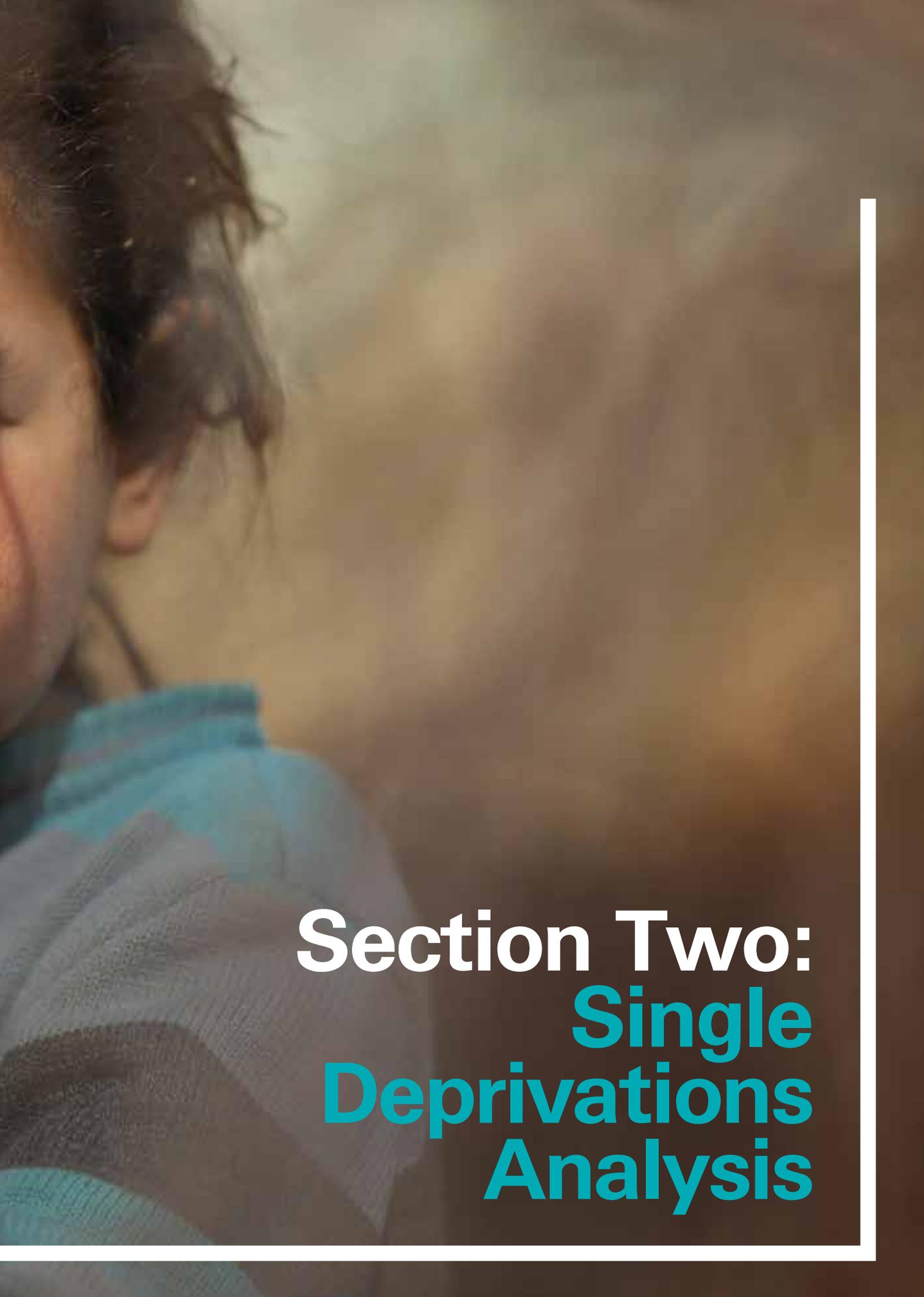
# Section Two:
## Single Deprivations Analysis

# Summary

- The highest scoring deprivation was in the protection from violence dimension, where about 12.3 million children up to 17 years of age suffered or had a sibling suffering severe physical punishment from a care giver in their household.

- The ranking of incidence in deprivation varies across age groups. High incidence is found in nutrition and health for under-five children, 30.2 and 20.9 percent respectively; high manifestations of deprivation in nutrition are present for children between 5 and 11 years of age (14.7 per cent); and high manifestations of deprivation in education are found for children of 12 to 17 years of age (18.4 per cent);

- Deprivations in water, sanitation, housing, and information, of children from poorest households are significantly higher than those from the richest households, ranging from between 7 to 18 percentage points higher.

- Deprivation in health is high among children living in rural areas and is almost twice as high compared with urban areas. Sizeable differences can also be observed between wealth quintiles where the number of deprived children is three times higher in the poorest quintile than in the richest.

- Deprivation in nutrition among under-five children (with moderate or severe stunting or obesity) scores higher than in other age groups. In fact, where 30 percent of under five children are deprived only 14 percent of the 5 to 11 age group and 8.2 percent of the 12 to 17 age group are. Surprisingly differences in malnutrition among wealth quintiles and geographical areas are little if not equal to zero suggesting that both obesity and stunting may be widespread social issues.

- Deprivation in education is highest among children aged 12 to 17 years with these socio-economic characteristics: children from the poorer wealth quintiles, whose parents have no formal education, and children who have four or more siblings.

## Single Deprivations Analysis

2.0 The present section examines the prevalence of child deprivation in each dimension using the deprivation definition adapted for Egypt and summarized above in Table 1 in the previous section. Table 2, below, presents the percentage and number of children deprived in each dimension by age group in 2014.

The first set of deprivations refers to those dimensions which are measured at the household level, including access to water, sanitation, housing, and access to information. From the table, we can see that for children in the 0 to 17 age group:

- 9.4 percent of children (approximately 3.2 million) lived in a household without access to a piped water source in their dwelling, and 10 percent were deprived from access to an improved and not-shared sanitation facility,

- Deprivation in housing, as captured by crowding within the dwelling, has a higher prevalence with 14.6 percent of all children living in a household where there is on average four or more members per bedroom.

- 6.2 percent of children lived in a household that does not own at least one information and one communication device.

2.1 Notwithstanding that a significant share of children suffer from deprivations which are shared with other members of their households, the table shows that the prevalence in deprivation in dimensions is higher in health, nutrition, education, and protection from violence; i.e. dimensions which are specific to children across the different age groups. Looking at deprivations measured at child level we realize that:

- Across all the dimensions considered, the incidence of deprivation is highest in the protection from violence dimension, about 12.3 million children (between 0 to 17 years of age) suffered or have a sibling who suffered severe physical punishment from a care giver in their household,

- Following the deprivation in protection, the ranking of incidence in deprivation varies across age groups, for example a high incidence in deprivation is found in nutrition and health for under-five children, 30.2 and 20.9 percent respectively; with high deprivation in nutrition for 5 to 11 year-olds; and deprivation in education highly manifested in 12 to 17 year old children.

**Table 2** Percentage and Number of Children Deprived in Single Dimensions, by Age Group

| Measurement level | Dimension | Children Age Groups | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0-4 yrs. | | 5-11 yrs. | | 12-17 yrs. | | 0-17 yrs. | |
| | | Percentage | Number of Children | Percentage | Number of Children | Percentage | Number of Children | Percentage | Number of Children |
| HH | Water | 9.5 | 1,065,100 | 9.6 | 1,269,000 | 9.0 | 888,600 | 9.4 | 3,222,700 |
| | Sanitation | 10.6 | 1,188,500 | 9.9 | 1,308,700 | 9.5 | 938,000 | 10.0 | 3,435,200 |
| | Housing | 11.8 | 1,323,000 | 16.5 | 2,181,200 | 15.4 | 1,520,500 | 14.6 | 5,024,700 |
| | Information | 6.0 | 672,700 | 6.5 | 859,200 | 6.0 | 592,400 | 6.2 | 2,124,300 |
| Child | Health | 20.9 | 2,342,200 | - | - | - | - | - | - |
| | Nutrition | 30.2 | 3,386,000 | 14.7 | 1,943,200 | 8.2 | 809,600 | - | - |
| | Education | - | - | 4.2 | 555,200 | 18.4 | 1,816,700 | - | - |
| | Protection | 39.6 | 4,439,900 | 41.6 | 5,499,200 | 24.8 | 2,448,700 | - | - |

Source (CAPMAS, 2015) and author's calculations

2.2 National averages are important to show the status of deprivation yet, as with all averages, they tend to mask key disparities faced by groups of children based on their geographical location or their families' socio-economic characteristics. Accordingly, the incidence of deprivation is analyzed across the different dimensions for children living in Rural versus Urban areas. As Figure 1 shows, there is a large gap in the incidence of deprivation in household level dimensions between Rural and Urban areas. For example, 14.6 percent of children in rural areas live in a household without access to an improved and non-shared sanitation facility, this figure drops to 1.1 percent among children in urban areas.

**Figure 1** Percentage of Children (0 to 17 years of age) Deprived in Household Level Dimensions, by Geographical Area

| | Water | Sanitation | Housing | Information |
|---|---|---|---|---|
| **Urban** | 4.1% | 1.1% | 10.3% | 3.3% |
| **Rural** | 12.1% | 14.6% | 16.9% | 7.6% |
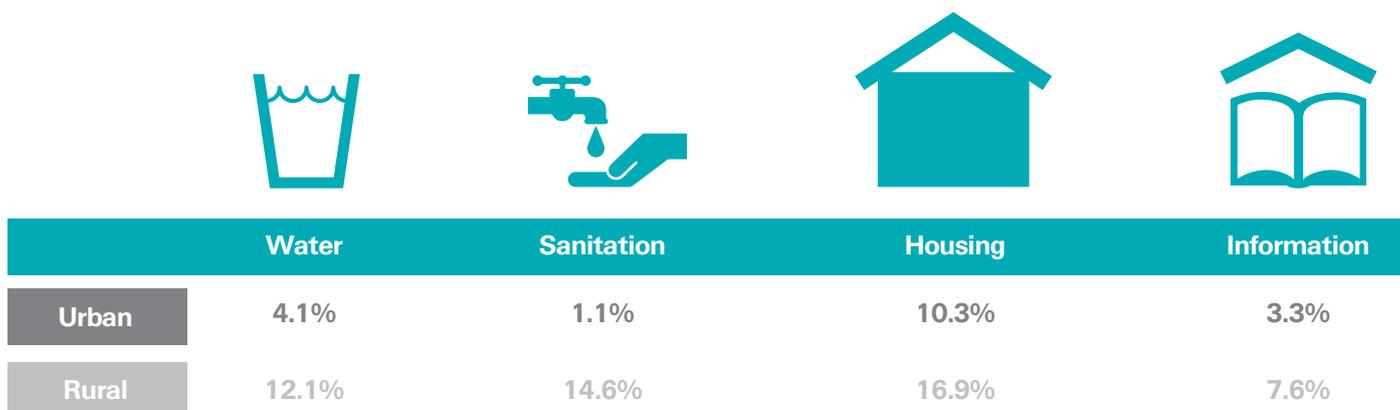
Source (MoHP, et al., 2015) and author's calculations

2.3 This Rural-Urban gap varies when assessing child specific dimensions. As Figure 2 shows below, the gap is significant for the incidence in deprivation in protection from violence across the different child age groups as well as for health and for education among children of between 12 and 17 years of age. The same gap is not significant when looking at the incidence in deprivation in education for 5 to 11 year-old children. On the other hand, the Rural-Urban gap is almost equal to 0 when considering deprivation in nutrition (the nutrition indicator considered both undernutrition and obesity).

**Figure 2** Percentage of Children Deprived in Child Specific Dimensions by Age Group

| | 0-4 years | | | 5-11 years | | | 12-17 years | | |
|---|---|---|---|---|---|---|---|---|---|
| **Urban** | 32.3% | 13.4% | 34.4% | 15.7% | 4.2% | 35.8% | 8.3% | 15% | 21% |
| **Rural** | 29.3% | 24.3% | 42% | 14.1% | 4.1% | 44.7% | 8.2% | 20.3% | 27% |
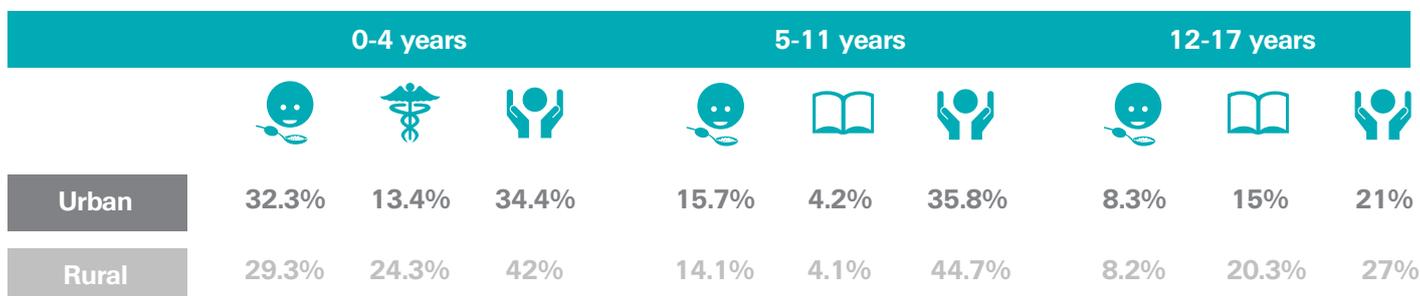
Source (MoHP, et al., 2015) and author's calculations

2.4 In order to identify and assess the underlying causes of child deprivation in single dimensions and re-visit the Rural-Urban gap, an in-depth analysis of the social and economic profile of deprived children living in Rural and Urban areas is needed. This first analysis needs to be complemented with ad-hoc studies that examine the intrinsic characteristic of Rural versus Urban areas in terms of service availability and quality as well as the social norms and behaviors that hinder the realization of children's rights across different dimensions. Using EDHS data and through logistic modelling, we are able to examine key social and economic characteristics and to which extent each of them increase or decrease the probability of a child being deprived in a given dimension.

2.5 The methodology of analysis applied can be briefly summarized as follows. The first step consists of short-listing the variables likely to explain child deprivation (i.e. if a child suffers deprivation in nutrition). The main underlying question of this first step is: **Given a large set of explanatory variables (socio-demographic characteristics of the household head, the characteristics of the household as well as those specific to children), which ones contribute the most in explaining the pattern observed in deprivation in a dimension?** The answer is obtained by testing the relevance of each variable by using standard tools such as the Kolmogorov-Smirnov test and the Pearson's chi-squared test. The second step consists in using a logistic regression model to estimate the odds of being deprived: where the dependent

variable is the deprivation outcome (e.g. 1 if deprived, and 0 otherwise), and the explanatory variables are those identified in step 1 (e.g. the age of the household head, household size, the region of residence, the per capita expenditure quintile, etc.). The third step involves fine-tuning the specification of the model by dropping those variables that are not significant in the initial regression: by means of a stepwise procedure where the model is repeatedly re-estimated on the basis of a restricted set of significant variables. The set of explanatory factors include: child age and sex, household head sex and age, level of education of each parent, place of residence (Urban/Rural), household size and number of children, and the wealth quintile for the household. In order to facilitate the interpretation of the regression outputs we have reported the so-called average adjusted predictions (AAP); the estimated coefficients of this procedure have a straightforward interpretation as the risk (probability) of being deprived in a given dimension associated to each explanatory variable. Tables B.1 through B.5 present the results for the determinants of child deprivation across the different dimensions, reporting both the coefficients of the logistic regression (the Odds Ratio) and the Probability (AAP). The methodology and tables can be found in Annex B.

2.6 While the tables in Annex B help in identifying groups of children at higher risk of deprivation in a given dimension, below we try to identify key determinants of child deprivation that play a role in driving the risk of deprivation across the different dimensions:

- For the dimensions on access to water and improved sanitation, two explanatory variables are significantly associated with higher risk of a child being deprived, namely household wealth and place of residence[1]. Controlling for the set of explanatory variables considered, a child from the poorest wealth quintile has 13 percent probability (reported under probability as 0.130 in the Table B.1) of being deprived in access to water, and the probability drops to 3.6 percent for a child from the richest quintile. For sanitation,

the difference in probability of deprivation is more evident, 18 percent and 0 percent for children from the poorest and richest households respectively. For place of residence, children living in rural areas face a greater risk of deprivation in both water and sanitation. The analysis shows that the probability of deprivation in water and sanitation declines among children in large households, and as the number of children in the household increases.

- For housing and access to information, given that these dimensions are closely associated to household level of income and monetary poverty, household wealth remains a key factor in explaining the probability of a child being deprived in these dimensions. A child from the poorest wealth quintile has a 17 percent probability of being deprived in housing compared to 5.5 percent for children from the richest quintile. For access to information the probability of deprivation is 8.4 and 1.3 percent for children from the poorest and richest quintiles, respectively. Interestingly children living in urban settings have a higher probability of being deprived in housing which reflects that overcrowding within the dwelling is more prevalent in these areas. Another factor leading to a significant increase in the probability of deprivation is the number of children in the household.

- Approximately 6 percent of households are female-headed and the analysis shows that the probability of deprivation significantly increases for children living in female-headed households in the sanitation, housing, and access to information dimensions. The effect is the opposite with regards to access to water, where the probability of deprivation is significantly lower for children from female-headed households. However, the small sample of female-headed households included in the sample suggests that these results may not be representative of the population.

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[1] The wealth index built using EDHS contains some of the variables that are used to measure deprivations, establishing a probabilistic relationship between wealth and deprivation that may cause some multicollinearity and interdependency issues. Nonetheless while the stepwise procedure mathematically detects and excludes multicollinearity, the lower contribution of these variables to the overall wealth index compared with the contribution these have to single dimension deprivations suggests that the use of the wealth index does not pose any inaccuracy threat.

**Figure 3:** Probability of Deprivation for Children 0 to 17 Years of Age by Wealth Quintile (AAP)
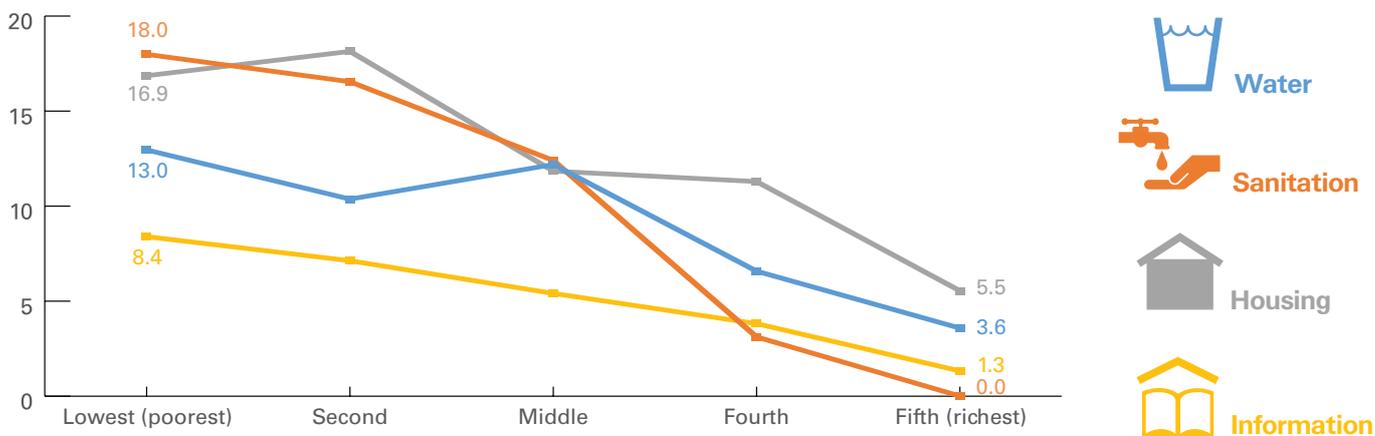


Source (MoHP, et al., 2015) and author's calculations

2.7   Figure 3, above, depicts the reported probability of deprivation in household level dimensions against wealth quintiles. The pattern clearly shows that the probability of deprivation is significantly higher among children from the poorest households.

2.8   Child deprivations in each dimension are summarized as follows (see Tables B.3 to B.5 in Annex B; or the summary table below):

- Under-five children's deprivation in health[2] is sensitive to socioeconomic differences, mother's education and household size.  With regards to household wealth, the probability of deprivation declines from 28.7 percent among children from the poorest households to 9.0 percent among those from the richest households. Mother's level of education shows similar trends, with the probability of deprivation declining from 30.5 percent for mothers without any formal education to 9.8 percent for children born to mothers with higher education. The number of children in the household is also a key factor showing that the probability of deprivation in health increases significantly in households with more children; the probability increases from 8.9 percent if the child is the only child in the family to 48.5 percent if the family has 6 or more children.

