A multidimensional analysis of child poverty in South Africa

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1. Introduction

South Africa remains a country with a relatively young population, with approximately 29. 6% being younger than 15 years (Statistics South Africa, 2017). These statistics shows that there is a significant number of young people in the country and children are the most vulnerable to any social ills, including poverty. Furthermore, according to the Men, Women and Children report published by Statistics South Africa (2018), 70% of the children were living in poverty in 2015. Omotoso and Koch (2017) also maintains that a large number of South African children reside in poor households and are consequently exposed to malnutrition, poor health and poor schooling.

Poverty and inequality remain key on the development agenda both nationally and internationally; reducing inequality and eliminating poverty forms part of the crucial targets of the National Development Plan (NDP) (Presidency, 2011). Also the Sustainable Development Goals (SDGs), particularly SDG 1 aims to eradicate extreme poverty and half the proportion of men, women and children affected by poverty by 2030 (United Nations Development Programme, 2015). The burden of poverty is significantly felt by the vulnerable groups in society which includes women, children and people living with disabilities. Abdu and Delamonica (2017) argue that children experience poverty differently from adults, thus understanding and measuring child poverty becomes imperative. In addition, Omotoso and Koch (2017:3) argue that "*there is little empirical analysis that shows the extent to which child multidimensional poverty has changed over time*." This research attempts to narrow the gap in child poverty research, with the objective to study the multiple overlapping deprivation analysis (MODA) in child poverty, so to understand the deprivation that children suffer from specifically, and also profile child poverty using geographical variable to understand the spread of child poverty in South Africa.

This report comprises of five sections including this introduction, which will be followed by a literature review that will provide clarity to some pertinent concepts, and on studies that have been done on child poverty and the evolution of the multidimensional poverty studies in South Africa. Then the next section will map out the methodology of the study, where there will be a brief discussion on the data set, and the relevance of the MODA approach

will be justified. This will be followed by the presentation of the results and findings accompanied by the interpretations of various graphs showing the indicators and dimensions used in measuring the multidimensional nature of child poverty. The last section will be a brief summary on the findings in relation to the objectives of the studies, and an overall conclusion of the report.

2. Literature Review

It remains undisputed that children experience poverty differently from adults, thus special attention needs to be given to child poverty as it affects children in their formative years, and may have negative implications on their overall development. In the attempt to understand child poverty in South Africa, this paper will be reviewing literature pertaining to the multidimensional nature of child poverty. The structure of this section will be as follows; first there will be a discussion on conceptual clarity, where key concepts will be discussed and defined in relation to the study. The second section will be a discussion on how it is measured, with a particular focus on multidimensional poverty and why it is finding prominence in the studies of poverty. Then lastly zoom in to South Africa, looking at the multidimensional studies carried out to date.

2.1 Conceptual Clarity

What is poverty?

Poverty tends to be a highly contested concept, it can be broadly defined as condition of lacking basic needs that enables one to achieve a certain level of wellbeing (National Treasury of South Africa, 2007). Study of poverty cuts across various disciplines and thus the definition and measure tends to be aligned to a specific discipline. According to Wagle (2002) poverty studies are centred on three broad approaches which are economic well-being, capability and social exclusion. Economists tend to focus on economic well-being which is usually measured using income and consumption as proxies of wellbeing; while Social Scientists may perceive poverty as a societal and structural challenge depriving individuals their full capabilities in attaining basic wellbeing.

The definition and measurement of poverty have crucial policy implications thus making it imperative to have clarity in concepts used. According to Short (2016) households are considered to be living in poverty if they are deprived of sufficient resources to meet their basic needs, however these needs may differ depending on the context. The author further distinguishes between those who are poor and non-poor on the basis of the deprivations they suffer from. The burden of poverty falls heavier on the most vulnerable in society and

children bears the brunt the most. The next section takes a closer look at child poverty and its implications.

2.2 Understanding child poverty

The prominence in the study of child poverty gained traction after UNICEF commissioned a study on child poverty which applied a Human Rights Approach. This study was carried out in 70 developing countries, where child poverty was scientifically estimated for these countries; using common concepts and measures (Abdu and Delamonica, 2017). The multidimensional definition of child poverty was adopted by the United Nations General Assembly and implemented in the year 2007.

Having an understanding of child poverty becomes imperative as a country is often judged by how it cares and invest in its women and children. Both women and children are prone to be vulnerable to poverty, especially children as they are fully depend on their parents or care-givers. Children often experience poverty that is suffered at household level, which is affected by the resources available in the household. Smeeding and Thevenot (2016) maintains that parental/ caregiver's employment is a key determinant in child poverty as it contributes to the child's material wellbeing. Therefore, environmental and structural factors play a role in child poverty, these factors include residential stability, unemployment, household educational level and single headed households (Ferriss, 2006).

To address child poverty it is vital to have a comprehensive and detailed analysis of the multiple deprivations affecting children. Child poverty is a serious concern as it is during childhood where major formation and development takes place. Smeeding and Thevenot (2016) argues that child poverty has long lasting implications on the future life of the child from poor health to poor learning outcomes and ultimately low employment rates when they become adults. Given the dynamics of child poverty, a multidimensional approach to poverty will be applied in this study, the next section provides justification for this approach.

2.3 How is Poverty Measured?

Multidimensional Poverty

Once the definition of poverty has been established it is also important to define the measures of poverty. The manner in which poverty is measured has an influence on how it is understood, prioritized and thus ultimately affects policy and planning (Alkire and Foster, 2011). Poverty is predominantly measured using a unidimensional approach that focuses mainly on income and expenditure. With this approach the minimum income threshold is established, and it is used to draw the poverty line of which those falling below this line are considered to be living in poverty. The major limitation to this approach is that it is one sided, and poverty can result from other non-monetary factors, especially when looking at child poverty.

According to Alkire and Foster (2011) poverty is not unidimensional as it goes way beyond income and expenditure, thus it is necessary to explore alternatives to complement the unidimensional methods. The authors introduced the concept of multidimensional poverty, better known as the Multidimensional Poverty Index (MPI) which incorporates several dimensions in identifying the poor from the non-poor. These dimensions include education, health and living conditions; all which are further accompanied by 10 indicators. The weighted deprivation scores are used to determine a poverty cut off, from where we can deduce if a person is poor. Therefore, poverty is very complexed and can manifest itself in economic, social and political ways (Statistics South Africa, 2014).

Abdu and Delamonica (2017) advocate for a shift from the unidimensional to a multidimensional measure of poverty. Thus the unidimensional measure of poverty falls short in fully capturing child poverty, as in most cases children are too young to work or earn a salary, and income does not affect children directly. Furthermore, it is highly unlikely that one measure can capture the multiple aspects of child poverty. Omotoso and Koch (2017) also maintain that though most poverty experienced by children is often poverty that is suffered at household level. However, children's experiences of poverty differs significantly as it exceeds the mere lack of financial resources but also includes social exclusion and deprivation of multidimensional wellbeing. These authors provide the

justification for a multidimensional approach when studying child poverty, therefore using a multidimensional approach would show deprivations that are unique to children.

Even though children do benefit from the income earned by parents/guardians in the household, income alone does not affect children directly as their poverty may root from multiple deprivations which may not relate to the households' earnings. Abdu and Delamonica (2017) further maintains that increases in family earnings may have detrimental effects on children, as higher income may come from child labour or parents working longer hours, which disadvantages the child as they would spend less time with their parents / care givers. Furthermore, an assessment of child poverty aligned to children's rights and needs cannot always be acquired through monetary means. As UNICEF recommends that the dimensions to child poverty be aligned to children's rights, and these rights include education, housing, health and nutrition (Abdu and Delamonica, 2017).

Therefore, the multidimensional approach to poverty encompasses various forms of deprivations that go beyond monetary deprivation. An understanding of multidimensional poverty amongst children would assist in policy formulation and also in monitoring and evaluating progress or the lack of, over time. According to the Oxford Poverty and Human Development Initiative (OPHI) this method is flexible and incorporates a wide range of dimensions, indicators and weights. This method also reflects changes in indicators and it is sensitive to time which makes it an effective tool for monitoring progress in policy. Furthermore, child poverty also tends to be embedded in the system of economic and political structure of the country (Ferriss, 2006). The next section will focus on South Africa, looking into the advent of multidimensional poverty studies.

2.4 Multidimensional Poverty in South Africa

South African Multidimensional Poverty Index (SAMPI)

In 2014 Statistics South Africa published the very first South African Multidimensional Poverty Index (SAMPI), the justification for using this approach was that it can incorporates the multifaceted nature of poverty since income fails to capture all of these facets.

The SAMPI was constructed using the 2001 Census and 2011 Census, following the post 2015 Millennium Development Goals (MDGs) meeting in 2013 where countries reported on

the progress made towards achieving the goals (Statistics South Africa, 2014). It was after this meeting that nations were encouraged to adopt a multidimensional approach to poverty.

