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Investigating multidimensional poverty in South Africa in 2001-2016: The multidimensional poverty index (MPI) approach

by

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DECLARATION

I declare that ***Investigating multidimensional poverty in South Africa in 2001-2016: The multidimensional poverty index (MPI) approach*** is my own work, that it has not been submitted for any degree or examination in any university, and that all the sources that I have used or quoted have been indicated and acknowledged by complete references.

Tina Fransman

Signature: 

Date: 15 August 2017

ABSTRACT

Since the dawn of democracy, South Africa has come a long way in trying to eradicate problems relating to poverty and inequality that the apartheid system left deeply engraved within the midst of our society. To date we however still live in a society characterised by severe socio-economic challenges. Most of these challenges are not straight fold, one-dimensional issues. Instead, in most cases one would find that with each challenge, stem even more interrelated challenges. Up to now, poverty, associated with notions relating to scarcity, insufficiency and deficiency, is still one of these major challenges South Africa seems to be grappling with.

Over the years, researches have tried to measure poverty in numerous ways; in many instances, the accuracy of these methods has been debated. One of the foremost reasons for these debates is associated with the fact that poverty itself is complex in nature as it is comprised of monetary, ownership and well-being elements. For this reason, money-metric poverty or non-money metric poverty instruments on its own are not sufficient to accurately paint a picture of poverty in South Africa. An amalgamation of these two instruments of some sort might perhaps provide a better approach to measuring poverty. Thus, in this study, a relatively fresh approach especially on the local front will be employed (very few local studies have used this approach to date), namely the multidimensional poverty index (MPI) method.

The purpose of this study is to investigate multidimensional poverty in South Africa in 2001-2016. Poverty is examined by both demographic characteristics and geographical areas, by adopting the multidimensional poverty index or MPI approach and using the data obtained from the 10% sample of Census 2001, Community Survey 2007, 10% sample of Census 2011 and Community Survey 2016.

Keywords: Multidimensional poverty, Multidimensional poverty index, South Africa
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"It always seems impossible until it is done" – Nelson Mandela

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LIST OF ABBREVIATIONS

AES	Adult equivalence scale
AMPS	All Media and Products Survey
ASGISA	Accelerated and Shared Growth Initiative for South Africa
BBBEE	Broad Based Black Economic Empowerment
CA	Correspondence Analysis
CBN	Cost-of-basic needs
CDF	Cumulative density function
COICOP	Classification of Individual Consumption According to Purpose
CS	Community Survey
DC	District Council
EAP	Economically Active Population
FA	Factor Analysis
FEI	Food-energy-intake
FGT	Foster-Greer-Thorbecke
FPL	Food poverty line
GEAR	Growth, Employment and Redistribution
GHS	General Household Survey
HDI	Human Development Index
IES	Income and Expenditure Survey
LBPL	Lower-bound poverty line
LCS	Living Conditions Survey
LFS	Labour Force Survey
MCA	Multiple Correspondence Analysis
MPI	Multidimensional Poverty Index
NGP	New Growth Path
NIDS	National Income Dynamics Study
OHS	October Household Survey
PCA	Principal Components Analysis
PSLSD	Project for Statistics on Living Standards and Development
RDP	Reconstruction and Development Program

SAMPI	South African Multidimensional Poverty Index
SES	Socio-economic status
SRMI	Sequential regression multiple imputation
Stats SA	Statistics South Africa
STC	Standard Trade Classification
TFR	Total Fuzzy and Relative approach
UBPL	Upper-bound poverty line

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CHAPTER ONE: INTRODUCTION

1.1 Statement of the problem

In South Africa, since the dawn of democracy, there has been increasing emphasis on poverty alleviation as a developmental concern (Roberts, 2001: 2). The government has implemented several large-scale economic programmes which aimed at reducing disparities and imbalances stemming from the Apartheid regime. These programmes ranged from the Reconstruction and Development Program (RDP), Growth, Employment and Redistribution (GEAR), the Accelerated and Shared Growth Initiative of South Africa (ASGISA), and the more recently launched New Growth Path (NGP) and National Development Plan (NDP). These programs were specifically aimed at achieving various economic goals such as, amongst others, the alleviation of poverty and inequality, improved service delivery, achieving more rapid real GDP growth and job creation.

With regard to local studies that have been conducted on poverty levels and trends in South Africa, indeed many studies exist. However, the majority of them only focus on the measurement of money-metric poverty, by using per capita income or expenditure along with a poverty line (which specifies a certain amount of expenditure to purchase essential food and non-food items required for survival) where the poor are distinguished from the non-poor. While income and expenditure are by all means sound proxies for indicating poverty, it is however restrictive because poverty encompasses even more aspects that stretch beyond what is considered to be low levels of income or expenditure.

Other studies examine non-money-metric poverty with the aid of statistical techniques, including the Principal Components Analysis (PCA), Factor Analysis (FA) and Multiple Correspondence Analysis (MCA). These techniques derive an asset or non-income welfare index by taking access to public services (e.g. sanitation facility, fuel source, frequency of refuse removal) and ownership of private assets (e.g. television, cellular telephone, and refrigerator) into consideration. While these studies acknowledge that poverty cannot be analysed by only using money-metric measures, the techniques involved to derive the asset indices may be too highly statistical. This in turn implies that the general public may not be

able to understand the results without difficulty. Furthermore, these statistical methods could also only reflect the incidence of poverty but not the intensity of deprivation.

In recent years, an alternative approach, namely the multidimensional poverty index (MPI) approach, has evolved in international literature. What makes this approach distinctive is that the MPI is comprises of two poverty measures, namely the incidence of poverty and the intensity of poverty, experienced by the individuals. The incidence of poverty (which also stands for the headcount ratio) accounts for the percentage of the population experiencing several deficiencies at a time while the intensity of poverty refers to the proportion of average deprivation experienced by the people (Santos and Alkire, 2011: 34). In addition, the MPI approach is relatively more straightforward (compared to the above-mentioned highly statistical techniques) and easier for the general public to understand.

1.2 Objectives of the study

Associations between poverty and income are constantly being made. Even though these associations are by all means correct, it should also be realised that there is so much more to the story than what this single association projects. Human poverty goes beyond income poverty as it inevitably denies individuals the ability to live what is considered a normal, bearable life (UNDP, 1997:2). Income as well as consumption thus only provides a one-dimensional approach to examining poverty as it only illustrates money-metric poverty. For this reason, the need for an approach to studying poverty which would actually capture its complexity cannot be stressed enough (Ngwane *et al.*, 2001:78).

The aim of the study is therefore to explore the levels and trends of multidimensional poverty in South Africa in 2001-2016 using the recently available Census and Community Survey data. The incidence and intensity of poverty will be examined with the MPI approach, which was initially introduced in 2010 and has since been used internationally. Nonetheless, it is still not commonly used in local studies. This approach differs from income and consumption approaches as it is used to measure acute poverty :firstly, acute poverty takes those who do not meet agreed upon standards on an international level into account in terms of indicators that represent the individuals' basic functions, which in turn refer to basic tasks (e.g. good nutrition, clean drinking water) individuals carry out daily to ensure that their level of well-

being are satisfactory; secondly, acute poverty considers individuals who do not reach the least possible standards in numerous basic functions simultaneously. The MPI is therefore able to measure the incidence of poverty as well as the intensity of deprivation that those who are poverty-stricken experience (Santos and Alkire, 2011:3).

The intention of the study is to examine MPI poverty levels by population group, gender, educational attainment, province and geographical areas (i.e. provinces, district councils, municipalities). This implies that poverty will be investigated not only by demographic characteristics but also by geographic areas. This analysis will thus help formulate a more comprehensive and accurate profile of the poor. The empirical analysis employed in the study will allowed for the establishment of the main drivers of poverty in the context of South Africa and allow for a comparison to be made between MPI poverty and money-metric poverty. This approach can therefore be viewed as a tool to identify the most vulnerable people (i.e. the poorest of the poor), and it can be used as a means to determine poverty patterns in South Africa. This in turn is more likely to lead to the formation of better poverty-reduction policy and will allow for better targeting and allocation of resources.

1.3 Outline of the study

The study consists of six chapters. Chapter One presents the statement of the problem, poses the research question and the structure of the study. Chapter Two firstly examines the poverty theories, namely: the behavioural/decision-based theory, the sub-culture of poverty, opportunity theory and poverty as a structural failing. The chapter then reviews various poverty concepts after which the dimensions and measurements of poverty is discussed. With regard to the measurement issue, various commonly adopted methods are examined: from the money-metric side, these measures include welfare indicators, absolute and relative poverty lines, cumulative density function for dominance testing, per capita and per adult equivalent variables; for the non-money metric measures, the PCA, FA, MCA, fuzzy sets and the MPI approaches as well as the critical evaluation of the pros and cons of these approaches are examined.

Chapter Three presents the literature review of the past South African empirical studies on money-metric and non-money-metric poverty from various data sets. With regard to non-

money-metric approaches, both uni-dimensional non-money-metric as well as multidimensional non-money-metric is examined. Before concluding the chapter, studies that considered both money-metric and non-money-metric variables are also examined.

Chapter Four firstly thoroughly discusses the methodology (i.e. MPI), namely its origin, the original MPI methodology, the revised MPI methodology as adapted for the purpose of this study and MPI decomposition. Secondly, the data employed in the study is discussed. In this study, four datasets are utilised, namely the 10% sample of Census 2001, Community Survey 2007, 10% sample of Census 2011 and Community Survey 2016, all conducted by Stats SA. Lastly the limitations of the study are highlighted.

Chapter Five presents the empirical findings. This analysis is centred on poverty levels and trends for the period of 2001 to 2016 with regard to the incidence of poverty, the intensity of poverty and poverty levels that were derived using the MPI approach. The chapter also illustrates a profile of the poor based on characteristics such as gender, area type and age, among others. The main drivers of poverty are also discussed, before comparing the results of MPI poverty with money-metric poverty.

Lastly, Chapter Six concludes the study. This is done by presenting a review of the main findings of the paper followed by policy recommendations.

CHAPTER TWO: CONCEPTS, DIMENSIONS AND MEASUREMENT OF POVERTY

2.1 Introduction

Chapter Two provides an overview of the concepts, dimensions and the measurement of poverty. It consists of six sections: Section 2.2 discusses various poverty theories, while Section 2.3 provides a review of the concepts of poverty. Section 2.4 highlights the dimensions of poverty, before Section 2.5 illustrates the methods which can be employed to measure poverty. Section 2.6 presents the multidimensional approach to measuring poverty, after which Section 2.7 concludes the chapter.

2.2 Poverty theories

Poverty reduction strategies are always at the forefront of economic policy. It is however important to realise that for good poverty reduction strategies to be formulated, the various roots of poverty must first be determined. This in turn increases the likelihood of better targeted and effective poverty reduction strategies to be implemented.

Many may wonder about the causes of poverty. In all honesty, there is no single answer to the question. Poverty may result from mental or physical handicaps; it could partly be due to low motivation or the inability to make investments in human capital where this inability would in turn hinder an individual, mainly in an economic sense. Poverty may also be partly caused by past or present prejudice. This point in particular is very relevant in the South African context. Furthermore, poverty could partly be the result of the market's valuing certain skills and ability that individuals are not able to offer at such a low price that even if they are healthy and were to work full time, the income the individual would have received would still leave him or her living below the poverty line.

What's more is that poverty could be caused by the performance of the economy. Inflation without a doubt has a negative impact on those with fixed incomes while recession leads to retrenchments which cause thousands or even millions depending to its severity to experience poverty (Lipsey *et al.,* 1987:392). Lastly, some individuals unfortunately may just be born into poverty. It is then up to the individual to decide whether to break the poverty trap or not.

Even though there are millions of people who intent to or who may try to do this, in reality this is no easy feat.

In a broad sense, poverty theories can be classified into two types: poverty being a cultural defect and poverty being a structural defect. Theories related to the cultural perspective explain poverty in terms of the traits of the poor themselves. In other words, it refers to the poverty attributed to attitude and behavioural patterns. On the other hand, poverty theories linked to structural defect makes reference to poverty based on the conditions under which the poor live. These conditions include poor education and health, underemployment and unemployment (Elesh, 1970:4). The various poverty theories that have been developed over the years are therefore based on either the cultural premise or structural premise. By utilising a somewhat more formal and economic approach, the various theories on the causes of poverty are discussed below.

2.2.1 Behavioural / Decision-based theory

The behavioural (also known as decision-based) theory to explain poverty is based on a laissez-faire principle which suggests that whether individuals experience poverty or not is dependent on their own economic decisions. According to this theory, individuals are responsible for their experiences of poverty (Davis and Sanchez-Martinez, 2014:17). This theory embodies the cultural premise to explain poverty as it refers to the behavioural aspect of individuals in relation to poverty. The theory therefore relates to the individual factors that fuel poverty, namely welfare participation, the individual's attitude and human capital (Sameti *et al.*, 2012:45).

Also, everyone ultimately decides whether they want to live in poverty or not. Change in economic circumstances and well-being is dependent on attitude and how motivated people are. This theory implies that there is almost no role for the state to intervene. In order to avoid poverty, individuals must ultimately make the decision of whether they want to invest in their own human capital development, whether they would want to participate in the labour market which in turn relates to their own level of motivation. For this reason, this understanding of poverty relates to the belief that the poor self-select into deprivation and poverty is thus

attributed to the shortcomings of individuals themselves instead of market failure (Davis and Sanchez-Martinez, 2014:18, citing Townsend, 1979).

This behavioural theory is based on the classical approach and examines classical literature to examining poverty. According to this theory, low level of motivation or productivity (including non-involvement in markets) is the result of conscious choices made by individuals as they play an active role in determining their economic and social well-being. The theory suggests that the social and political environment where individuals find themselves in have little or no influence over this decision. It should also be highlighted that the fundamental premise governing this theory relates to the fact that even though many alternatives may be available to people, at the end of the day they are in control of the choices they make and are ultimately the ones who limit their access to economic resources which increase the likelihood of them experiencing poverty (Davis and Sanchez-Martinez, 2014:18).

2.2.2 The "sub-culture" of poverty

This theory also examines poverty from a classical approach and relates to poverty being a cultural defect. The culture of poverty theory was first devised by Oscar Lewis in 1961 and 1966, and is grounded on the notion that the poor and rich possess different values, beliefs and behavioural norms (Sameti *et al.*, 2012:47). Poverty theories related to intergenerational poverty state that attitude and behaviour towards poverty are passed on from generation to generation through families, through upbringing or a generic component. It is based on the principle that poverty ultimately creates poverty (Davis and Sanchez-Martinez, 2014:20).

According to the theory, the poor become poor because they acquire certain psychological behaviours related to poverty. Lewis specifies that the poor learn not to plan for the future; they do not learn the value of education but learn to spend money irresponsibly (Sameti *et al.*, 2012:47). The notion of intergenerational poverty and the saying that poverty creates poverty demonstrates poverty as a cyclical phenomenon in the sense that it is common to find successive generations of a particular family tree remaining poor. As a result, a poverty cycle occurs which becomes very difficult to break (Elesh, 1970:4).

2.2.3 Opportunity theory

A response theory to the "sub-culture" of poverty theory is the opportunity theory. Once again, the opportunity theory also examines poverty as being a cultural defect. This theory debates that people are not poor due to psychological behaviours related to poverty, but are poor rather due to limited access to human capital and restricted access to opportunities. It is argued that the rich experience the opposite as the social system is structured in such a way where certain groups are favoured, particularly the rich (Sameti *et al.,* 2012:47). Poverty therefore does not only refer to the physical environment, practical limitations and deprivation that are associated with physical needs. The impact of poverty may be intensified by other factors including the level of equality within a community (Cowlin, 2015:120).