- Deprivation in nutrition for under-five children does not show large differences across the different social and economic characteristics. The probability of being deprived in this dimension is slightly higher among boys than girls and children in their first two years of life but it is low among children from female-headed households. After controlling for socio-economic characteristics, children in rural areas seem to have an advantage over children from urban areas as the probability of deprivation is 29.2 and 33.2 percent respectively. Poorest children have a probability of 32.4 percent, while for the richest it is 29.9 percent.

- Deprivation in nutrition for children aged between 5 to 11[3] records different trends and underscores existing social issues that go beyond socio-economic factors. In fact, the probability of deprivation is higher among boys, 16.7, percent as compared to 12.3 percent for girls, and the probability is somewhat higher among children aged between 5 to 8 years (15.8 percent) as compared to children between 9 to 11 years old (12.8 percent). The probability of deprivation is lower among children from female-headed households. It is concerning that the probability of deprivation in nutrition slightly increases among richer households and at higher level of mother and father education suggesting, as highlighted before, that nutrition might be a broader social issue that goes beyond poverty and is rooted in changing food consumption patterns over time. This trend is evident when observing the increase in the incidence of obesity among children from richer households living with better educated parents.

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[2] Under-five children deprivation in health (defined as deprivation in regular antenatal care for the mother during pregnancy or no skilled attendance at birth)

[3] Deprivation in nutrition for children between 5 and 11 years of age  is defined as suffering from severe thinness or obesity.

**Table 3:** Deprivations Levels of Child -Level Dimensions of Health, Nutrition, Education and Protection, by Wealth Quintile by Age Group  (%)

| Wealth Quintile | 0-4 Years | | 5-11 Years | | 12-17 Years | | 0-17 Years |
|---|---|---|---|---|---|---|---|
| | Health | Nutrition | Nutrition | Education | Nutrition | Education | Protection |
| Lowest (Poorest) | 28.7 | 32.4 | 13.0 | 3.1 | 7.1 | 18.1 | 39.1 |
| Second | 27.5 | 33.1 | 13.7 | 2.5 | 8.7 | 17.4 | 40.9 |
| Middle | 22.1 | 28.8 | 15.2 | 2.1 | 8.7 | 17.8 | 38.6 |
| Fourth | 15.1 | 28.7 | 15.8 | 2.8 | 8.8 | 15.4 | 34.4 |
| Fifth (Richest) | 9.0 | 29.9 | 15.2 | 2.5 | 8.7 | 12.0 | 29.9 |

Source (MoHP, et al., 2015) and author's calculations

- Deprivation in nutrition for children 12 through17 years of age[4] varies per child gender, age group and household socio economic characteristics. While the probability of deprivation slightly higher among boys and children between 12 and 14 years of age, it is significantly higher among children from female-headed households, 13 percent, as compared to 8.3 percent among children from male-headed households. The rural-urban gap's role  in probability of deprivation is very contained at 8.7 percent in rural areas versus 7.8 percent in urban areas. As for children in the 5 to 11 year-old age group, there is a slightly higher probability of deprivation among richer households, although the role that parental education levels plays is not clear.

- Deprivation in education for children aged between 5 and 11years[5] is low, as a result of impressive national progress in achieving a universal rate of enrolment in primary education; and the differences among socio-economic groups are very contained. Nonetheless, it is worth analyzing the factors that show the highest differences in probability of deprivation. Children aged between 9 and 11 years are at a slightly higher risk of deprivation, 3.7 percent, as compared to younger children aged between 6 and 8 years who have a probability of deprivation equal to 1.8 percent. An important pattern can be observed among children with younger household heads. In fact, while the probability of deprivation is 5 percent when the household head is 50 to 59 years of age and 7.9 percent when the household head is 60 or more years old, this compares to 0.5 percent among children whose household head is below 29 years of age. Likewise, higher maternal education levels lower the probability of deprivation among children, as compared to mothers with lower educational attainment.

- Deprivation in education among children 12 to 17 years of age[6] has a much higher probability of occurring when parents are not educated. Boys are at a slightly higher risk of not being sent to school and so are older children (those between 15 to 17 years of age). Parental level of education has the largest effect on the probability of deprivation, which is 23.2 percent among children where the mother has no formal education and decreases to 4.9 percent among children where the mother finished university education. The same pattern is observed for paternal education levels. The probability of deprivation though, is lower among wealthier households than among the poorer ones. Probability of deprivation among children from the

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[4] Deprivation in nutrition for children between 12 and 17 years of age is defined as moderate or severe thinness or obesity

[5] Defined as children who are not attending primary school or are two years behind the educational grade appropriate for children their age

[6] Deprivation in education among children 12 to 17 years of age is defined as lack of child attendance in secondary school.

poorest quintile is quite high and equal to 18.1 percent where it is at 12 percent among the richest quintile.

- Deprivation in protection from violence for children between 0 to 17 years of age[7] is very common and widespread across the different socio-economic groups, nonetheless some patterns can be isolated. The probability of deprivation is higher among children living in female-headed households at 43.8 percent as compared to 36.9 percent among children living in male-headed households. Children with younger household heads face a higher probability of deprivation at 40.9 percent where the head is below 30 years of age as compared to between 31 and 33 percent among children with parents aged 40 or above. In terms of the impact of parental education levels, only those children with parents who finished university education have a significantly lower probability of deprivation; the probability of deprivation for children where the father has no formal education is 39.5 percent and declines to 35.7 percent for children whose father has completed secondary education and further to 29.3 percent among those whose father has a university degree. For maternal levels of education, the probability peaks among children whose mother finished only primary education (41.6 percent) and decreases among children where the mother has a university degree (31.9 percent).

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[7] Deprivation in protection from violence for children 0 to 17 years of age occurs when a child of this age group suffers from severe physical punishments by her/his care givers. Following on from the national consultations run in Egypt it was decided to calculate the deprivation in the protection dimension for children between 1 to 14 years of age as a proxy of the age group of children aged from 0 to 17 years established by the MODA methodology
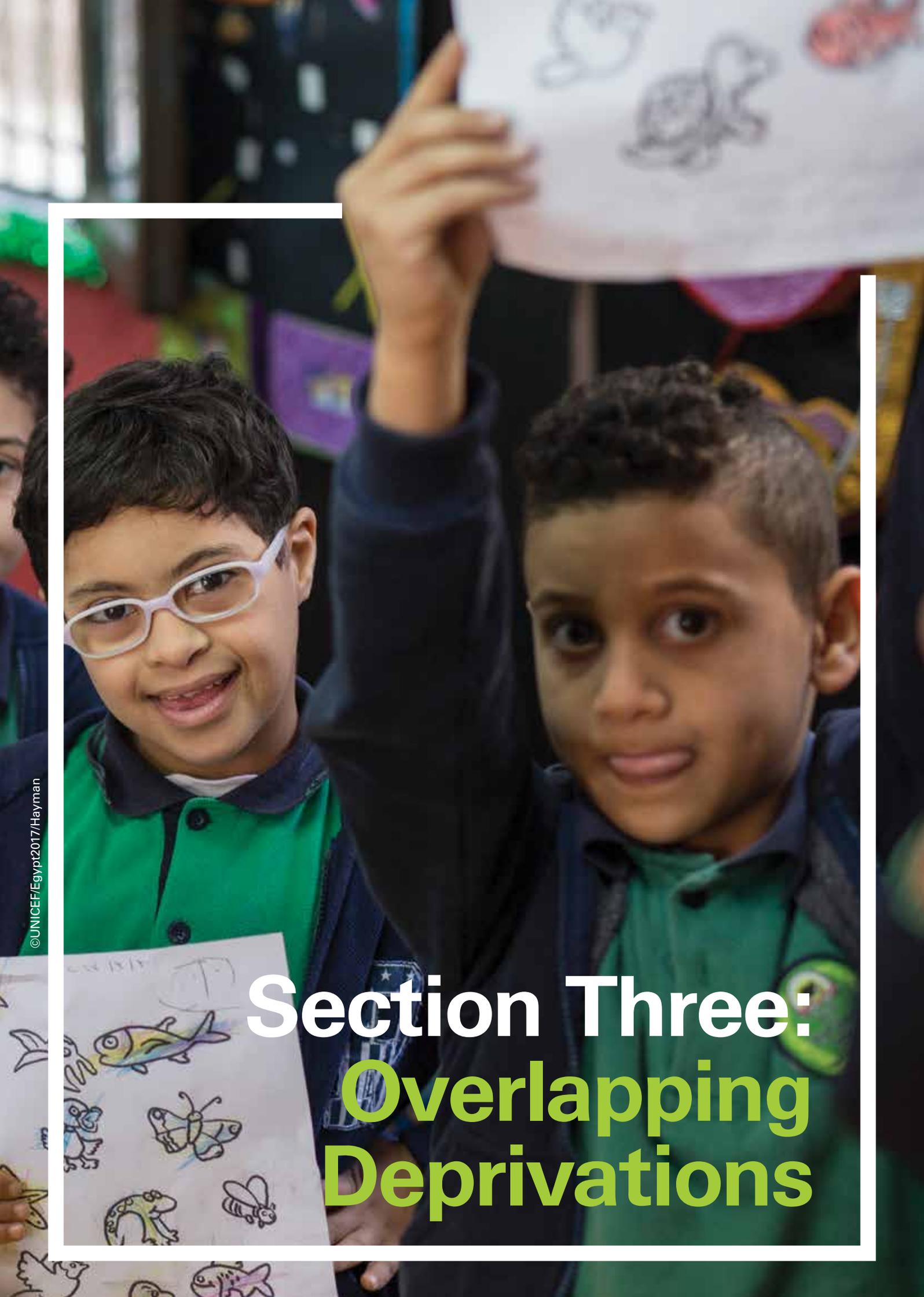
# Section Three:
# Overlapping Deprivations

# Summary

- Around one-third of children 0 to 17 years of age do not suffer from any deprivation. This percentage varies by age group with the highest at 41.1 percent for children aged 12 to 17 years, and decreases among younger children to 32.5 percent and 25.2 percent among children aged 5 to 11 years and under-five children, respectively. Furthermore, the majority of children are deprived in one or two dimensions simultaneously.

- Deprivation in protection has the highest overlap with other dimensions across the three child age groups. For under-five children, nutrition and health demonstrate high overlap with other dimensions. For children aged 5 to 11 years, nutrition and housing are predominant, with a high overlap with deprivation in other dimensions; and for children 12 to 17 years of age, deprivation in education has a strong overlap with deprivation in other dimensions;

- Comparing the overlap between education and other dimensions between children aged 5 to 11 years and 12 to 17 years, deprivation in education moves from lowest prevalence and overlaps with other dimensions for children aged 5 to 11 years. This reflects the gains realized in improving access to education and the high rate of promotion among school years.

## Overlapping Deprivations

3.0   To understand the relationship between deprivations across different dimensions and identify children who suffer from several deprivations simultaneously, this section analyses the overlap between child deprivations across the different dimensions. As mentioned in Section Two, the adapted methodology (i.e. dimensions and definition of thresholds) varies across the three child age groups, though a total of seven dimensions are considered for each age group.

3.1   Counting the deprivations in dimensions that a child suffers simultaneously allows for analysis of the distribution of children by number of deprivations, as shown in Table 4, below. Around one-third of children aged 0 to 17 years do not suffer from any deprivation[8]. It is important to underline that the percentage of children who do not suffer deprivation in any dimension varies by child age group, with the highest being at 41.1 percent for children aged 12 to 17 years, and decreases among younger children to 32.5 percent and 25.2 percent for children aged 5 to 11 years and for under-five children, respectively. At the other extreme, across all age groups (in each age group) no child is deprived in all seven dimensions. With the exception of under-five children, no child of another age group is simultaneously deprived in six dimensions. The analysis shows that the majority of deprived children are those deprived in one or two dimensions simultaneously, the headcount decreases for children suffering from three or four dimensions, and further diminishes to less than 0.5 percent for children suffering from five or six dimensions.

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[8] The estimates for all children (0–17 years) is a weighted average of the percentages corresponding to the three age groups, weighted by population and is used to give indication on the distribution of all children by number of deprivations suffered simultaneously. It is important to bear in mind that the indicators vary across the different age groups.

**Table 4:** Children Suffering Multiple Deprivations, by Age Group (%)

| Number of Simultaneous Deprivations | 0-4 years | 5-11 years | 12-17 years | 0-17 years |
|:---:|:---:|:---:|:---:|:---:|
| 0 | 25.2 | 32.5 | 41.1 | 32.5 |
| 1 | 37.8 | 40.4 | 35.1 | 38.0 |
| 2 | 24.3 | 20.3 | 16.9 | 20.6 |
| 3 | 9.3 | 5.7 | 5.6 | 6.9 |
| 4 | 3.0 | 0.9 | 1.2 | 1.7 |
| 5 | 0.3 | 0.3 | 0.1 | 0.2 |
| 6 | 0.1 | - | - | 0.1 |
| 7 | - | - | - | - |

Source (MoHP, et al., 2015) and author's calculations

3.2 Having seen that the distribution of children by number of deprivations is concentrated around children with one, two and three deprivations, the question posed is: what are the dimensions that overlap the most? Figure 4, below, shows the proportion of under-five children who are deprived in one to four or more dimensions simultaneously. Deprivation in protection has the highest overlap with other dimensions with 15.2 percent of children deprived in protection and one other dimension, and 6.9 percent children deprived in protection and two other dimensions.

3.3 For under-five children, protection followed by nutrition and health are the dimensions with the highest prevalence in deprivation, and overlap the most with other dimensions.

**Figure 4:** Deprivation Overlap by Dimension for Children 0 to 4 Years of Age (%)
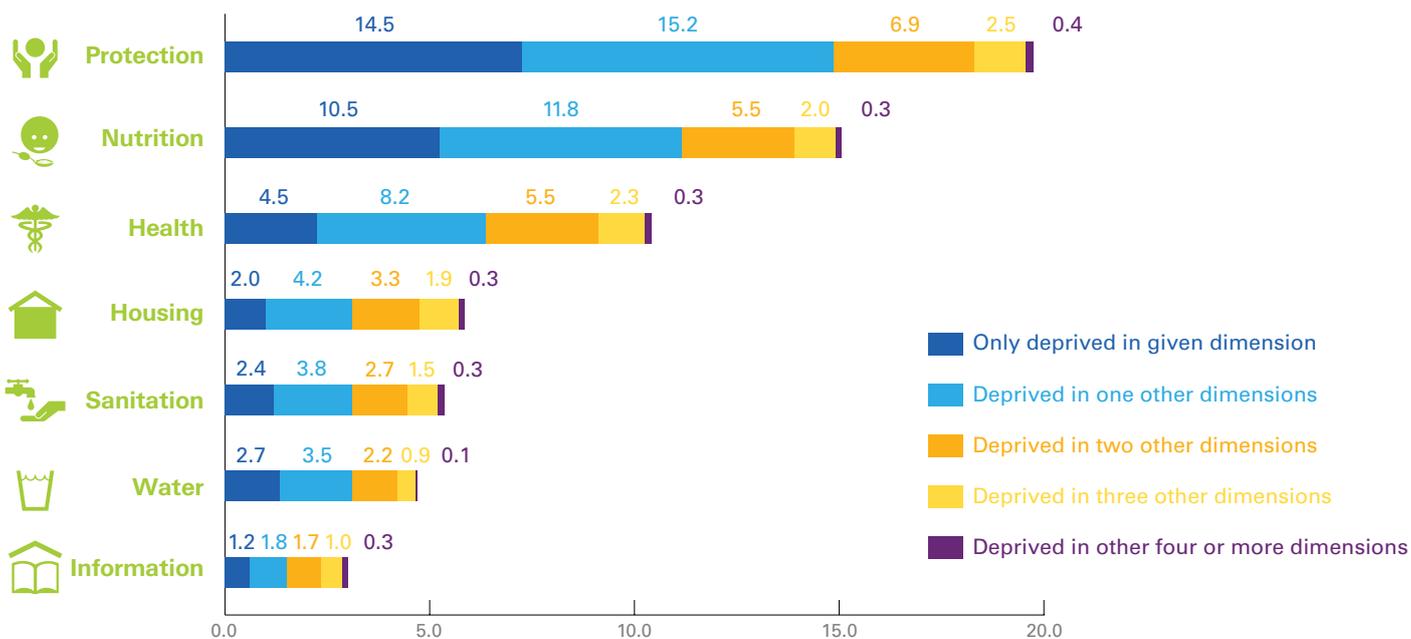


Source (MoHP, et al., 2015) and author's calculations

3.4  For children aged 5 to 11 years, protection is the dimension that overlaps the most with other dimensions, followed by housing and nutrition. Among children aged 12 to 17 years, the ones deprived in protection have higher probability of being deprived in other dimensions. Deprivation in education comes second. Comparing the overlap between education and other dimensions between children aged 5 to11years and 12 to 17 years shows that deprivation in education moves from lowest prevalence and overlaps with other dimensions for children aged 5 to 11 years, to be the dimension with the second highest prevalence of deprivation and extent of overlap with other dimensions among the children aged 12 to17 years. Successful transition into secondary education and school dropout rates are the dimensions with considerably high levels of overlap.

**Figure 5:** Deprivation Overlap by Dimension for Children 5 to 11 Years of Age (%)
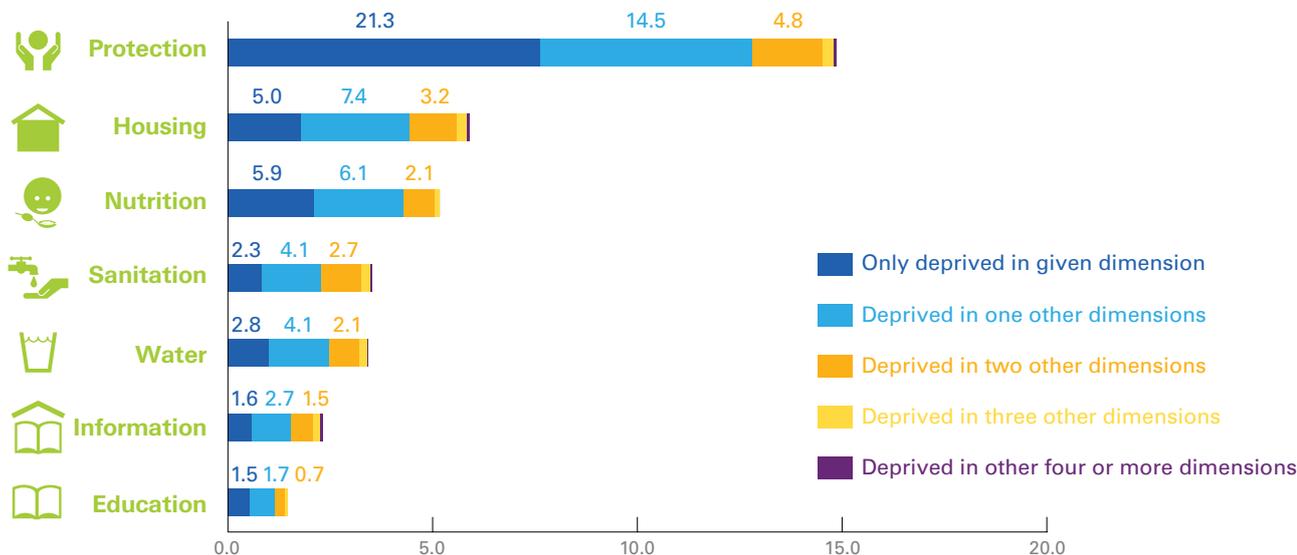


Source (MoHP, et al., 2015) and author's calculations

**Figure 6:** Deprivation Overlap by Dimension for Children 12 to 17 11 Years of Age (%)
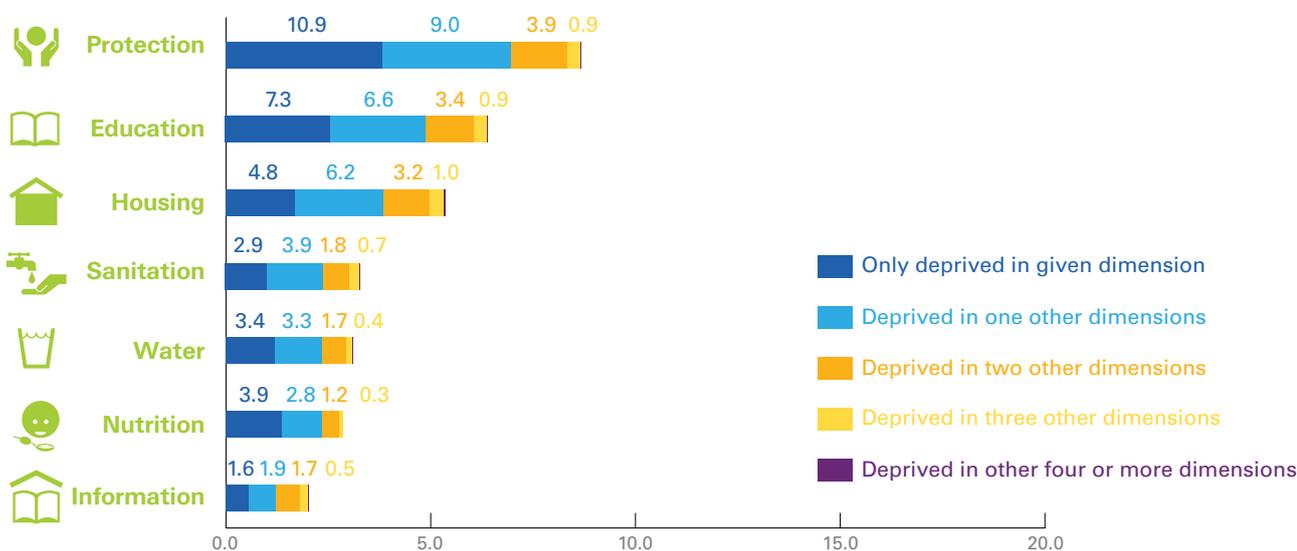


Source (MoHP, et al., 2015) and author's calculations

3.5 To closely visualize the overlap and relationship between deprivations in different dimensions, Figure 7, below, shows (proportionally) through Venn diagrams the overlap in deprivation in the three dimensions with the highest overlap, by age group. For children aged 0 to 4 years (left panel in Figure 7), the three dimensions with the largest overlap are protection, nutrition, and housing. Children suffering from two or three of these deprivations simultaneously represent 17.6 percent of the reference population (i.e., of all children in the same age group). We can observe that the same dimensions for children under-five years and children aged 5 to 11 years tend to overlap (the central panel) which changes the relative importance of the three dimensions. For children aged 12 to 17 years, the dimensions with the largest overlaps are housing, education and protection.