The findings revealed that the proportion of households experiencing multidimensional poverty increased between 2001 and 2011 from 49.9% to 53.9%, respectively. Furthermore the results also show that Eastern Cape recorded the highest SAMPI score for both time periods, 0.13 in 2001 and 0.06 in 2010 (Statistics South Africa, 2014).

Youth MPI

Another study on multidimensional poverty in South Africa, was conducted by Frame, De Lannoy and Leibbrandt (2016), where they focused on devising a youth MPI. The study utilized data from Census 2001 and Census 2011 and 2007 Community Survey and 2016 Community Survey. The youth was defined as those aged 15-24 years.

The focus on the youth stemed from challenging the assumption that household members experience poverty or deprivation in the same way, which is not the case. The study was able to focus specifically on the youth, using 4 dimensions; namely education, health, living standard and economic opportunities; the last dimension was very percular to the youth, as they are mainly within the working age group and are affected by unemployment. Inaddition unemployment tends be linked to poverty, as South Africa continues to battle with high unemployment rates especially within the youth.

The findings from the study show that both the incidence and intensity of poverty decreased, and this decrease was experienced by black women residing in rural areas. They also found that African black youth experience more multidimensional poverty compared to other racial groups.

Child MPI

A study by Omotoso and Koch (2017) looked into constructing the child MPI in South Africa, using the 2002 and 2014 General Household Survey (GHS) dataset. The study considered children to be those between the ages 0-17 years. The objectives of the study was to measure child MPI over time. The justification for their study was that multidimensional poverty has been studied mainly aggregated at household level, and as mentioned earlier,

children experience poverty differently from adults. The dimensions of interest were living conditions, education, health and economic activities, with most of the indicators being at household level.

This study applied the Alkire-Foster approach, using the child as the unit of analysis. According to Omotoso and Koch (2017) the child MPI had 4 dimensions and 18 indicators in total. These dimensions included education, health, living conditions and economic activity. The authors also maintain that the dimensions used are similar to those used in SAMPI and the Youth MPI, but were adjusted to be relevant to children. Table 2.1 shows these dimensions and indicators in greater detail.

Table 2.1 Dimensions and Indicators

Dimension (weight)	Indicator (weight)	Deprived if...
Living conditions ($\frac{1}{4}$)	Electricity ($\frac{1}{44}$)	A young child is living in a household that does not have electricity
	Water ($\frac{1}{44}$)	A young child is living in a household that does not use improved drinking water sources from pipe/tap/boreholes on site, or the distance to the nearest water source takes at least 15 minutes. In essence, water source is unprotected well, spring and river/lake/pond
	Sanitation	A young child is living in a household that does not use improved sanitation/toilet facilities such as flush toilet, and the toilet facility is shared or the distance to the nearest toilet facility takes at least 2 minutes
	Refuse collection	A young child is living in a household where refuse are removed less often than a week or there is no concrete refuse removal system
	Fuel for cooking/heating/lighting	A young child is living in a household that is using solid fuel such as paraffin/candles/nothing/other for cooking/heating/lighting
	Dwelling type	A young child is living in a household that is an informal shack/traditional dwelling/caravan/tent/other

Dimension (weight)	Indicator (weight)	Deprived if...
	Walls	A young child is living in a household that does not use standard materials such as bricks, cement, tiles for the walls and the condition of the walls are deplorable
	Roofs	A young child is living in a household that does not use standard materials such as corrugated iron, asbestos, tiles for the roofs and the condition of the roofs are in a bad state
	Overcrowding	A young child is living in an overcrowded house. Overcrowding is obtained by dividing the household size by the total number of rooms available in the house (excluding kitchen and bathrooms). if the value obtained is greater than two, then a child is considered to be living in crowded house.
	Assets	A young child is living in a household that owns zero or one of the following assets; television, radio, telephone, cell phone, fridge, bicycle, AND the household does not own a vehicle. Household is not deprived in assets if it owns at least a house (fully or partially-paid), one of the assets for access to information (phone (mobile or fixed), radio, TV) AND either one asset for easy mobility (bicycle, motorbike, motorboat, car/truck or animal wheel cart) OR one asset for livelihood (refrigerator, agricultural land or livestock (at least one cow or at least one horse or at least two goats or at least two sheep, or at least 10 chickens)
	Child support grant access	A young child has lost either or both parents, and lives in a household where total household consumption/expenditure is less than R400 per month or there is no income, and that child is not a recipient of child support grant
Education ($\frac{1}{4}$)	School attendance ($\frac{1}{8}$)	A child of school-going age (7-15 years old) is not attending school. According to the South African Schools Act of 1996, education is compulsory for all South Africans between the ages of 7 and 15.
	Years of schooling ($\frac{1}{8}$)	A child lives in a household where no member has at least five years of education
Health ($\frac{1}{4}$)	Ill-health ($\frac{1}{16}$)	Young children aged 0 - 17 years who are ill could not seek medical care due to inability to pay for health care services, distance to health care facilities and other socio-economic reasons
	Disability ($\frac{1}{16}$)	Young children aged 0 - 17 years who are severely disabled are not currently attending school, and they are not on care dependency grant
	Hunger ($\frac{1}{16}$)	A young child aged 0-17 years, in a household, has to go to bed hungry because there was insufficient food in the house
	Homelessness ($\frac{1}{16}$)	A young child aged between 7-15 years is living on the street
Economic activity ($\frac{1}{4}$)	Unemployment rate ($\frac{1}{4}$)	Young children aged 0 - 17 years are living in a household where no working-age adults (aged 18 to 64) are employed, and no member of the household is on any social grant

Source: (Omotoso and Koch, 2017)

The study findings show that even though progress has been made in reducing child poverty in South Africa, deprivation amongst children still remains high, especially across racial lines. There is an uneven distribution of child multidimensional poverty across different socio-demographic groups, with child poverty being concentrated in rural areas (Omotoso and Koch, 2017). Thus addressing child poverty requires a comprehensive and detailed analysis of the many deprivations children suffer from.

The research understudy draws a lot of inspiration from this paper, but the difference is mainly in the methodology, as this study will be using the MODA approach which is an extension of the MPI with a special focus on children. This will be the first MODA study carried out in the country, thus it will enable the researcher to swift out the specific deprivations suffered by children. Since MODA is child specific, the deprivations considered are mainly aligned to children's wellbeing and rights. Thus MODA allows for the identification of such deprivations and this information will assist in reprioritization when it comes to addressing child poverty. The MODA approach will be discussed in further detail in the next chapter.

Therefore, this section has provided a review of literature pertaining to child poverty, it began with providing conceptual clarity where poverty was defined in its multidisciplinary nature. Then the focus was on understanding child poverty, where most authors agreed that children experience poverty differently from adults and thus child poverty should be measured in all it dimensions. This led to the discussion on the measures of poverty, where justification was given to the measure of multidimensional poverty especially among children. Then the discussion went further to look at MPI studies carried out in South Africa, particularly the SAMPI, youth MPI and the child MPI. The current study draws more resemblance to the child MPI, but will be using the MODA methodology which looks at dimensions specific to children, in the attempt to fully comprehend child poverty in South Africa.

3. Methodology

3.1 Data Source

This study will apply a quantitative approach, utilizing a secondary data source from the Living Conditions Survey (LCS 2014/15), which is a nationally representative survey conducted by Statistics South Africa. The objective of LCS is to profile the poverty experienced by households in South Africa, so to better understand the intensity and severity of poverty in the country (Statistics South Africa, 2017). As it is not enough knowing the headcount of the poor; but it is also imperative to understand the dynamics of those living below the poverty line. The LCS also further details the living circumstances of South African households and such information is important for government planning and resources allocations. Utilizing this survey will enable the researcher to study the multidimensional poverty amongst children.

3.2 Description of the LCS 2014/15 data

Background

The first LCS was conduct in 2008/09, this came about from a demand for a survey that would capture the multitude of poverty, as prior, the existing surveys only produced poverty reports, but none measured the multidimensional nature of poverty (Statistics South Africa, n.d). The LCS was designed to improve the measure of poverty with the aim to improve the lives of South Africans, through better understanding the phenomenon in its multitude.

Survey Objectives

The objective of LCS is to profile the poverty experienced by households in South Africa to better understand the intensity and severity of poverty in the country. This aids in the understanding of the living conditions of people in the country, and also provides an understanding in the changing trends of poverty over time.

The study population & Sampling

The LCS is a household survey and thus the sample coverage comprises of domestic households, residents in workers hostels, convents and monasteries, it excludes boarding

schools, halls of residence, prisons, hospitals and old age homes (Class notes, 2018). It is a nationally representative survey, with a sample size of 30 818 dwelling units, from which 5 379 were out of scope. The survey uses both recall and the dairy as method of collecting information.

Limitations

The LCS is not a child specific survey, but rather a survey that aims to capture the full picture of poverty confronting households in South Africa; and as a result some MODA indicators may not be well articulated, such as those in the child health dimension. The most general limitation of the LCS arises from the refusals which ultimately result in lowering the response rate; this could be due the length of the survey and the diary capturing.