2.2.4 Poverty as a structural failing

This is based on the premise that poverty is the result of structural factors that are inherent to either the economy or various interrelated institutional environments that tend to favour certain groups over others. This preference may be based on a number of factors such as race, gender or class (Addae-Korankye, 2014:151). Structural causes of poverty are deemed to be of a more permanent nature and are dependent on a number of exogenous factors, ranging from skill shortages and limited resources, to other factors relating to the social and political climate of a particular country. Other spin-off factors which may cause poverty in a structural sense make reference to factors that are the result of structural adjustment reforms as well as changes in economic policy which in turn cause fluctuations in price and labour market conditions (Addae-Korankye, 2014:150, citing Yahie, 1993).

The notion of poverty as a structural failing can be associated with structural unemployment and low levels of human capital investment to a large extent. This is particularly true within the South African context as it is caused by structural imbalances which are related to various reasons such as the use of capital- or skills-intensive technology, rapid growth of the labour force and an inflexible labour market (Barker, 2007:177). The South African economy is characterised as having a shortage of skilled workers and an oversupply of unskilled and semi-skilled workers. South Africa's unemployment is therefore viewed as being structural mainly because of the fact that the unemployed usually possess skills that are lower than what is required by the economy (Pauw *et al*., 2008:45). For this reason, a mismatch exists

between the skills that are in demand and the skills that are required by the labour market. One of the foremost reasons for this mismatch can be traced back to poor levels of educational attainment. As a result, underemployment or unemployment is rifer which increases the likelihood of poverty.

On the other side of the coin, demographic factors are also considered in the context of poverty as a structural failing; race, gender, area type, family size and family structure are factors that may explain structural poverty. It is often found that women, female headed-households, larger families with many kids and those with severe disabilities usually project higher poverty rates (Sameti *et al.*, 2012:46, citing Rank, 2004).

As mentioned earlier, poverty as a structural defect makes reference to poverty based on the conditions under which the poor live. It is therefore also important to take health and natural disasters into account. The prevalence of diseases accompanied by poor health care facilities has also been deemed to be one of the leading causes of poverty. Leading examples within the South African context include HIV/AIDS and TB. These diseases affect individual's ability to work with particular reference to the bread winners in the context of poor households, results in most of the income within the household to be spent on treatment. It may also lead to children becoming orphans in the event of death which in turn exacerbates poverty (Addae-Korankye, 2014:152).

Poverty may lastly also be attributed to natural disasters or man-made disasters such as wars or environmental damage (Addae-Korankye, 2014:151). When natural disasters occur, it is a known fact that regardless of whether these disasters can be predicted or not, no amount of forecasting and preparation can ever account for the psychological and structural devastation that these disasters bring. The same applies for man-made disasters. When catastrophic disasters occur, it is very difficult to start over in both an emotional and financial sense. In the occurrence of such events, individuals are more susceptible to the experience of poverty.

Based on the theories above, it is evident that poverty stems from more than one root. It is also important to realise that the causes of poverty may be the result of a number of other factors and is not only restricted to what has been discussed within this section.

2.3 Reviewing the concepts of poverty

Poverty is by no means a new concept. Indeed it is known to many but the complexities and underlying facets related to the concept are not truly understood by all and at the same time raise various debates. It is important for poverty to be understood due to the nature and extent of poverty on a worldwide scale with particular reference to developing countries (Francis, 2006:1). On an international scale, the eradication of extreme poverty and hunger was at the top of the list with the release of the Millennium Development Goals in 2000, with one of the goals being to half the proportion of those living in extreme poverty in developing countries by 2015 (Falkingham and Namazie, 2002: 12). At the time of writing, poverty is still a major and crippling socio-economic issue that many other developing countries around the world (including South Africa) are still faced with.

Poverty is usually associated with homelessness, unemployment, shacks, poor infrastructure and the lack of access to basic services and is therefore in some sense visible to the human eye (Triegaardt, 2006:2). For this reason, when one thinks of poverty, visuals associated with hunger, suffering and poor living conditions are most likely to come to mind. In order to conduct any sort of poverty analysis, the way in which poverty is defined is of fundamental importance. Even though poverty may be considered to be a universal concept, there is often debate with regards to the way in which it is defined because the concept of poverty can have a cluster of coinciding meanings (Gordon, 2006: 29). The truth about poverty is that it is not a phenomenon which can be classified as being either black or white, but is a concept considered to be complex in the sense that it can mean different things to different people.

According to Ravallion (1992:4), when one or more individuals are unable to manage a minimum level of well-being (in a materialistic sense) which represents what society deems to be acceptable, this is referred to as poverty. A very stringent definition of poverty therefore relates to deprivation, explicitly deprivation in relation to the well-being of individuals (Haughton and Khandker, 2009:2). To elaborate it further, poverty is fundamentally associated with individual's inability to make provision for necessities which facilitate basic human functioning. It should however be noted that people may experience deprivation on very different levels or in different aspects of their lives. For this reason, in a broad sense,

poverty refers to different forms of deprivations related to human capabilities, basic needs and income (Govender *et al*., 2006:6).

According to Gordon (2005: 3, citing UN, 2005) in the complete sense of the word, overall poverty can take a number of forms which include a *"lack of income and productive resources to ensure sustainable livelihoods; hunger and malnutrition; ill health; limited or lack of access to education and other basic services; increased morbidity and mortality from illness; homelessness and inadequate housing; unsafe environments and social discrimination and exclusion. It is also characterised by lack of participation in decision-making and in civil, social and cultural life. It occurs in all countries: as mass poverty in many developing countries, pockets of poverty amid wealth in developed countries, loss of livelihoods as a result of economic recession, sudden poverty as a result of disaster or conflict, the poverty of low-wage workers, and the utter destitution of people who fall outside family support systems, social institutions and safety nets".*

Poverty therefore exists when people are denied opportunities associated with living healthy and fulfilling lives. The definition of overall poverty above demonstrates the different ways in which poverty can infiltrate the various aspects of people's lives. This in turn proves that poverty is by no means a static concept.

2.4 The dimensions of poverty

Poverty is and has always has been a dynamic concept (Gordon, 2006:33). As a means of identifying the poor, Chambers (1988:8) revealed five dimensions of poverty. These dimensions illustrate the circumstances or conditions that the poor experience.

2.4.1 The five dimensions of poverty

2.4.1.1 Poverty Proper

This dimension is associated with the lack of income and assets. The concept of poverty is at first naturally considered to contrast notions related to material prosperity and wealth (Qizilbash, 1998: 3). Poverty defined in relation to income and consumption is after all the traditional approach to examining poverty (World Bank, 2000:16). It therefore goes without

saying that for one to experience poverty, an individual must lack monetary prosperity and assets.

2.4.1.2 Physical Weakness

Physical weakness stands for a condition of poverty as a result of sickness, malnutrition, disability and an overall lack of strength (Chambers, 1988:9). When one thinks of poverty from an income and consumption perspective, the inability to satisfy basic needs in turn means that there is bound to be difficulties in terms of maintaining a healthy lifestyle. The World Bank (2000: 18) expands this dimension even further as they make reference to health and educational deprivation. It has been established time and time again that a link indeed exists between health and educational outcomes. Better health status is therefore associated with better educational outcomes. As a result, when one combines all these elements, it can be noted that poverty is ultimately associated with poor health such as sickness and malnutrition and is therefore more likely to bring about poor educational outcomes for the impoverished.

2.4.1.3 Isolation

Isolation in this context refers to both physical and social isolation (Woolard and Leibbrandt, 1999:3). From the physical isolation perspective, reference can be made to peripheral location where individuals reside which lessens their contact with others. This perspective also includes the lack of access to basic goods and services which may very well be tied in with the peripheral location factor. For social isolation, ignorance and illiteracy come into play which may influence the ability and willingness of individuals to interact with others.

2.4.1.4 Vulnerability

Vulnerability in relation to poverty according to Chambers (1989) refers to the possibility of being exposed to unforeseen circumstances as well as the risk of possibly becoming poorer. According to Philip and Rayhan (2004:5, citing Chambers, 1989), vulnerability is indeed related to poverty and can be divided into two parts. The first part refers to an external component where reference is made to stress, shock and various risks that individuals may possibly experience. The second part on the other hand speaks of the internal part of vulnerability which relates to feelings of helplessness. This internal aspect can take a number

of forms which may range from psychological damage and decreases in physical health to feelings of humiliation and being socially dependent. It can therefore be noted that although vulnerability is very closely related to poverty, it is important to remember that it is also a circumstance that is distinct (Philip and Rayhan, 2004: 1).

2.4.1.5 Powerlessness

This dimension related to feeling of powerlessness within the context of existing economic, social, political and cultural structures (Woolard and Leibbrandt, 1999:3). This dimension is considered to be harder to measure as it is less tangible.

2.4.2 Objective, subjective, temporary, chronic, absolute and relative poverty

When exploring poverty in greater detail, in addition to the five dimensions as discussed above, it is clear that the concept of poverty can be further split and may also be fragmented in ways which may ultimately seem to contradict each other. According to Govender *et al*. (2006:6), this is referred to as dichotomies in the concept of poverty. The reason for these dichotomies stem from the definition of poverty and according to Govender *et al*. (2006), understanding each dichotomy is vital in order to understand and capture the true essence of poverty. Three dichotomies are discussed below.

2.4.2.1 Objective poverty vs. Subjective poverty

With reference to the objective perspective, normative judgements are made with regard to what constitutes poverty. These judgements are also used to determine what is necessary to help reduce or alleviate poverty. This objective approach is therefore also termed the welfare approach (Philip and Rayhan, 2004: 7). When applied to any poverty analysis, the objective perspective requires the use of methods that are more quantitative in nature. This perspective is likely to be employed in the analysis of educational deprivation, economic deprivation and certain types of biological deprivation (Govender *et al*., 2006:7).

With regard to the subjective perspective, in many ways it can be said to be the perspective that recognises the "human" aspect or side of poverty. In other words it takes the preferences of people into account in relation to the value they place on various goods and services. As a result, from an economic perspective, the focus in this instance is on individual utility (Philip

and Rayhan, 2004: 7). Therefore, when compared to the objective perspective, the subjective perspective takes on a qualitative approach to examining poverty. Personal experiences (e.g. stress and anxiety), political issues and social circumstances are examples of subjective factors in poverty analysis (Govender *et al*., 2006:7).

After taking the objective versus subjective perspectives to examining poverty into account, one can then relate this dichotomy to the five dimensions of poverty. When applied, it can be noted that the dimensions 'poverty proper' and 'physical weakness' can be categorised under the objective perspective while 'isolation', 'vulnerability' and 'powerlessness' are categorised under the subjective perspective.

According to Chambers (1988: 9) the first three dimensions ('poverty proper', 'physical weaknesses' and 'isolation') were mainly focused on by government programs to various extents. In the same breath, he stated that 'vulnerability' and 'powerlessness' were the dimensions that were neglected by these programs. One of the main reasons for this is attributed to the difficulty in the measurability of these dimensions. Baring this in mind, even in today's context the subjective dimensions are still more difficult to measure due to the dimensions being dynamic as well as the accuracy and consistency issues associated with each dimension (World Bank, 2000:17).

2.4.2.2 Temporary poverty vs. Chronic poverty

The second dichotomy addresses temporary and chronic poverty, with the former being considered to be less severe in nature. Temporary poverty is therefore defined as the situation where individuals find themselves moving through periods where they are poor to periods where they are not poor. In other words, temporary poverty takes account of individuals who are not typically poor on average but who are poor for certain periods of time. Also known as transient poverty, it should be noted that these types of poverty spells can be avoided by a better managing and reducing consumption for instance (Haughton and Khandker, 2009:214).

Chronic poverty is viewed in a more long-term sense, associated with inter-generational poverty, and is more difficult to address (Woolard and Leibbrandt, 1999:17). From a more technical perspective, chronic poverty concerns those individuals whose average

consumption per capita over time either meets the poverty line or is below it (Haughton and Khandker, 2009:214). Francis (2006:2, citing Baulch and Hoddinott, 2000) suggests that temporary poverty occurs when individuals are unable to deal with shocks while chronic poverty occurs due to a lack in ability to convert assets into income or the result of a low endowment of assets. To further elaborate this point, temporary or transitory shocks refer to occurrences such as disease, injury, illness and unemployment. Chronic poverty examines investments in human capital especially in the case of inter-generational poverty, transfers of financial and material capital from generation to generation as well as environmental factors and socio-political factors (Hulme *et al.*, 2001:17). This dichotomy once again serves as a reminder of the complexity that the concept of poverty holds. Not only is there a difference between temporary and chronic poverty, it is also very important that each be recognised as they require separate policy approaches and solutions (Duclo *et al*., 2006:3).

2.4.2.3 Absolute poverty vs. Relative poverty

Absolute poverty is defined in relation to the requirements that are considered to be sufficient to satisfy minimum basic needs. Therefore, when reference is made to those who are considered to be absolutely poor, it becomes evident that these individuals do not have the means to satisfy their basic needs (Kabubo-Mariara and Ndeng'e, 2004:8). To establish absolute poverty, nutritional requirements and essential goods are usually examined to determine whether living standards are socially accepted or not (Philip and Rayhan, 2004: 7).

From a theoretical perspective, absolute poverty may seem to be simpler and more transparent. In the real life situation it should however be noted that defining and analysing absolute poverty is not that simple. One of the main concerns pertains to the fact that what is considered to be minimum standards change over time and space. Another concern is the fact that basic and nutritional needs differs in each country. In the end, the definition of absolute poverty will be country dependant, change over time and is more or less a matter of judgment (Falkingham and Namazie, 2002: 18).

In contrast, relative poverty is measured by making comparisons between the lower and upper segments of the population. This is quantified by examining income in the form of deciles or percentiles by taking a few key indicators into account such as national income that

is accounted for by the poorest proportions (e.g. 20% and 40%) of the population (Philip and Rayhan, 2004: 7). The relative approach therefore goes beyond what is considered to be basic psychological needs as it refers to poverty in relation to what is considered to be acceptable regarding the standard of living in a certain society, at a specific time (Falkingham and Namazie, 2002: 8).

Kabubo-Mariara and Ndeng'e (2004:8) indicate that relative poverty can be determined by examining the mean or median income (expenditure). An example of this is where two-thirds and one-third of the mean income (expenditure) have been used to define relative poverty. In this case, when the two means are compared, it would imply that those represented by one-third of the mean would be worse off than the proportion of the income classified under the two-thirds of the men mean category. Relative poverty lines are considered to be most effective in countries where absolute deprivation is not a social norm. Examination of households who live on an income below the half-average income is an example of a relative poverty line that is commonly used (Falkingham and Namazie, 2002: 8).

Examining poverty from both an absolute and relative perspective is essential for two reasons: the absolute approach helps identify the number of people and which people within the household situation are unable to satisfy their basic needs and as a result are experiencing absolute poverty; the relative approach on the other hand enables us to identify those who have limited resources and are therefore unable to maintain a lifestyle that is considered to be acceptable within the specific society that they reside (Falkingham and Namazie, 2002: 8).

As a final point, the dichotomies embedded within the concept of poverty echoes how dynamic and complex poverty is. Even though there is still debate over how poverty should be defined, these dichotomies indeed provide us with a more comprehensive and in-depth understanding of poverty as too does it highlight the various meanings that poverty portrays.

2.5 Methods of measurement

Poverty measurement is crucial for poverty analysis as it allows for the identification of the poorest and most vulnerable groups within society. It helps determine the extent of poverty and the distribution of poverty. It has now become evident that the way in which poverty is

measured inevitably determines how poverty is defined. As the years have gone by, it is no secret that large bodies of literature and research have developed. As a result, various methods or techniques have developed pertaining to the measurement of poverty. Despite the advancement of various poverty measurement methods and techniques, ultimately three steps are involved in the measuring of poverty (Haughton and Khandker, 2009:10, citing Ravallion, 1998): firstly, an indicator of welfare has to be defined; secondly, a poverty line is established; lastly, a summary statistic is generated. These steps are considered to be the basis of poverty analysis and will be examined in more detail below.