**Figure 7:** Deprivation Overlap Analysis Based on Three Dimensions, by Age Group (%)
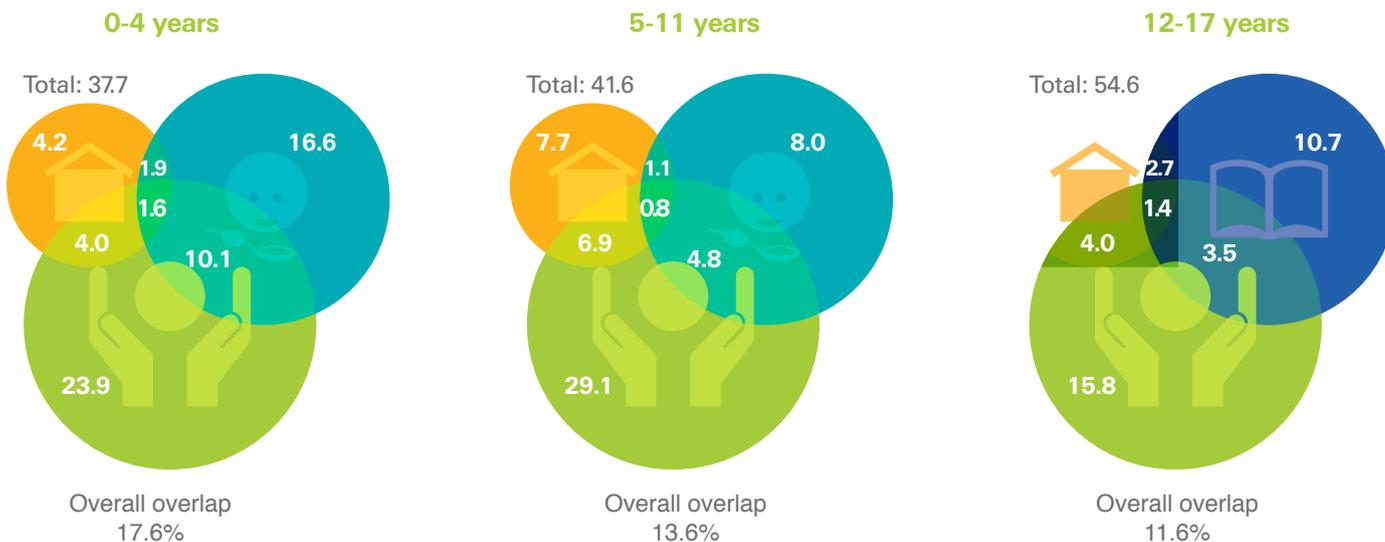


Source (MoHP, et al., 2015) and author's calculations

3.6 Table 5, below, shows in greater detail the percentages used to construct the Venn diagrams in Figure 7, above. For simplicity, we included only four sets of deprivations, those corresponding to the largest overlap of three dimensions for each age group.

Columns A, B, and C tell us that 4.2 percent of children aged 0 to 4 years are housing-deprived (deprived of housing only), 16.6 percent are nutrition-deprived, and 23.9 are protection-deprived.

**Table 5:** Percentage Distribution of the Combination of Dimensions with Highest 'Overlaps' by Age Group

| Overlap | Dimension | Single (Only) | | | Multiple | | | | | None | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | AB | AC | BC | ABC | All | | |
| 0-4 years | Housing (A) Nutrition (B) Protection (C) | 4.2 | 16.6 | 23.9 | 1.9 | 4.0 | 10.1 | 1.6 | 17.6 | 37.7 | 100.0 |
| 5-11 years | Housing (A) Nutrition (B) Protection (C) | 7.7 | 8.0 | 29.1 | 1.1 | 6.9 | 4.8 | 0.8 | 13.6 | 41.6 | 100.0 |
| 12-17 years | Housing (A) Education (B) Protection (C) | 7.2 | 10.7 | 15.8 | 2.7 | 4.0 | 3.5 | 1.4 | 11.6 | 54.6 | 100.0 |

Source (MoHP, et al., 2015) and author's calculations

3.7 The next three columns (AB, AC, BC) tell us the two-dimension overlap: 1.9 percent of children aged 0 to 4 years are simultaneously housing-deprived (A) and nutrition-deprived (B), and 10.1 percent are simultaneously deprived in nutrition (B) and protection (C). Finally, under-five children that are deprived in the three dimensions simultaneously are 1.6 percent (ABC). Hence, overall, under-five children who are deprived

in nutrition are 30.2, which is consistent with the headcount ratio previously presented in Table 2. Across the different child age groups we see that deprivation in housing and protection are present in the set of the three dimensions with the highest overlap, showing their importance in contribution when it comes to deprivation in multiple dimensions.
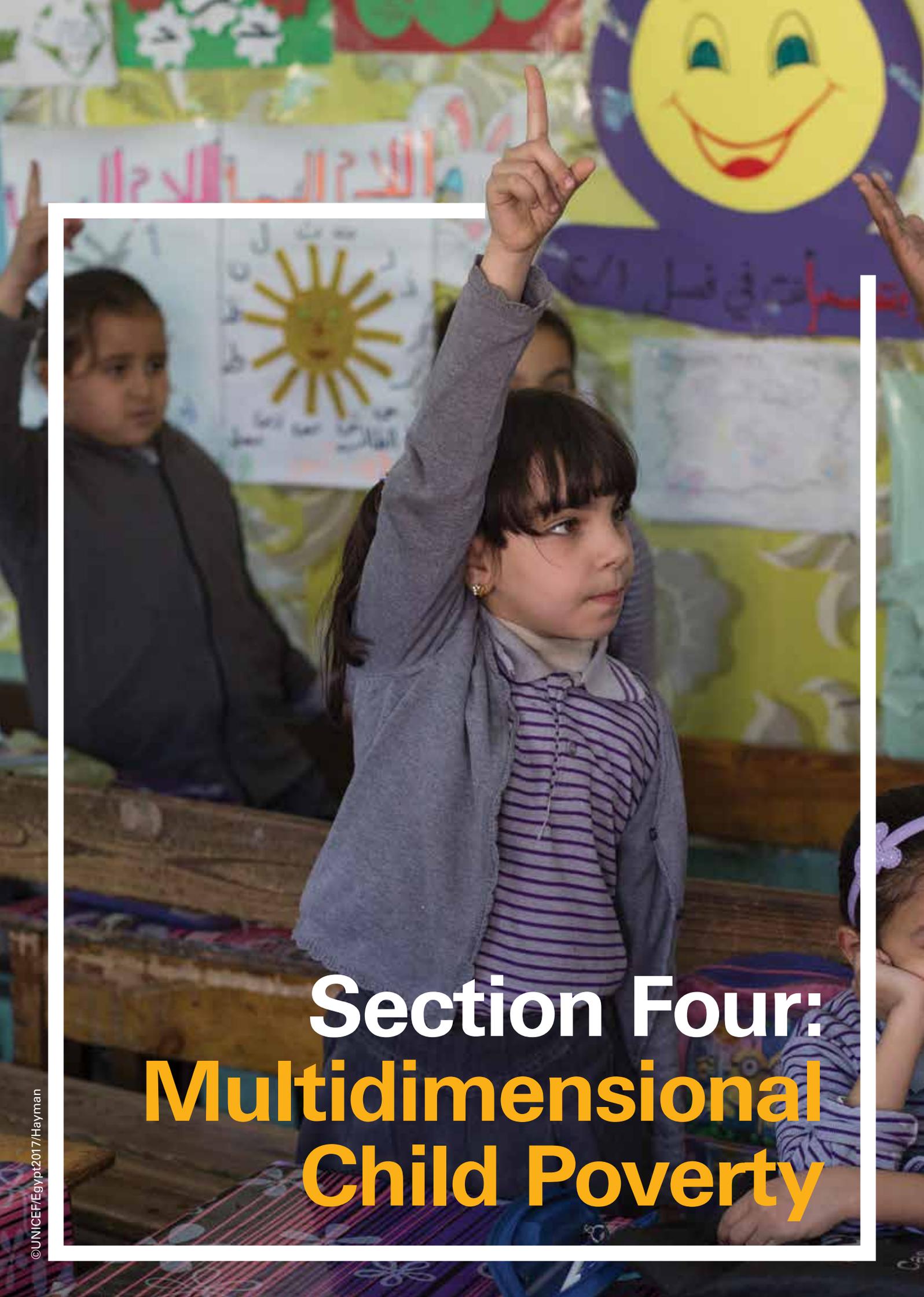
# Section Four:
## Multidimensional Child Poverty

# Summary

- 29.4 percent of children (equivalent to 10.1 million children) experience two or more deprivations. Children who are deprived in three or more dimensions represent around 8.8 percent or 3.0 million, and children deprived in four or more dimensions represent 1.9 percent of total children and are equal to 0.67 million.

- Under-five children are subject to the highest prevalence of child multidimensional poverty and are the majority of multidimensionally poor children. 37.1 percent of under-five children are multidimensionally poor and deprived on an average of 35.0 percent of the total number of dimensions considered. For children aged 5 to 11 years this is considerably less; in fact, 27.2 percent of them are multidimensionally poor with an average deprivation intensity of 32.9 percent. While for children between 12 to 17 years of age, the headcount declines to 23.8 percent, with an average intensity of 33.6 percent.

## Multidimensional Child Poverty

4.0 The present section focuses on analyzing multidimensionally poor children[9] using the MODA framework to identify the most deprived among the deprived. In order to do so, two key methodological choices must be made. First, a threshold to identify children suffering multidimensional poverty must be established; and second, a set of multidimensional poverty indices must be defined. Both choices are discussed in detail in Dr Neuborg, et al (2012) building on the pioneering work of Alkire and Foster

(2011), from which we draw most of the discussion in this section.

4.1 With regards to the choice of the threshold for child multidimensional poverty, we use the so-called union approach. Following this approach a child is considered deprived in one dimension if s/he experiences deprivation in just one indicator, and is considered multidimensionally poor if the number of dimensions in which s/he is deprived is equal or larger than a certain value k; the value k is referred to as the

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[9] In the literature by Chris de Neubourg this is referred to as multidimensionally deprived (De Neuborg, et al., 2012), while Alkire and Foster refer to multidimensionally poor (Alkire & Foster, 2011). For consistency and to distinguish the single dimensional deprivation analysis from the multidimensional analysis of poor in this report we will use multidimensionally poor children.

multidimensional poverty cut-off point. For the purpose of this analysis k will be equal to 2.

4.2 With regards to the choice of measures, we make use of three measures as highlighted in Section Two. The first and simplest measure is the headcount ratio (H). This is a simple count of multidimensionally deprived children - the number of children deprived in at least k=2 dimensions as a share of the child reference population to whom the index refers. The problem with this indicator is that it is entirely insensitive to the intensity of poverty experienced by the child who is multidimensionally poor or better, that it would not account for the number of dimensions a child may be experiencing simultaneously. In fact, the poverty headcount or H would not be affected whether a poor person experiences deprivation in two or three dimensions (Alkire & Foster, 2011). Accordingly, a second measure is used to overcome H's shortcomings, which is the average intensity of deprivation (A). This measure is calculated as the average of the ratios of the total number of deprivations suffered by each child out of the total number of dimensions (that is the maximum number of possible simultaneous deprivations).

4.3 The third measure is the adjusted headcount ratio ($M_O$) or Multidimensional Poverty Index, which is calculated as the product of H times A. Many advantages are associated with $M_O$, including that it is sensitive to both the incidence and the intensity of multidimensional poverty. The single most important characteristic of the $M_O$, however, is that it satisfies the axiom of "dimensional monotonicity", which "suggests that in a situation where a multidimensionally poor child increases his or her poverty by becoming deprived in a dimension on which he or she was previously not deprived, overall poverty levels will increase". A second advantage is that $M_O$ is decomposable, which implies that 'overall poverty [is] a weighted average of subgroup poverty levels, where weights are subgroup population shares'. As we will see shortly, these properties are key to profiling the poor and helping policymakers to design

policies to address multidimensional poverty (Alkire & Foster, 2011).

4.4 The analysis below calculates multidimensional poverty measures using different multidimensional poverty cut-off points with the aim of distinguishing the most deprived children. The MODA analysis is developed separately for each age group as the methodology varies, yet in order to report on the overall child population of multidimensionally poor we calculate the multidimensional poverty headcount (H) and average intensity of deprivation (A) as the population share weighted average of the different child age groups indices. Finally, the EDHS and population figures announced by CAPMAS in January 2015 were used to calculate proportions for the purposes of reporting on the number of children suffering multidimensional poverty.

4.5 Figure 8, below, presents the estimated values for multidimensional poverty headcounts H and $M_O$ for children 0 to 17 years of age, along with the number of multidimensionally poor children using different multidimensional poverty cut-off points (k). About two-thirds of children (67.4 percent) suffer one or more deprivations (k=1), equivalent to 23.1 million children in 2015. Examining a more deprived group of children by setting the multidimensional poverty cut-off values to two or more deprivations, we estimate that 29.4 percent of children suffer two or more deprivations (10.1 million children). The cut-off value of two or more deprivations lies at the center of our analysis because as we move from a cut-off point of k=1 to k=2, we focus the analysis on children suffering multiple deprivations (two or more) excluding from the analysis those children deprived in only one dimension. Two other groups of children who suffer more intense deprivations are important to examine, and they are the ones suffering three or more deprivations (k=3), about 3 million children; and those suffering four or more deprivations, which is equivalent to 1.9 percent of children (0.67 million children).

**Figure 8:** Multidimensional Poverty Headcounts and Number of Multidimensionally Poor Children as a Function of Different Multidimensional Poverty Cut-off Values (Aged 0 to 17)
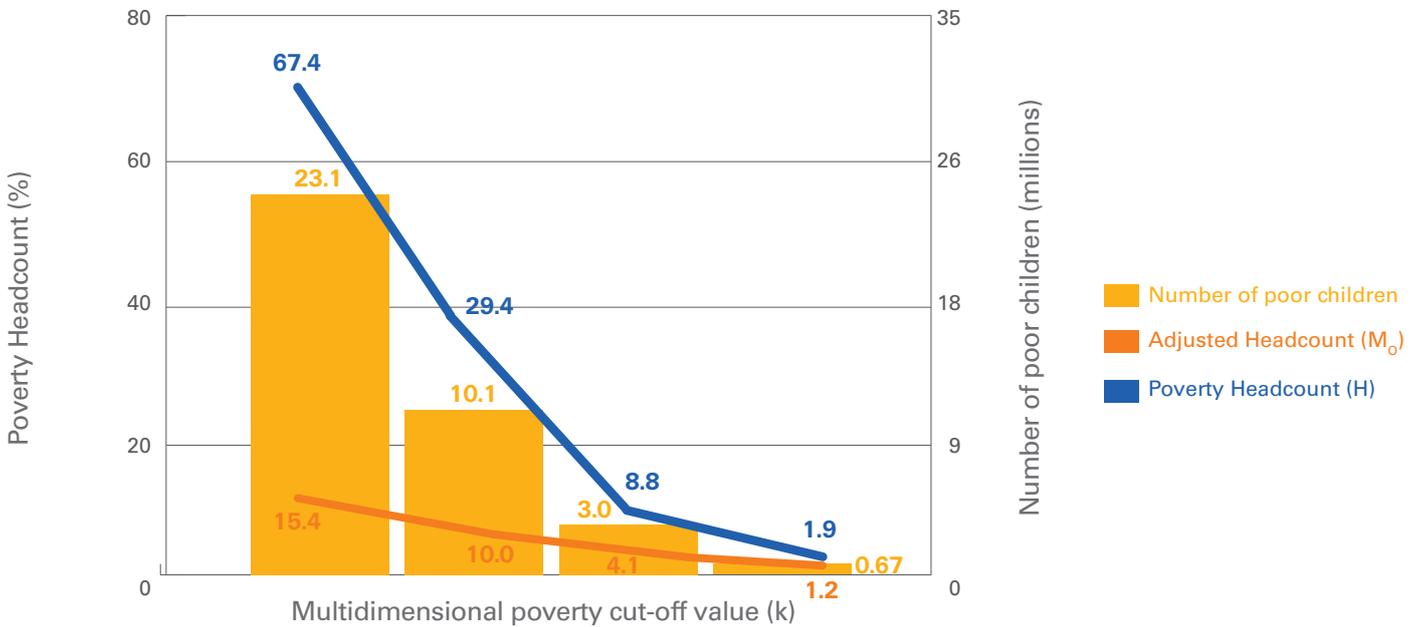


Source (CAPMAS, 2015) and author's calculations

4.6   To better understand the age-specific dynamics of multidimensional poverty incidence, Figure 9, below, shows multidimensional poverty headcounts as a function of the cut-off value for the three child age groups. According to the estimates, 74.9 percent (H) of under-five children suffer one or more deprivations. The incidence decreases among children in the 5 to 11 year old age group to 67.5 percent, and to 58.9 percent for the 12 to 17 year old age. Figure 9 clearly demonstrates that regardless of the multidimensional poverty cut-off value selected, both multidimensional poverty headcounts (H, $M_O$) are higher among under-five children.

**Figure 9:**  Multidimensional Poverty Headcounts as a Function of Different Cut-off Points, by Age Group
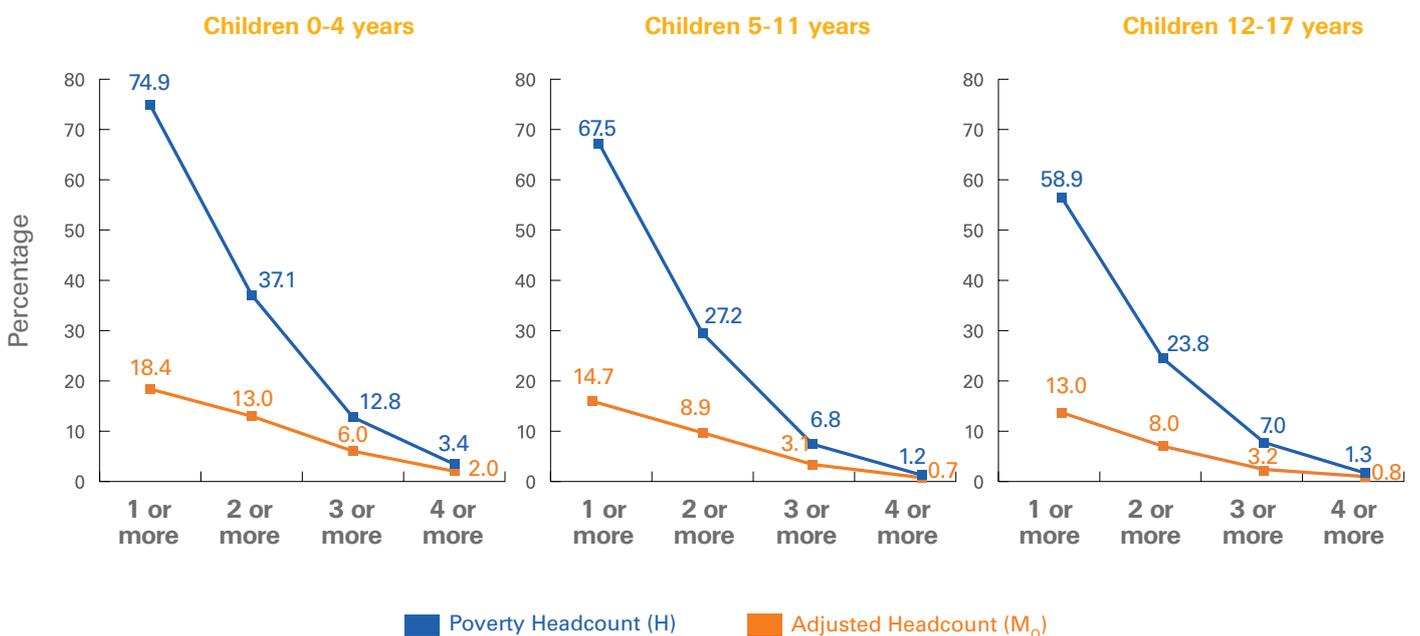


Source (MoHP, et al., 2015) and author's calculations

4.7 Table 6, below, provides the estimates for H, A, and $M_O$ for the different child age groups, using two cut-off points: k=2; and k=3. When k=2, we can see that 37.1 percent (H) of under-five children are multidimensionally poor, with deprivation on average in 35 percent of the total number of dimensions considered. For children in the 5 to 11 age group we see that 27.2 percent are multidimensionally poor with average deprivation intensity of 32.9 percent; and for children in the 12 to 17 age group the headcount declines to 23.8 percent, with an average intensity of 33.6 percent. The adjusted headcount ratio ($M_O$) shows not only that under-five children suffer a higher incidence of multidimensional poverty (for both cut-off points), but also multidimensionally poor children face a higher intensity of deprivations.