3.3 MODA Methodology

Given the dynamic nature of child poverty, a multi-dimensional approach will be applied, better known as the Multiple Overlapping Deprivation Analysis (MODA). The MODA methodology was introduced by the UNICEF with the objective to measure poverty by using the child as a unit of analysis rather than the household. The acquisition of income is not the most important issue for children, but rather their access to food, shelter, education and healthcare; all of which can be measured using the multidimensional approach (Abdu and Delamonica, 2017). Furthermore, Rutstein (2015) argues that MODA offers indicators that are relevant and specific to the wellbeing of children. The MODA methodology further applies a life cycle approach in measuring child poverty, which allows for the selection of age specific dimensions and analysis to account for the deprivation variations amongst children. Furthermore, the indicators derived from MODA are consistent with the Convention on the Rights of Children, meaning that all indicators are given equal weight and importance.

Therefore, the MODA approach accurately captures child poverty by taking into account the complexities of poverty and deprivations experienced by children at varying stages of their lives.

Dimensions & Indicators

De Neubourg *et al.* (2012:17) provides some guidelines on selecting indicators; and they are as follows:

> *"The indicators must be relevant to child well-being, and the deprivation should enhance policy relevance; there must be some variance in the indicator so to distinguish deprived children from those that are not; there must be full coverage of that specific indictor for all children within the specified age group, so that the missing information will not be taken as deprived".*

For this study the indicators were selected on the basis of the availability of data for children aged from 0 to 17 years, and children were further grouped into two groups, 0-4 and 5-17 age groups. For those between 0-4 years the pertinent dimension is Early Child Development (ECD), while for the older age group 5-17 the specific dimension is education. The remaining dimensions relates to all children and these are water, sanitation, housing, nutrition, information and protection from violence. Table 3.1 shows these dimension and relevant indicators.

Table 3.1: MODA Dimensions & Indicators

Age group			
0-4		5-17	
Dimension	Indicator	Dimension	Indicator
Nutrition	Food security	**Nutrition**	Food security
Health	Distance to health facility	**Health**	Distance to health facility
Development	ECD attendence	**Education**	Lateness
	ECD exposure		Facilities
Protection	Safety	**Protection**	Safety

Housing	Roof, floor & walls	**Housing**	Roof, floor & walls
	Source of energy		Source of energy
WASH	Water, sanitation	**WASH**	Water, sanitation
	Refuse removal		Refuse removal
Information	TV, radio & internet	**Information**	TV, radio & internet

Source: Own table using LCS data

3.4 Union Approach

Identifying the poor

In identifying the poor, there are two main approaches that are used, namely the union approach and the intersection approach. The union approach tends to exaggerate poverty, as according to this approach a child is poor if it is deprived in at least one of the dimensions. While the intersection approach lowers poverty, as according to this approach a child is poor if it is deprived in all the dimensions.

When using MODA, the union approach is applied because one deprivation for children is enough to classify them as poor, as children experience poverty differently to adults, they are more sensitive to their living environments. According to De Neubourg *et al.* (2015:14)

> *"As is standard in MODA for each dimension, a child has been identified as deprived if he/she is deprived in at least one of the indicators in the dimension – following the union approach, all indicators in the dimension are equally weighted as they are selected based on the assumption that they are equally important for child well-being"*

Thus in the union approach all indicators in the dimensions are assigned equal weights as they are all aligned to the child's wellbeing; and all the dimensions are also assigned equal weights as they reflect children's rights, thus given equal importance.

3.5 Data Analysis

The LCS dataset

The LCS dataset consists of four separate data files; one for the household and another one for the household assets; one for persons and another one for person incomes. At some point during the analysis the dataset will be merged, as some variables like water and sanitation are at household level; while education and health are at individual level.

Creating Indicators

After the dimensions were identified and relevant indicators were looked up and found on the dataset; they were then coded accordingly and binary variables were created. The binary variables assist in differentiating deprived children from those that are not deprived, which assists in coming up with deprivation threshold or cut-off. According to De Neubourg *et al.*(2012) the threshold choices are informed by internationally agreed definitions adopted from WHO, UN-Habitat and national norms.

Below, the indicators are grouped according to the dimensions they fall under and they are as follows:

- Under the **Nutrition** dimension the indicator is:
    - Food security: we looked at
        - child hunger: frequency at which the child experienced hunger
            - a child was considered deprived if their experience of child hunger was seldom, often and always
        - money for food: if the household ever ran out of money to buy food
        - meal cuts: if the household ever had to cut down on meals due to the unavailability of food
        - skipped meals: If the household had to skip meals
        - Variety and proportion reduced: if the variety and proportions in food had to be reduced.
- Under the **Health** dimension the indicator is:
    - Distance to health facility: here we look at the distance from the child's home to the clinic or hospital. If the child had to travel more than 5 km to a health facility then they are deprived
- Under the **Information** dimension the indicators are:
    - Assets: children are considered deprived if their households lack assets like a TV, radio and the internet.
- Under the **Protection** dimension the indicator is:
    - Safety: related to crimes committed towards the household such as robbery, assault, theft and hijacking.

- Under the **Housing** dimension the indicators are
    - Roof, floor walls: a child is considered deprived on the basics of the material used for the floor, roof and walls separately. Such materials included
        - wood (for the roof)
        - corrugated iron/zinc (for the walls)
        - sand and dung (for floor)
        - plastic, cardboard, mud and grass (for all 3)
    - Source of energy: here we looked at the sources of energy used for cooking, lighting, heating water and heating space. Children from households where paraffin, wood, animal dung, candles and wood were used as sources of energy, were considered as deprived
- Under the **WASH** dimension the indicators are
    - Water: here we looked at the sources of drinking water, children were classified as deprived if the sources of water were:
        - rain-water tank in yard
        - water-carrier/tanker
        - flowing water/stream/river
        - stagnant water/dam/pool
        - well
        - spring
    - Sanitation: children were considered to be deprived if they did not have a toilet at home or if their toilets were as follows
        - pit latrine/toilet without
        - ventilation pipe
        - bucket toilet (collected by municipality)
        - bucket toilet (emptied by household)
        - ecological sanitation systems
        - none
        - Refuse removal: children were considered deprived based on the frequency of the refuse removal and by whom it was collected and where it was disposed. A child is considered to be deprived if the refusal removal is:

- Removed by the local authority /private company less often than once a week
- Removed by community members contracted by the municipality less often than once a week
- Removed by community members less often than once a week
- Communal refuse dump
- Communal container/central collection point
- Dump or leave rubbish elsewhere

- Under the **Development** dimension the indicators are:
    - ECD attendance: if the child attends Early Child Development, which includes
        - Grade R
        - Pre=school/ Nursery School/Grade 00(RR)/ Grade 000/RRR
        - Creche/ Educare Centre

If the child attended any of these, they were not considered to be deprived

    - ECD exposure: if the child is exposed to any Early Child Development Program
- Under the **Education** dimension the indicators are:
    - School attendance: if the child is currently enrolled in an educational institution
    - School facilities: the child is considered deprived if they attend a school that does not have proper water and sanitation, also if the school does not have a library and sports facilities.

The first sets of indicators were created at household level under the following dimensions Water, Sanitation and Hygiene (WASH), housing, nutrition, and protection against violence. At individual level the dimensions were education and child development.

After the indicators were created, then profiling variable were also prepared for the analysis. The profiling variable assist with defining the characteristics and demographics of the deprived children. From such variable we are able to establish the geographic location, settlement type, types of households from which deprived children reside. The profiling variables may include population group, sex of the child and sex of the head of household, household size and the household income quintiles, the province and settlement type.

Data Analysis

The data analysis section is divided into six parts, the first part looks at deprivation incidence by indicators and these indicators are disaggregated at national level and are aligned to both age groups.

The second part of the analysis looks at deprivation incidence by dimensions, and these dimensions are set according to the relevant age groups and against the province profiling variable.

The third part of the analysis includes counting the number of deprivations, where we are checking to see which dimension contributes more to child poverty. According to (De Neubourg *et al,* 2012), counting deprivations should be done for each child so to assess the breadth of deprivation suffered. The deprivation distribution gives insight into the differences in the severity of deprivation suffered by children in different subgroups.

The fourth part looks at the multidimensional deprivation indices which includes the headcount, poverty intensity and the multidimensional poverty indices; all which are measured at national level. These indices were calculated as follows; for the headcount ratio (H) we had to first come up with a deprivation cut off (k=1) and since we are using the union approach a child is considered poor if they are deprived in at least one the indicators in the dimension. After the cut off is established, then we sum the number of children deprived in one or more of the dimensions, this number will form the numerator and the denominator will be the total number of children; that is how the headcount ratio is calculated.