2.5.1 Welfare Indicator

As mentioned above, the first step in poverty analysis is to choose a welfare indicator. Three main types of welfare indicators exist, namely income, non-income and composite (Shea, 1997:10). Selecting a welfare indicator forms the basis of any poverty analysis as it determines the approach that will ultimately be used with regard to poverty measurement. In other words, it institutes whether poverty will be examined from a money-metric angle, non-money-metric angle or from a composite angle. The three type of welfare indicators are examined below.

2.5.1.1 Income indicator

Most poverty studies utilise money-metric approaches to measuring poverty. This examines well-being from a purely monetary perspective. In other words, poverty is measured by establishing the individuals' ability to consume and in turn satisfy their needs. Per capita income or consumption would therefore be classified as a welfare indicator that is money-metric (income). From a theoretical perspective, the best way to quantify the welfare of individuals would be to examine their consumption patterns on goods and services (Falkingham and Namazie, 2002: 21). When applied in practice, consumption is examined by using income and consumption data. When this approach is adopted, it is executed on the foundation that an individual's well-being is equal to his or her utility. This means that each individual determines what they value and the extent to which they value certain things. Their overall well-being is also accounted for (Budlender *et al.*, 2015:5). In microeconomics, this is referred to as the examination of the preferences of an individual. Budlender *et al.* (2015:5,

citing Sen, 1980) reveals that in the real life application of this approach, this in turn becomes a means to measure consumption of goods and services.

Money-metric poverty therefore measures poverty using per capita income or the per capita expenditure variable along with a poverty line (i.e. a certain amount of expenditure to purchase essential food and non-food items required for survival) where the poor are distinguished from the non-poor. Deciding on the income or money-metric approach as a welfare indicator has been popular due to the fact that income and expenditure methods utilise cardinal variables and therefore allow for direct comparisons to be made. As a result, these results are easy to understand and interpret and can also be used in quantitative analysis (Moser and Felton, 2007:1).

2.5.1.2 Non-income indicator

Instead of focusing on well-being from a purely monetary perspective, non-money-metric indicators provide an indication of well-being from a perspective that is associated to the standard of living people experience. Non-money-metric indicators therefore include ownership of assets (e.g. fridge, stove, washing machine, TV, car and so forth) as well as household services and facilities (e.g. electricity, water and sanitation). Other factors which are valued by individuals which cannot be accounted for by utilising money-metric analysis such as health status and literacy also form part of non-money-metric indicators.

It can be noted that income and consumption is typically measured at household level only. It can however be measured independently as per individual. For example, some components of income can be measured per individual such as wage income. Even though this might be possible, it still does not make it easier to determine the extent to which an individual's income actually translates into their own well-being. For this reason, research conducted over the years has acknowledged that non-money-metric indicators do indeed have more specific advantages over money-metric welfare indicators (Anderson, 2008:6).

2.5.1.3 Composite indicator

A composite welfare indicator is a more comprehensive indicator and can take two forms: the first form refers to a composite indicator that can consist of both monetary and non-monetary

indicator variables, while the second form is where a composite indicator can examine a number of non-monetary indicator variables at a time (Shea, 1997:10).

According to Dalton-Gretyling and Tregenna (2014:3, citing Sharpe and Smith, 2005) a composite index refers to individual indicators which are aggregated into a single index or bottom line by using a certain weighting scheme. Methods employed to derive a composite indicator many range from simply adding together the scores on the indictors to domains or to weights being calculated for each indicator or domain (Weerahewa and Wickramasinghe, 2005:5).

A composite indicator can be made up of both monetary and non-monetary variables that can used to derive a welfare index. This type of composite indicator would therefore be a combination of both quantitative and qualitative features related to poverty measurement. A well-known example of this type of composite indicator would be the Human Development Index (HDI)[1]. A composite indicator may also allow for the examination of multiple non-money-metric variables at a time in order to derive a welfare index. A prime example of this is illustrated by Lindenberg (2002:307), where a single index was developed which was made up of eight variables and one aggregate measure. The aggregate measure in this case was based on accessibility, availability, quality and status, each of which was ranked on a five-point ordinal scale. The eight variables that were examined where income and assets, education, food and nutrition, participation, sanitation, water, reproductive health and primary health status. In this case, equal weights were assigned to each variable on which the aggregate measure was based.

It is common to find that most studies assume equal weighting of the variables when composite indicators are constructed. This in turn implies that all indicator variables are considered to be of equal importance. In application, this is not ideal. Some researchers have

[1] The HDI is an index which utilises a scale which ranges from zero to one. Zero represents the lowest level of human development, while one represents the highest level of human development. The index comprises of a combination of measures namely, health, education and adjusted real income per capita. The health component examines longevity which is measured by life expectancy at birth. The education component measures knowledge. This is measured by means of a weighted average of adult literacy (two-thirds) and also the gross school enrolment ratio (one-third). Lastly, the adjusted real income per capita component accounts for the standard of living of individuals. (Todaro and Smith, 2012:48).

therefore employed subjective weighting methods which rely on participatory methods, judgments of experts and even their own judgment. Even though there have been much promise with regard to the fact that these methods may be more realistic than applying an equal weighting system, the validity and reliability of this subjective approach has been strongly questioned (Dalton-Gretyling and Tregenna, 2014:7). The basic approach of summing the number of indicator variables or assets by assigning equal weights to each also poses an arbitrary problem and at the same time does not make it possible to account for the quality of the various indicator variables (Bhorat et al., 2014: 4). In the case of any in-depth poverty analysis, this would be a huge downfall as quality is indeed a very important characteristic that should be measured particularly in the case of variables or assets such as education, health, electricity and sanitation.

To account for all these issues that result from an equal weighting scheme, statistical approaches and be used to determine the most appropriate weights for the various indicator various. These techniques include Principal Components Analysis (PCA), Factor Analysis (FA) and Multiple Correspondence Analysis (MCA) and are used to derive an asset index, by taking access to public services (e.g. sanitation facility, fuel source, frequency of refuse removal) and ownership of private assets (e.g. television, landline telephone, cellular phone) into consideration. These variables also have to be weighted and aggregated, but this time statistical techniques are employed instead of simply giving each variable equal weight.

Another advantage associated with these techniques is the fact that they do not call for a priori assumptions for the weights of the different indicator variables (Dalton-Gretyling and Tregenna (2014:7). These statistical techniques (PCA, FA and MCA) will however be discussed in greater detail in the next section. What is vital to understand at this point is the fact that composite welfare indicators act as a very important tool which can be utilised to give a more comprehensive picture of poverty in all its facets. For this reason, the quality of a composite indictor as well as the reliability of the message it conveys is dependent on the methodology employed to create it but more importantly, it is heavily dependent on the data and framework within which it is applied (OECD, 2008:17).

2.5.2 Poverty line

The construction and use of poverty lines are integral to any type of poverty analysis. A simplistic definition - a poverty line is a set of cut-off points which separate the poor from the non-poor. This can be illustrated with the following simple example: if the poverty line is set at R500, it would therefore mean that a household earning R500 and above would not be counted as being poor whereas those earning less than R500 would be counted as being poor. Is this however actually true? It should be noted that a poverty line in essence is an imperfect theory. It is however necessary in order to conduct any type of poverty analysis as a line needs to be drawn *somewhere* before the nature and trends in poverty can be examined and understood (Woolard and Leibbrandt, 2006:18).

A poverty line can be expressed in a monetary or non-monetary form (Coudouel *et al.*, 2002:33). Once a poverty line has been established, depending on whether variables are money-metric or non-money-metric, individuals who fall below the poverty line are considered to be poor. According to Ravallion (1998:ix) poverty lines serve two distinctive roles: (1) to determine the minimum level in terms of the standard of living before an individual is no longer considered to be poor; (2) poverty line is used as a tool to make interpersonal comparisons. This means that by using different poverty lines, comparisons can be made between different household sizes, between those who reside in difference places and at different times. It enables us to find out the cost of living between people from different circumstances and as a result, by knowing this, the aim would therefore be help put measures and policies in place to ensure that poverty alleviation occurs.

With regard to poverty measurement, there are two main approaches that can be utilised to set a poverty line. The first approach is absolute while the second approach is relative. Absolute poverty lines are constructed on a pre-determined minimum standard of living that households are supposed to achieve to satisfy their basic needs, while relative poverty lines examine the overall distribution of either income or consumption of the population. Lastly, a poverty line can also be constructed by the combination of both absolute and relative poverty lines. When this occurs, it implies that the relative position of households will be examined while inequality will also be taken into account (Coudouel *et al.*, 2002:33).

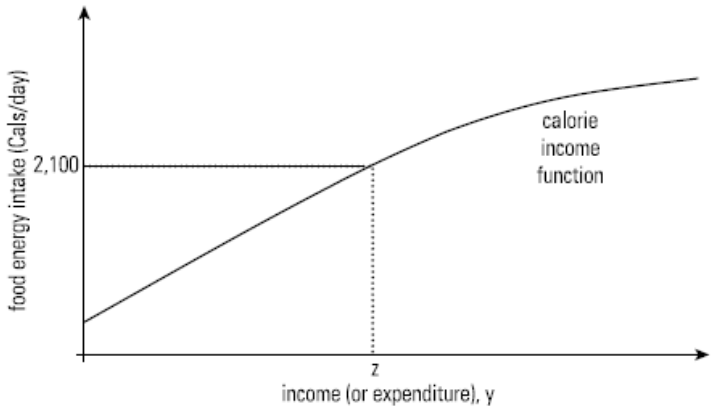
2.5.2.1 Absolute poverty lines

Absolute poverty lines adjust only for inflation and therefore remain fixed over time. It is therefore a good measure to employ when one intends on painting a picture of poverty over time but can also be used to examine the impact of various polices on poverty (Haughton and Khandker, 2009:39). With regard to the nature of absolute poverty lines, it is based on the theory that a household's or individual's poverty status or welfare is only related to his or her own consumption or real income, that a changing standard of living of a society or the individual or households relative position in society is not an influencing factor (Leibbrandt and Woolard, 2015:7). In practise, there are two main methods that can be employed when constructing absolute poverty lines, namely food-energy intake (FEI) method and cost-of-basic needs (CBN) method (Ravallion, 2008:5).

It is often found that food or calorie needs by individuals are the focus with regard to setting absolute poverty lines. This makes reference to the FEI method. This is particularly in the case of developing countries due to the fact that in these countries, the poor spend most of their income on food. This means that the required daily intake of calories is used to determine how much food is needed by individuals (Govender *et al.*, 2006:13). For example, if 300 calories represent the daily recommended calorie intake per day, then individuals who consume less than this amount will be considered as poor. In the same breath, only a meek allowance is made for non-food items with regards to absolute poverty lines in the context of developing countries (Woolard and Leibbrandt, 1999:9).

The aim of the FEI method is to determine the level of income or consumption expenditure required to ensure that the household is able to attain the stipulated energy requirement. As mentioned above, an allowance is made for non-food items. If one thinks about this, realistically, no matter how poor an individual may be, a portion of their money will be spent on other goods which are not food items such as clothes and toiletries. Figure 2.1 represents a calorie-income function. As expenditure or income rises, food energy intake also increases but the increase in calories per day is deemed to be slower than the increase in expenditure or income.

Figure 2.1 Calorie Income Function



Source: Haughton and Khandker, 2009:55.

The function is derived by plotting food energy intake (vertical axis) against income or expenditure (horizontal axis). The line of best fit, as indicated in the figure above, 2 100 calories per day is therefore considered as the calorie norm. This therefore represents the minimum nutritional requirement. Point z denotes the income or expenditure at which an individual would then attain the specified 2 100 calorie intake. This implies the income / expenditure at this threshold is regarded as the money-metric poverty line.

In the real life application of this FEI method, reference can be made to the seminal work done by Deaton. In the construction of poverty lines for a typical household using this caloric intake method firstly requires data on the number of calories consumed by each household over the last 30 days. These figures are then divided by 30 to put them on a daily basis, after which the figures are divided by the number of people in the household. The final figure then represents the daily per capita calorie consumption (Deaton and Dreze, 2010:79).

There are however a few drawbacks with this approach. Firstly, if this approach is to be applied in a real life context, the establishment of a single food energy requirement will not be realistic as the calorie intake of people will vary, depending on their age, gender and employment they find themselves in (Govender *et al*., 2006:14). From an overall perspective, this could be based on the fact that people require different levels of calorie intake due to differences in metabolism and activity levels. In other words, since everyone's food energy requirement may differ, their corresponding poverty line may also be different.

Secondly, behaviour differs from household to household and the food / calorie intake approach does not account for the consumption behaviour of households (Woolard and Leibbrandt, 1999:9). Households have different preferences and as a result, their consumption patterns differ. These drawbacks are therefore a clear reminder that there will always be an arbitrary element attached to the construct of poverty lines no matter which type of method is used. For this reason, it has been suggested that the focus should therefore shift from trying to determine the number of people whose income and expenditure all below the poverty line to actually focusing on and assessing the extent and changes in poverty over certain periods of time (Govender *et al*., 2006:14).

With regard to the CBN method, absolute poverty lines are constructed by determining the level of consumption that is needed for a certain basket of goods as well as services which is viewed as the minimum basket required to be classified as non-poor. This basket of goods is therefore kept constant. It should however be noted that the nominal cost of this basket of goods will fluctuate over time to keep its value fixed in real terms (Leibbrandt and Woolard, 2015:7). This means the poverty line is set in a way that it denotes the same purchasing power over time. As a result, the absolute poverty line is fixed but will however differ between different countries, provinces or regions (Haughton and Khandker, 2009:45).

A well-known example of absolute poverty lines (in 2000 prices) in the South African context were proposed by Woolard and Leibbrandt (2006: 21-22), using the consumption basket from the IES 2000 data. The authors first make reference to a food poverty line with the value of R211 as this was the calculated cost of purchasing sufficient food items to satisfy the daily food energy requirement of the average person over a month. Secondly, a lower bound poverty line (LBPL) was set at R322 per month. This LBPL comprises of expenditure on food items (R211) and essential non-food items (R111). Lastly, the upper bound poverty line (UBPL) was set at the value of R593 per month by accounting for both food items (R211) and non-food items (R382). Based on this, individuals whose consumption is below this line (R593) will be classified as poor.

When comparing the two methods, the minimum basket of goods is mainly associated with food-energy requirements mainly based on common diets which are applicable within the

context of poverty. The difference however lies in the fact that allowance is also made for non-food products. As a result, the focus is not only on nutrition alone as other aspects of health and well-being are accounted for (Ravallion, 2008:5). In addition, the cost of the bundle will be estimated for different subgroups whether it is urban verses rural or a comparison between provinces for example (Haughton and Khandker, 2009:49).

A brief outline for constructing an absolute poverty line according to the CBN approach is illustrated below. According to Haughton and Khandker (2009:50) (citing Rowntree, 1941), even though the approach considers food (calorie intake) and non-food products, the poverty line is always measured in monetary terms. The CBN approach can be broken down into four steps as found in Haughton and Khandker (2009:50) as well as Woolard and Leibbrandt (2006: 21):

- Identify the different types of food items that are most likely to be consumed by the poorest of the population. The percentage of the poor taken into account will therefore differ from country to country.
- Once this has been done, a nutritional requirement must be decided on in the light of it being required for good health. For example, 2 100 calories per individual, per day is considered to be required for good health. After which, the cost associated with attaining this diet is then calculated (at market price). From a mathematical aspect, this component will be denoted as $z^{F.}$
- Allowance then has to be made for the essential non-food component (z^{NF}).
- Lastly, the poverty line is therefore given by: $z^{BN} = z^{F} + z^{NF}$. This poverty line therefore represents the cost associated with obtaining food that is on a level considered to be satisfactory in terms of avoiding hunger and at the same time.