**Table 6:** Multidimensional Poverty indices (H, A, $M_O$) by Cut-off and Age Group

| Age Group | Cut-off point (k) | H* | A** | $M_O$*** |
|---|---|---|---|---|
| 0-4 years | At least 2 | 37.1 | 35.0 | 13.0 |
| | At least 3 | 12.8 | 47.3 | 6.0 |
| 5-11 years | At least 2 | 27.2 | 32.9 | 8.9 |
| | At least 3 | 6.8 | 45.7 | 3.1 |
| 12-17 years | At least 2 | 23.8 | 33.6 | 8.0 |
| | At least 3 | 7.0 | 45.8 | 3.2 |

\* Headcount ratio; ** Average deprivation intensity; *** Adjusted headcount ratio or MPI; k: cut-off number of deprivations (at least)

Source (MoHP, et al., 2015) and author's calculations

4.8 The high incidence of multidimensional poverty among under-five children makes this age group the one with the highest incidence of poverty among children (aged 0 to 17) suffering multidimensional poverty. As show in Figure 10, below, 41.2 percent of all children suffering two or more deprivations are under the age of five.

An as we move into the higher cut-off point of three or more deprivations the proportion of under-five children among multidimensionally poor children increases to 47.4 percent. For both cut-off points, children aged 5 to 11 years old rank second in terms of the proportion of all multidimensionally poor children.

**Figure 10:** Percentage Distribution of Multidimensionally Poor Children for Different Cut-off Points by Age Group
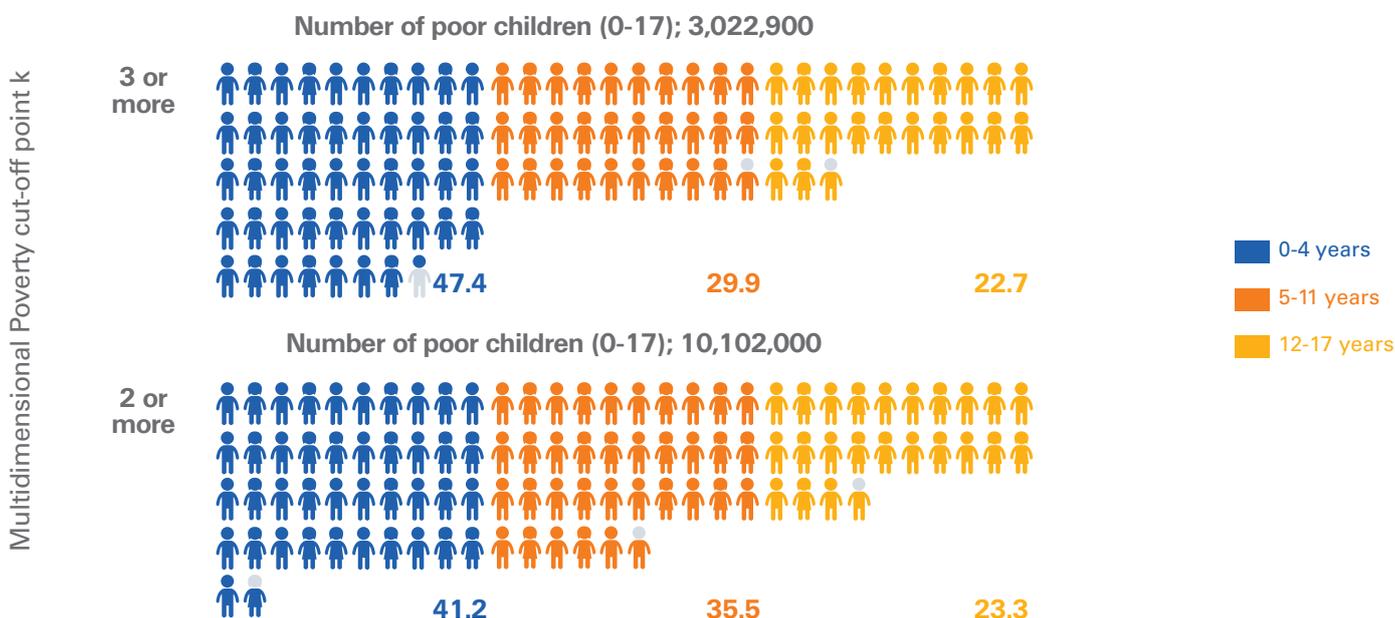


Source (CAPMAS, 2015) and author's calculations

4.9   The age pattern is very clear whether in terms of single dimension deprivation or the extent of overlapping deprivations, and is clearly confirmed in the analysis of multidimensional poverty. **Though one may wonder, Is there a similar gender pattern in child multidimensional poverty?** Table 7, below, shows the multidimensional poverty measures using the cut-off point k=2 for boys and girls across the different age groups and a population weighted average for all children in the last column of the table. For children under five, the multidimensional poverty incidence is slightly higher among boys (37.1 percent, as compared to 36.6 percent among girls). This gap increases among children aged 5 to 11, and reaches a multidimensional poverty headcount of 28.3 percent for boys and 25.9 percent for girls. This male disadvantage is reversed to some extent among children in the 12 to 17 year old age group. Overall, the last row shows that for all children the gender gap is contained and there is a small male disadvantage. These results appear consistent with similar MODA analyses carried out in the region (ESCWA, et al., 2017). Nonetheless, evidence of gender differences and gaps from the results of different outcomes based on surveys and studies are not explicit from the below table, mainly due to the choice of indicators, many of which are at the household level

**Table 7:** Child Multidimensional Poverty (%) by Gender (k=2)

| Age Group | Child Gender | H* | A** | $M_o$*** |
|---|---|---|---|---|
| 0-4 years | Boys | 37.5 | 34.9 | 13.1 |
| | Girls | 36.6 | 35.1 | 12.9 |
| 5-11 years | Boys | 28.3 | 33.0 | 9.3 |
| | Girls | 25.9 | 32.8 | 8.5 |
| 12-17 years | Boys | 23.2 | 33.8 | 7.8 |
| | Girls | 24.5 | 33.4 | 8.2 |
| 0-17 years | Boys | 29.9 | 34.0 | 10.2 |
| | Girls | 29.0 | 33.9 | 9.8 |

* Headcount ratio; ** Average deprivation intensity; *** Adjusted headcount ratio or MPI; k: cut-off number of deprivations (at least)
Source (MoHP, et al., 2015) and author's calculations

**Section Five:**
**The Map of Child Multidimensional Poverty**

# Summary

- Children in rural areas face a much higher prevalence of multidimensional poverty, as well as a higher intensity of deprivation as compared to children in urban areas. The highest rate is found among under-five children in rural areas where 42.8 percent are multidimensionally poor, this compares to 24 percent in urban areas.  Accounting for the population size in urban and rural areas, four out of every five children suffering multidimensional poverty reside in rural areas (79.4 percent).

- Rural Upper Egypt has the highest multidimensional poverty incidence and deprivation intensity among the regions. Furthermore, poor children from rural Upper Egypt account for 42.9 percent of all multidimensionally poor children in Egypt. Rural Lower Egypt is the region with the second highest levels of multidimensional poverty incidence and the highest intensity.

- While multidimensionally poor children in Frontier Governorates represent less than 1 percent of poor children in Egypt, children in this region face the third highest levels of poverty incidence and intensity.

- Suhag, Assiut, Behera, Matrouh, Qena, Luxor, and Sharkia governorates report the highest prevalence of multidimensional poverty across the different age groups.

## The Map of Child Multidimensional Poverty

5.0   As we saw in the previous section, over 10 million children in 2015 (29.4 percent) were multidimensionally poor (i.e. suffering deprivation in two or more dimensions). In the present section we analyze where these children live and where the child poverty is concentrated geographically.  Table 8 shows the extent of multidimensional poverty indices for the different child age groups in Urban and Rural areas. The Table confirms a 'Rural' disadvantage as both the incidence (H) and intensity of deprivation (A) children face in rural areas is higher across the different age groups as compared to children living in urban areas. For example, while 24.6 percent of under-five children in urban areas suffer multidimensional poverty, the incidence is 42.8 percent among children in rural areas, and the average deprivation intensity is also higher. For the other age groups the multidimensional poverty incidence in rural areas is more than twice the incidence in urban areas. Accounting for population size in urban and rural areas we estimate that four out of every five children suffering multidimensional poverty resides in rural areas (79.4 percent).

**Table 8:** H, A and $M_O$ (%), by Urban and Rural Areas (k=2)

| Area | 0-4 Years | | | 5-11 Years | | | 12-17 Years | | | 0-17 Years | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H* | A** | $M_O$*** | H* | A** | $M_O$*** | H* | A** | $M_O$*** | H* | A** | $M_O$*** |
| **Urban** | 24.6 | 32.6 | 8.0 | 16.3 | 30.8 | 5.0 | 13.6 | 32.4 | 4.4 | 18.0 | 32.4 | 5.8 |
| **Rural** | 42.8 | 35.6 | 15.2 | 32.8 | 33.4 | 11.0 | 29.6 | 33.9 | 10.0 | 35.3 | 33.9 | 12.0 |
| **Egypt** | 37.1 | 35.0 | 13.0 | 27.2 | 32.9 | 8.9 | 23.8 | 33.6 | 8.0 | 29.5 | 33.6 | 9.9 |

\* Headcount ratio; ** Average deprivation intensity; *** Adjusted headcount ratio or MPI; k: cut-off number of deprivations (at least)

Source (MoHP, et al., 2015) and author's calculations

5.1 Table 9, below, shows the three indices across the different regions in Egypt by age group. Rural Upper Egypt is the region with the highest multidimensional poverty incidence and deprivation intensity. Though this holds for all child age groups, the disadvantage is higher among under-five children in this region. Furthermore, poor children from Rural Upper Egypt account for 42.9 percent of all multidimensionally poor children in Egypt, as can be seen from Figure 11, below.

**Table 9:** H, A and $M_O$ Deprivation Rates (%) by Region for 2 or More Dimensions of Deprivation (k=2)

| Region | 0-4 Years | | | 5-11 Years | | | 12-17 Years | | | 0-17 Years | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H* | A** | $M_O$*** | H | A | $M_O$ | H | A | $M_O$ | H | A | $M_O$ |
| **Urban Governorates** | 19.7 | 30.8 | 6.1 | 12.8 | 29.9 | 3.8 | 10.0 | 31.0 | 3.1 | 14.0 | 31.0 | 4.3 |
| **Urban Lower Egypt** | 23.7 | 32.2 | 7.6 | 18.4 | 31.1 | 5.7 | 14.0 | 33.0 | 4.6 | 18.6 | 33.0 | 6.1 |
| **Rural Lower Egypt** | 38.7 | 34.7 | 13.4 | 35.1 | 33.0 | 11.6 | 29.2 | 33.3 | 9.7 | 34.7 | 33.3 | 11.6 |
| **Urban Upper Egypt** | 29.7 | 33.9 | 10.1 | 17.7 | 31.2 | 5.5 | 16.4 | 32.9 | 5.4 | 21.1 | 32.9 | 6.9 |
| **Rural Upper Egypt** | 47.9 | 36.6 | 17.5 | 30.1 | 34.1 | 10.2 | 30.1 | 34.6 | 10.4 | 36.0 | 34.6 | 12.5 |
| **Frontier Governorates** | 34.5 | 35.0 | 12.1 | 25.1 | 31.2 | 7.8 | 26.1 | 32.5 | 8.5 | 28.6 | 32.5 | 9.3 |
| **Egypt** | 37.1 | 35.0 | 13.0 | 27.2 | 32.9 | 8.9 | 23.8 | 33.6 | 8.0 | 29.5 | 33.6 | 9.9 |

\* Headcount ratio; ** Average deprivation intensity; *** Adjusted headcount ratio or MPI; k: cut-off number of deprivations (at least)

Source (MoHP, et al., 2015) and author's calculations

**Figure 11 :** Percentage Distribution of Multidimensionally Poor Children by Region (k=2)

| 42.9 | 36.1 | 8.4 | 6.4 | 5.5 | 0.9 |

0    10    20    30    40    50    60    70    80    90    100

■ LE Rural    ■ UE Rural    ■ UE Urban    ■ LE Urban    ■ Urban Governorates    ■ Frontier Governorates
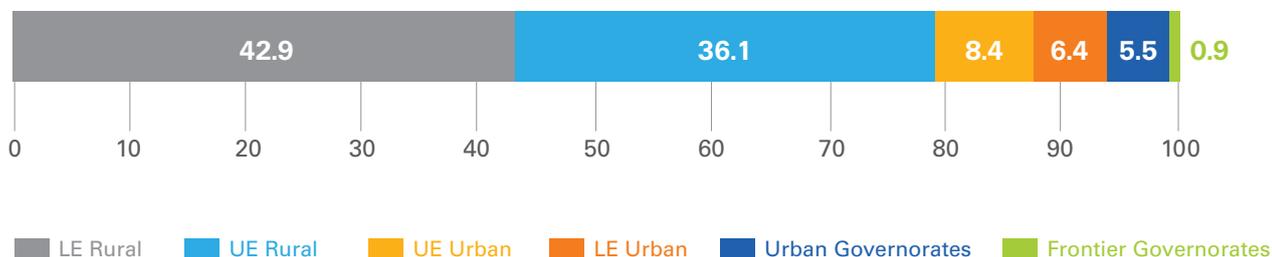
Source (MoHP, et al., 2015) and author's calculations

5.2 As we can see in the map provided in Figure 12, below, Rural Lower Egypt is the second highest region in terms of multidimensional poverty incidence and intensity. It is important to highlight that while multidimensionally poor children in the Frontier Governorates represent only about 1 percent of poor children in Egypt, this region scores the third highest levels of poverty incidence and intensity among children. Children in Urban Governorates face low incidence and intensity of multidimensional poverty though the levels are significant; about one in five of under-five children in Urban Governorates are multidimensionally poor. It is worth mentioning that in urban areas the sample design of nationally representative household surveys (including the EDHS) does not allow estimating deprivation and poverty levels in slums and unplanned areas. An earlier ad-hoc study on poverty in these areas indicates that levels of poverty and deprivations in the mentioned areas are in line with those found in rural areas (ISDF & UNICEF, 2013) Among all, two Frontier governorates out of five, North Sinai and South Sinai, which represent less than 1 percent of the total Egyptian population, were not included in EDHS 2018 survey. (CAPMAS, 2017).

**Figure 12:** Child MPI Headcount Distribution Nationwide.



Child MPI    9.90    24.1    38.2
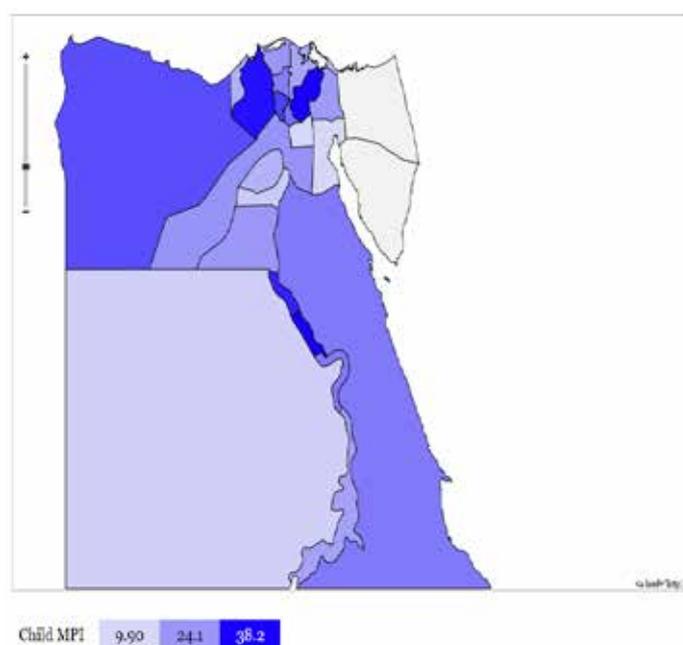
Source (MoHP, et al., 2015) and author's calculations

5.3 Figure 13, below, shows the multidimensional poverty headcounts H and $M_O$ for each governorate by age group, sorted by the decreasing values of $M_O$. The red bars represent the overall situation of Egypt. Matrouh, Suhag. Assiut, and Sharkia have the highest indices of multidimensional poverty for under-five children, all exceeding 50 percent. If we focus on the second age group 5-11 years of age, Sharkia stands out for its highest incidence of multidimensional poverty of around 45.5 percent, followed by Suhag, Behera, Assiut, and Qena. Finally, as shown in the graph Suhag, Assiut, Matrouh, Behera, Sharkia and Qena have the highest levels of multidimensional poverty for children aged between 12 and 17 years. In contrast, Suez, Cairo, and New Valley show the lowest values for all indices, irrespective of the age group.

**Figure 13:** Multidimensional Poverty Headcount H and $M_0$ (in %) by Governorate and Age Group (k=2)
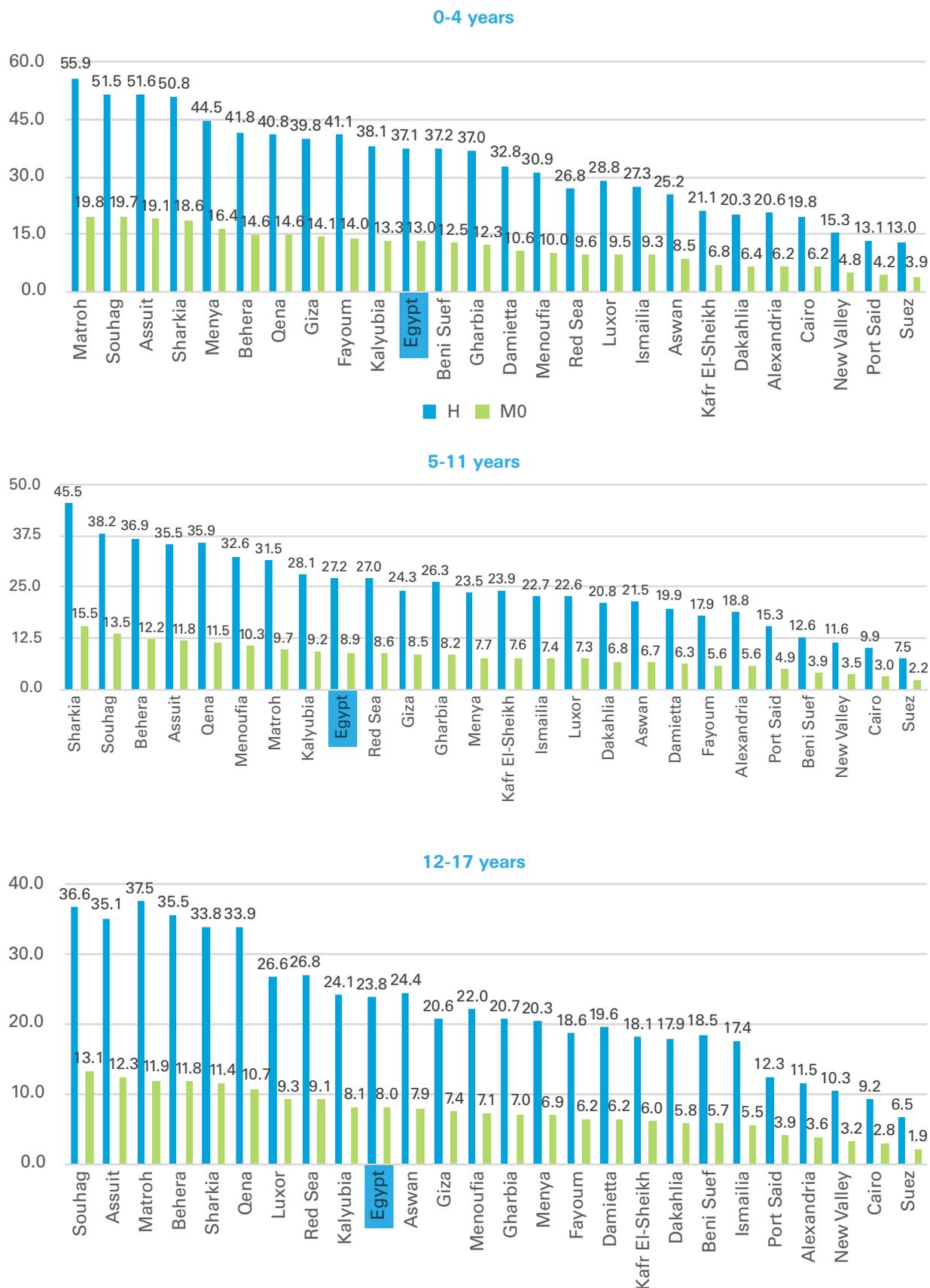
### 0-4 years



### 5-11 years



### 12-17 years



Source (MoHP, et al., 2015) and author's calculations

# Section Six: Dimensions' Contribution to Child Multidimensional Poverty

# Summary

- Deprivation in protection, nutrition, and health are the main contributors to the overall incidence of multidimensional poverty affecting under-five children.