To get the deprivation intensity (A) we first find the sum of the number of dimensional deprivations and we divide it by the number of dimensions under consideration, of which in this case it is 7 dimensions per age group. Here we get the average deprivation intensity

number (A). To get a percentage (A %) we take the (A) number and divide it by the total number of deprivations and multiply by 100. Finally, to get the adjusted deprivation headcount (M) we multiply the headcount by the intensity **(M=H*A %).**

The fifth part looks at the overlapping analysis, making one dimension principle at a time. The deprivation overlaps are useful in identifying the deprivations that children suffer from simultaneously. Such knowledge of the conjuncture of deprivations can be useful in highlighting the characteristics of children that are most deprived relative to others. The overlapping deprivation analysis is best displayed using the Venn-diagram which shows the overlap between dimensions graphically.

The sixth part looks at the contribution of each dimension into child poverty for each specific age group. According to De Neubourg *et al* (2012:33) "*the adjusted headcount ratio M_0 satisfies the axiom on decomposability, which requires that overall deprivation level are sum of the weighted average of subgroup deprivation leve*l." In this section we decompose the dimensions to estimate the depth of each dimension on the overall child poverty.

4. Results & Findings

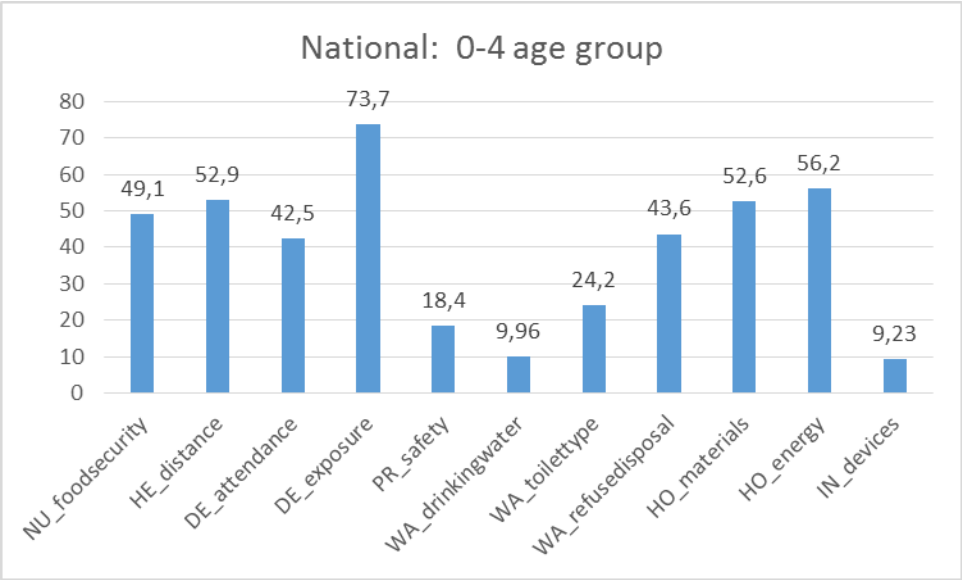
This section provides a discussion on the finding of the study. The arrangement of this chapter will be as follows; there will be a discussion on the indicators where they are disaggregated nationally. Then there will be a discussion on the dimensions disaggregated by provinces, to see which province experiences higher child poverty relative to national aggregates. This will be followed by the deprivation counts, where estimates are made on the number of dimensions which a child is deprive in, and these will be disaggregated by settlement type. The section that follows will be looking at multidimensional deprivation headcount, and the section that follows will be looking at the overlapping dimensions. The last section will look at the decomposition by dimensions to see how much each dimension contributes to the MODA index. The reference period for these finding is 2015.

4.1 Indicators

This section presents figures displaying indicators at national level for both age groups, where it will be shown which indicator contributes the most to child poverty as it would be the indicator that most children are deprived in.

It should be noted once more, indicators slightly differ for the two age groups. The difference are mainly within the education and development dimensions' indicators; for the older age group 5-17 years the specific indicators are education lateness and education facilities, while development in ECD attendance and ECD exposure is specific to the younger age group 0-4.

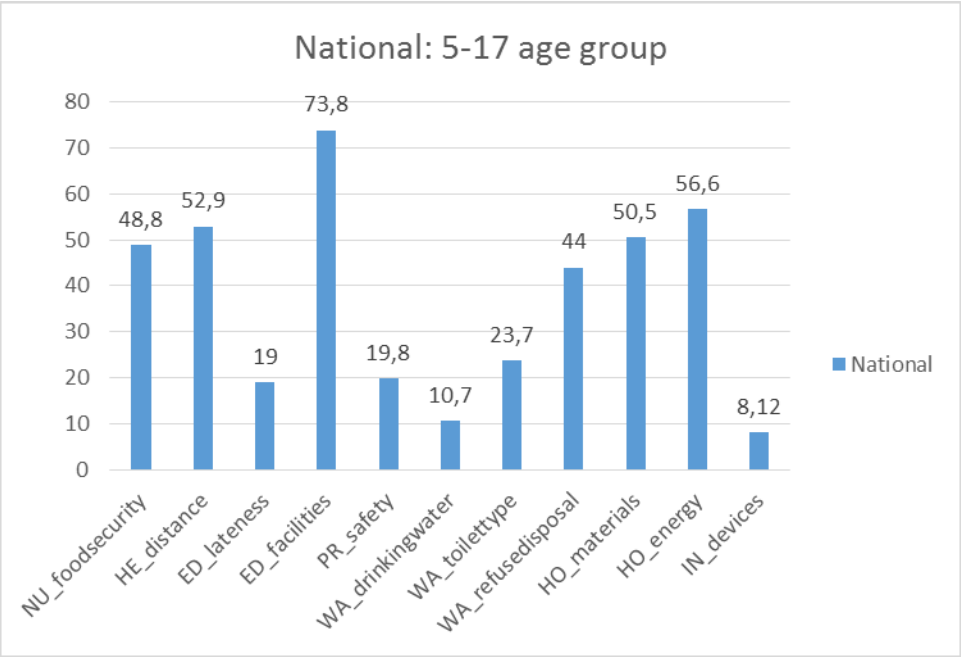
Figure 4.1 Indicators at National level in 2015 (0-4 years)



Source: Own calculations using LCS data

Figure 4.1 shows indicators for younger children aged 0-4 years; from the graph it can be observed that 73.7% children were deprived in ECD exposure, while the indicator with the least number of deprived children in devices was 9.23%, (*devices is an indicator under information)*. It is also notable that more than 50% of the children were deprived in a multiple indicators, including distance to a health institution (52.9%), housing materials for the roof, floor and walls (52.6%), and the household sources of energy (56.2%).

Figure 4.2 Indicators at National level in 2015 (5-17 years)



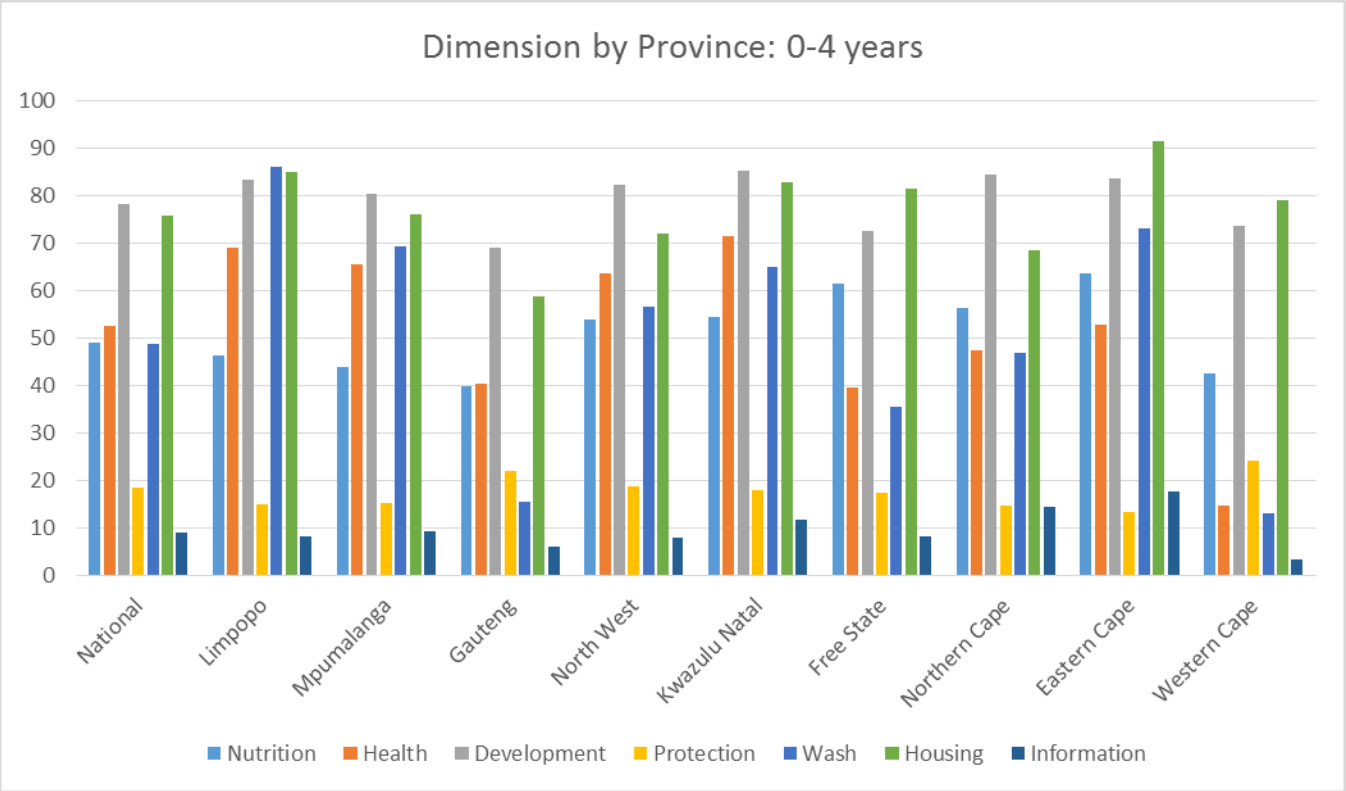
Source: Own calculations using LCS data

For the older age group 5-17 years, their indicators are presented in Figure 4.2, where education facilities is the indicator where majority of the children were deprived (73.8 %) and only 8.12% of the children were deprived in assets or devices. Like with the younger age group, more that 50% of the older children were also deprived in housing materials (50.5%) and household energy source (56.6%)