Like in the case of the FEI method, the CBN method also has a few drawbacks. Firstly, what seems to make this approach more reliable and favourable is the fact that it consists of a non-food component. When applied, it should however be noted that there is some debate about how the allowance has to be made for this non-food component (Haughton and Khandker, 2009:54). Secondly, price data may not be available. The CBN approach required the prices of the goods that the poor is most likely to consume. If price data were unavailable, this would therefore bring about numerous problems when the above four steps are applied.

(Haughton and Khandker, 2009:54). Thirdly keeping in line with the non-food component, it tends to rise in relation to national income (Woolard and Leibbrandt, 2006: 21). Moving away from the non-food component, a shortcoming of the CBN method is that the poverty line is not always constant as it might have to be adjusted for different areas within a country. This may be applicable in the comparison between urban and rural areas as access and prices to goods and services may differ. Lastly, with the CBN method, it is expected that similar poverty lines would be constructed for different countries when in reality this is not the case. One of the main reasons for this is related to the fact that the types of food consumed by those who are deemed to be poor differ immensely across the world (Woolard and Leibbrandt, 2006: 21).

2.5.2.2 Relative poverty lines

While absolute poverty lines are centred on survival and physical well-being, relative poverty lines on the other hand differ as the focus shifts to social norms. This means that relative poverty lines examine poverty from the perspective of the standard of living in a particular society. When applied, the poverty line is more likely to be a function derived from the mean or median income (Leibbrandt and Woolard, 2015:7). Relative poverty is mainly examined when the focus is on the poorest proportion of the population (Haughton and Khandker, 2009:43).

A relative poverty line may be constructed based on the standard of living in a particular community. If certain households within the community fail to meet this standard, they fall below the relative poverty line. A relative poverty line is defined as the income level which separates the poorest percentage of the population in the national income distribution. The poorest percentage chosen is often 40% but it must be noted that there is always an arbitrary element as to what this percentage should be. This method is however debated for two reasons. One reason relates to the fact that the method is based on the premise that there will always be poor people no matter what. This therefore implies that even if a big change in the standard of living were to occur, the proportion of people who are living in poverty will remain unchanged. The second cause for debate suggests that this method presumes the extent of poverty. Using the example of 40%, it seems to suggest that this percentage is often used without even conducting relevant research to determine whether this figure is actually

realistic. This is something to bear in mind as it is more likely to differ greatly depending on the country and region under examination (Woolard and Leibbrandt, 1999:10).

In practise, conducting any type of poverty analysis, using a single poverty line would be unrealistic. For this reason, many researchers agree that it would be more useful to utilise several poverty lines. This in turn implies the application of both absolute and relative poverty lines. It can also refer to the use of a poverty critical range or a range of income (expenditure) which is pre-determined which determines the range or boundaries within which poverty levels must be examined. The advantage of this would be that this would allow for tests in the sensitivity of measures to be conducted in relation to the impact of minor changes in the determination of a poverty line (Govender *et al*., 2006:13, citing Ravallion, 1999).

2.5.2.3 Objective poverty line versus subjective poverty line

Just as poverty lines can be absolute or relative, in practise, poverty lines can also be referred to as being objective or subjective (Ravallion, 2008: 5). Absolute and relative poverty lines are referred to as objective poverty lines. We therefore believe that they are established by so called experts of poverty and related fields who determine the levels of consumption or expenditure that must be achieved in order to not be defined as poor (Leibbrandt and Woolard, 2015:8). Methods such as the FEI and CBN are used to develop objective poverty lines.

In contrast, subjective poverty lines highlight the importance of the actual poor being included in the process of establishing what constitutes poverty, as the poor have a better idea about the necessaries to survive from first-hand experience. The notion of subjective poverty lines questions how objective and accurate researches really are. It also argues that poverty will be best understood by getting regular people involved as poverty in true essence of the word is deemed to be socially determined. (Leibbrandt and Woolard, 2015:8).

Overall, the subjective approach to determining poverty lines is fundamentally personal judgements that people formulate on their own with regard to what is considered to be a socially acceptable minimum standard of living (Ravallion, 1992:33).

2.5.3 Summary statistics

This step involves the generation of a summary statistic to aggregate the information from the distribution of the welfare indicator and this will be relative to the poverty line (Haughton and Khandker, 2009:10). The establishment of a welfare indicator and a poverty line is therefore only the beginning of poverty measurement. After these two aspects have been established, actual poverty levels and trends have to be determined. The measures employed to do this however, have to meet a certain criteria which would deem them as suitable.

For any measure to provide an indication of the level of poverty for any type of poverty analysis, four principles govern the quality of these measures (Sen, 1976). In other words, these principles provide a benchmark that should be used to evaluate prospective poverty measurement tools. If poverty measurement tools satisfy these principles, this in turn gives an indication that the poverty measure is suitable (Govender *et al*., 2006:14). According to Sen (1976) the four principles or axioms are as follows:

- Monotonicity: The poverty index must rise in the case where income of poor people decreases. This axiom therefore speaks of an indirect relationship between poverty and the poverty index in relation to income;
- Population symmetry: If two or more identical populations are pooled, the index should not change;
- Transfer: Transfers of income made by a poor person to any individual must cause the index to rise, irrespective of whether these individuals who will be receiving the transfer are poor or not;
- Proportion of poor: If the proportion of the population defined as poor increases, the index must also increase.

Bearing these axioms in mind, it is important to note that a poverty measure on its own is a statistical function that converts the assessment of the well-being indicator and poverty line into one aggregate number. This number represents the entire population or it can represent the population as a sub-group (Coudouel *et al.,* 2002:33).

The most commonly used poverty measures are those proposed by Foster, Greer and Thorbecke (1984)[2], which could be expressed as follows:

$$P_\alpha = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{z - y_i}{z}\right)^\alpha \Bigg| (y_i \leq z)$$

Where:

P_α = measure of poverty

q = number of poor people

n = total number of people

z = poverty line

y_i = income of the i-th person in the population

Three poverty measures can be derived from using the equation above, namely the headcount index (P_0) the poverty gap index (P_1) and squared poverty gap index (P_2) (Ravallion, 1992:35). Each of these indices will be explained in some detail below.

2.5.3.1 Headcount Index

One of the most popular poverty measures to date is known as the headcount index (P_0), which measures the share of the population who is defined as poor. This is usually determined by examining whose income or consumption is below the poverty line (Coudouel *et al*, 2002:33). P_0 therefore illustrates the incidence of poverty.

From a more statistical point of view, P_0 is constructed as follows: P_0 denotes the proportion of the population counted as poor. N_p represents the number of poor that has been established while N represents the total sample or population under study. Since the headcount index is one of the foremost measures of poverty, it only makes it natural to want to examine it in relation to the four axioms of a good poverty measure and at the same time, highlight the strengths and weaknesses associated with the measure. One of the main reasons why this method is preferred is that it is easy to construct and comprehend. A weakness associated with this measure is that it does not take the intensity of poverty into account. In other words,

[2] For the remainder of the dissertation, it will be referred to as the FGT poverty measures.

it does not indicate how poor the poor actually is (Haughton and Khandker, 2009:69). This weakness can be illustrated by means of the table below.

From the hypothetical example in Table 2.1, even though the poverty headcount poverty rate is the same (50%) in both countries, there is actually some indication that Country Red is in fact worse off when compared to Country Blue, as the two poor people in Country Red only earn R100 compared to the two poor people in Country Blue (earning a higher R125). The headcount index does not change if people who live below the poverty line become poorer. In addition to this, it can be noted that the fastest and easiest way to reduce the headcount index is to target people who fall just below the poverty line. These individuals are viewed as being the "cheapest" to move across the poverty line. However, if any thought is given to this reasoning, wouldn't it seem more just to help the poorest of the poor? (Haughton and Khandker, 2009:69)

Table 2.1: Poverty headcount rates in two hypothetical countries (poverty line: R150)

	Expenditure of each individual				**Headcount Poverty Rate (P_0)**
Country Blue	180	180	125	125	50%
Country Red	180	180	100	100	50%

Source: Adapted from Haughton and Khandker, 2009:69.

When reference is made to Sen's axioms which describe the qualities of a good poverty measure, the headcount index fails to satisfy two of these axioms. According to Govender *et al*. (2006:15) as well as May and Woolard (2005), this measure firstly fails to meet the monotonicity and transfer axiom. The monotonicity axiom is not met because the headcount index does not automatically rise or fall when changes in the distribution of expenditure or income occur. This point therefore ties in with what was mentioned earlier, that the headcount index does not change if people who live below the poverty line become poorer. Secondly, the transfer axiom is not met as transfers from poor to poorer do not result in a rise in the headcount index. The opposite occurs in actual fact. For this reason, the headcount index is not able to capture the severity of poverty. Despite the fact that the headcount index fails to meet the monotonicity and transfer axiom, it does meet the proportion of poor axiom and the population symmetry axiom.

With reference to Table 2.1, the poverty headcount index is unchanged at 50% when two identical populations were pooled. For this reason, the population symmetry axiom is met. Lastly, the proportion of poor axiom can be examined with the aid of another hypothetical example in Table 2.2: according to the proportion of poor axiom, if the proportion of the population defined as poor increases, then the index must also rise. Since three out of four people were deemed to be poor in 2015, compared to the two out of four in 2014, there was indeed an increase in the population defined as poor. As a result, the headcount index increased from 50% to 75% which in turn proves that the axiom is met.

Table 2.2: Poverty headcount rates in 2014 vs 2015 for hypothetical country Blue (poverty line: R150)

	Expenditure of each individual				**Headcount Poverty Rate (P_0)**
Country Blue (2014)	180	180	125	125	50%
Country Blue (2015)	180	125	125	125	75%

Source: Adapted from Haughton and Khandker, 2009:69.

2.5.3.2 Poverty Gap Index

The poverty gap index (P_1) measures the depth of poverty. It is considered to be a better measure of poverty when compared to the headcount index as it indicates the aggregate poverty deficit of the poor in relation to the poverty line (Ravallion, 1992:36). The poverty gap index therefore examines the extent to which the poor fall below the poverty line and is expressed as a percentage of the poverty line. In more technical terms, this implies that the poverty gap (G_i) is defined as the poverty line the poverty line (z) minus actual income (Y_i) for poor individuals. It is therefore important to note that the poverty gap is considered to be zero for everyone else. This means that income or expenditure above the poverty line is not accounted for in the summation of the poverty gap index. By employing an index function, the poverty gap $(G_i) = (z - yi) \cdot I\ (yi < z)$. P_1 is therefore formally represented by the following equation:

$$P_1 = \frac{1}{N} \sum_{i=0}^{n} \frac{G_i}{z}$$

A practical example of how the poverty gap index is computed is illustrated in Tables 2.3 and 2.4 below. These two examples clearly show that even though both countries had the same P_0 of 50%, P_1 for each country differs. P_1 is greater for Country Red than Country Blue due to the fact that a greater amount of income is needed to eliminate absolute poverty in Country Red as indicated by the poverty gap of 50 versus the poverty gap of 25 in Country Blue.

Table 2.3: Poverty gap index in a hypothetical country Blue (poverty line: R150)

Expenditure of each individual	180	180	125	125	Poverty gap index (P_1)
Poverty gap	0	0	25	25	= 0.0835
$\boldsymbol{Gi_z}$	0	0	0.167	0.167	[= 0.334 / 4]

Source: Adapted from Haughton and Khandker, 2009:70

Table 2.4: Poverty gap index in a hypothetical country Red (poverty line: R150)

Expenditure of each individual	180	180	100	100	Poverty gap index (P_1)
Poverty gap	0	0	50	50	= 0.1670
$\boldsymbol{Gi_z}$	0	0	0.333	0.333	[= 0.666 / 4]

Source: Adapted from Haughton and Khandker, 2009:70

In contrast to the headcount index, changes in the poverty gap index reflect welfare changes to a single poor household or a number of poor households. Based on the above two tables, the headcount index forms part of the poverty gap index computation. It is therefore important to note that when applied, data must allow for income or expenditures to be ordered in ascending order (Shea, 1997:5). Another feature of the poverty gap index is that it is sensitive to changes in income or welfare experienced by poor households. On the other hand, it is insensitive to changes in the distribution within poor households. This in essence means that if income of the poorest households increases while the income of the least poor falls by the same amount, the poverty gap index would remain unchanged (while the headcount index would also remain the same) (Shea, 1997:5).

Again, when the poverty gap index is examined in the light Sen's four axioms, two out of the four are only met. Firstly, the index meets the monotonicity axiom. This is based on the fact that the poverty gap would rise if the income of the poor falls. Secondly, the population

symmetry axiom is met as there is no change in the index when the pooling of two or more identical populations occurs. On the other hand, due to the fact that the poverty gap is not affected by transfers that occur among the poor, which in turn leads to greater inequality with regard to income/expenditure distribution, the poverty gap does not satisfy the transfer axiom. Lastly, the proportion of the poor axiom is not satisfied as the measure is not dependent on the actual number of people who are poor. For this reason, it does not always mean a change will occur when there are increases or decreases in the number or proportion of poor people.

2.5.3.3 Squared Poverty Gap (Poverty Severity) Index

The squared poverty gap index differs from the previous two indexes due to the fact that they account for inequality among the poor. The squared poverty gap index (P_2) therefore examines the severity of poverty. The method requires the weighted summing of poverty gaps but in this case, equal weights are not given. Weights are allocated as a proportion of the poverty line. To be more specific, households who are considered to be worse off is allocated larger weights (Shea, 1997:7). The squared poverty gap is therefore denoted as follows:

$$P_2 = \frac{1}{N}\sum_{i=1}^{n}\left(\frac{G_i}{z}\right)$$

The example in Table 2.5 and Table 2.6 illustrates how P_2 for each country is computed. The examples below are an extension of the poverty index example above. This is not only done for simplicity but it is also used to express how the squared poverty gap index is an extension of the poverty index.

Table: 2.5: Squared poverty gap index in a hypothetical country Blue (poverty line: R150)

Expenditure of each individual	180	180	125	125	Squared Poverty gap (P_2) = 0.014 [= 0.056 / 4]
Poverty gap	0	0	25	25	
$\boldsymbol{Gi_z}$	0	0	0.167	0.167	
$\boldsymbol{(Gi_z)^2}$	0	0	0.028	0.028	

Source: Adapted from Haughton and Khandker, 2009:72.

Table: 2.6: Squared poverty gap index in a hypothetical country Red (poverty line: R150)

Expenditure of each individual	180	180	100	100	Squared Poverty gap (P_2) = 0.055 [= 0.222 / 4]
Poverty gap	0	0	50	50	
$\boldsymbol{Gi_z}$	0	0	0.333	0.333	
$\boldsymbol{(Gi_z)^2}$	0	0	0.111	0.111	

Source: Adapted from Haughton and Khandker, 2009:72.

When a comparison is made between country Blue and Red, poverty is more severe in Country Red as indicated by the greater squared poverty gap ratio. P_2 is greater for Country Red because the index gives more weight to the poverty gap of the worst-off households. From the example above, it is evident that Country Red still has the bigger poverty gap and thus poverty is much more severe in Country Red. Even though this measure meets the transfer axiom, one of the main drawbacks of this approach relates to its difficulty to interpret. This is the main reason for this approach is not used very widely (Haughton and Khandker, 2009:72).

The three FGT poverty measures can be best summarised as follows: P_0 allows us to identify the *proportion* of households or individuals who are classified as being poor; P_1 helps to determine the *depth* of poverty experienced by these individuals or households; P_2 provides a picture of the *severity* of poverty (Shea, 1997:8).