- For children aged from 5 to 11 years, protection, housing, and nutrition have the highest contribution to child multidimensional poverty. For children 12 to 17 years of age, protection, education and housing are the main contributors.

- For under-five children, while the three largest contributors to child poverty are the same in urban and rural areas (protection, nutrition, and health) the contributions of protection and nutrition are higher in urban areas, while in health, the levels are similar. What contributes to the rural disadvantage is the high relevance in the contribution of deprivation in water and sanitation.

- For children aged 5 to11 years, the differences in main contributions between urban and rural areas are more prominent. While protection is the largest contributor to child multidimensional poverty, the second and third main contributors differ from nutrition and housing in urban areas to housing and sanitation in rural areas.

- For children aged 12 to 17 years, protection, education, and housing have similar levels in both urban and rural areas, although the relative deprivation is higher in urban areas. For rural areas, we see that sanitation and water have a higher relevance in contributing to child multidimensional poverty in all age groups.

- Governorate-level analysis of the contribution of dimensional deprivation to poverty reveals important difference in sectoral (dimension level) priorities. For example, child poverty in Matrouh stands out with the highest contribution for the dimension of water that does not show as such at the national level. A similar example is found in the high contribution of deprivation in sanitation to child poverty in the governorate of Damietta.

# Dimensions' Contribution to Child Multidimensional Poverty

6.0  A key feature of the MODA methodology relevant to policy makers is that the adjusted headcount ratio $M_O$ satisfies the axiom on decomposability. The axiom requires that the overall level of deprivation is equal to the sum of the weighted average of subgroup deprivation levels with the weights for each subgroup being equal to their respective population share. A special case of decomposition can be performed by dimension which helps to assess the extent to which a deprivation in a given dimension contributes to the adjusted headcount ratio $M_O$. This can be calculated as well by population subgroup to inform the definition of policy priorities at national and subnational level. As explained in Neubourg et al (2012), the contribution P of each dimension j as to the overall deprivation level has been expressed in this analysis as a share of the total adjusted headcount ratio $M_O$ defined as follows:

$$P_j = \frac{\sum_{i=1}^{n}(y_j * y_k)}{n_a * d * M_0}$$

Where Pj contribution of dimension j to the adjusted headcount ratio $M_O$

$\sum_{i=1}^{n}(y_j * y_k)$ total number of children i deprived in dimension j while also being deprived multidimensionally according to the cut-off point k

$y_j = 1$ if child i is deprived in dimension j, and $y_j = 0$ if child i is not deprived in dimension j

$y_k = 1$ if child is multidimensionally deprived with $D_i \geq K$ and $y_k = 0$ if child is not multidimensionally deprived with $D_i < K$

d total number of dimensions used in the analysis, and na is total number of children of the relevant age group a

6.1  Estimating the incidence of child multidimensional poverty, including identifying the most deprived, and the geographical concentration of poverty, is extremely important, in order to inform policy makers of the priorities in terms of poverty severity by geographical distribution. The MODA analytical framework complements this by focusing its analysis on poor children and estimating the contribution of each dimension to multidimensional poverty.  At national level, Table 10 shows the contribution of single dimensions to the overall index ($M_O$) when the cut-off (or k, the number of dimensions) changes from two to three dimensions. A key finding is that deprivation in protection, nutrition, and health are the dimensions that contribute the most to the overall poverty incidence for under-five children. When we focus on more severely poor children, (those suffering from three or more deprivations) these three priorities remain with a slight reduction in their relevance (contribution) to housing level dimensions (indicators).

**Table 10:** Contribution to $M_O$ (in %) by Age Group and Poverty Cut-off Point (k)

| Dimension | Age Group | | | | | |
|---|---|---|---|---|---|---|
| | 0-4 Years | | 5-11 Years | | 12-17 Years | |
| | k=2 | k=3 | k=2 | k=3 | k=2 | k=3 |
| Water | 7.6 | 7.9 | 10.8 | 12.3 | 9.9 | 9.9 |
| Sanitation | 9.1 | 10.6 | 12.1 | 15.9 | 11.7 | 12.0 |
| Housing | 10.7 | 13.0 | 18.5 | 18.8 | 18.7 | 19.2 |
| Information | 5.3 | 7.2 | 7.8 | 10.0 | 7.6 | 10.5 |
| Nutrition | 21.7 | 19.3 | 14.0 | 12.0 | 7.7 | 6.6 |
| Health | 18.0 | 18.7 | - | - | - | - |
| Education | - | - | 4.3 | 4.4 | 19.8 | 19.9 |
| Protection | 27.6 | 23.3 | 32.5 | 26.6 | 24.7 | 21.9 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| $M_O$: Adjusted headcount ratio; k: cut-off number of deprivations (at least) | | | | | | |

Source (MoHP, et al., 2015) and author's calculations

6.2 For children in the 5 to 11 year-old age group, protection, housing, and nutrition are the highest contributors to child multidimensional poverty. For more severely poor children (k=3), protection remains the largest contributor, and housing level indicators (housing, sanitation and water) gain relevance as high contributors to child multidimensional poverty. As for children in the 12 to 17 year-old age group, protection, education and housing are the dimensions that contribute the most to child multidimensional poverty; this ranking and relevance also holds true for severely poor children.

6.3 The richness of the analysis for policy making is underlined in assessing how the contributors and their relative relevance change across the different regions and governorates. Figure 14, below, depicts the dimensional contribution to multidimensional

poverty (k=2) for urban versus rural areas for different age groups (sorted by the magnitude of the urban-rural difference in contribution). For under-five children, while the three largest contributors to child poverty are the same for both urban and rural areas (namely; protection, nutrition, and health) the contributions of protection and nutrition are higher in urban areas, with health contributions being similar. What contributes to the rural disadvantage is the high contributions of deprivation in water and sanitation. For children aged 5 to 11 years, the differences in priorities among urban and rural areas are more prominent. While protection is the largest contributor to child multidimensional poverty, the second and third priorities differ from nutrition and housing in urban areas to housing and sanitation in rural areas.

**Figure 14:** Contribution to $M_O$ (in %) by Age Group and Urban/Rural Location



| 0-4 years | | | | | | |
|---|---|---|---|---|---|---|
| **Nutrition** | **Protection** | **Housing** | **Health** | **Information** | **Water** | **Sanitation** |
| **Urban** 28.1% | 32.3% | 11.3% | 17.6% | 4.0% | 4.8% | 2.0% |
| **Rural** 20.2% | 26.5% | 10.5% | 18.1% | 5.6% | 8.2% | 10.8% |

| 5-11 years | | | | | | |
|---|---|---|---|---|---|---|
| **Nutrition** | **Protection** | **Housing** | **Health** | **Information** | **Water** | **Sanitation** |
| **Urban** 21.1% | 36.4% | 21.0% | 6.6% | 6.3% | 6.2% | 2.2% |
| **Rural** 12.3% | 31.6% | 17.9% | 3.7% | 8.2% | 11.9% | 14.5% |

| 12-17 years | | | | | | |
|---|---|---|---|---|---|---|
| **Nutrition** | **Protection** | **Housing** | **Health** | **Information** | **Water** | **Sanitation** |
| **Urban** 28.7% | 11.5% | 23.1% | 20.8% | 6.4% | 6.3% | 3.2% |
| **Rural** 23.7% | 6.7% | 18.9% | 18.2% | 7.9% | 10.8% | 13.8% |

$M_O$: Adjusted headcount ratio

Source (MoHP, et al., 2015) and author's calculations

6.4 For children in the 12 to 17 year-old age group, three main dimensions contribute the most to multidimensional poverty: protection, education, and housing. These are the same in urban and rural areas, however, the relative prevalence is higher in urban areas. For rural areas, sanitation and water have a higher relevance in contributing to child multidimensional poverty for all age groups.

6.5 For a more accurate assessment of the drivers of child multidimensional poverty, Tables 11, 12, and 13 provide the estimates of dimensional contribution for the six regions, by the three age groups. For under-

five children, the relative contributions of the different dimensions vary across the regions substantially. For example, deprivation in nutrition, while amongst the main drivers of child multidimensional poverty, is more prominent for children in Urban Lower Egypt and Urban Governorates. Health has the highest contribution to poverty in Frontier Governorates, and Rural and Urban Upper Egypt. Interestingly, this reveals that in Frontier Governorates, the main contributor to child multidimensional poverty is deprivation in water, followed by health, protection, and nutrition.

**Table 11:** Contribution to $M_O$ for Children in the 0 to 4 Age Group, by Region (%)

| Dimensions | Urban Governorates | Urban Lower Egypt | Rural Lower Egypt | Urban Upper Egypt | Rural Upper Egypt | Frontier Governorates |
|---|---|---|---|---|---|---|
| **Water** | 1.8 | 10.3 | 10.3 | 2.0 | 6.0 | 26.1 |
| **Sanitation** | 1.3 | 1.1 | 16.1 | 3.0 | 5.7 | 0.8 |
| **Housing** | 13.5 | 8.6 | 6.8 | 11.9 | 14.3 | 6.9 |
| **Information** | 2.6 | 3.9 | 3.7 | 4.9 | 7.6 | 3.5 |
| **Health** | 17.0 | 11.7 | 14.0 | 21.4 | 22.1 | 23.3 |
| **Nutrition** | 28.6 | 31.3 | 20.7 | 26.3 | 19.7 | 19.5 |
| **Protection** | 35.3 | 33.0 | 28.4 | 30.6 | 24.7 | 20.1 |
| **Total** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source (MoHP, et al., 2015) and author's calculations

6.6 Table 12, below, demonstrates that for children in the 5 to 11 age group, apart from protection, nutrition has contributed more to multidimensional poverty in Urban Governorates and Urban Lower Egypt. Housing appears to contribute more to poverty in Rural and Urban Upper Egypt, while water remains, as for under-five children, the main contributor to multidimensional poverty in Frontier Governorates.

**Table 12:** Contribution to $M_O$ for Children in the 5 to 11 Age Group, by Region (%)

| Dimensions | Urban Governorates | Urban Lower Egypt | Rural Lower Egypt | Urban Upper Egypt | Rural Upper Egypt | Frontier Governorates |
|---|---|---|---|---|---|---|
| Water | 2.0 | 11.7 | 13.7 | 2.8 | 9.2 | 28.6 |
| Sanitation | 2.0 | 1.9 | 17.9 | 2.7 | 9.9 | 1.1 |
| Housing | 22.2 | 14.6 | 11.3 | 26.5 | 27.0 | 15.0 |
| Information | 4.3 | 5.6 | 6.0 | 8.5 | 11.2 | 7.1 |
| Education | 8.7 | 6.9 | 3.2 | 4.8 | 4.4 | 4.8 |
| Nutrition | 22.4 | 23.7 | 15.3 | 18.4 | 8.0 | 12.3 |
| Protection | 38.3 | 35.5 | 32.5 | 36.3 | 30.3 | 31.3 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source (MoHP, et al., 2015) and author's calculations

6.7 For children in the 12 to 17 age group, education is among the key contributors to poverty, although it has a higher relevance in Urban Governorates and Frontier Governorates.

**Table 13:** Contribution to $M_O$ for Children in the 12 to 17 Age Group, by Region (%)

| Dimensions | Urban Governorates | Urban Lower Egypt | Rural Lower Egypt | Urban Upper Egypt | Rural Upper Egypt | Frontier Governorates |
|---|---|---|---|---|---|---|
| Water | 3.1 | 11.9 | 13.3 | 2.4 | 7.7 | 29.8 |
| Sanitation | 2.8 | 4.3 | 19.2 | 2.8 | 7.9 | 0.4 |
| Housing | 18.8 | 15.4 | 11.8 | 26.5 | 25.3 | 12.0 |
| Information | 5.1 | 5.8 | 6.4 | 7.8 | 9.5 | 5.4 |
| Education | 27.6 | 19.6 | 15.8 | 23.0 | 22.3 | 25.8 |
| Nutrition | 10.9 | 16.3 | 8.5 | 8.6 | 4.8 | 5.6 |
| Protection | 31.7 | 26.6 | 24.9 | 29.0 | 22.4 | 20.9 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source (MoHP, et al., 2015) and author's calculations

6.8 Figures 15 through 17 show, for each governorate and for different age categories, the contribution of a single dimension to overall multidimensional poverty ($M_O$) and could be of major interest to policymakers. Despite the apparent complexity of the figure, a clear pattern emerges. Protection, nutrition and health stand out as the most relevant dimensions associated with child deprivation in governorates characterised by high overall levels of child multidimensional poverty. We see that Matrouh (which is a Frontier Governorate), however, does not comply with this statement as deprivation in water has the highest contribution there. Figure 15 illustrates how specific governorate priorities stand out. For example, nutrition is the main contributor to poverty in Damietta and Suez, and it is a more significant contributor among governorates with lower incidence of multidimensional poverty. Similar contributions at governorate level emerge for the other two age groups.

**Figure 15:** Level of $M_O$ and Dimensional Contribution to $M_O$ at Governorate Level for the 0 to 4 Age Group
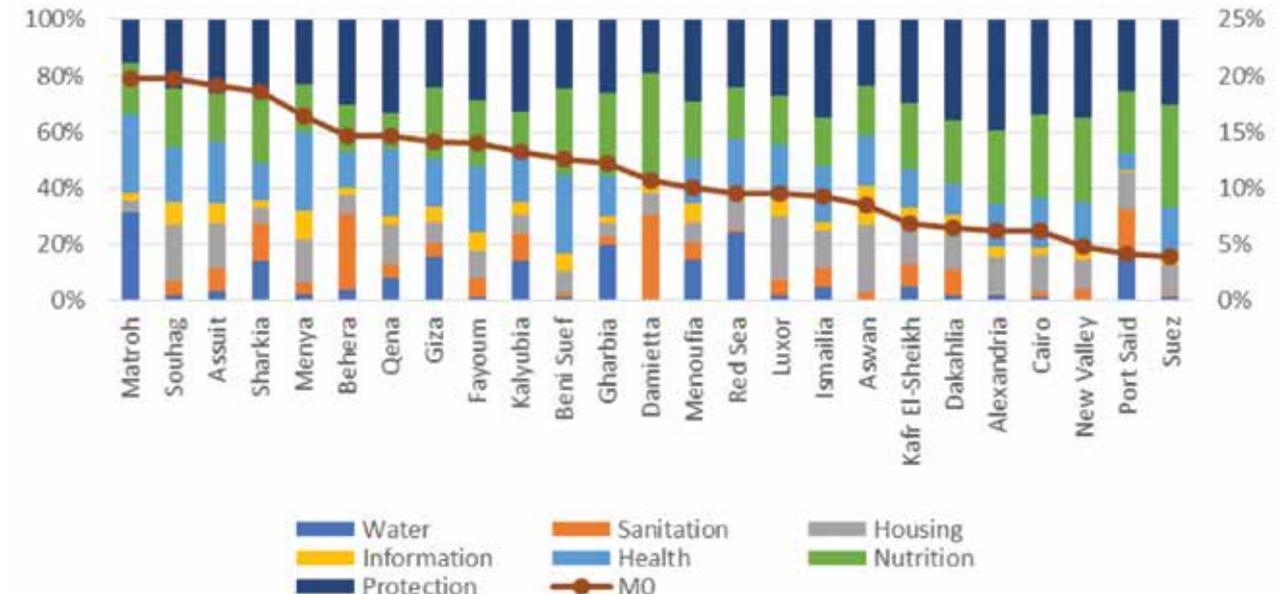


Source (MoHP, et al., 2015) and author's calculations

**Figure 16:** Level of $M_O$ and Dimensional Contribution to $M_O$ at Governorate Level for the 5 to 11 Age Group
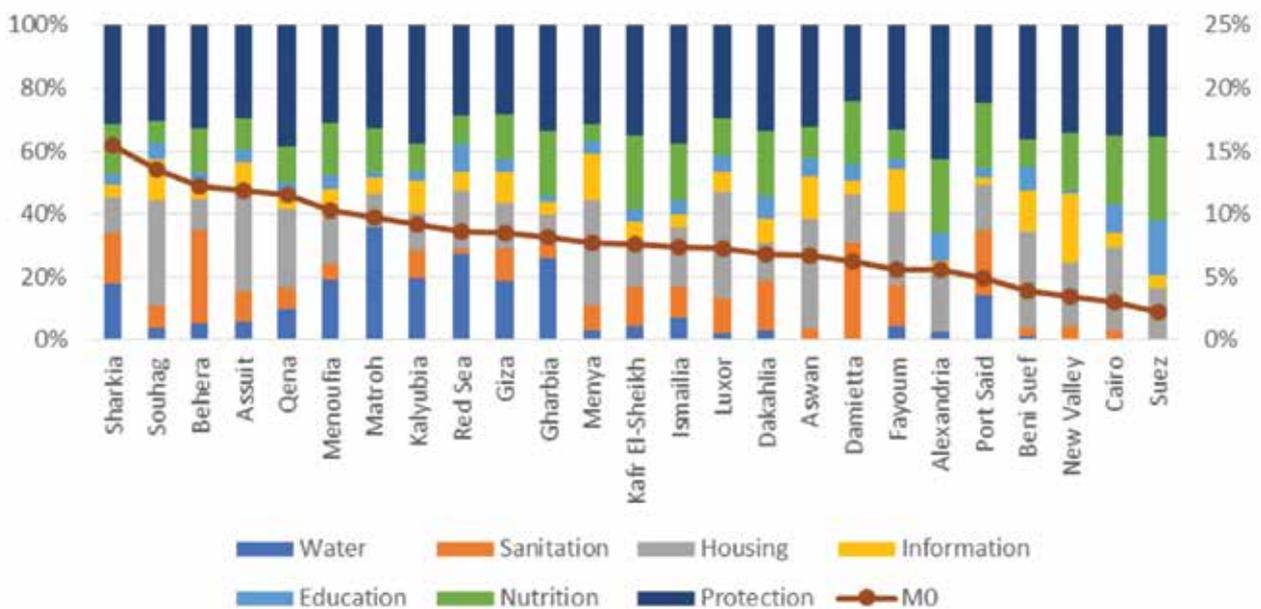


Source (MoHP, et al., 2015) and author's calculations

**Figure 17:** Level of $M_O$ and Dimensional Contribution to $M_O$ at Governorate Level for the 12 to 17 Age Group
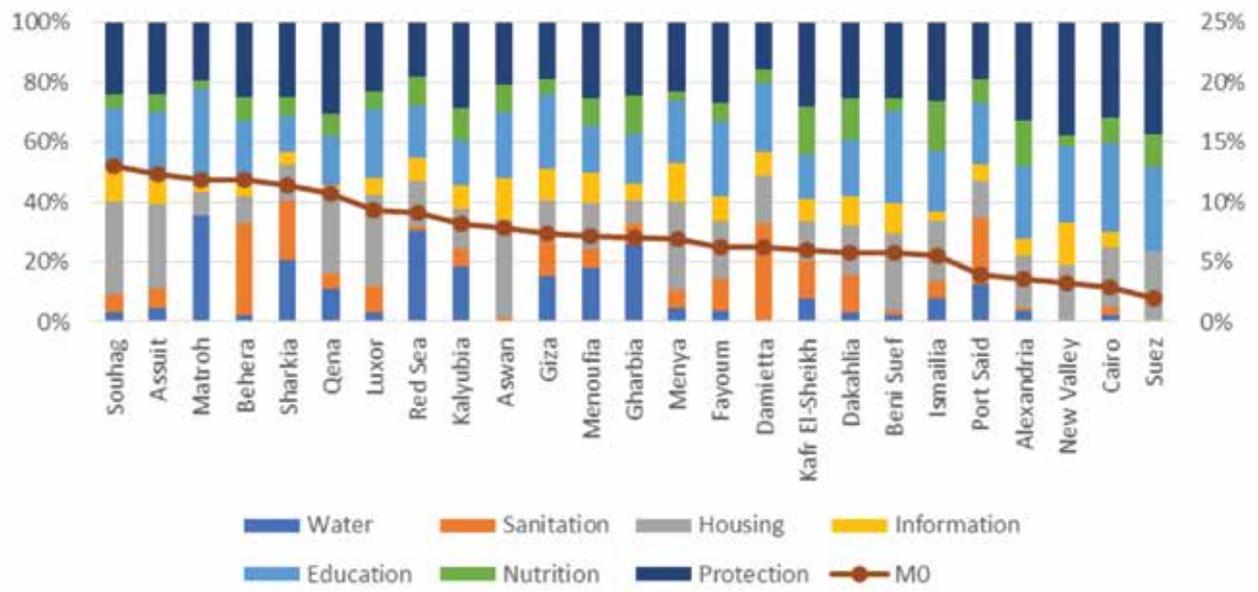