4.2 Dimensions

This section provides a discussion on the dimensions at provincial level for both age groups. The dimensions for both age groups are the same except for development which is found in the 0-4 age group and education which is found in the older age group, 5-17.

Figure 4.3: Dimensions by Province (0-4 years)



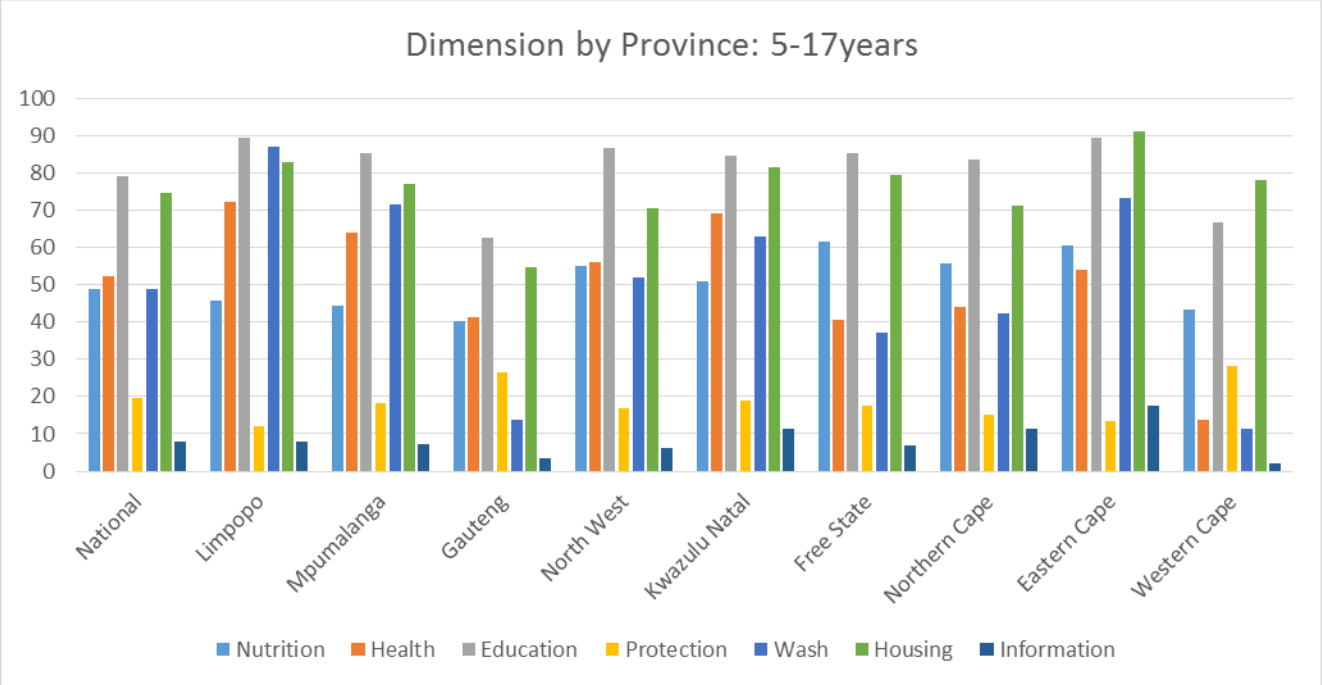
Source: Own calculations using LCS data

According to the Poverty Trends Report (PTR) published by Statistics South, in 2015 the poorest provinces in the country were Eastern Cape, Limpopo and KwaZulu-Natal, while the least poor provinces were Gauteng and the Western Cape. Figure 4.3 shows that Eastern Cape had children experiencing the highest deprivation in housing at 91.4%, followed by Limpopo with 84.9% and KwaZulu-Natal with 82.7%. The housing dimension does correspond with the findings of the PTR as these three provinces had the most deprived children. When it came to nutrition KwaZulu-Natal took the lead with 54.5%, followed by

North West with 53.9% deprived children and Eastern Cape with 52.9%; other province had less than 50% children deprived in nutrition with the national average being 49.1%. The development dimension was very high for KwaZulu-Natal with 85.1%, followed by the Northern Cape with 84.4%, Eastern Cape with 83.7% and Limpopo with 83.3% of deprived children in development through early child education. Even the provinces considered to experience the least poverty relative to others experienced a high deprivation in development, with the Western Cape having 73.7% of deprived children and Gauteng with 69.1%. The WASH dimension was the highest for Limpopo with 86.1% of deprived children followed by the Eastern Cape with 73.1% and Mpumalanga with 65.4% which was slightly more than KwaZulu-Natal at 65%.

For most provinces, health deprivation was more or less 50% except for Limpopo where it was the highest at 69.1%. Across all provinces children between 0-4 years were least deprived in information and protection.

Figure 4.4: Dimensions by Province (5-17 years)



Source: Own calculations using LCS data

The same pattern is observable for the older age group, as the dimension with highest number of deprived children remains housing and the province with the highest number of deprived children is still the Eastern Cape with 91.3 % followed by Limpopo with 82.8%,

KwaZulu-Natal with 81.4% and Free State with 79.6%. With nutrition, the older age group had a greater number of deprived children and they were from Free State with 61.7% and Eastern Cape with 60.6%.

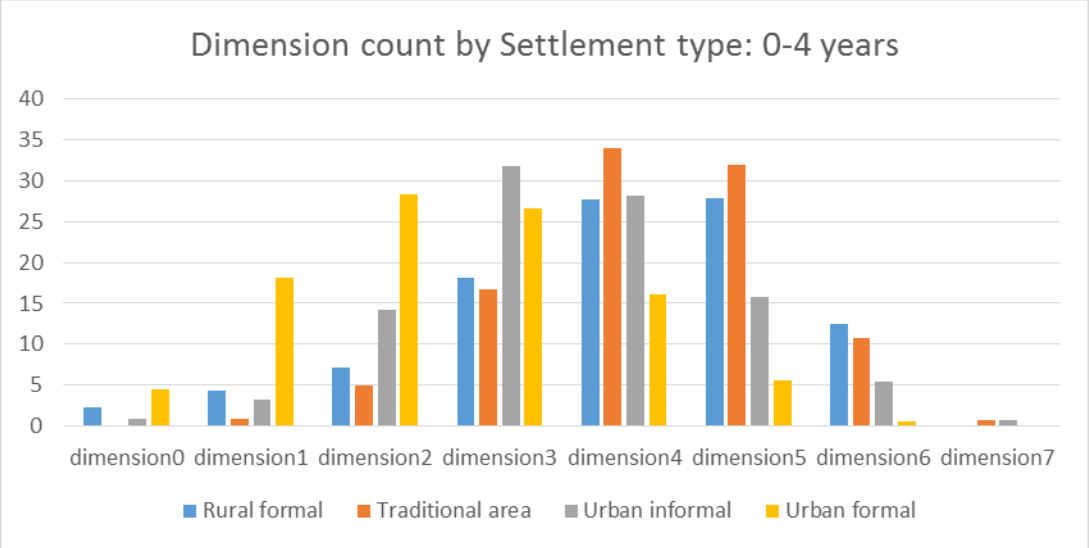
Education was the second highest deprivation and it had the highest number of deprived children in Limpopo and Eastern Cape with 89.4% for both provinces and KwaZulu-Natal and Mpumalanga with 84.5%. The WASH dimension had the third largest deprivation and the provinces with the most deprived children in this dimension were Limpopo with 87% followed by Eastern Cape with 73.4% and Mpumalanga with 71.7%.

As with the younger age group, the dimensions with the least number of deprived children were protection and information.

4.3 Deprivation Count

This section will look into the deprivation count, which refers to the estimated number of dimensions in which children are deprived. This will be disaggregated by the settlement type at which the child resides. For both graphs the x-axis refers to the number of dimensions a child is deprived in; if it is *dimension0* it means the child is not deprived in any of the dimensions.