2.5.4 Cumulative density function for dominance testing

In addition to the FGT poverty measures, another generally used poverty measure is cumulative density functions (CDFs) for dominance testing. This in essence refers to whether poverty estimates are sensitive to the poverty line that is chosen. By plotting the headcount index on the vertical axis and the poverty line on the horizontal axis, where the horizontal axis varies from zero to maximum consumption, a CDF will be formulated. The CDF can therefore be referred to as the poverty incidence curve as each point on the curve represents the proportion of the population whose consumption is less than the amount stipulated on the horizontal axis (Ravallion, 1992:57). This in turn implies that as the corresponding cumulative proportion of the population will increase as real income increases. This tool can be better understood by the aid of Figure 2.2.

Figure 2.2: Cumulative density functions of a hypothetical country, 2015 vs. 2016

Figure 2.2a

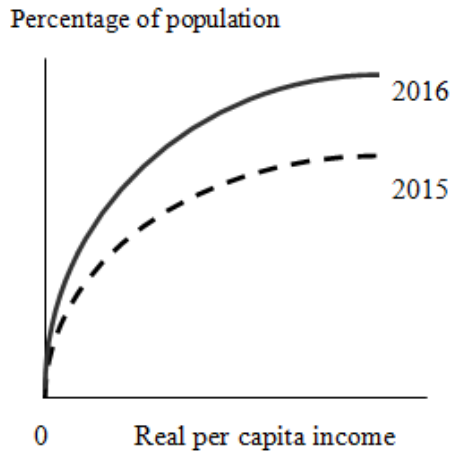


Figure 2.2b

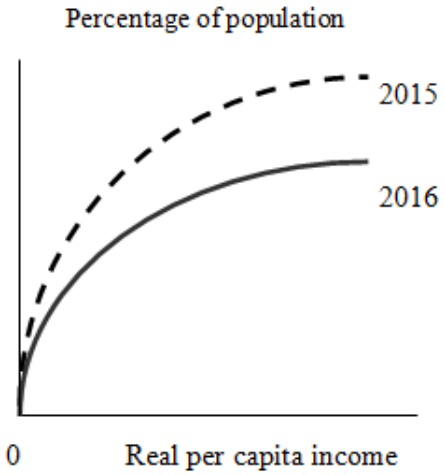


Figure 2.2c

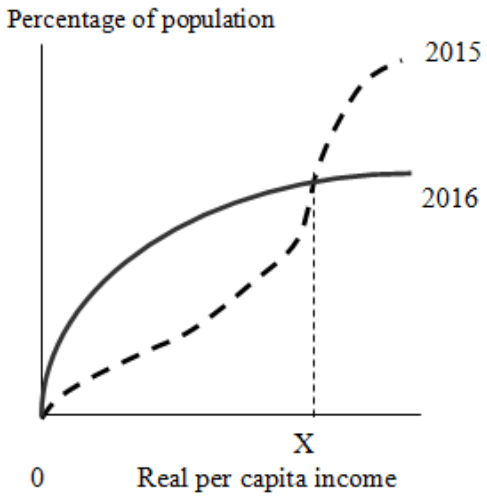
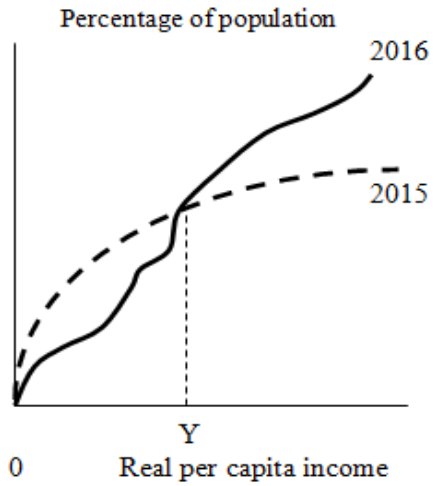


Figure 2.2d



Source: Adapted from Yu, 2012: 206.

In Figure 2.2a, the whole CDF for 2016 is higher than the CDF for 2015 on the horizontal axis. Hence, this implies that poverty has increased, irrespective of the poverty line chosen. Figure 2.2b illustrates the opposite scenario, as the CDF for 2015 is higher than the CDF for 2016 which means that poverty has decreased, irrespective of the poverty line.

It is possible that the CDFs cross each other, which indicates that the comparison of poverty estimates between two periods is sensitive to the poverty line that is chosen. In Figure 2.2c, at any level of income to the left of X or below X, poverty was lower in 2015. However, at any

level income to the right of X or higher that X, it becomes evident that poverty was in fact higher in 2015 when compared to poverty in 2016. Similarly, in Figure 2.2d, if a poverty line that is lower than Y is used, it would mean that from 2015 to 2016, poverty decreased while the opposite would occur if a poverty line greater than Y is used. With aid of the figures above, it is evident that an advantage of this method is that it helps determine whether poverty has increased over time, independent of any single poverty line (Ravallion 1992:65).

2.5.5 Per capita variable vs. Per adult equivalent variable

Up to now, the focus has been on money-metric measures as a means of poverty measurement. It should however be noted that in reality, no two households are identical as they differ in size, consumption, demographic composition, income and expenditure. This in turn means that the amount of resources required by households to make ends meet differs for each household. For this reason, a direct comparison of aggregate household consumption would not paint a very accurate picture of well-being as the households achieve different levels of well-being. For example, a family of three living in a rural area may be able to survive on a total income of R2 000 per month whereas a family of three in an urban area may not be able to survive on the same income (World Bank, 2005:21).

Direct comparisons of household consumption may be misleading. It is therefore common practise to make use of some form of normalisation (Ravallion, 1992:17). The use of the per capita variable is considered to be the simplest and most commonly used normalisation. This method requires that household consumption be divided by household size, after which comparisons are made on the basis of household per capita consumption. The per capita method sets the number of adult equivalents equal to the number of household members. This therefore implies that the needs of a child costs as much to meet as that of an adult and also there are no economies of scale involved (Streak *et al.,* 2009:192).

A more complex form of normalization has however gained popularity, where household consumption is converted to consumption per equivalent adult. In this case, a household of a specific size and demographic composition is taken to have the equivalent needs of a given number of adult males (Woolard and Leibbrandt, 1999:12). There is however a number of adult equivalent scales (AES) and per adult equivalent income or expenditure should be used

for measuring poverty. AES is a tool which has been developed to allow conversion of household welfare for households of heterogeneous size and composition into welfare measures for individuals within the household context. In order to achieve this, AES are based on assumptions about economies of scale and household composition (Streak *et al.*, 2009:188).

Despite of the number of AES's that exist to date, the most popular and commonly used AES is known as the 'double parameter class of scales'. This AES was introduced by Cutler and Katz in 1992. The scale is represented by the function:

$E = (A + cK)^{e}$

where

E = The number of adult equivalents in the household;

A = The number of adults in the household;

K = The number of children in the household;

c = A constant reflecting the resource cost of a child relative to an adult, with $0 \leq c \leq 1$

e = The overall economies of scale in household size, with $0 \leq e \leq 1$.

With regard to the assumption based on economies of scale, in the case where consumption by the household is mainly on food which is a common finding in developing nations, there should be few economies of scale which would therefore mean that e should be close to 1. In the event where households become better off in terms of wealth, it implies that less money would go to food consumption and more would be spent on other goods and services. This would therefore mean that economies of scale would increase, having the opposite effect on e, implying that it would fall. With regard to the second assumption about household composition, it is assumed that children[3] have smaller food needs when compared to adults. In the case where the majority of household exoenditure is spent on food, this would mean that food for the children should cost less. It should be noted that in reality, there can be no universal or scientifically determined true value for c as this value will differ from country to country, age to age and ultimately from child to child. Since it is assumed that children eat less than adults, as income rises and food expenditure declines, c will approach 1. Often, c is

[3] A child is an individual younger than 18 years according to the South African Constitution. This definition is applied here unless otherwise stated.

set by making a comparison of the energy requirements for different groups. Adults as well as children consume both food and non-food items and as a result, there is no reason to expect that non-food items cost would have the same ratio (Streak *et al.,* 2009:189). Another approach would be the Engel method which is also an older method. This method however extends beyond the scope of this paper.

In addition to the AES proposed by Cutler and Katz, other commonly used AES are illustrated in Table 2.7 below, but they fall beyond the scope of this study and will not be discussed further.

Table 2.7: Commonly used adult equivalence scales

Scale	Equation
Square root scale[#]	$E = (A + C)^{0.5}$
OECD original[##]	$E = 1 + 0.7 \times (A - 1) + 0.5C$
OECD modified[###]	$E = 1 + 0.5 \times (A - 1) + 0.3C$
Double parameter class of scales	$E = (A + cK)^{e}$, $0 \leq c \leq 1$, $0 \leq e \leq 1$.

Sources: Deaton and Paxton (1997); OECD (2008); Streak, Yu and Van der Berg (2009).
[#] This scale approximates the number of equivalent adults as the square root of household size (to address economies of scale). The different needs of adults versus children are not distinguished.
[##] This scale assigns a value of 1 to the first household member, of 0.7 to each additional adult and of 0.5 to each child.
[###] This scale assigns a value of 1 to the first household member, of 0.5 to each additional adult and of 0.3 to each child.

Even though a number of AES exist, in the end the choice of scale, the child cost relative to that of an adult, and the decisions about the value of the parameters for economies of scale is based less on theory and empirical evidence and is based more on convention and assumption (Streak *et al*, 2009:189, citing Corak, 2005).

2.6 A multidimensional approach to measuring poverty

Interest in multidimensional poverty has gradually grown over the last ten years, not only in a purely academic sense but also in relation to policy debate (Ferreira and Lugo, 2012:2). Multidimensional poverty is considered to be a more robust tool that can be used to capture poverty as it includes an assortment of indicators instead of only looking at income or expenditure. Poverty is now widely recognised as a multidimensional phenomenon. For this

reason, it extends beyond a narrow lack of resources or material consumption as it also comprises of low achievements in education, poor health status, feelings of vulnerability to external events, and acknowledges the psychological pain and effects that being poor has on individuals. Since poverty is a multidimensional phenomenon, it would perhaps be for the best to also consider a multidimensional instrument for poverty measurement to provide a more holistic picture of poverty trends (Finn, Leibbrandt and Woolard, 2013:2).

One of the leading arguments for the use of multidimensional poverty measures is that it allows for the main causes of poverty to be identified. This in turn means that better socioeconomic polices can be formulated and adopted by nations to reduce poverty and prevent the transmission thereof (Costa, 2003:2). Another motivation for multidimensional approaches relate to the fact that income on its own only denotes the means to achieving a better life but is not actually the better life itself (Statistics South Africa, 2014a:2). With regard to the proposed methodologies associated with measuring multidimensional poverty, literature has highlighted that these methodologies can be ranged from axiomatic and information theory approaches, to latent variable methods and fuzzy set theories (Alkire & Santos, 2013:240). Bearing this in mind, on the other hand, some studies also examines non-money-metric poverty by making use of statistical techniques. A few multidimensional approaches to examining poverty will be discussed below.

2.6.1 Principal Components Analysis (PCA)

The PCA technique is a multivariate technique that is employed in welfare analysis to construct an asset index which acts as a proxy for household wealth. It is employed under the assumption that in the long run, the wealth of households explains the maximum variance in the asset variables (Schiel, 2012:4). This approach is therefore a linear index of all the variables that capture the largest amount of information that is common to all the variables (Filmer and Pritchett, 2001:116). PCA decomposes the variance of a set of variables into a number of orthogonal components. These components comprise of a weighted sum of individual variables. The weighting for each individual variable is therefore proportional to the share of total variance that it denotes (Van der Berg *et al*, 2003:21).

This notion can be illustrated as follows: $P_1 = \sum_{i=1}^{n} a_{1i}\ X_{1i}$ is the first principal component, with $a_{ki} = \frac{\sum_{i=1}^{n} r_{x_{1xi}}}{\sum_{i=1}^{n}\sum_{j=1}^{n} r_{xjxi}}$ representing its sample variance given by the variance of the linear combinations of the indicators which takes the sample variances of the indicators into account as well as the sample covariance's across indicators.

Since weights are assigned to asset variables based on their standard deviation, the greater the standard deviation of the asset variable, the greater the weight allocated to it. For this reason, asset variables that are most unequally distributed carry the greatest weight (Yu, 2012:192). Components are calculated in turn, with successive elimination of the variation captured by the previous component. For example, in the case of the computation of the second principal component, it may be based on a matrix with elements which sum to:

$r_{xixj-}\ a_{1i}a_{1j}$.

The proportion of the total variance that each of the principal component explains is indicated by the eigenvalue ratios. This in turn is used to explain the number of components that should be included in the asset index (Van der Berg *et al.*, 2003:21). PCA therefore allows for the aggregation of several binary asset ownership variables into a single dimension (Moser and Felton, 2007:3). Different dimensions of poverty are therefore captured within the data due to each linear combination being uncorrelated with the others (Yu, 2012:192).

Today, PCA is one of the commonly used methods to derive an asset index. An advantage of PCA lies in the way it allows for patterns to be identified in data, and once the data is compressed by reducing the number of dimensions, not much information will be lost. Furthermore, according to Bhorat *et al*. (2014:4, citing Filmer and Pritchett, 2001), PCA is preferred due various reasons: firstly, it is intuitive as a means to extract shared information from a set of variables that are interrelated. The weights assigned to each asset variable are relatively easy to interpret. This is due to the fact that weights are allocated based on the amount of information it provides about the other asset variables. Also, since the weight allocated to the asset variable is dependent on the standard deviation, assets that are more unequally distributed within and across households would therefore be given a greater weight. In turn, assets that explain none of the variation across households will be excluded

from the analysis. Lastly, asset variables with positive weights are associated with higher socio-economic status (SES) in relation to the interpretation of these variables.

There are also two main drawbacks associated with PCA. Firstly, accuracy can be an issue with regard to the covariance matrix as it is difficult to assess if the aim is to do so in the most accurate fashion. Secondly, unless the data employed in relation to the PCA method does not explicitly specify invariance, any sort of invariance no matter how meek it may be will result in the invariance not being captured by the PCA (Karamizadeh *et al.*, 2013:174).

2.6.2 Factor Analysis (FA)

FA can also be used as a means to construct a non-money-metric measure of welfare (or an asset index). Unlike PCA, FA is an approach is aimed more at data exploration than dimensional reduction (Moser and Felton, 2007:5). FA enables the construction of poverty indicators without too many priori restrictions. FA is similar to PCA but differs as it makes leeway for error to a certain extent where PCA does not. Instead of utilising a variance-maximising procedure like in the case of PCA, FA estimates the quantity of variability as a result of common factors (Schiel, 2012:4). FA therefore captures latent variable and allows for the derivation of a community variable which provides an indication of variance of the original variables explained by the common factors and in turn provides a value for the latent variables (Schiel, 2012:5).

When applied with the intension of deriving an asset index, factor analysis takes the following form as suggested by Sahn and Stifel (2000):

$$a_{ik} = \beta_k c_i + \mu_{ik} \quad (1)$$

The variable a_{ik} represents i^{th} household ownership of an asset or service k, which is linked to a common factor c_i which in turn represents household welfare. The estimated value of β represents the strength of the relationship. The difficulty associated with the model above is stems from the fact that the dependent variable a_{ik} and its coefficient β are unobservable variables. The beauty of FA however stems from the fact that it allows for direct estimation of the relationship which in turn means that it is easier to construct suitable weights for the asset index (Bhorat *et al*, 2014:17).

FA is based on the assumption that the relationships between variables under consideration are reducible to a square correlation matrix. Based on equation (1) above, in vector form, the correlation matrix takes the form a_{ik} which denotes that unique correlations between k assets and services across i households. FA involves a reduction in the correlations into a single unique common factor which is denoted by f_{1i}. The values confined to this matrix are often referred to as factor loadings for the first common factor (Bhorat and Van der Westhuizen, 2013:298). The derivation of factor loadings on the unique factor is possible through the extraction of the maximum possible variance that exists across the assets and service variables. This is done by an estimation of both the unit roots of the correlation matrix (also known as eigenvalues as seen above in PCA section) and their eigenvectors (Bhorat *et al.*, 2014:17, citing Cattell (1965) and Child (1969).