Source (MoHP, et al., 2015) and author's calculations
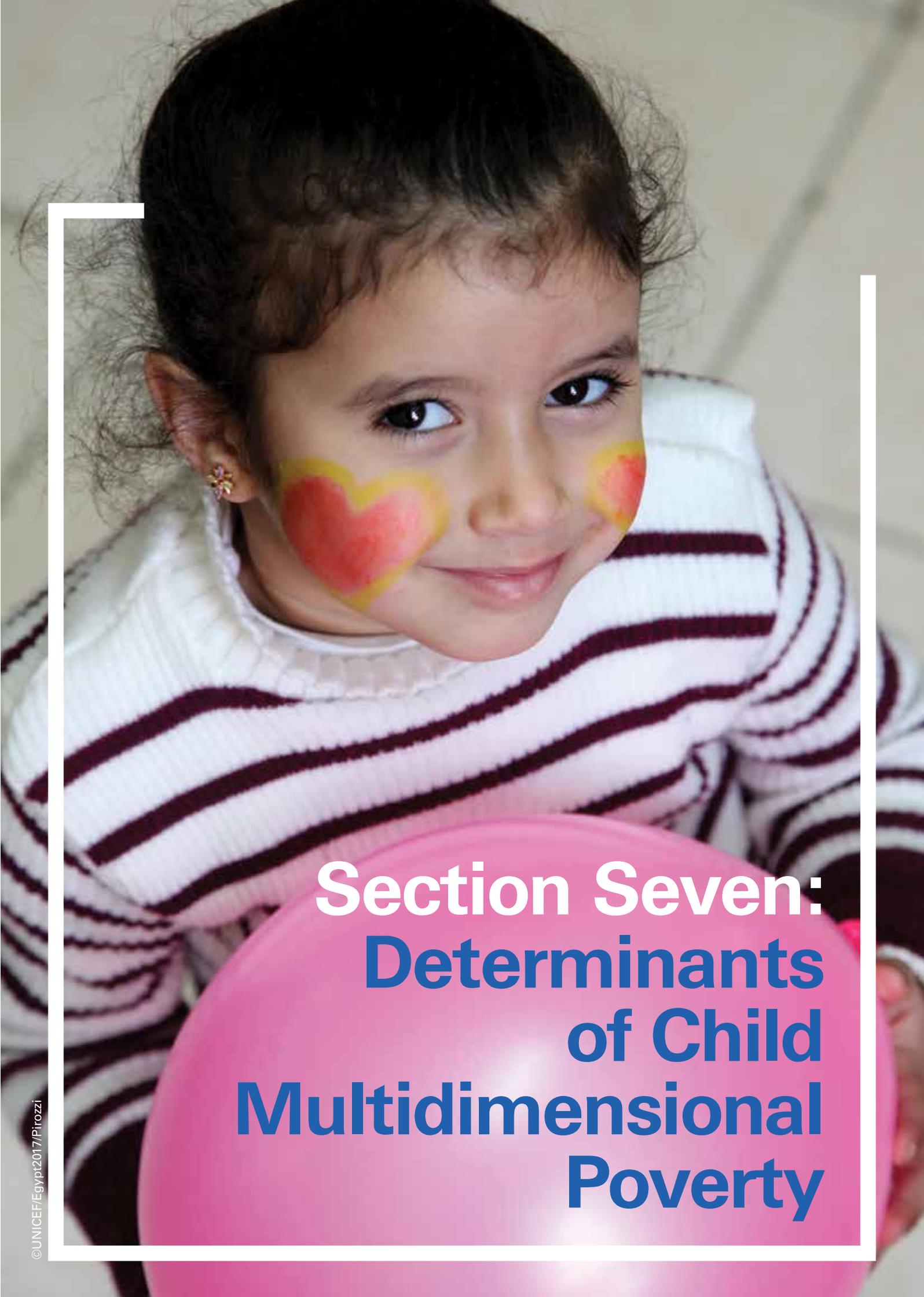
Section Seven:
Determinants
of Child
Multidimensional
Poverty

# Summary

- Monetary poverty as measured by household wealth, parents with low or no formal education, and a large number of children in the household (four or more) are the factors that significantly increase the probability of a child becoming multidimensionally poor. From a long-term perspective, these factors catalyze the dynamics behind the inter-generational transmission of poverty.

7.0 When observing poverty incidence and intensity data, the question arises: What are the social and economic characteristics of families and children that are associated with a higher probability of a child being multidimensionally poor? To answer this question and following the same procedure described in Section 3 above, we analyze the determinants of child multidimensional poverty using a logistic regression that includes as independent variables those social and economic characteristics of the household and children which proved to be statistically significant in explaining the dependent variable, with the latter being whether a child is multidimensionally poor or not. Given that the MODA methodology varies by age group, the analysis is done for each of the three age groups. Table 14, below, provides the regression outputs reported in terms of the Odds Ratio and the Probability (or Average Adjusted Prediction - AAP).

7.1 Across the three age groups, four determinants show a consistent and significant trend. They are as follows:

1. **Age of Household Head:** The probability a child will be multidimensionally poor is significantly high when the household head is young (between 15 and 29 years of age), and it declines as the age of the household head increases, except for an increase among children whose household head is 60 years of age or above. For example, the probability for an under-five child whose household head is aged between 15 to 29 is 42.8 percent, and it declines

when the household head is between 30 to 49 years of age to approximately 31 percent; and increases again to reach 36.6 percent when the household head is 60 years of age or above. This finding reflects the challenges and vulnerability that younger households heads face as they go about establishing their families and raising their children.

2. **Paternal and Maternal Education Level:** Parental educational attainment has an important impact on the probability of a child suffering multidimensional poverty. A child whose father or mother has no formal education faces the highest probability of being multidimensionally poor. Furthermore, the probability of being poor declines significantly only among children whose father or mother has completed secondary education or has a higher university education. Another important pattern is that while the increase of either the father's or mother's level of education significantly reduces the probability of a child being poor, the effect (the return to education) is, to some extent, higher for mothers. For example, the probability of an under-five child being multidimensionally poor is 42.8 percent if the father has no formal education and 44.0 percent if the mother has no formal education, this probability declines to 35.1 percent among children whose father has completed secondary education and 34.3 percent among children whose mother has completed

secondary education. The probability further drops to 29.1 percent for under-five children whose mother has higher education. This finding is linked to two kinds of underlying causes to child poverty: first, higher education is associated with better employment opportunities and earnings, giving parents the financial ability to invest in their children; and second, higher educational attainment is associated with parents having the knowledge and capacity to raise their children and to place greater value on their fulfillment.

3. **Number of Children in the Household:** For children under-five and children in the 12 to 17 year-old age group, the probability of a child being poor is significantly lower if the child is the only child in the household; and the probability increases as the number of children in the household increases. For example, if an under-five child is the only child in the household, her/his probability of being multidimensionally poor is 19.5 percent; it increases to 33.3 percent if the child has one sibling; and further increases to 62.2 percent if the child has five other siblings or more. The same pattern is seen for children in the 12 to 17 age group, although the probability is more contained than that of the under-five group. For children in the 5 to 11 age group the effect of number of children on the probability of poverty does not hold as consistently as for the other two age groups; and the probability of poverty is higher for this group (at 30.4 percent) if the child is the only child in the family.

4. **Household Wealth:** Children from households within the lowest wealth quintile (i.e. the poorest) face the highest probability of child multidimensional poverty; and the probability declines significantly among richer households across the three age groups. For example, an under-five child from a household within the poorest wealth quintile has a 48.8 percent of probability of being poor, while an under-five child from the richest quintile only has 19.1 percent probability of being poor. This finding pinpoints to two important constructs: a) income (household wealth is a proxy) plays an important role in affecting

household ability to invest in children, and as a result a child's probability of being poor; and b) while the probability of poverty for a child declines significantly for children from well-off households, it does not drop to zero, indicating that factors other than monetary poverty affect the chance of a child being poor. These factors have to do with determinants of child poverty other than those considered by the model, including service availability and quality, and community and family awareness and norms which affect rich and poor alike.

7.2 Household wealth, parental education levels, and number of children in the household are all factors that significantly affect the probability of a child being multidimensionally poor, which translates into losses in their development, educational attainment, ability to gain life skills, and ultimately, their chances for future gainful employment. Viewed from the perspective of the long-term consequences of child poverty, these factors act as a catalyst for the inter-generational transmission of poverty.

7.3 Table 14, below, shows the findings for other variables, including child age, child gender, household head gender, and place of residence (rural versus urban). Child gender does not have a significant effect on child poverty, confirming that the prevalence is similar for boys and girls. While younger children suffer higher poverty rates, within age groups the probability of poverty is not differentiated among different ages. Household head gender is a significant variable, yet the direction of the effect changes across the different age groups, a child in the 5 to 11 age group or in the 12 to 17 age group has a higher probability of falling into poverty if s/he is in a female headed household; while the relationship is the opposite for under-five children. Most importantly, when accounting for the social and economic characteristics of households, the urban/ rural difference in probability is contained and not significant. This suggests that the rural disadvantage in child multidimensional poverty reflects the concentration of households from the poorest wealth quintile, parents with low or no formal education, and households with higher numbers of children.

**Table 14:** Correlates of Child Multidimensional Poverty

| Determinant | Children 0-4 | | Children 5-11 | | Children 12-17 | |
|---|---|---|---|---|---|---|
| | Odds Ratio# | Probability | Odds Ratio | Probability | Odds Ratio | Probability |
| **Gender of Child** | | | | | | |
| Boy (Baseline) | - | 0.378 | - | 0.277 | - | 0.237 |
| Girl | 0.93 | 0.365 | 0.85 | 0.249 | 0.97 | 0.232 |
| **Age of Child** | | | | | | |
| 0-1 | - | 0.365 | - | - | - | - |
| 2-4 | 1.06 | 0.377 | | | | |
| 5-8 | - | - | - | 0.270 | - | |
| 9-11 | - | - | 0.91 | 0.254 | - | |
| 12-14 | - | - | - | - | - | 0.257 |
| 15-17 | | | | | 0.73 | 0.208 |
| **Gender of Household Head** | | | | | | |
| Male (Baseline) | - | 0.373 | - | 0.263 | - | 0.234 |
| Female | 0.80 | 0.329 | 1.38 | 0.322 | 1.83 | 0.337 |
| **Age of Household Head** | | | | | | |
| 15-29 (baseline) | | 0.428 | | 0.370 | | 0.387 |
| 30-39 | 0.78 | 0.376 | 0.63 | 0.279 | 0.55 | 0.277 |
| 40-49 | 0.57 | 0.319 | 0.49 | 0.236 | 0.43 | 0.236 |
| 50-59 | 0.55 | 0.310 | 0.52 | 0.247 | 0.37 | 0.214 |
| 60+ | 0.74 | 0.366 | 0.68 | 0.295 | 0.39 | 0.222 |
| **Education of Father** | | | | | | |
| No Formal Education (Baseline) | - | 0.428 | - | 0.280 | - | 0.270 |
| Some Primary Education | 0.84 | 0.393 | 1.03 | 0.285 | 1.11 | 0.288 |
| Completed Primary/Some Secondary | 0.83 | 0.390 | 1.05 | 0.289 | 0.92 | 0.256 |
| Completed Secondary Education | 0.69 | 0.351 | 0.80 | 0.240 | 0.59 | 0.188 |
| Completed Higher Education | 0.68 | 0.348 | 0.82 | 0.244 | 0.48 | 0.160 |
| **Education of Mother** | | | | | | |
| No Formal Education (Baseline) | - | 0.440 | - | 0.295 | - | 0.260 |
| Some Primary Education | 0.94 | 0.426 | 1.00 | 0.295 | 1.06 | 0.270 |
| Completed Primary/Some Secondary | 0.86 | 0.408 | 0.92 | 0.279 | 0.77 | 0.218 |
| Completed Secondary Education | 0.63 | 0.343 | 0.71 | 0.235 | 0.64 | 0.192 |
| Completed Higher Education | 0.48 | 0.291 | 0.58 | 0.203 | 0.58 | 0.178 |
| **Household Size** | | | | | | |
| 1-4 (Baseline) | - | 0.398 | - | 0.241 | - | 0.207 |
| 5-6 | 0.78 | 0.348 | 0.92 | 0.227 | 0.88 | 0.188 |
| 7-8 | 0.87 | 0.371 | 1.83 | 0.356 | 1.83 | 0.309 |
| 9+ | 0.88 | 0.372 | 2.32 | 0.406 | 2.32 | 0.356 |
| **Number of Children** | | | | | | |
| 1 (Baseline) | - | 0.195 | - | 0.304 | - | 0.187 |
| 2 | 2.19 | 0.333 | 0.82 | 0.268 | 1.16 | 0.208 |
| 3 | 3.42 | 0.427 | 0.82 | 0.269 | 1.35 | 0.230 |
| 4 | 3.31 | 0.420 | 0.70 | 0.242 | 1.53 | 0.250 |
| 5 | 5.41 | 0.529 | 0.85 | 0.275 | 1.90 | 0.288 |
| 6+ | 8.28 | 0.622 | 0.78 | 0.259 | 1.71 | 0.269 |
| **Rural-Urban Residence** | | | | | | |
| Urban (Baseline) | - | 0.392 | - | 0.261 | - | 0.242 |
| Rural | 0.87 | 0.365 | 1.02 | 0.264 | 0.94 | 0.232 |
| **Wealth Quintile** | | | | | | |
| Lowest-Poorest (baseline) | - | 0.488 | - | 0.329 | - | 0.283 |
| Second | 0.93 | 0.472 | 1.00 | 0.329 | 0.94 | 0.272 |
| Middle | 0.67 | 0.396 | 0.82 | 0.289 | 0.80 | 0.245 |
| Fourth | 0.38 | 0.281 | 0.44 | 0.183 | 0.50 | 0.175 |
| Highest-Richest | 0.22 | 0.191 | 0.26 | 0.120 | 0.28 | 0.110 |
| **Constant** | 1.13 | - | 1.43 | - | 1.14 | - |

The odds ratio is a comparative measure of two odds relative to different events. For two probabilities, PA = Pr{event A occurs} and PB = Pr{event B occurs}, the corresponding odds of A occurring relative to B occurring is $odds\ ratio\{A\ vs.\ B\} = \frac{odds\{A\}}{odds\{B\}} = \frac{p_A/(1-p_A)}{p_B/(1-p_B)}.$

Source (MoHP, et al., 2015) and author's calculations

# Section Eight:
## Policy Directions

8.0 In order to not only update and enrich the data on child poverty in Egypt, but also and more importantly to inform GoE reforms targeting poverty reduction and the promotion of human development using targeted cash transfers and investments in social services for poor families with children, the current section aims to distil the wealth of data presented in the report into a road map of policy actions required in order to effectively fulfill the GoE's vision for child poverty eradication. Evidence-based policy directions are presented below in order to draw this road map:

1. **Cross-Sectoral Integration:** With a large share of children being multidimensionally poor (29.4 percent) policies and programs targeting child poverty need to be designed to address the linkages between deprivations in dimensions and account for their interdependence. This policy pointer is valid not only for integrated social protection programs, which by design try to address multidimensional poverty through integrated responses, but also and more importantly for sectoral polices; where there is more of an urge to link the different interventions to boost the fulfillment of each sector's objectives, as well as to contribute to the reduction of child multidimensional poverty. A clear example of this is provided by the significant overlap between deprivations in health and nutrition for under-five children, and the overlap between deprivations in education and protection for children between 12 and 17 years of age.

2. **Integrated Response to the Underlying Causes of Child Poverty:** The analysis of the determinants of child poverty provided in the previous section clearly identifies three factors which have a consistent and significant effect on increasing the probability of a child being multidimensionally poor, namely: a) household wealth (children from the poorest wealth quintile); b) parental education (children whose parents have low or no formal education); and c) number of children within the household (children in households with a high number of children). This suggests that the underlying causes of child poverty transcend one domain, and therefore, require an integrated response. Furthermore, the analysis of single dimensional contributions and overlapping

deprivations identifies very different regional scenarios, which call for a decentralized approach to social policies that is able to address specific multidimensional poverty profiles at the local level. In order to achieve this, it is crucial that households are provided with the knowledge and skills required to help children achieve their full potential. It is also critical to ensure access to affordable and good quality services, to enable families to make informed decisions on their reproductive choices, and to help them fulfill their children's developmental needs. Failing to directly address these underlying causes will not only result in inefficient, incomplete and ineffective responses to child poverty, it will translate into a worse failure to break the cycle of intergenerational transmission of poverty.

3. **Systemic Response to End Violence Against Children:** Violence against children is widespread, and 12.4 million children have suffered or have a sibling who suffered severe physical punishment by a care giver. ts high incidence is associated with child deprivation having the highest overlap with deprivations in other child wellbeing dimensions, and for violence against children to be the main contributor to child multidimensional poverty throughout childhood. Furthermore, the analysis of the profile of deprived children in the protection dimension suggests that some groups of children are at a higher risk of deprivation (including children from female-headed households, or from households with a younger household head, with low parental educational attainment, and from the lower wealth quintiles) and shows that across the different socio-economic groups the probability of a child being deprived in protection remains substantial, with important age differences. The analysis shows that any response designed to reduce child multidimensional poverty must include a programmatic component that addresses violence against children in order to be effective. Furthermore, the approach to curb violence against children needs to be systemic and include preventive as well as curative measures tailored to the needs and underlying causes that children from different social and economic groups endure.

4. **Integrated Policy Framework for Early Childhood Development:** Under-five children face the highest prevalence of child multidimensional poverty (37.1 percent) and are at a higher risk of becoming poor. Some groups of under-five children are at an even higher risk, including children from the two lowest wealth quintiles, children whose parents have no formal education, and children who have four or more siblings.  Furthermore, in addition to deprivation in protection, deprivations in health and nutrition are the main contributors to under-five child poverty (their combined contribution is 40 percent). The situation of under-five children calls urgently for strengthening integrated policies to promote early childhood development with programmatic linkages between interventions in health, nutrition, and child protection. Such an approach is in line with efforts that are currently underway to rethink the model for early childhood development, that emphasize the importance of the first 1,000 days of a child's life, and that aim to enable families to nourish and nurture children and give children a fair chance at survival and development. These policy directions are instrumental to fulfilling the GoE's vision to reduce poverty and promote human development, because investing in the early stages of a child's life provides the foundation for accumulating the capacities and skills (both physical and cognitive) which are the prerequisites for reducing poverty as children transition into adulthood. However, this must be linked to a more holistic approach to child poverty that places the full lifecycle of the child (from 0 to 17 years) at its centre.

5. **Prioritize Governorates with High Prevalence of Poverty and Tailor Responses to Governorate-Level Priorities:** In order to reduce child poverty effectively, national policies need to prioritize governorates where the prevalence and intensity of poverty are higher. Doing so is essential to achieve the largest impact in reducing poverty and to address the needs of extremely poor children. Furthermore, the analysis shows that the dimensional contribution to poverty varies across governorates, meaning that priorities

between sectors vary spatially. For example, Suhag, Assiut, Behera, Matrouh, Qena, Luxor, and Sharkia governorates reported the highest prevalence of poverty across the different age groups. Looking for sectoral priorities, child poverty in Matrouh, for example, has a particularly high prevalence of deprivation in water, and has the highest contribution to child multidimensional poverty that is not reflected at the national level. A similar example is found in the high contribution of deprivation in sanitation to child poverty in the governorate of Damietta.

6. **National Action Plan to Address Malnutrition:** Deprivation in nutrition among under-five children (suffering moderate or severe stunting or obesity) shows a high prevalence with contained disparities across different socio-economic groups. Furthermore, for under-five children, nutrition is the second largest contributor to child multidimensional poverty and has a high overlap with deprivations in the other dimensions. Addressing the deprivation in nutrition is central to the reduction of child multidimensional poverty, as the policy response needs to account for the varying causes of nutrition deprivation affecting children from different segments of society by integrating interventions on enhancing services, building family knowledge and skills, and addressing monetary poverty. Deprivation in nutrition with its double burden of malnutrition (severe thinness and obesity) continues to contribute significantly to child multidimensional poverty for children in the 5 to 11 and 12 to 17 year-old age groups.