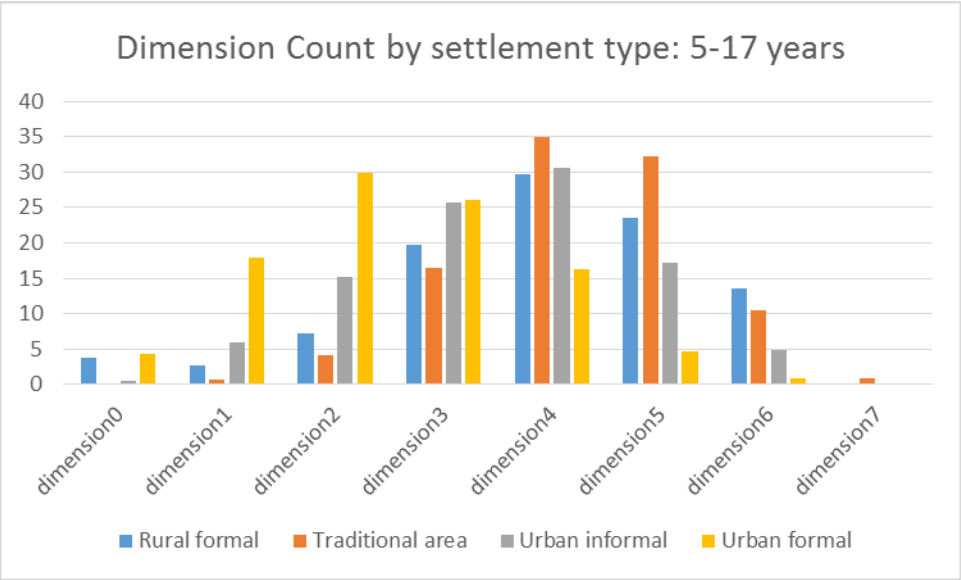
Figure 4.5: Dimension count by settlement type (0-4 years)



Source: Own calculations using LCS data

Figure 4.5 shows the dimension count by settlement type for children aged 0-4 years, across different settlement types. Children living in traditional areas were deprived in all the dimensions; a larger share of 34% of the children were deprived in at least 4 dimensions and 31.9% were deprived in at least 5 dimensions. While children residing in urban formal were mostly deprived in 1 dimension (18.1%) and in 2 dimensions (28.3%). Those residing in urban informal were mainly deprived in 3 dimensions. Less than 1% of the children were deprived in at least 7 dimensions regardless of the settlement type.

Figure 4.6: Dimension count by settlement type (5-17 years)



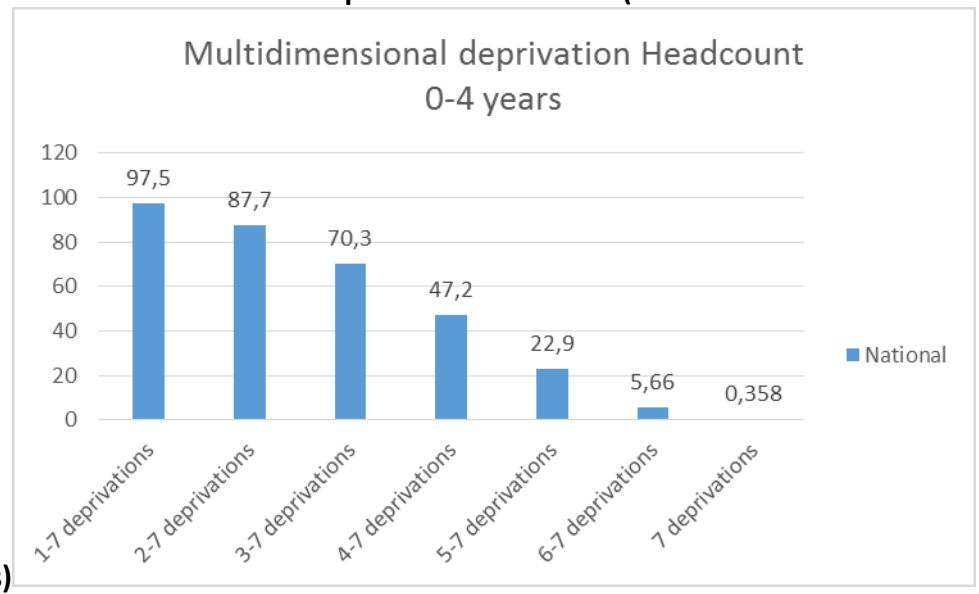
Source: Own calculations using LCS data

For the older age group the trend is similar for the number of dimensions per settlement type, the only observable difference is with rural formal which had a slightly higher number of children that were not deprived in any dimension (3.73%), when compare to the younger group (2.31%) in Figure 4.5.

4.4 Indices

The index under consideration is the multidimensional deprivation headcount, which measures the number of children deprived in a number of deprivations at national level.

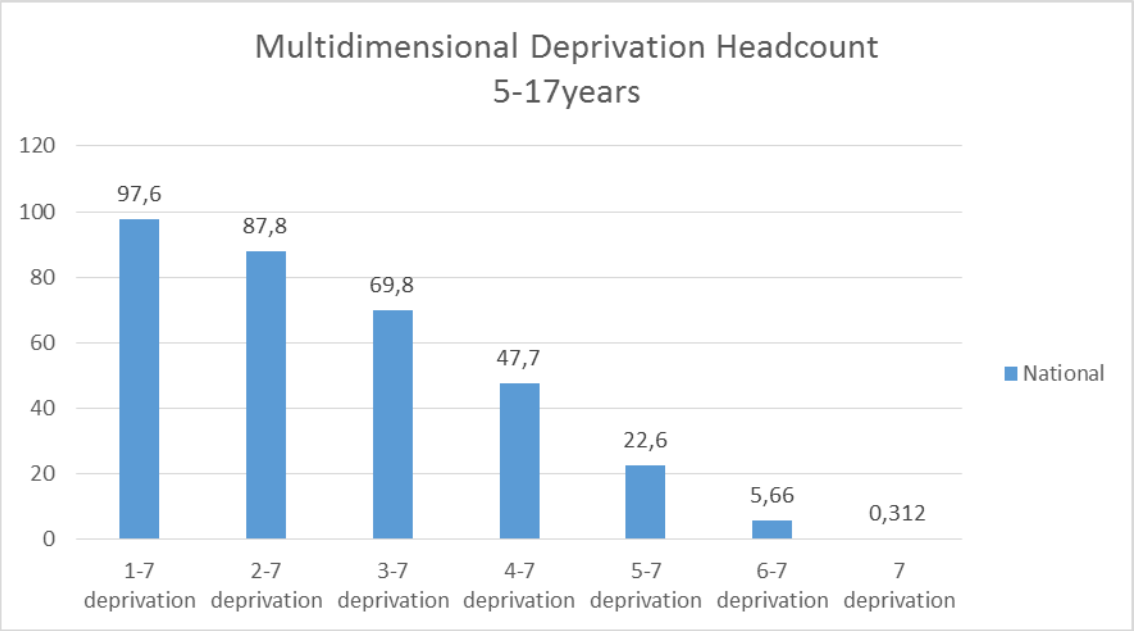
Figure 4.7 Multidimensional deprivation headcount (0-4 years)



Source: Own calculations using LCS data

Figure 4.7 shows that 97.5% of the children aged 0-4 years were deprived in at least 1 dimension, while 87.7 % children were deprived in at least 2 dimensions and 70.3% were deprived in at least 3 dimensions. As the number of dimensions increase we see that the number of deprived children decreases.

Figure 4.8: Multidimensional deprivation headcount (5-17 years)



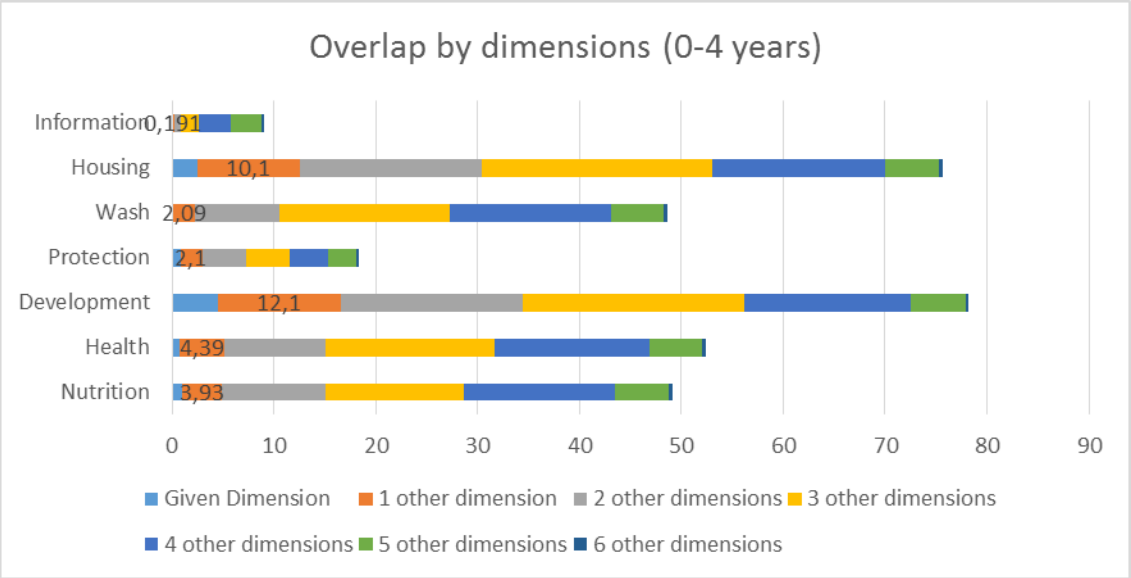
Source: Own calculations using LCS data

The difference is not so great for the older age group, as 97.6% of the children were deprived in at least 1 dimension, while 87.8% were in deprived in at least 2 dimensions and 69.8% of the children were deprived in at least 3 dimensions. Less than 50% of the children were 4 dimensions and even lesser children were deprived as we increase the dimensions.