Factor loadings in essence are important as they from the starting point of the construction of an asset index. This is mainly attributed to the fact that weights are estimated because it is not possible to impose a weighing structure on the different assets. FA therefore enables the assignment of an appropriate weighing structure for each and every asset relevant to a particular household. Therefore, the unique factor loadings provide information which allows for the derivation of the following:

$$c_i = f_1 a_1 + f_2 a_{22} + \cdots + f_k a_{ik} \qquad (2)$$

With reference to equation (2), f_1, …, f_k represent the weights being estimated onto the observed assets owned by households. These are also referred to as scoring coefficients which are then normalised for each household which in turn implies the derivation of an asset index for each household. This normalisation process takes places around the standard deviation and mean of each asset. For this reason, the asset index is constructed as follows:

$$A_i = f_1 \left(\frac{a_{i1-}\mu_1}{s_1}\right) + f_2 \left(\frac{a_{i2-}\mu_2}{s_2}\right) + \cdots + f_k \left(\frac{a_{ik-}\mu_k}{s_k}\right) \qquad (3)$$

With reference to the equation above, μ and s represent the mean and standard deviation respectively. With regard to interpreting the asset index, the higher the asset index, the more well off those households is deemed to be. On the contrary, the lower the asset index, the poorer the household (Bhorat *et al.*, 2014:17).

The use of FA in the examination of poverty is that it accounts for the covariance of the assets in the index for a smaller number of hypothetical common factors instead of forcing all components to accurately and completely explain the correlation structure between the dimensions as is in the case of PCA for example. In addition, all of the common factors are not forced to explain the entire covariance matrix as FA allows for the variance to be explained by asset-specific influences (Kabubo-Mariara *et al.*, 2010:12). A drawback of FA is that it may be difficult to provide an intuitive interpretation of deprivation values, person-specific achievement or the overall poverty index. For well-known person-specific asset index scores which are usually used to rank the population may not have an intuitive interpretation. It could also be that its components also may not have an intuitive interpretation like its assigned weights. For this reason, it is often not possible to set an absolute cut-off to identify the poor when poverty analysis is conducted using the asset index scores (Alkire *et al.*, 2015: 39). Lastly, in most forms of FA, singularity or extreme multicollinearity may be a problem (Kabubo-Mariara *et al.*, 2010:12).

2.6.3 Multiple Correspondence Analysis (MCA)

MCA, just like PCA and FA, is a statistical measure used to measure non-income poverty trends. MCA is considered to be the opposite of PCA. This is based on the fact that MCA works best with categorical data where as PCA does not due to the fact that it imposes linear constraints on the categories and it also requires the assumption of normally distributed variables (Adams *et al.*, 2015: 699). It is however important to clarify that PCA still works with categorical data, even though it is ultimately better suited for binary data. When employing MCA in poverty analysis, it allows for a pattern of relationships of numerous categorical dependent variables to be analysed. This technique therefore is best suited to nominal variables. It should however be noted that the MCA technique is able to accommodate quantitative variables if they are recoded as nominal observations (Njong and Ningaye, 2008: 10).

With regard to the MCA model, MCA is the application of the simple correspondence analysis (CA) algorithm to multivariate categorical data coded in the form of a Burt matrix or indicator matrix (*i.e.*, a matrix whose entries are 0 or 1) (Kabubo-Mariara *et al.*, 2010:12).

From a more statistical point of view, when MCA is applied the following notions are made. Firstly, there are K nominal variables and in turn J_k levels. J is therefore equal to the sum of J_k. Secondly, there are I observations. X therefore represents the $I \times J$ indicator matrix. When CA is performed on the indicator matrix this would then produce factor scores, two to be exact where one would be for the rows while the other would be for the columns. Since the factor scores scaled, it would mean that their variance is equal to their corresponding eigenvalue. The inertia matrix which is eventually diagonalised in the MCA is the Burt Matric which is deduced from the binary matric by $B = X^T X$. The principal of MCA is to extract a first factor which allows for the maximum information in the matrix to be retained. After this has been done, the first eigenvalue (λ_1) must be extracted as well as the related eigenvectors.

The Burt matric is of vital importance in MCA for two reasons: it plays a very important theoretical role as the eigenvalues that are formulated from its analysis give a better estimate of the inertia explained by the factors other than the eigenvalues of X. Also, from a practical perspective, it is computationally easier. When utilising MCA, two interpretations are made: firstly, the MCA calculates a discrimination measure on each of the factorial axes. This is done for each of the ordinal variables. Secondly, every variable modality has a coordinate on each of the extracted axes. The weights in the axis are therefore represented by the factorial score (Njong and Ningaye, 2008: 37).

Overall, the ultimate reason for the application of MCA would be to generate a composite indicator for each individual household (Njong and Ningaye, 2008: 10). MCA can be used to reduce dimensionality and when used in an appropriate normative setting with the purpose of creating an aggregate achievement value it would then be possible to identify the poor and also construct poverty indices. MCA is also useful for both the selection and the categorisation of indicators when constructing multidimensional measures (Alkire *et al.*, 2015: 37). Another advantage of using this technique is that the indicator would possess numerous desirable features of a poverty indicator which would include the monotonicity axiom and the feature that categories with fewer observations receive a higher weighting in the indicator score (Adams *et al.*, 2015: 699, citing Ezzrari and Verme, 2012).

2.6.4 Totally Fuzzy and Relative (TFR) indices of poverty approach

The totally fuzzy and relative (TFR) indices of poverty sets approach are another technique that was developed to examine the multidimensional nature of poverty. The approach was originally designed to examine poverty from a non-money-metric perspective but when applied, a money-metric income variable can be included. This approach differs in the sense that it does not assign arbitrary weights to different poverty dimensions. Instead, poverty dimensions are weighted based on how frequently the particular deprivation in the different poverty dimensions is experienced by the population. When computing the index, this would mean that less weight would be allocated to a certain dimension if it is a common deprivation experienced by the population. In contrast, if the deprivation is less common, more weight will be allocated to that specific dimension.

Since poverty is considered to be a vague concept, the fuzzy approach was designed to establish those who are extremely deprived or absolutely poor but it can also be used to determine the households who are relatively better off but just "meet" the poverty line. Instead of only making a distinction between the rich and the poor by means of a poverty line, the variable's top category represents affluence while the bottom category represents extreme poverty. The in-between categories indicate the degree to which individuals or households can be regarded as poor and this is done by means of an assigned score which is provided (Burger *et al*., 2004:2).

There are three main important advantages that the fuzzy set approach allows. Firstly, each household is measured in terms of its relative level of deprivation or poverty. Secondly, the fuzzy sets approach allows for the average poverty index of the population of households to be estimated. Lastly, the approach measures the relative deprivation and poverty corresponding to each variable or dimension of poverty undertaken by the study in which the approach is employed (Costa and De Angelis, 2008:306).

In terms of its application, instead of one critical level, the fuzzy approach is associated with two critical levels, namely minimum level and maximum level (Burger *et al*., 2004:4). The minimum level represents the level below which a person or household is indeed a member of the group while the maximum level represents the level above which a person or

household is certainly not a member of the group. In the case where a person or household falls between the two levels, then the person or household would belong to the group to a certain extent. These critical levels are therefore set in such a way to ensure that they correspond to the minimum and maximum categories in each poverty dimension. This is done to avoid arbitrary setting of critical levels which is done to prevent the approach from being susceptible to the same criticism as the traditional approach to poverty measurement (Burger *et al*., 2004:5).

A membership function characterises the fuzzy sets approach that determines the degree of membership to the fuzzy subset. If X is allowed to be a set, x can be an element of X. A, a fuzzy subset of X, is defined as: $A = \{x, \mu_A(x)\}$ for all $x \in X$. The mapping of X is $\mu_A(x)$ with the interval [0, 1]. This therefore indicates the extent of membership of x to A. Therefore μA (x) is the membership function to the extent that should $\mu_A(x) = 0$, x does not belong to the fuzzy subset of A. If $\mu_A(x) = 1$ then x in its entirety is a member of A. In the case where $0 < \mu_A(x) < 1$, then x only partly belongs to A. As $\mu_A(x)$ nears 1, the degree of membership with respect to A increases.

This method can therefore be used in poverty analysis. When applied, X can represent a set of k poverty dimensions so that $X = \{X_1, X_2, X_3 \ldots, X_k\}$in a population of n persons or households. $\delta(x_{ij})$ represents the membership function of the i-th individual in dimension X_j. It should therefore be noted that dimension X_j may be comprised of m categories of deprivation. Thus, with respect to the risk of poverty, the categories can be arranged in increasing order. This would mean that $x_j^{(1)}$ would denote the least risk of poverty while $x_j^{(m)}$ would denoted the maximum risk of poverty. Hence, $X_j = \{x_j^{(1)}, x_j^{(2)}, \ldots, x_j^{(m)}\}$ where $x_j^{(1)} < x_j^{(2)} < \ldots < x_j^{(m)}$ with respect to poverty (Burger *et al*., 2004:5).

If $\delta(x_{ij})$ represents the membership function for the i^{th} individual or household in the dimension X_j then the Totally Fuzzy and Relative approach by Cheli and Lemmi (1995) the membership function for discrete variables will be denoted as:

$$\delta(x_y) = \begin{cases} 0 \\ \delta \end{cases} \left(xj^{(\lambda-1)}\right) + \frac{F\left(x_j^{\lambda}\right) - F\left(x_j^{\lambda-1}\right)}{1 - F\left(x_j^{(1)}\right)} \quad \text{if} \quad x_{ij} = x_j^{(1)}$$

$$x_{ij} = x_j^{(\lambda)}, \lambda = 2, \ldots, m$$

where $F\left(x_j^{\lambda}\right)$ represents the cumulative distribution of the function $x_j^{(\lambda)}$.

With regards to the TFR approach by Cheli and Lemmi (1995), it differs to the fuzzy approach methodology by Cerioli and Zani (1990). The approach by Cheli and Lemmi (1990) was a reaction to the approach by Cerioli and Zani (1990). Although a detailed comparison of the changes in methodology is beyond the scope of this study, two important points can however be highlighted. It is argued that the approach by Cheli and Lemmi (1995) is viewed as an improvement for two reasons. Firstly, they criticized the earlier approach for setting the minimum and maximum limits that defined the set. They deemed this to be arbitrary. It was argued that their method was an improvement due to the fact that critical levels were set in agreement with the minimum and maximum categories in each dimension. Thus, the 1995 method addressed the problems of vertical and horizontal vagueness of poverty. Secondly, the methodology employed by Cheli and Lemmi (1995) utilises a non-linear functional form where Cerioli and Zani's (1990) utilised a linear membership function. The advantage of a non-linear function is that it allows the rating of poverty for each category of every dimension to be determined by the degree of deprivation experienced by individuals when compared to the size of other categories (Burger *et al*., 2004:6).

The fuzzy sets approach therefore allows for a multidimensional examination of poverty by providing ratios for each household, the population of households and for the population of households by attribute. These ratios can therefore be used to paint a picture of the state of poverty, deprivation experienced by the poor, social exclusion in addition to providing the causes of poverty in order of importance (Costa and De Angelis, 2008:314).

2.6.5 Multidimensional Poverty Index (MPI)

In terms of a more axiomatic approach to studying multidimensional poverty, there has been growing interest in the methodology by Alkire and Foster, formally known as the

Multidimensional Poverty Index (MPI) approach. The MPI methodology is based on an intuitive and axiomatic counting approach in which a vector of deprivations is identified (Rogan, 2016:991). From a development perspective there are numerous debates over the years which raised the point that although income is an important means for poverty measurement, alone it is not sufficient as more direct measures are also needed. The study of multidimensional poverty using the MPI approach therefore enables researchers to study acute poverty. As mentioned in Chapter One, acute poverty accounts for those who do not meet agreed standards on an international level in terms of indicators that represent the individuals' basic functions, which in turn refer to basic tasks (e.g. good nutrition, clean drinking water) individuals carry out daily to ensure that their levels of well-being are satisfactory. These basic functions mentioned above may bring about some sort of connection to Amartya Sen's Capability Approach which focuses on the quality of life people are able to achieve. Functioning's are also one of the core concepts of the Capability Approach.

According to Sen, functioning refers to what an individual is able to achieve given a bundle of commodities. Functioning's are states of 'being and doing'. For example, are individuals able to achieve good nutrition, given a certain bundle of food products? According to Sen, the achievement of a functioning is dependent on a number of both social and personal factors[4] which in turn influence how individuals make use of the commodities they have at the their disposal. Since the MPI is concerned with measuring acute poverty, this would imply the inability of individuals to achieve a functioning in relation to Sen's capability approach (Clark, 2006:4).

Furthermore, acute poverty considers individuals who do not reach the minimum standards in numerous aspects simultaneously. It has been stated that the MPI approach complements the traditional income and expenditure based poverty measures as it captures severe deprivations that individuals or households face. These deprivations pertain to three dimensions namely education, health and living standards.

[4] These social and personal factors include but are not limited to body size, age, gender, education, nutritional knowledge, health, access to medical services etc. (Clark, 2006:4).

Still considered as a relatively fresh approach in South Africa, the MPI approach is deemed to be gaining traction across the world for a number of reasons. According to Statistics South Africa (2014b:3) the reasons are as follows:

- The MPI approach describes both the headcount and intensity of poverty;
- The overall poverty index can be decomposed by demographic characteristics as well as geographical area;
- The contribution of each dimension to the overall poverty situation can be determined and the contribution can be decomposed at any geographical level;
- The methodology makes it known in which aspects the poor are deprived but at the same time divulges the interconnections among those deprivations. This in turn is more likely to bring about more effective policy making and the better allocation of resources;
- The assumptions around which the multidimensional poor are identified can easily be changed. Thus, the approach is considered to be a more transparent and intuitive measure of multiple deprivations.

There are a number of non-money-metric poverty measures that do exist who have their own fortes. However, the benefit of the MPI approach lies in the fact that it allows for the decomposition of poverty results in a manner that allows for the identification of certain indicators which are deemed to be the key drivers of poverty. When compared to statistical methods such as PCA and MCA, this would be impossible to do. Therefore for the purpose of this study, multidimensional poverty will be examined by employing the MPI approach, which will be examined and discussed in greater detail in Chapter Four.

2.7 Conclusion

Chapter Two provided a discussion on the concepts, dimensions and measurement of poverty. An overview of poverty theories were firstly discussed after which the various concepts of poverty were reviewed. The chapter also highlighted the various dimensions of poverty and illustrated the methods with which poverty can be measured. Lastly, the chapter provided insight on multidimensional, non-money-metric approaches to measuring poverty.

CHAPTER THREE: LITERATURE REVIEW OF POVERTY TRENDS SINCE THE TRANSITION

3.1 Introduction

This chapter presents a review of poverty levels and trends in South Africa since the transition. The chapter is divided into three main sections. Section 3.2 provides an overview of studies which utilise money-metric approaches to establish poverty trends. Section 3.3 presents a literature review of studies on poverty trends using non-money-metric approaches. Section 3.4 examines studies which have adopted both money-metric and non-money-metric approaches to investigating poverty. Lastly, Section 3.5 concludes the chapter.

3.2 Review of studies using money-metric approaches

Since money-metric approaches to examine poverty define poverty primarily in monetary terms, the focus is usually on variables relating to consumption, expenditure or insufficient income. Money-metric approaches therefore provide an overview of the severity, trends and extent of poverty. Section 3.2 thus makes mention of studies which examined poverty for various years by utilising money-metric approaches in relation to different data sets.