7. **Inclusive Quality Education:** The impressive gains realized in Egypt in terms of school enrolment over the past two decades are reflected in the analysis, where deprivation in education for children 5 to 11 years of age (measured by school enrolment and delays in school years) has the lowest prevalence (4.2 percent) and has the lowest contribution to child multidimensional poverty as compared to deprivations in other dimensions. Yet, the contrast is large when we consider deprivation in education among children aged between 12 to17

years where it has the second highest prevalence and is the second largest contributor to child multidimensional poverty. The profile of children in the 12 to 17 age group who are deprived in education lends credence to the role of education in the cycle of intergenerational transmission of deprivation and poverty. Children in this age group whose parents have low or no formal education, and those from the poorest households, face the highest risk of deprivation. The evidence clearly shows that addressing deprivation in education is central to the reduction of child poverty among children between 12 and 17 years of age, and that overcoming children's deprivation in education has long lasting positive effects in reducing the transmission of deprivation and poverty to future generations. Furthermore, the analysis of single deprivation confirms that when it comes to older children's education, an educated and older parent does a better job in keeping children and especially boys in school. Accordingly, no education policies for children can be 100 successful if parents do not decide to have children at a later stage in their lives, which would allow them (especially mothers) to pursue an education.

8. **Leverage the Use of Data on Children within Social Policy Programs:** While the present analysis depicts a road map to reduce child multidimensional poverty, achieving sustainable progress requires that the generation of data and analysis on child poverty becomes an integral part of national social policy programs. Monitoring systems, impact evaluation, and analysis of effects of economic scene or policy changes on child poverty need to be part of any program, to inform its course of action and sustain its relevance in addressing child poverty.

8.1 The recent reform of social protection systems in Egypt, and the introduction of Takaful and Karama cash transfer programs, offer an unprecedented opportunity to find an integrated solution to the multifaceted problem of multidimensional poverty. In fact, the Takaful program aims to provide a cross-sectoral integrated response to the underlying causes of child poverty by providing targeted cash transfers to the poorest families with children conditional on the fulfillment of health, nutrition, and educational outcomes for children. The first two policy pointers are present in the design of the program, and currently the priority is to enhance sectoral integration to achieve child priorities including early childhood development and interventions in the first 1,000 days of a child's life, ending violence against children, and inclusive quality education. These structural features of the programme lay good foundations to holistically tackle child multidimensional poverty. Nevertheless, continuous efforts and capacity development are required in order to repeat this type of analysis, and measure whether adopted measures have had positive impact.

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# Annex A

## Adapting the MODA Methodology for Egypt – National Consultation Report

A.0  The consultation convened national stakeholders including representatives of the National Council for Childhood and Motherhood (NCCM), the Ministry of Planning (MoP), the Ministry of Health and Population (MoHP), the National Nutrition Institute (NNI), the Ministry of Finance (MoF), the World Food Program (WFP), the United Nations Resident Coordinator Office (UNRCO), the European Union (EU), and members of academia.

A.1  This brief summarizes the discussion, methodological choices, and indicators that fed into development of the MODA. The figure and table below summarize the MODA methodology, based on the discussions conducted during the workshop.

**Figure 18:** MODA – Summary of Methodological Decisions

### Age Groups and Dimensions

| Age 0-4 | | Age 5-11 | | Age 12-17 |
|---|---|---|---|---|
| Water | | Water | | Water |
| Sanitation | | Sanitation | | Sanitation |
| Housing | | Housing | | Housing |
| Information | | Information | | Information |
| Health | | Nutrition | | Nutrition |
| Nutrition | | Education | | Education |
| Protection | | Protection | | Protection |

**Table 15:** Indicators at the Household Level Common to all Children in the Household

| All Children (0 to 17 Years of Age) | | | | |
|---|---|---|---|---|
| **Dimension** | **Indicator** | **Prevalence (%)** | | |
| | | **Urban** | **Rural** | **National** |
| **Water** | A child is deprived in access to water if s/he lives in a household without access to piped water into dwelling, yard, or plot | 4.1 | 12.1 | 9.4 |
| **Sanitation** | A child is deprived if s/he lives in a household that does not have access to improved sanitation facility or is sharing the sanitation facility with another household | 1.1 | 14.6 | 10.0 |
| **Housing** | A child (0-17) is deprived if s/he lives in a household where on average there are 4 or more household members per bedroom. (In the calculation fractions between 3 and 4 are rounded up to 4) | 10.3 | 16.9 | 14.6 |
| **Information** | A child is deprived if s/he lives in a household that does not have at least one information device (TV, radio, computer) and one communication device (fixed phone, mobile phone) | 3.3 | 7.6 | 6.2 |

**Table 16:** Indicators for Individual Children (by Age Group)

| Children 0 to 4 Years of Age | | | | |
|---|---|---|---|---|
| **Dimension** | **Indicator** | **Prevalence (%)** | | |
| | | **Urban** | **Rural** | **National** |
| **Health** | A child is deprived in access to health if during pregnancy the mother did not receive regular antenatal care or the birth was not assisted by a skilled health provider | 13.9 | 25.0 | 21.6 |
| **Nutrition** | A child is deprived if s/he is suffering from stunting (moderate or severe; -2SD) and/or obesity (+3SD) | 33.5 | 30.0 | 31.1 |
| **Protection** | A child is deprived if s/he suffers severe physical punishment* | 34.4 | 42.0 | 39.6 |
| * Indicator for age 2 to 4 years used as a proxy | | | | |
| Children 5 to 11 Years of Age | | | | |
| **Dimension** | **Indicator** | **Prevalence (%)** | | |
| | | **Urban** | **Rural** | **National** |
| **Nutrition** | A child is deprived if s/he is suffering moderate or severe thinness (BMI; -2SD), or is obese (BMI; +2SD) | 15.7 | 14.1 | 14.7 |
| **Education** | Five years old children are not deprived, a child (6-11) is deprived if s/he is not attending primary school or is attending a primary grade that is two grades or more behind the age appropriate grade | 6.8 | 6.2 | 6.4 |
| **Protection** | A child is deprived if s/he suffers severe physical punishment | 35.8 | 44.7 | 41.6 |
| Children 12 to 17 Years of Age | | | | |
| **Dimension** | **Indicator** | **Prevalence (%)** | | |
| | | **Urban** | **Rural** | **National** |
| **Nutrition** | A child is deprived if s/he is suffering moderate or severe thinness (BMI; -2SD), or is obese (BMI; +2SD) | 8.3 | 8.2 | 8.2 |
| **Education** | A child is deprived if s/he is not attending secondary school | 15.0 | 20.3 | 18.4 |
| **Protection** | A child is deprived if s/he suffers severe physical punishment* | 21.0 | 27.0 | 24.8 |

* Indicator for age 12-14 years used as a proxy

## Child Age Groups

A.2 The choice of age groups in MODA is one of the core methodological decisions and is expected to capture the age specific deprivations common to all children in each age group. The decision on the age group is associated also with the choice of the dimensions to be analyzed, depending on the availability of specific data in the 2014 EDHS.

Two different options, informed by the availability of data, were discussed by the participants:

• Three age groups, namely infancy and early childhood (0 to 4 years of age); primary school aged (5 to 11 years of age); and adolescence (12 to 17 years of age) .

• Two age groups: 0 to 4 years of age; and 5 to 17 years of age.

Participants unanimously selected the 'three age-groups' option, agreeing that it better captures and reflects the education system and national policies, and accounts for the specificity of child deprivation of primary school age children, and adolescents in education and protection.

A.3  Methodological Choice: adoption of three age groups (0-4, 5-11, and 12-17) in MODA to measure and analyze multidimensional child poverty.

## MODA Dimensions

A.4.0  An accurate review of the 2014 EDHS (including specific child-focused modules suggested by UNICEF) showed that the survey provides suitable indicators for deprivation analyses covering eight dimensions; four dimensions are measured at the household level, supporting the assessment of deprivation faced by all household members. These household level dimensions are a) access to water, b) access to sanitation, c) access to information, and d) housing conditions. The other four dimensions are specific to children and are a) health, b) nutrition, c) education, and d) protection.

A.4.1  Unanimously, participants agreed on the importance of capturing all the eight dimensions in the MODA methodology and analytical framework. A discussion took place on whether to combine water and sanitation under one dimension or to treat them separately. From a child's point of view, the question is whether the two dimensions are interlinked and are capturing one deprivation, or if they present different deprivations and should therefore each be treated separately in MODA and be given the same individual importance as the other dimensions. The majority of participants supported the separation of water and sanitation, and stated evidence on the geographic mismatch between the two deprivations and the need to capture this aspect in MODA to better inform policies.

A.4.2  Methodological Choice: It was decided that MODA would cover all eight dimensions available in the EDHS and treat the access to water and the access to sanitation as two separate dimensions. Later in the discussion, it was agreed that health data are only available for the 0 to 4 age group, while for the education dimension the data for the 0 to 4 age group were not sufficient for its meaningful inclusion (therefore, the education dimension is included only for the age groups 5 to 11 and 12 to 17)

## MODA Indicators

A.5.0  The presentation highlighted for each dimension of child poverty, across the three age groups, the key indicators disaggregated by urban and rural category. It was agreed that the selection of deprivation indicator(s) for each dimension needed to reflect the headline priority for children in that dimension and to meet the following criteria:

1.  Relevance: indicate levels of child wellbeing and child deprivation deemed as the child priority for that dimension.

2.  Attribution: indicate a core deprivation to a policy domain.

3.  Variance: indicate differences and gaps in child wellbeing and deprivation in that dimension.

4.  Coverage and homogeneity for children within the age group: indicating a deprivation for all children within the age group to allow sound assessment of overlapping deprivations and child wellbeing within the same age group.

A.5.1  The above criteria were used to guide the discussion and selection of indicators[10] during the workshop. To inform the MODA methodology and the analysis of multidimensional child poverty, the discussions were geared to provide indicators for each dimension that would be the Priority Indicators for the MODA methodology (the measurement of multidimensional child poverty).

1.  **Water:**

Access to improved drinking water includes sources that, by nature of their construction or through active intervention, are protected from outside contamination, particularly faecal matter. Another key aspect is the sustainability and ease of accessing water sources. The indicator capturing child deprivation in access to water sources depends on the sources of water considered improved. Participants discussed two alternative definitions of child deprivation in access to water: first, the expanded definition, used in the 2014 EDHS, where improved water sources include a piped source within the household's dwelling yard or plot, a public tap, a tube hole or borehole, a protected well or spring, and bottled water; and second, a more restrictive definition

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[10]  Other criteria of technical importance such as scalability, freeness from measurement bias, and internal consistency were checked by UNICEF and CAPMAS and were assessed during the finalization of MODA.

where the improved water source includes <u>a piped water source to the household's dwelling, yard, or plot.</u> The strict definition aims at capturing the availability of infrastructure required to sustain access to improved water sources. <u>Participants agreed to select the second definition to capture access to water.</u>

Methodological Choice: access to improved water sources include piped water into a household's dwelling, yard, or plot.

MODA Priority Indicator: A child between 0 and 17 years of age is deprived in access to water if s/he lives in a household without access to piped water into the dwelling, yard, or plot.

### 2. Sanitation:

An improved sanitation facility ensures hygienic separation of human excreta from human contact. Improved facilities include: <u>flush or pour-flush toilet/latrine to: piped sewer system septic tank pit latrine, ventilated improved pit latrine, pit latrine with slab, and composting toilet. Child deprivation in access to an improved sanitation facility occurs if the household does not have access to an improved sanitation facility or is sharing an improved facility with other household(s).</u> Another aspect of importance to hygiene and reduction of contamination and diseases relates to <u>the availability of a handwashing place at the household as well as water, and soap at the handwashing place.</u> Participants discussed two alternative indicators to capture access to sanitation: first, a combined indicator of access to improved facility and handwashing place with soap and water, a child is deprived in the access to sanitation dimension if s/he is deprived in at least one of the two indicators. And second, is to select one indicator only to represent the dimension. The participants exchanged views on both options and concluded that given both indicators importance <u>the access to improved sanitation facility will be considered the priority indicator</u> feeding into the measuring of multidimensional poverty.

Methodological Choice: choice of access to improved sanitation facility for the MODA priority indicator, while access to a handwashing place, water, and soap to be considered in the analysis.

MODA Priority Indicator: A child between 0 to 17 years of age is deprived if s/he lives in a household that does not have access to an improved sanitation facility or is sharing the sanitation facility with another household.

### 3. Housing:

Within the housing dimension the aim was to capture the conditions of the dwelling where the child spends a large amount of time studying, sleeping, playing, and interacting with parents and siblings. The 2014 EDHS provides information that can shed light on two aspects of the housing dimension: first, the overcrowding within the dwelling measured by the number of household members per bed room. Following UN-HABITAT guidelines, overcrowding, as a proxy of the dwelling space available to each household member is measured using an adjusted number of household members, where a child under five years of age is given a weight of (0.5). The participants discussed the definition of deprivation among two alternatives: one defines <u>a child as deprived if s/he lives in a household where on average there are 4 or more members per bedroom</u>, and another more extreme definition where <u>a child is deprived if s/he lives in a household where on average there are 5 or more members per bedroom.</u>

<u>After considering both alternatives the participants agreed to select 4 or more members per bedroom as the cut-off to define deprived children presented as a minimum space required for children as they grow beyond five years of age.</u> The second aspect of housing is the floor material of the dwelling, as a proxy for the durability and quality of dwelling construction. <u>A child is deprived if s/he lives in a household where the floor is made of earth, sand, or raw wood planks.</u> To measure child deprivation in housing the participants discussed wither to combine both indicators (overcrowding and floor material) or choose one for MODA. <u>Participants agreed to focus the measurement of multidimensional child poverty on overcrowding.</u>

Methodological Choices: overcrowding at the dwelling was selected as the MODA priority indicator: a child is deprived if s/he lives in a household with 4 or more members per bedroom.

MODA Priority Indicator: A child between 0 and 17 years of age is deprived if s/he lives in a household where on average there are 4 or more household members per bedroom. (As the calculation indicates fractions such as 3.2 persons per bed room, all figures between 3 and 4 are rounded up to 4).

### 4. Information

This dimension aims at capturing child and household access to information and the ability to communicate. A proxy of that in the 2014 EDHS is household ownership of information and communication devices via which the household can receive important messages or communicate. Information devices are televisions, radios, and computers; while communication devices include fixed phones and mobile phones.

MODA Priority Indicator: A child between 0 and 17 years of age is deprived if s/he lives in a household that does not have at least one information device (television, radio, computer) and one communication device (fixed phone, mobile phone).

### 5. Health

The availability of quality health services and interventions is crucial to child survival and is key to assuring healthy physical and cognitive development. This is especially the case during pregnancy, birth, and the first years of life. The 2014 EDHS provides information to capture children's access to health care during these stages, including antenatal care, skilled assistance at birth, and immunization. For the first age group, immunization does not enable assessment of deprivation in access to health as the coverage is universal (small variance) and refers to a subgroup of children under five years of age, those between 18 and 29 months of age, not offering a homogenous indicator for all children below five years of age. Two indicators were discussed to capture access to health care: a) access to regular antenatal care, following a minimum of four visits is required; and b) skilled attendance at birth.

Participants proposed to combine both indicators for children under-five to capture access to service at two crucial stages. The 2014 EDHS does not provide indicators for the 5 to 11 and the 12 to 17 age groups, therefore, MODA for these age groups would not include the health dimension.

The participants discussed the importance of assessing the access of health care from the public sector as well as trends in specific services, such as the caesarean section.

Methodological Choice: combine access to regular antenatal care and skilled birth assistance to capture deprivation in health dimension for children under-five.

MODA Priority Indicator: a child between the ages of 0 and

4 is deprived in access to health if during pregnancy the mother did not receive regular antenatal care or the birth was not assisted by a skilled health provider.

### 6. Nutrition

Adequacy, age-appropriateness, and diversity of the diet received by children affects their physical and cognitive growth, and their health status. Undernutrition and malnutrition among children under-five are largely manifested in one or more of the following nutritional outcomes: stunting (low height-for-age), underweight (low weight-for-age), wasting (low weight-for-height), and overweight and obesity (high weight-for-height). For under-five children, the 2014 EDHS provides information on feeding practices and on nutritional outcomes. Participants discussed the nutritional outcomes and highlighted the importance of assessing the outcomes in the moderate and severe forms (together), stunting is a key priority for Egypt to address, and the need to assess overweight and obesity as these problems are recently growing. For children in the 0 to 4 age group, the discussion concluded with an agreement to combine stunting (moderate and severe) and obesity. The participants stressed the importance of the other undernutrition and malnutrition indicators, feeding practices (adequacy, age-appropriateness, and diversity), as well as anaemia status.

For children between 5 and 17 years of age, the 2014 EDHS provides anthropometric measures capturing children's moderate and severe thinness, overweight and obesity, all measured using the Body Mass Index. To capture deprivation in nutrition within MODA, participants agreed to combine thinness (moderate and severe) and obesity.

Methodological Choice: For under-five children, MODA would combine stunting (moderate and severe; -2SD) and obesity (+ 3 SD) to capture deprivation in nutrition. And for children between 5 and 17 years of age, it would combine thinness (moderate and severe; +2SD) and obesity (BMI +2SD).

MODA Priority Indicator: A child between the ages of 0 and 4 is deprived if s/he is suffering from stunting (moderate or severe; -2SD) and/or obesity (+3SD). A child between the ages of 5 and 17 is deprived if s/he is suffering moderate or severe thinness (BMI; -2SD), or is obese (BMI; +2SD).

## 7. Education

The discussion of child deprivation in education tackled the issues of school enrolment, attendance, successful completion and transition between grades and levels, as well as the quality of education. The 2014 EDHS provides information on attendance by level and grade which reflects attendance and dropout, as well as transition between levels. For children under-five information is available on attendance of any form of pre-school program. This indicator is not suitable for MODA as the indicator does not specify the type of program or institute attended, and covers only children between 3 to 4 years of age. Participants discussed deprivation in education for children in the 5 to 11 age group, where children of five years old are not deprived as they did not reach school compulsory age; while for children between 6 to 11 years of age deprivation is captured by attendance of primary education, as well as in delays in successfully transitioning between grades. For children in the 12 to 17 age group, two issues of importance are dropping-out from school and delay in transitioning from primary to secondary school; and attendance of secondary school captures the deprivations due to both issues. The participants stressed the importance of quality of education and requested to use the available data in the 2014 EDHS to shed light on the issue in terms of delays in transitioning between grades and levels.

Methodological Choice: Use of school attendance to measure child deprivation in education. Children of five years old are not deprived as they did not reach the compulsory age of school. Children between 6 and 11 years of age are deprived if not attending primary school, or if are attending with a delay of two years or more behind the school year appropriate for their age. While children in the 12 to 17 age group are deprived if not attending secondary school, encompassing those who dropped out or those who are did not transition to secondary school and are still attending primary education.

MODA Priority Indicator: a child of five years old is not deprived, while a child between the ages of 6 and 11 is deprived if s/he is not attending primary school or is attending a primary grade that is two grades or more behind the age appropriate grade. A child between the ages of 12 and 17 is deprived if s/he is not attending secondary school.

## 8. Protection

Violence, exploitation, and abuse have harmful, and in many instances irreversible effects on children's development and the full realization of their potential. The exposure and nature of child deprivation from protection varies with child age, gender, and place (house, school, street, etc.). The 2014 EDHS covers some of these aspects including: child labour, female circumcision, early marriage and pregnancy, violent child discipline, and birth registration. Participants discussed the selection of the MODA priority indicator by examining these different options.

The main remarks were: Since the 2014 EDHS shows birth registration in Egypt reached 99.9 percentage points with no difference between urban and rural areas, the indicator is not suitable for MODA as it does not capture a priority in child protection and offers very low variance for analysis.

Female circumcision (female genital mutilation, FGM) is a key priority for child protection in Egypt, whether actual prevalence of circumcision or mother's intent, the fact that the indicator is only for girls does not enable its use for meaningful comparison of child deprivation in protection for boys and girls in MODA.

Child labour was indicated as a priority issue but the sample size and age dynamics do not allow the use of the indicator to capture deprivation in protection for children of all ages. The aforementioned limitation of sample size and gender are more accentuated for early marriage and pregnancy.

Violent child discipline captures the use of a variety of severe physical punishment practices including: hitting or slapping the child on the face head or ears, or beating up the child repeatedly and strongly. The indicator is available for children between 1 to 14 years of age, and can be used as a proxy for children not covered (infants and those between 15 and 17 years of age.

The participants stressed that no form of violence is tolerable whether severe or not, but given the high prevalence of severe physical punishment it can be set as the priority. Participants stressed the importance of the other aspects of child protection and requested their consideration for complementary analysis.