4.5 Overlapping

The overlapping analysis shows the types of deprivations children experience simultaneously. This type of analysis helps to show that from the principle dimension, which other dimensions the child suffers from concurrently and what share each dimension contributes. The legends are provided below the x-axis to show what each colour represents.

Figure 4.9 Overlap by dimensions (0-4 years)



Source: Own calculations using LCS data

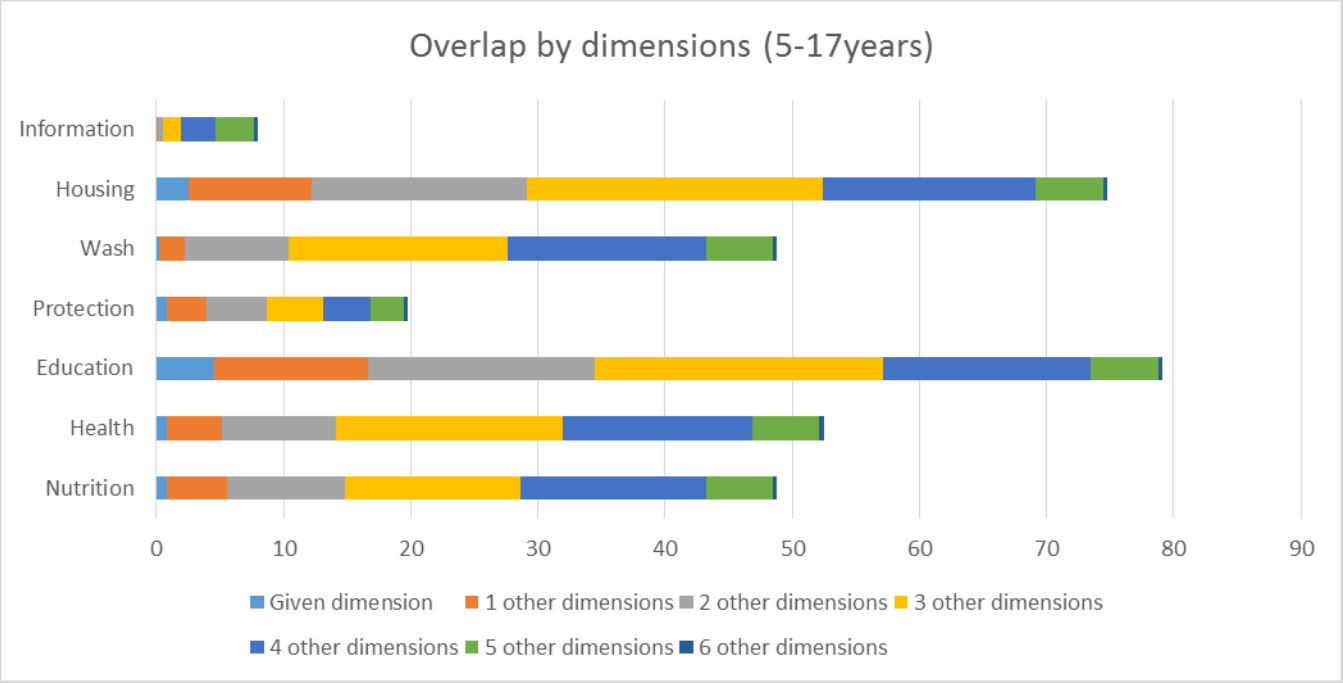
A recap from section 4.2 where there was a discussion on the dimensions, from there we saw that information and protection had the least number of deprived children with 9.1% and 18.4%, respectively. The same trend is observable in Figure 4.9, the only difference here is that we show the overlaps and contribution of other dimensions concerning the specific dimension under consideration.

According to Figure 4.9, children aged between 0 and 4 years are mostly deprived in development, housing and health. When taking a closer look at these 3 dimensions, 78.3% of the children are deprived in development; 4.48% are deprived only in development, and when we add 1 other dimension to development it goes up to 12.1%, when a second dimension is added it goes to 17.9%. However when 4 other dimensions are added it becomes 16.4%.

When housing is overlapped with other dimensions 75.7% children are deprived, but when it unpacked we see that housing alone contributes 2.4%, and when 2 other dimensions are added to housing we get 17.9% and when 3 other dimensions are added it we get 22.6%.

For the health dimension there are 52.5% of deprived children, but when broken down to include other over lapping dimensions we see that adding 1 and 2 more dimension contributes 4.39% and 9.9%, respectively.

Figure 4.10: Overlap by dimensions (5-17 years)



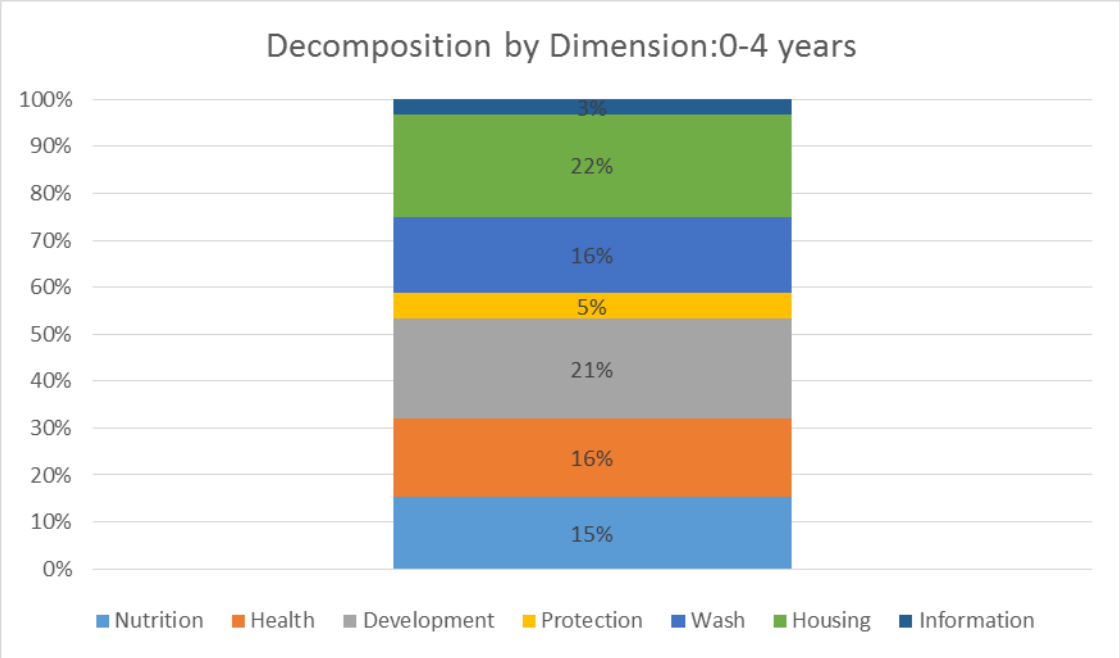
Source: Own calculations using LCS data

Figure 4.10, show the overlap by dimensions for the older age group. In section 4.2 we saw that the dimensions with the highest number of deprived children were education (79.1%), housing (74.7%) and health (52.4%). Even in Figure 4.10 we see these dimension still have the highest deprivation share, but when broken down to their overlapping dimensions we see that on their own they have a relatively lower shared, but when they are overlapped the share increased. For the top 3 dimensions with highest share of deprivation we see that when adding 3 other dimensions the poverty share increases significantly; as for housing it increased by 23.3% and education increased by 22.7%, but on their own the share is not so great. The Information and protection dimensions still remain with the least share of deprivations.

4.6 Decomposition

This section decomposes all the dimensions to show which dimension contribute more to child poverty when using the MODA index.