3.2.1 Studies that have used the IES data

Van der Berg and Louw (2004) argued that in South Africa, post-transition trends to a large extent were centred on poverty and whether it had increased or decreased. After the release of the 2010 Income and Expenditure Survey (IES) data, it had been reported that real income in South Africa had decreased for the period of 1995-2000 (this was based on the comparison of the IES 1995 and IES 2000). At the same time it was noted that all national accounts and demographic statistics which Stats SA had complied depicted the opposite finding. Furthermore, these surveys suggested that income distribution and poverty had increased substantially. Van der Berg and Louw then used national accounts as well as other data sources to calculate mean income by race after which they applied the income values to the intra-group distributions of income which were contained in the two IESs. A poverty line was applied to the analysis to value of R250 per capita per month (in 2000 prices). In relation to the poverty line, it was found that even though the headcount ratio had declined slightly across the two surveys, due to population growth there had been an increase in the number of

people living in poverty. With regard to income distribution, findings suggested that even though African[5] per capita income had risen which had narrowed the inter-racial income gap, there had been increasing inequality within the African population.

Hoogeveen and Özler (2006) also used the IES 1995 and 2000 data to investigate poverty. Two poverty lines were used within the study, namely the LBPL and UBPL which was equivalent to R322 and R593 respectively, per capita per month in 2000 prices. The study also applied the international poverty line of US$2 per day which was the equivalent of R74 per month, once again in 2000 prices.[6] When the US$2 per day poverty line was applied, the poverty headcount ratio increased from 0.32 to 0.34. Using the normative LBPL, at least 58% of the population were poor in both years. In 1995, 68% of the African population was indicated to be living in poverty. The African population group were therefore found to be the poorest when examining poverty by race, followed by Coloureds[7], Asians and Indians.[8] With regard to the urban-rural divide, poverty was more prominent in rural areas; however poverty rates did increase significantly in both urban and rural areas over the period.

In the study by Yu (2008), poverty and inequality trends were examined by using the IES 1995, 2000 and 2005/2006 data. It should be noted that even though the main focus of the study was based on the IES as a dataset in itself and the comparability of the different IES datasets, the study did provide brief findings related to South African poverty trends. A LBPL of R322 per month was used (2000 prices). It was found that regardless of whether COICOP[9] or STC[10] method was used to derive the income variable across all three surveys, there was an increase in the headcount poverty ratio between 1995 and 2000, after which it there was a

[5] There are four race groups in South Africa, namely: Africans, Coloureds, Indians and Whites. The first three groups are however generally classified as 'Blacks'.
[6] Hoogeveen and Özler regard the US$2/day poverty line to be associated with extreme poverty while the LBPL made reference to moderate poverty.
[7] FGT measures indicated that the change in poverty remained very low for Indians and Asians while for the White population on the other hand was found to be zero and only increased to 1% in 1995 and 2000 in terms of moderate poverty.
[8] Poverty among the Coloureds decreased significantly due to improvements in mean expenditure.
[9] COICOP is the abbreviation for Classification of Individual Consumption According to Purpose. It is referred to as a reference classification published by the United Nations Statistics Division that divides the purpose of individual consumption expenditures incurred by three institutional sectors, namely households, non-profit institutions serving households and general government, and was adopted for the first time in South Africa in IES2005/2006 (Yu, 2008: 11).
[10] STC is the abbreviation for Standard Trade Classification used in IES 1995 and IES 2000 to categorise expenditure variables and is not directly comparable with COICOP (Yu, 2008:14).

decline in 2005. Overall, it was found that even though there was a decline in the poverty headcount ratio from 2000 to 2005/2006, the headcount ratio was generally lower in 1995 when compared to the other years in the period under study. If the COICOP approach was used in all three surveys, headcount poverty had increased from 0.46 in 1995 to 0.57 in 2000 and then decreased to 0.50 in 2005/2006. On the other hand, when using the STC approach in all surveys, it was found that the headcount ratio increased from 0.44 to 0.56 after which it dropped to 0.50.

3.2.2 Studies that have used Census and the 2007 Community Survey (CS) data

By employing the 1996 and 2001 Censuses in a study that focused on money-metric poverty, Leibbrandt, Poswell, Naidoo and Welch (2006) determined changes in poverty by the utilisation of two poverty lines. The authors made the decision that they would reset the incomes of children below the age of 15 years with high and positive incomes to zero for both censuses before household income was derived. The study therefore excluded households with zero or unspecified income before the derivation of per capita income. The two poverty lines used were R250 per month (1996 prices) and US$2 per day.

The empirical results indicated that the headcount ratio increased from 1996 to 2001 for both poverty lines. With reference to the R250 per month poverty line, the headcount ratio increased from 0.50 in 1996 to 0.55 in 2001, while the ratio increased from 0.26 to 0.28 for the $2 per day poverty line. After the inclusion of households with zero or unspecified income the results were as follows: the headcount ratio increased from 0.59 to 0.65 between 1996 and 2001 for the R250 poverty line. In the case of the $2 per day poverty line, an increase in the headcount ratio also occurred between the two censuses from 0.40 to 0.44. Similarly, an increase from 0.28 to 0.31 occurred for the $2 per day poverty line.

Based on the results above, the authors noted that there was an influential distinction between the inclusion and exclusion of the zero-income households from the analysis. When households with zero or unspecified income were included for the analysis, it was found that the headcount ratios and poverty gaps were larger for both poverty lines respectively. Furthermore, it was found that a higher percentage of households in 2001 reported zero earnings and for this reason, the inclusion of those households basically guaranteed that

measured poverty for 1996 to 2001 would have worsened. Overall, the trend indicated that poverty had increased between 1996 and 2001.

When comparing the study above by Leibbrandt, Poswell, Naidoo and Welch (2006) with the study by Yu (2009), even though the poverty lines in the studies differed, the results in both studies illustrated similar results as they showed that poverty had an upward trend to the years leading up to 2000 after which came a decline. In the study by Yu (2009), the Census 1996 and 2001 as well as CS 2007 data was used, with the aid of three poverty lines (all in 2000 prices) – R211, R322 and R593 (refer to the discussion in Section 2.5.2.1). The CDFs suggested that poverty had indeed increased between the two censuses with a rapid decreased taking place for the period from 2001 to 2007. In addition to the CDFs, the headcount ratio indicated that for all race groups, headcount poverty had increased between the two censuses for each poverty line, with a rapid decreased occurring once again between 2001 and 2007.

3.2.3 Studies that have used the AMPS data

Van der Berg, Burger, Burger, Louw and Yu (2005) investigated poverty and inequality trends since the South African political transition. In conjunction with the All Media Products Survey (AMPS) data, distributional estimates were adjusted. This was done to ensure that the estimates would be consistent with the national accounts series for aggregate household income. Their study utilised two poverty lines, one that was lower and the other being of a higher nature. Two poverty lines were used (2000 prices, per capita per month): R250 and R281. The lower poverty line was aimed at identifying households who were considered to be living in extreme poverty whilst the higher poverty line was aimed at identifying those who were considered to be moderately poor.

Within the context of their study, the focus was mainly on the LBPL of R250 per month. Their results however indicated that for both poverty lines, the headcount ratio had increased from 1993 to 2000 after which it decreased for the period of 2000 to 2004. Furthermore it was noted when the downward trend in the headcount ratio occurred for the latter of the period (2000-2004), the headcount ratio was indeed much lower than that it had initially been in 1993. Results also indicated that the number of poor had followed a similar trend as an increase had occurred between 1993 and 2000, followed by a decrease in the number of poor

from 2000 to 2004 for both poverty lines. To better illustrate this, the number of poor under the LBPL had increased from 16.2 million in 1993 to 18.5 million in 2000 after which this figure had decreased to 15.4 million in 2004.

In a later study by Van der Berg *et al*. (2007) by employing the same poverty line of R250, poverty trends were once again analysed for the period of 1993 to 2004. With the distributional estimates being adjusted like in the case of the earlier mentioned study, this study boasted slight improvements[11] in the techniques that were utilised to estimate the distribution of wage income. With regard to their findings, it was found to be very similar as the headcount ratio once again had increased from 1993 to 2000 after which it decreased for the period of 2000 to 2004. Pertaining to race, the headcount ratio was the highest for the Black population and the least for the White population.

Van der Berg, Louw and Yu (2007) used AMPS once again to establish whether poverty had or had not declined since 1994. One again, the standard R250 per month (2000 prices) poverty line was applied. A similar result was found as indicated by the previous studies. Poverty had increased around the mid-1990s which was followed by a period of stability until 2000. The headcount index then illustrated a large reduction in poverty after 2001. Overall, the headcount index decreased from 50.1% in 1993 to 46.9% in 2004. The poverty increase around the mid-1990s was said to be the result of both poor labour market prospects as well as sluggish economic growth. The drop in poverty in 2001 was indicated to be the result of upward income mobility among the African population, better labour market prospects, more rapid economic growth and increased social grant spending.

3.2.4 Studies that have used the NIDS data

Yu (2013) derived poverty and inequality estimates using the National Income Dynamics Study (NIDS) 2008 and NIDS 2010/2011 data. The paper was primarily aimed at determining whether both poverty estimates were significantly different if both the single and aggregate income and expenditure estimate variables were used. Using a LBPL of R322 per capita per month in 2000 prices (which was the equivalent of R478 per month in 2008 prices), it was

[11] In order to estimate the distribution of wage income, the income distribution was shifted rightwards in line with the national accounts mean income. This was done as the survey under-estimated income when compared with national accounts which in turn affected the poverty estimates.

established that lower poverty rates were the result of both the per capita income and expenditure variables being derived after imputations and the addition of implied rent. Furthermore, it was found that headcount ratios using per capita expenditure without imputations were lower than in the case of the results which had used single estimate per capita variables. The end result indicated that poverty estimates were higher when single estimate variables were used. The reason for this included the fact that under-reporting was more likely to occur from the single estimate method as it is more likely to happen to households who find themselves in poorer quintiles while the possibility of households deeming single estimate income higher than aggregate income is higher within the context of richer quintiles. Overall, income poverty had declined between NIDS 2008 and NIDS 2010/2011. Thus, poverty trends between the two surveys were found to be similar irrespective of the method used to derive the income variable.

Finn and Leibbrandt (2013) examined the dynamics of poverty by using the balanced sample from the first three waves of NIDS data. The period under study was 2008 to 2012 with the focus being on absolute rather than relative poverty transitions. R636 per capita per month was set as the poverty line which was used in the analysis. Two transitions were considered, namely the transition into poverty versus the transition out of poverty. With regard to transition matrices, for the balanced panel members who were found to be poor in wave 1, three quarters of them were classified as poor in wave 2. In the examination of poverty entry and exit rates, the exit rate which makes reference to the transition from being poor to non-poor increased from 25% to 36%. On the other hand, the poverty entry rate was lower for the wave 1 to 3 compared to wave 1 to 2. According to the data irrespective of the transition period still a large percentage of the poor were deemed to still be trapped in severe poverty. However it was found that the exit rate from severe[12] poverty increased with each new wave of NIDS which in turn suggested that the left hand tail of the income distribution had shifted progressively rightwards. Exit rates from poverty[13] was found to be higher in wave 2 to 3 and wave 1 and 3 when compared to wave 1 to wave 2.

[12] Severe poverty is defined as the situation where an individual's real household income per capita is less than half the poverty line. Since the poverty line was set at R636, individuals with a real household income per capita of less than R318 would then considered as severely poor.

[13] Poverty in this context refers to real monthly household income per capita of between R318 and R636. The term is used to differentiate from severe poverty.

Results based on poverty rates by household type indicated that households with one or two adults and at least one child constituted the highest poverty rates however the general trend indicated that poverty had dropped from when wave 1 was compared to wave 3. On the other end of the spectrum, poverty rates were the lowest for couples over 60 in waves 1 and 3. Pertaining to the transition into poverty, with regard to gender, it was found that females were significantly more likely to enter poverty between waves 1 and 2 and waves 1 and 3 when compared to males. With regard to race, Coloureds were most likely to transition into poverty between wave 2 and wave 3 but for the transition from wave 1 to wave 2 and from wave 1 to wave 3; Africans were more likely to enter poverty than any of the other racial groups. An employed household member was found to be protected against poverty entry by between 13 and 18 percentage points which was dependent on the period under consideration. Moving onto the transition of out poverty, it was found that females coming from larger households residing living in rural areas were associated with a lower likelihood of poverty exit. Also, poverty exit was more likely to occur for all the racial groups other than Africans.

3.2.5 Studies that have used various sources of data

Armstrong, Lekezwa and Siebrits (2008) presented a South African poverty profile based on data provided by the 2005 IES and the 2006 General Household Survey (GHS). It should however be noted that the majority of the analysis were based on the IES2005. With the aim of examining the overall extent of poverty, two poverty lines were applied namely the LBPL and UBPL poverty line of R322 and R593 per capita per month respectively (in 2000 prices). Based on IES2005 data, results indicated that 33.2% of all households had consumption levels below the LBPL. On the other hand, 53.3% of households consumed less than the UBPL.

In an extension of this analysis, when examining the proportion of individuals who were poor instead of the proportion of households who were poor, it was found that poverty was rifer. This was especially attributed to the fact that poorer households are on average bigger than richer households. Looking at this from the perspective of the population, it was found that

with regard to the LBPL, 47.1% of the population consumed less than this poverty line while 67.6% of the population consumed less than the UBPL.[14]

In the end, three important key findings arose. Firstly, poverty was more prevalent for those living in rural areas (with particular reference to the Eastern Cape, Limpopo and KwaZulu-Natal), amongst the elderly, those with low levels of education, blacks and female-headed households. Secondly, income poverty is closely linked to other dimensions of deprivation such as but not limited to low levels of education and limited access to essential services. Lastly, the provision of social grants was important in the alleviation of extreme poverty.

Stats SA (2014) examined absolute poverty between 2006 and 2011 by employing the IES 2005/2006 and 2010/2011 as well as the Living Conditions Survey (LCS) 2008/2009 data. Three poverty lines were used: the food poverty line (FPL), the lower-bound poverty line (LBPL) and the upper-bound (UBPL). The poverty lines[15] linked to the data sources in the study were as follows: In 2006 the FPL was R210, the LBPL was R300 and the UBPL was R431. In 2009, the FPL was R305, the LBPL was R416 and the UBPL was R577. Lastly, in 2011 in FPL was R321, the LBPL was R433 and the UBPL was R620.

When applying the UBPL, Stats SA found that poverty levels had dropped since 2006 as the percentage of the population deemed to be poor had dropped from 57.2% to 45.5% in 2011. In the case of extreme poverty, measured by the FLP, the percentage of the population living in extreme poverty had increased from 2006 to 2009 from 26.6% to 32.4%. In absolute terms this meant that the number of people living below the FLP had increased from 12.6 million to 15.8 million in 2009[16]. By 2011 however, the number of people living below the FPL had dropped to 10.2 million or 20.2% in percentage terms due to a number of factors ranging

[14] It should be noted that when interpreting these results, IES2005 may have overestimated the incidence of poverty was food expenditure may have been under recorded. From 2000 to 2005 were the years in which per capita income generally grew. In most cases, such growth is normally accompanied by decreases in the consumption share of food expenditure. The findings of IES2000 and IES2005, however, indicate that the consumption share of spending on food and non-alcoholic beverages fell by 10.8 percentage points. This seems excessive, even allowing for the effects of the introduction of the diary method of capturing food expenditure. Food expenditure is by far the largest category of spending by poor households, and its under-recording would have reduced the incomes of poor households and, hence, raised measured poverty.

[15] The study highlighted that in all three cases, the poverty line had been benchmarked to March prices as they represented the mid-point for each survey and that the UBPL had been the primary line unless otherwise stated.