Methodological Choice: Use of severe physical punishment to measure child deprivation in protection. Severe physical punishment includes hitting or slapping the child on the face head or ears, and beating up the child repeatedly and strongly. Use the information on severe physical punishment available for children between 1 to 14 years of age for children below 1 year of age and children between 15 and 17 years of age.

MODA Priority Indicator: A child between 0 and 17 years of age is deprived if s/he or one of child's siblings suffer severe physical punishment.

# Annex B
## The Determinants of Child Deprivation Using Logistic Regression Tables B.1 – B.5

**Table 17 (B.1):** Determinants of Deprivation in Access to Water and Sanitation for Children (0 to 17 Years Old)

| Determinant | Water | | Sanitation | |
|---|---|---|---|---|
| | Odds Ratio# | Probability | Odds Ratio | Probability |
| **Gender of Child** | | | | |
| Boy (Baseline) | | 0.096 | | 0.103 |
| Girl | 1.00 | 0.097 | 0.97 | 0.101 |
| **Age of Child** | | | | |
| 0-1 (Baseline) | | 0.096 | | 0.098 |
| 2-4 | 1.02 | 0.098 | 1.05 | 0.102 |
| 5-8 | 1.02 | 0.097 | 1.13 | 0.109 |
| 9-11 | 1.09 | 0.103 | 1.01 | 0.098 |
| 12-14 | 1.01 | 0.097 | 1.10 | 0.106 |
| 15-17 | 0.88 | 0.086 | 1.00 | 0.098 |
| **Gender of Household Head** | | | | |
| Male (Baseline) | | 0.097 | | 0.102 |
| Female | 0.60 | 0.061 | 1.51 | 0.143 |
| **Age of Household Head** | | | | |
| 15-29 (Baseline) | | 0.091 | | 0.140 |
| 30-39 | 1.03 | 0.094 | 0.76 | 0.112 |
| 40-49 | 1.15 | 0.103 | 0.62 | 0.095 |
| 50-59 | 1.04 | 0.095 | 0.53 | 0.082 |
| 60+ | 0.92 | 0.085 | 0.56 | 0.086 |
| **Education of Father** | | | | |
| No Formal Education (Baseline) | | 0.084 | | 0.103 |
| Some Primary Education | 1.05 | 0.088 | 1.11 | 0.113 |
| Completed Primary/ Some Secondary | 1.32 | 0.107 | 1.04 | 0.107 |
| Completed Secondary Education | 1.14 | 0.094 | 0.92 | 0.096 |
| Higher Education | 1.41 | 0.114 | 0.99 | 0.103 |
| **Education of Mother** | | | | |
| No Formal Education (Baseline) | | 0.095 | | 0.104 |
| Some Primary Education | 1.24 | 0.114 | 1.03 | 0.107 |
| Completed Primary/ Some Secondary | 1.15 | 0.107 | 0.97 | 0.100 |
| Completed Secondary Education | 0.90 | 0.086 | 0.94 | 0.099 |
| Higher Education | 1.19 | 0.111 | 1.14 | 0.116 |
| **Household Size** | | | | |
| 1-4 (baseline) | | 0.099 | | 0.090 |
| 5-6 | 1.08 | 0.107 | 1.17 | 0.104 |
| 7-8 | 0.74 | 0.076 | 1.22 | 0.107 |
| 9+ | 0.64 | 0.066 | 1.67 | 0.138 |
| **Number of Children** | | | | |
| 1 (Baseline) | | 0.108 | | 0.133 |
| 2 | 0.93 | 0.102 | 0.99 | 0.132 |
| 3 | 0.80 | 0.089 | 0.78 | 0.108 |
| 4 | 0.79 | 0.088 | 0.55 | 0.080 |
| 5 | 1.19 | 0.126 | 0.57 | 0.082 |
| 6+ | 0.82 | 0.092 | 0.34 | 0.052 |
| **Rural-Urban Residence** | | | | |
| Urban (Baseline) | | 0.069 | | |
| Rural | 1.59 | 0.104 | | |
| **Wealth Quintile** | | | | |
| Lowest-Poorest (baseline) | | 0.130 | | 0.180 |
| Second | 0.78 | 0.104 | 0.90 | 0.165 |
| Middle | 0.93 | 0.122 | 0.64 | 0.124 |
| Fourth | 0.47 | 0.066 | 0.14 | 0.031 |
| Fifth-Highest | 0.25 | 0.036 | 0.00 | 0.000 |
| **Constant** | 0.10 | | 0.36 | |

#The odds ratio is a comparative measure of two odds relative to different events. For two probabilities, PA = Pr{event A occurs} and PB = Pr{event B occurs}, the corresponding odds of A occurring relative to B occurring is $odds\ ratio\{A\ vs.\ B\} = \frac{odds\{A\}}{odds\{B\}} = \frac{p_A/(1-p_A)}{p_B/(1-p_B)}$

Source: our estimates on 2012 IHSES data. *** (**) means significant at 95% (90%) with respect to the baseline category. Only significant probabilities are shown.

**Table 18 (B.2):** Determinants of Deprivation in Housing & Access to Information for Children (0 to 17 Years Old)

| Determinant | Housing | | Information | |
|---|---|---|---|---|
| | Odds Ratio | Probability | Odds Ratio | Probability |
| **Gender of Child** | | | | |
| Boy (Baseline) | | 0.139 | | 0.056 |
| Girl | 1.01 | 0.140 | 1.08 | 0.060 |
| **Age of Child** | | | | |
| 0-1 (Baseline) | | 0.125 | | 0.064 |
| 2-4 | 1.14 | 0.136 | 0.90 | 0.058 |
| 5-8 | 1.54 | 0.162 | 0.96 | 0.062 |
| 9-11 | 1.21 | 0.141 | 0.96 | 0.062 |
| 12-14 | 1.05 | 0.129 | 0.85 | 0.055 |
| 15-17 | 1.03 | 0.127 | 0.68 | 0.046 |
| **Gender of Household Head** | | | | |
| Male (Baseline) | | 0.139 | | 0.058 |
| Female | 1.40 | 0.169 | 1.17 | 0.067 |
| **Age of Household Head** | | | | |
| 15-29 (Baseline) | | 0.180 | | 0.087 |
| 30-39 | 0.64 | 0.139 | 0.69 | 0.063 |
| 40-49 | 0.62 | 0.137 | 0.47 | 0.045 |
| 50-59 | 0.60 | 0.134 | 0.51 | 0.048 |
| 60+ | 0.61 | 0.136 | 0.98 | 0.086 |
| **Education of Father** | | | | |
| No Formal Education (Baseline) | | 0.154 | | 0.082 |
| Some Primary Education | 0.99 | 0.153 | 0.63 | 0.055 |
| Completed Primary/ Some Secondary | 0.83 | 0.137 | 0.59 | 0.052 |
| Completed Secondary Education | 0.76 | 0.130 | 0.54 | 0.047 |
| Higher Education | 0.66 | 0.118 | 0.54 | 0.047 |
| **Education of Mother** | | | | |
| No Formal Education (Baseline) | | 0.163 | | 0.083 |
| Some Primary Education | 1.04 | 0.167 | 0.83 | 0.070 |
| Completed Primary/ Some Secondary | 0.70 | 0.131 | 0.63 | 0.055 |
| Completed Secondary Education | 0.59 | 0.117 | 0.42 | 0.038 |
| Higher Education | 0.37 | 0.084 | 0.20 | 0.019 |
| **Household Size** | | | | |
| 1-4 (Baseline) | | 0.094 | | 0.080 |
| 5-6 | 0.55 | 0.056 | 0.76 | 0.063 |
| 7-8 | 5.46 | 0.322 | 0.47 | 0.041 |
| 9+ | 5.61 | 0.327 | 0.53 | 0.045 |
| **Number of Children** | | | | |
| 1 (Baseline) | | 0.042 | | 0.044 |
| 2 | 2.77 | 0.096 | 1.15 | 0.049 |
| 3 | 5.37 | 0.153 | 1.26 | 0.054 |
| 4 | 5.13 | 0.148 | 1.48 | 0.062 |
| 5 | 5.33 | 0.152 | 2.39 | 0.094 |
| 6+ | 9.62 | 0.219 | 2.59 | 0.101 |
| **Rural-Urban Residence** | | | | |
| Urban (Baseline) | | 0.185 | | 0.067 |
| Rural | 0.53 | 0.128 | 0.82 | 0.057 |
| **Wealth Quintile** | | | | |
| Lowest-Poorest (Baseline) | | 0.169 | | 0.084 |
| Second | 1.13 | 0.181 | 0.83 | 0.071 |
| Middle | 0.58 | 0.118 | 0.61 | 0.054 |
| Fourth | 0.54 | 0.113 | 0.42 | 0.038 |
| Fifth-Highest | 0.21 | 0.055 | 0.14 | 0.013 |
| **Constant** | 0.11 | | 0.45 | |

**Table 19 (B.3):** Determinants of Deprivation in Health and Nutrition for Children 0 to 4 Years of Age

| Determinant | Health | | Nutrition | |
|---|---|---|---|---|
| | Odds Ratio | Probability | Odds Ratio | Probability |
| **Gender of Child** | | | | |
| Boy (Baseline) | | 0.203 | | 0.325 |
| Girl | 1.17 | 0.226 | 0.81 | 0.281 |
| **Age of Child** | | | | |
| 0-1 (Baseline) | | 0.208 | | 0.318 |
| 2-4 | 1.07 | 0.218 | 0.89 | 0.294 |
| **Gender of Household Head** | | | | |
| Male (Baseline) | | 0.214 | | 0.305 |
| Female | 0.91 | 0.200 | 0.74 | 0.245 |
| **Age of Household Head** | | | | |
| 15-29 (Baseline) | | 0.270 | | 0.324 |
| 30-39 | 0.64 | 0.202 | 0.94 | 0.310 |
| 40-49 | 0.63 | 0.199 | 0.75 | 0.265 |
| 50-59 | 0.56 | 0.183 | 0.86 | 0.293 |
| 60+ | 0.75 | 0.225 | 0.99 | 0.322 |
| **Education of Father** | | | | |
| No Formal Education (Baseline) | | 0.252 | | 0.336 |
| Some Primary Education | 0.72 | 0.202 | 0.83 | 0.296 |
| Completed Primary/ Some Secondary | 0.71 | 0.200 | 0.94 | 0.323 |
| Completed Secondary Education | 0.78 | 0.212 | 0.78 | 0.284 |
| Higher Education | 0.72 | 0.201 | 0.91 | 0.315 |
| **Education of Mother** | | | | |
| No Formal Education (Baseline) | | 0.305 | | 0.307 |
| Some Primary Education | 0.83 | 0.271 | 0.94 | 0.295 |
| Completed Primary/ Some Secondary | 0.62 | 0.221 | 1.13 | 0.334 |
| Completed Secondary Education | 0.48 | 0.183 | 0.93 | 0.292 |
| Higher Education | 0.23 | 0.098 | 0.98 | 0.303 |
| **Household Size** | | | | |
| 1-4 (Baseline) | | 0.233 | | 0.308 |
| 5-6 | 0.98 | 0.230 | 0.95 | 0.298 |
| 7-8 | 0.64 | 0.174 | 1.02 | 0.312 |
| 9+ | 0.44 | 0.133 | 0.97 | 0.302 |
| **Number of Children** | | | | |
| 1 (Baseline) | | 0.089 | | 0.298 |
| 2 | 2.11 | 0.165 | 1.00 | 0.298 |
| 3 | 3.33 | 0.231 | 1.09 | 0.317 |
| 4 | 4.18 | 0.270 | 1.00 | 0.298 |
| 5 | 8.00 | 0.398 | 1.09 | 0.316 |
| 6+ | 11.97 | 0.485 | 1.02 | 0.303 |
| **Rural-Urban Residence** | | | | |
| Urban (Baseline) | | 0.248 | | 0.332 |
| Rural | 0.75 | 0.205 | 0.83 | 0.292 |
| **Wealth Quintile** | | | | |
| Lowest-Poorest (Baseline) | | 0.287 | | 0.324 |
| Second | 0.94 | 0.275 | 1.03 | 0.331 |
| Middle | 0.68 | 0.221 | 0.84 | 0.288 |
| Fourth | 0.41 | 0.151 | 0.84 | 0.287 |
| Fifth-Highest | 0.22 | 0.090 | 0.89 | 0.299 |
| **Constant** | 0.56 | | 0.83 | |

**Table 20 (B.4):** Determinants of Deprivation in Nutrition for Children (5 to 11 and 12 to 17 Years of Age)

| Determinant | Nutrition (5-11) | | Nutrition (12-17) | |
|---|---|---|---|---|
| | Odds Ratio | Probability | Odds Ratio | Probability |
| **Gender of Child** | | | | |
| Boy (Baseline) | | 0.167 | | 0.078 |
| Girl | 0.69 | 0.123 | 1.14 | 0.088 |
| **Age of Child** | | | | |
| 5-8 (Baseline) | | 0.158 | | |
| 9-11 | 0.78 | 0.128 | | |
| 12-14 (Baseline) | | | | 0.096 |
| 15-17 | | | 0.69 | 0.068 |
| **Gender of Household Head** | | | | |
| Male (Baseline) | | 0.146 | | 0.083 |
| Female | 0.80 | 0.121 | 1.66 | 0.130 |
| **Age of Household Head** | | | | |
| 15-29 (Baseline) | | 0.171 | | 0.179 |
| 30-39 | 0.78 | 0.140 | 0.42 | 0.085 |
| 40-49 | 0.85 | 0.150 | 0.41 | 0.083 |
| 50-59 | 0.90 | 0.158 | 0.40 | 0.081 |
| 60+ | 0.67 | 0.122 | 0.42 | 0.084 |
| **Education of Father** | | | | |
| No Formal Education (Baseline) | | 0.137 | | 0.073 |
| Some Primary Education | 1.02 | 0.140 | 1.19 | 0.086 |
| Completed Primary/ Some Secondary | 1.17 | 0.157 | 1.39 | 0.099 |
| Completed Secondary Education | 1.07 | 0.145 | 1.07 | 0.078 |
| Higher Education | 1.09 | 0.148 | 1.21 | 0.087 |
| **Education of Mother** | | | | |
| No Formal Education (Baseline) | | 0.135 | | 0.073 |
| Some Primary Education | 0.94 | 0.128 | 1.28 | 0.091 |
| Completed Primary/ Some Secondary | 1.10 | 0.146 | 1.12 | 0.081 |
| Completed Secondary Education | 1.16 | 0.153 | 1.32 | 0.094 |
| Higher Education | 1.19 | 0.156 | 1.09 | 0.079 |
| **Household Size** | | | | |
| 1-4 (Baseline) | | 0.136 | | 0.085 |
| 5-6 | 1.10 | 0.148 | 0.96 | 0.082 |
| 7-8 | 1.14 | 0.153 | 0.96 | 0.082 |
| 9+ | 1.13 | 0.152 | 1.16 | 0.097 |
| **Number of Children** | | | | |
| 1 (Baseline) | | 0.193 | | 0.113 |
| 2 | 0.82 | 0.164 | 0.73 | 0.086 |
| 3 | 0.71 | 0.146 | 0.67 | 0.079 |
| 4 | 0.68 | 0.140 | 0.61 | 0.072 |
| 5 | 0.59 | 0.124 | 0.73 | 0.085 |
| 6+ | 0.36 | 0.079 | 0.61 | 0.072 |
| **Rural-Urban Residence** | | | | |
| Urban (Baseline) | | 0.141 | | 0.078 |
| Rural | 1.07 | 0.149 | 1.13 | 0.087 |
| **Wealth Quintile** | | | | |
| Lowest-Poorest (Baseline) | | 0.130 | | 0.071 |
| Second | 1.06 | 0.137 | 1.25 | 0.087 |
| Middle | 1.19 | 0.152 | 1.25 | 0.087 |
| Fourth | 1.25 | 0.158 | 1.27 | 0.088 |
| Fifth-Highest | 1.20 | 0.152 | 1.25 | 0.087 |
| **Constant** | 0.25 | | 0.20 | |

**Table 21 (B.5.):** Determinants of Deprivation in Education for Children (5 to 11 and 12 to 17 Year Olds) and in Protection for Children 0 to 17 Years of Age.

| Determinant | Education (5-11) | | Education (12-17) | | Protection (0-17) | |
|---|---|---|---|---|---|---|
| | Odds Ratio | Probability | Odds Ratio | Probability | Odds Ratio | Probability |
| **Gender of Child** | | | | | | |
| Boy (Baseline) | | 0.025 | | 0.175 | | 0.378 |
| Girl | 1.09 | 0.027 | 0.88 | 0.159 | 0.93 | 0.361 |
| **Age of Child** | | | | | | |
| 0-1 | | | | | | 0.350 |
| 2-4 | | | | | 1.43 | 0.429 |
| 5-8 | | 0.018 | | | 1.31 | 0.410 |
| 9-11 | 2.23 | 0.037 | | | 1.25 | 0.399 |
| 12-14 | | | | 0.153 | 0.97 | 0.343 |
| 15-17 | | | 1.27 | 0.183 | 0.47 | 0.206 |
| **Gender of Household Head** | | | | | | |
| Male (Baseline) | | 0.027 | | 0.167 | | 0.369 |
| Female | 0.52 | 0.015 | 1.05 | 0.174 | 1.37 | 0.438 |
| **Age of Household Head** | | | | | | |
| 15-29 (Baseline) | | 0.005 | | 0.221 | | 0.409 |
| 30-39 | 2.92 | 0.015 | 0.79 | 0.187 | 1.04 | 0.419 |
| 40-49 | 2.89 | 0.015 | 0.66 | 0.165 | 0.70 | 0.333 |
| 50-59 | 10.11 | 0.050 | 0.64 | 0.161 | 0.63 | 0.311 |
| 60+ | 17.07 | 0.079 | 0.70 | 0.172 | 0.71 | 0.334 |
| **Education of Father** | | | | | | |
| No Formal Education (Baseline) | | 0.031 | | 0.223 | | 0.395 |
| Some Primary Education | 0.58 | 0.019 | 0.87 | 0.202 | 1.13 | 0.423 |
| Completed Primary/ Some Secondary | 0.72 | 0.023 | 0.60 | 0.151 | 1.04 | 0.403 |
| Completed Secondary Education | 0.76 | 0.025 | 0.42 | 0.114 | 0.84 | 0.357 |
| Higher Education | 1.01 | 0.032 | 0.34 | 0.094 | 0.62 | 0.293 |
| **Education of Mother** | | | | | | |
| No Formal Education (Baseline) | | 0.039 | | 0.232 | | 0.366 |
| Some Primary Education | 0.67 | 0.027 | 0.71 | 0.178 | 1.16 | 0.398 |
| Completed Primary/ Some Secondary | 0.42 | 0.018 | 0.57 | 0.149 | 1.26 | 0.416 |
| Completed Secondary Education | 0.48 | 0.020 | 0.27 | 0.078 | 0.98 | 0.361 |
| Higher Education | 0.36 | 0.015 | 0.16 | 0.049 | 0.80 | 0.319 |
| **Household Size** | | | | | | |
| 1-4 (Baseline) | | 0.023 | | 0.175 | | 0.389 |
| 5-6 | 1.01 | 0.023 | 0.88 | 0.159 | 0.85 | 0.355 |
| 7-8 | 1.31 | 0.030 | 0.94 | 0.166 | 0.94 | 0.375 |
| 9+ | 3.32 | 0.064 | 1.29 | 0.210 | 1.07 | 0.405 |
| **Number of Children** | | | | | | |
| 1 (Baseline) | | 0.084 | | 0.152 | | 0.204 |
| 2 | 0.51 | 0.049 | 1.06 | 0.159 | 2.09 | 0.341 |
| 3 | 0.24 | 0.025 | 1.21 | 0.175 | 2.75 | 0.401 |
| 4 | 0.16 | 0.017 | 1.16 | 0.170 | 2.79 | 0.404 |
| 5 | 0.07 | 0.008 | 1.19 | 0.174 | 3.02 | 0.422 |
| 6+ | 0.07 | 0.008 | 1.21 | 0.176 | 3.07 | 0.425 |
| **Rural-Urban Residence** | | | | | | |
| Urban (Baseline) | | 0.028 | | 0.209 | | 0.383 |
| Rural | 0.91 | 0.026 | 0.65 | 0.154 | 0.92 | 0.364 |
| **Wealth Quintile** | | | | | | |
| Lowest-Poorest (Baseline) | | 0.031 | | 0.181 | | 0.391 |
| Second | 0.78 | 0.025 | 0.95 | 0.174 | 1.09 | 0.409 |
| Middle | 0.66 | 0.021 | 0.97 | 0.178 | 0.98 | 0.386 |
| Fourth | 0.90 | 0.028 | 0.81 | 0.154 | 0.81 | 0.344 |
| Fifth-Highest | 0.78 | 0.025 | 0.59 | 0.120 | 0.65 | 0.299 |
| **Constant** | 0.03 | | 1.00 | | 0.39 | |

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