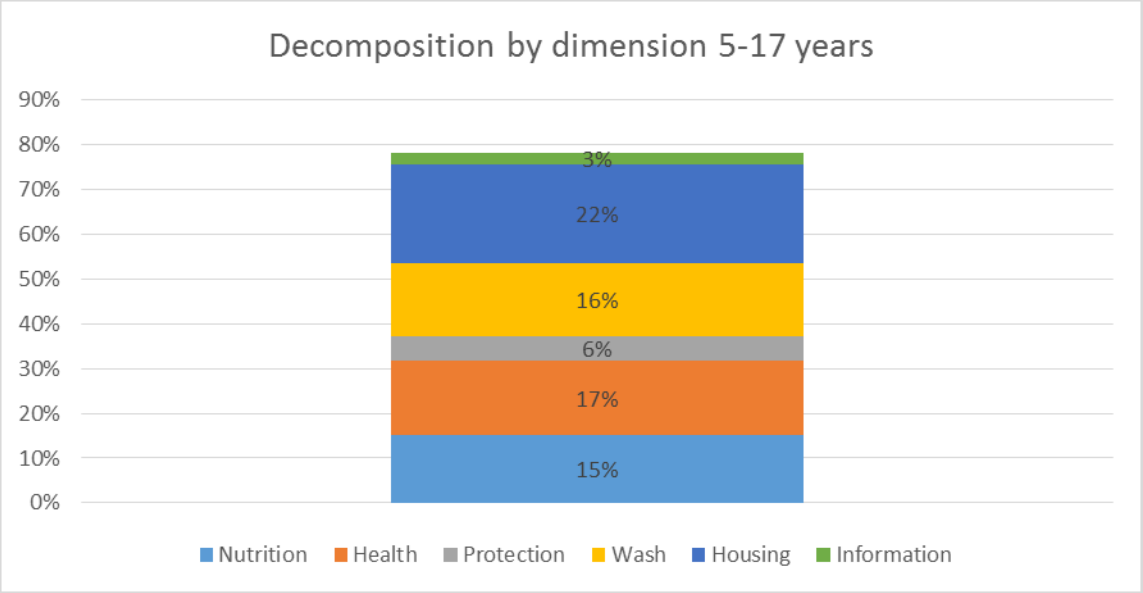
Figure 11: Decomposition by dimension (0-4 years)



Source: Own calculations using LCS data

Figure 11 shows the decomposition by dimensions for the younger age group, the dimensions that contributed the most to the MODA index are housing with 22% followed by development with 21%, and health and nutrition contributed equally with 16%. The dimensions to contribute the very least to child poverty within this age group are information (3%) and protection (5%); this is consistent with the findings from the previous sub-sections above.

Figure 12: Decomposition by dimension (5-17 years)



Source: Own calculations using LCS data

For the older age group, the dimensions with a larger contribution to child poverty were nutrition with 22% followed by health with 17% and WASH with 16%. The dimensions that contributed the least to child poverty for this age group were information with 3% and protection with 6%.

These findings in Figure 12 and Figure 11 show how different age groups are affect differently by poverty; though for both age groups we saw that information and protection had the least contribution to child poverty. The younger age group was mainly affected by housing, development and health; while the older age group was mainly affected by nutrition, WASH and health. The health dimension seems to be common in both age groups.

This section has provided the results of the study, whereby each section was accompanied by graphs and interpretations of those graphs, and these graph were for both age groups to see the life cycle impact on child poverty. The indicators and dimensions were discussed and

disaggregated at various geographical levels in the attempt to profile the geography of child poverty.

The next section will provide a brief summary of this paper, relating the findings to the objectives and then there will be the overall conclusion.

5. Summary and Conclusion

The objectives of this paper are to study the multiple overlapping deprivation analysis (MODA) in child poverty, to understand the deprivations that children suffer from the most. The secondary objective was to profile child poverty using geographical variables to comprehend the spread of child deprivations in South Africa.

This was done using the Living Conditions Survey 2014/15, where dimensions and indicator pertinent to child poverty were derived and formed into binary variable to set aside those that are deprived from those that are not deprived.

Then the finding were presented for the younger age group aged 0-4 years and the older age group 5-17 years. This was done to accommodate the different life stages or cycles of children. From the study results presented in chapter 4 we saw that the indicators that most children suffered from were exposure to Early Child Education for the 0-4 age group and education facilities for the older group; with 73.7% and 73.8% respectively. For the older age group the deprivation in education was approximately 80% across all provinces except Gauteng with 62.6% and the Western Cape with 66.7%.The sector of concern in this regard would be education, the Department of Basic Education will have intervene in alleviating this serious deprivation as education contributes in shaping life chances and employment prospects in the future. These figures need to be halved by 2030 as stipulated in the SDGs.

When the dimensions were disaggregated by provinces, we saw that Eastern Cape, Limpopo and KwaZulu-Natal had the most deprived children in most dimensions; especially in housing which was 91.4%, 84.9% and 82.7% respectively. Close to 90% deprived in education were from Limpopo and the Eastern Cape. On average 50% of the children were deprived in nutrition nationally. Children across all age groups were least deprived in protection and information in all provinces.

When the dimensions counts were disaggregated by settlement types, we saw that traditional areas had more children deprived in 4 dimensions and 5 dimensions, while urban formal had more children deprived in lesser dimensions relative to other settlement types. This trend was observable across all children.

From looking at provinces and settlement types it can be concluded that child poverty is more prominent in less developed provinces like Eastern Cape and Limpopo; and also with the settlement type it is evident that child poverty is rifer in under developed settlement types like traditional areas, rural areas and urban informal areas. Thus we can conclude that child poverty has a geographical element attached to it.

References

Abdu, M., & Delamonica, E. (2017). Multidimensional Child Poverty: From Complex Weighting to Simple Representation; *Social Indicators Research,* 136(3), 881-905.

Alkire, S., & Foster, J. (2011). Understandings and Misunderstandings of Multidimensional Poverty Measurement. OPHI Working paper no. 43.

Department of the Presidency. (2011). National Development Plan 2030: Executive Summary. Available: http://www.poa.gov.za/news/Documents/NPC%20National%20Development%20Plan%20Vision%202030%20-lo-res.pdf

De Neubourg, C., Chai, J., de Milliano, M., Plavgo, I. & Wei, Z. (2012). Step-by-Step Guidelines to the Multiple Overlapping Deprivation Analysis (MODA)', Working Paper 2012-10, UNICEF Office of Research, Florence.

De Neubourg, C., De Neubourg, E., Felix, C., Reboul, V., Safojan, P. & Karpati, J. (2015). Wellbeing of Children in Kosovo: Poverty and Deprivation Analysis amongst children using Multiple Overlapping Deprivation Analysis (MODA). Economic Policy Research Institute. Available: https://www.unicef.org/kosovoprogramme/MODA_ENG.pdf

Ferriss, A.L. (2006). Social Structure of Child Poverty. *Social Indicator Research,* 78:453-472.

Frame, E., De Lannoy, A., & Leibbrandt, M. (2016). Measuring multidimensional poverty among youth in South Africa at the sub-national level. SALDRU Working Paper.

National Treasury of South Africa. (2007). The Measurement of Poverty in South Africa Project: Key issues. Available: http://www.treasury.gov.za/publications/other/povertyline/SPII%20document.pdf

Omotoso, K. & Koch, S.F. (2017). Exploring Child Poverty and Inequality in Post-Apartheid South Africa: A Multidimensional Perspective, *Working Paper.* Pretoria: University of Pretoria.

Rutstein, D. (2015). Multidimensional Child Poverty in Sub-Saharan Africa. UNICEF. Available: https://blogs.unicef.org/blog/multidimensional-child-poverty-in-sub-saharan-africa/

Short, K.S. (2016). Child Poverty: Definition and Measurement. *Academic Paediatrics,* 16(1), 46-50.

Smeeding, T., & Thevenot, M.A. (2016). Addressing Child Poverty: How does the US compare to other nations? *International Child Poverty Intervention.*

Statistics South Africa. (n.d). *Living Conditions of Households in South Africa 2008/2009*. Pretoria: Statistics South Africa.

Statistics South Africa. (2014). *The South African MPI: Creating a multidimensional poverty index using census data.* Statistics South Africa, Pretoria.

Statistics South Africa. (2017). Living Conditions Survey 2014/2015: Metadata. Report No.P0310. Available: https://www.datafirst.uct.ac.za/dataportal/index.php/catalog/608

Statistics South Africa. (2017). Living Conditions of Households in South Africa: Analysis of household expenditure and income data using the LCS 2014/2015. Pretoria: Statistics South Africa

Statistics South Africa. (2017). *Mid-year Population Estimates: Statistical Release.* Available: http://www.statssa.gov.za/publications/P0302/P03022017.pdf (accessed 10 June 2018)

Statistics South Africa. (2018). *Men, Women & Children: Findings from the Living Conditions Survey, 2014/15.* Pretoria: Statistics South Africa.

United Nations Development Programme. (2015). Sustainable Development Goals. Available: http://www.undp.org/content/dam/undp/library/corporate/brochure/SDGs_Booklet_Web_En.pdf

Walge, U.R. (2002). Rethinking Poverty: Definition & Measurement. *International Social Science Journal,* 171(1), 156-165.