[16] This increase was deemed to be as a result of the global financial crisis of 2008/2009.

from income growth, above inflation wage increases and the decelerating inflationary pressure. Results pertaining to the depth of poverty indicated that for both the UBPL and FLP, between 2006 and 2011, South Africa had been successful in reducing the gap of those who remain poor. For this reason, in terms of the UBPL, the poverty gap had decreased to 19,6% which in turn implied that an estimated R73.7 billion was required to bring those classified as poor out of poverty. Similarly, with regard to the FPL, R12 billion per annum would be required to eliminate food poverty as the FPL poverty gap stood at 6.2% in 2011.

Posel and Rogan (2012) adopted an alternative approach to examine poverty by focusing gender trends in poverty, using the 1997 and 1999 October Household Survey (OHS) as well as 2004 and 2006 GHS data. One poverty line was used namely R322 per capita monthly as proposed by Hoogeveen and Özler (2005). Three different measures of per capita monthly household income were considered to estimate the depth and extent of poverty. The first measure was used to identify how poor individuals would have been if they had relied only on the earnings of household members, thus only earned income was taken into consideration. The second measure considered both earned income and social grant income which in turn allowed for the identification of poverty reducing 'effects' of social grant income. The third measure considered earned income and social grant income with household expenditure which was used as a proxy for income in zero-income households[17].

Posel and Rogan found that overall poverty rates decreased for the period of 1997 to 2006 although results indicated that there was an initial poverty increase from 1997 to 1999. When social grant income was included as one of the income sources, poverty incidence had declined in a more pronounced manner as the poverty headcount ratios decreased from 63.6% to 61.6%. With regard to the gendered poverty trends, it was found that poverty remained a gendered phenomenon in post-apartheid South Africa. This was attributed to the fact that results indicated that for all years and across each measure, the depth and extent of poverty had been significantly higher for females and for households who were headed by females. For this reason, the decline in poverty rates was found to favour males and male-headed

[17] The third measure offered some correction for the upward bias in poverty estimates which the result was of incomplete information on all income sources.

households. Lastly, the study suggested that social grant income did play a major role in reducing poverty among females and female-headed households.

Meth and Dias (2004) tried to determine whether poverty had increased or decreased for the period 1999-2002. Their study was based on two data sets namely the 1999 OHS and 2002 LFS. Household expenditure information was used to derive per adult equivalent expenditure. Instead of focusing on the examination of poverty for South Africa as a whole, changes in poverty were estimated by estimating the number of people and households that had fallen into the lowest expenditure categories in each of the surveys. Therefore, the study only took those individuals or households with an expenditure level that was between R0-R399 and R400-R799 per month respectively into consideration. To estimate changes in the numbers of the poor, the R497 per capita per month (in 2000 prices) poverty line was used. The authors found that the number of people living below the specified poverty line had increased by 2 million which in turn meant that about 4.5 million people lived in poverty in 2002. Furthermore, the number of people in the bottom two expenditure categories increased by about 4.2 million for the period.

Yu (2016) explained the possible factors accounting for the contrasting poverty levels across the eight commonly used South Africa census and household surveys for the period 1993-2012. The study was based on the premise that even though poverty trend analysis generally indicated an increase in poverty until the end of the 1990s after which a decreased occurred, poverty levels still differed between various surveys due to three reasons: different poverty lines used in different studies; different approaches to collect income and expenditure information are utilised and lastly, there was a presence of a great proportion of households reporting zero or unspecified income. Yu utilised the LBPL as proposed by Woolard and Leibbrandt (2006)[18] with the focus being on FGT poverty headcount ratios.

The study also considered the imperfect income data (large proportion of households with zero or unspecified income) from the Census and CS and thus the sequential regression multiple imputation (SRMI) approach was adopted. Nonetheless, it was found that regardless of whether the imputation was conducted or not, the same poverty trend was observed: it

[18] Lower bound poverty line was set at R322 per capita in 2000 prices, equivalent to R665 in 2013 prices.

increased from 1996 to 2001, declined rapidly between 2001 and 2007, before showing a slight increase in 2011. Yu (2016) also found that with regard to the IES data, it did not matter whether the STC or COICOP approach was adopted across all surveys: between 1995 and 2000, headcount ratio increased after which a decline occurred between 2000 and 2010/2011.

The OHS and LFS data showed similar trends as the headcount ratios had showed an upward trend within the first few years which was followed by a downward trend. The GHS data indicated a number of fluctuations in the headcount ratio for the period of 2002-2012 but reached its all-time low in 2012 being 0.59 compared to 0.78 in 2002. AMPs data indicated a headcount ration of 0.59 between 1993 and 1999 followed by a downward trend between 2000 and 2008. Lastly, NIDS presented lower headcount ratios when the income approach was used. When income was used, for both the aggregation approach and the single estimate approach, the headcount ratios had decreased between 2008 and 2012. When expenditure was used, a similar result was found. Overall, the Yu study suggested that for all surveys, the general finding was that a downward poverty trend took place in the 2000s even after an initial increase in poverty in the 1990s.

3.2.6 Summary

Section 3.2 presented a review of literature which utilised money-metric measures to examine poverty. The literature review revealed that even though the datasets and poverty lines varied for each study and in cases where income was imputed or the income distribution shifted rightwards in line with the national accounts mean, the general finding was that poverty had increased in the 1990s until 2000, before a downward trend took place.

3.3 Review of studies using non-money-metric approaches

3.3.1 Uni-dimensional non-money-metric approaches

Using the Census data 1996 and 2001, Bhorat, Poswell and Naidoo (2004) examined a few indicators of well-being which was deemed to reflect the vast dimensions of poverty. The authors undertook an asset-based approach to examining poverty by examining five indicators namely: dwelling, sanitation, water, energy type and private goods. Their results indicated that from a national perspective, the proportion of individuals living in formal

dwellings increased from 64% in 1996 to 68.5% in 2001. Similarly, improvements in sanitation had also occurred. This made reference to the fact that the proportion of population with flush or chemical toilets increased by 9 percentage points over the period. There was also an increase in access to piped water in the context of a dwelling, yard or public tap (from 80% in 1996 to 84.5% in 2001). The percentage of households who had access to electricity was found to be 70% in 2001, indicating a 12 percentage point rise. Moving on to refuse removal, the authors found that the percentage of households who were able to have their refuse removed by a local authority at least once a week increased to from 51% to 55%. Lastly, with regard to household assets, common and widespread assets included a radio, refrigerator and cell phone. Thus, there was found to be an overall improvement in each of the indicators which was to a large extent attributed to vast improvements in service delivery.

Yu (2009) briefly analysed non-income welfare by examining household size, dwelling type and access to household goods and services in relation to the Census 1996, Census 2001 and the CS 2007 data. He found that there was an increase in the percentage of households living in formal dwellings[19] from 57.5% in 1996 to 66.7% in 2007. Water access (piped water in dwelling, on site or inside yard) had increased by almost 10 percentage points, from 60% in 1996 to almost 70% in 2007. The share of households with access to chemical or flush toilet facilities also increased from 50% to almost 60%. Also, more than 45% of households used solar or electricity for cooking in 1996, while this proportion increased to two-thirds in 2007. In 1996, 50% households had their refuse removed by the local authority at least once a week and this proportion increased to 60% in 2007. Lastly, the ownership of household goods category mainly indicated that the proportion of households with a landline or cell phone had dramatically increased to approximately 75% in 2007 from slightly above 25% in 1996. Based on these results, it was indicated that there had clearly been a continuous improvement in non-income welfare amongst South African households.

3.3.2 Multidimensional non-money-metric approaches

The two studies by Bhorat, Naidoo and Van der Westhuizen (2006) as well as Bhorat and Van der Westhuizen (2013) investigated non-monetary dimensions of well-being. More

[19] Formal dwellings refer to a house or brick structure, flat in block of flats, town/cluster/semi-detached house, and a unit in a retirement village.

specially, the studies provided an analysis of the shifts in non-income welfare for the period 1993-2004 by examining three data sets, namely the 1993 South African Integrated Household Survey from the Project for Statistics on Living Standards and Development (PSLSD), the 1999 OHS and 2004 GHS. Using the FA, an asset index was constructed, where the derived variables that were chosen was done so with the intension of depicting the access that households had to a number of assets and services. Two asset poverty lines were derived and set at the value of the 20th percentile and at the value of the 40th percentile of the asset index distribution. These poverty lines were derived with the purpose of serving as a reference points against which to compare the 1993 and 2004 asset index distributions.

With regard to the construction of the asset index that was derived in their study, two categories of variables were used. The first category was household characteristics or services while the second category was household assets. To elaborate this point further, the household characteristics or services category were made up of the following variables: quality of wall material, type of toilet facilities, type of dwelling, type of roof, source of energy and source of lighting. Household assets within the context of the factor analysis (FA) employed comprised of telecommunications, televisions and vehicles. FA was then conducted based on the three data sets being pooled.

The empirical results indicated that in both absolute and relative terms, government asset and service delivery from 1993 to 2004 was in fact pro-poor in nature. Households had become less asset-poor as indicated by the increase in the mean asset values. Despite this encouraging finding, it was also found that significant backlogs in the bottom expenditure deciles still existed and there were many households without access to basic services. Moreover, headcount asset poverty rates and poverty gap rates had decreased across all covariates. At the 20th percentile poverty line, the headcount index decreased from 20% in 1993 to 9.7% in 2004. At the 40th percentile, the headcount index had decreased from 40% in 1993 to 21.6% in 2004. Asset inequality had decreased from 0.32 to 0.24 over the period. Overall, the study suggested that non-income welfare had significantly improved.

Bhorat, Stanwix and Yu (2014) investigated non-income welfare in South Africa. PCA methodology was used to create an asset index which was made up of a number of household

service variables, private assets and educational attainment. The 1993 PSLSD as well as the 2008 and 2010/2011 NIDS data was used, and it was found that the ownership of assets or access to services were associated with higher non-income welfare. This finding was particularly relevant to assets/services such as piped water, electricity, a chemical or flush toilet, residence in a formal dwelling, high-quality wall material and the ownership of a television or fridge. This was indicated by the signs of the weights being positive. On the other hand, large negative weights were estimated for a medium-quality material of dwelling, wood or dung for cooking and the use of candles for lighting.

To examine the changes in non-income welfare for the period of 1993-2010/2011, the asset indices at the 20th and 40th percentiles in 1993 were used as the lower and upper bound relative poverty lines respectively. The utilisation of the FGT and two poverty lines revealed that overall asset poverty had dropped by almost 17% in relation to the LBPL. The authors make mention of the fact that according to recent income and expenditure-based literature at the time of writing, poverty had increased in the 1990s before a downward trend took place after 2000. The study showed large and statistically significant decreases in poverty especially among the poorer quantiles and in the case of female-headed households.

Bhorat, Van der Westhuizen and Yu (2014) estimated the extent to which non-income welfare improved since advent of democracy by examining the delivery of public assets. An asset index was generated by using the FA method. The study was based on four data sources: 1993 PSLSD, 1999 OHS, as well as 2005 and 2010 GHS. The study used seven public asset variables namely dwelling type, roof material of the dwelling, wall material of the dwelling, main source of drinking water, main source of energy for cooking, main energy source for lighting and the type of sanitation facility. The empirical results indicated that for all assets excluding formal dwelling, there had been a steady increase in the number and proportions of households with access to these assets over the 18-year period; this meant that more households had access to decent roof material[20], wall material of a high quality[21], piped water, a flush or chemical toilet and electricity for lighting and cooking. The percentage of

[20] Refers to roofs made of bricks, asbestos, tiles and corrugated iron/zinc.
[21] Makes reference to bricks, cement block and concrete.

households living in formal dwellings had decreased (from 74.2 % to 69.8%) for the period of 1999 to 2005.

The study went further as two poverty lines were derived based on the values at the 20th and 40th percentiles of the asset index in 1993. These poverty lines were created for the sole purpose of acting as reference poverty lines in order to compare 1999, 2005 and 2011 distributions. The poverty headcount was estimated to be 0.2 and 0.4 at the 20th and 40th percentile respectively. Overall, asset poverty had continuously decreased across the four surveys, almost halving between 1993 and 2005. The headcount rate and poverty ratio had decreased continuously between 1993 and 2011. It was found that the African population and female headed households enjoyed a more rapid decline in poverty.

Adams *et al*. (2015) measured non-income poverty trends by using the MCA method. The study examined the perceived quality of public assets and services to determine whether public assets and service delivery was really a success, using the GHS 2005, 2008 and 2012 data. Like the previously mentioned studies, the 20th and 40th percentile poverty lines in the earliest survey (2005 in this case) were used in the analysis. Two indexes were derived. Index 1 was comprised of eight variables[22] and was created to measure the types of assets and services to which households had access. Index 2 on the other hand was derived using five variables[23] for the purpose of measuring the perceived quality of public service delivery. The derivation of both indices thus allowed for the evaluation as to whether the vaunted 'success' in poverty reduction by means of public services is indeed matched by a similar decline in poverty, as measured by the perceived quality of public assets and services received.

The results indicated that with regard to Index 1, there was a general improvement in all eight variables for the proportion of the population with access to assets and services by race and province respectively, this improvement however was more distinct for the African population when compared to other racial groups. At the same time, results indicated that the

[22] Variables used to derive Index 1: dwelling type; roof material of dwelling; wall material of dwelling; water source; sanitation; fuel for cooking; fuel for lighting; availability of refuse removal service.
[23] Variables used to derive Index 2: condition of roof; condition of wall; quality of water service received from municipality; sharing of sanitation; frequency of refuse removal.

pattern of access to the 'best'[24] category of public assets and services by Africans were considerably less encouraging. Index 2 which represented the quality variables reflected small increases over the seven-year period. Furthermore, with regard to poverty estimates, the FGT poverty headcount measure indicated a decline in poverty for the overall population for both indices. The results thus painted a picture of overall poverty reduction between 2005 and 2012. Even though it was evident that the greatest of welfare improvements were experienced by the Africans, they were still the biggest share of the population considered to be poor.

Using both the traditional approach as well as the TFR approach, Ngwane, Yadavallie and Steffens (2001) investigated poverty in South Africa, using the OHS and IES 1995 data. With reference to the traditional approach, the poverty line of US$1 per day was used (at 1995 purchasing prices). It was indicated by the traditional approach that 16.96% of the population were living in poverty at the time on a national scale while for households; the headcount ratio was at 11.05%. Results further indicated that poverty was the highest in the Eastern Cape and Northern Province[25] and lowest for Gauteng and the Western Cape.

With regard to the TFR approach, nine poverty indicators were considered and split into three categories, namely socio-economic, housing and services, and monetary. The socio-economic category was comprised of employment status and education; the housing and services category consisted of lack of formal dwelling, sanitation facility, refuse disposal facility, safe water for drinking purposes, telephone and electricity for cooking; the monetary category consisted of household income. The empirical findings indicated that poverty differed depending on which indicator was used. Also, poverty was high in the Eastern Cape and Northern Province and low for Gauteng and the Western Cape. In the race front, poverty was deemed to be more prominent among the African population than the White population. In terms of area type, poverty was higher in rural areas when compared to urban areas. As a result, when comparing the two approaches, it is evident they produced similar trends particularly in the case of poverty by province. The only exception was in the case of KwaZulu-Natal and Mpumalanga. The index indicated that KwaZulu-Natal was worse when

[24] The term 'best' refers to the top level of each category. For example, a 'formal' dwelling would be considered to be better than an 'informal' dwelling. Therefore in this case, 'best' would then make reference to a formal dwelling.
[25] The Northern Province is now known as Limpopo Province.

compared to the Free State and the North West province. However, the headcount index indicated the opposite result.

Burger, Van der Berg, Van der Walt and Yu (2017) adopted the TFR approach to examine spatial and racial dimensions of poverty and deprivation in South Africa. The TFR approach was used to derive a poverty index with nine dimensions of deprivation which were employment, education, dwelling type, overcrowding, access to electricity, telephone, water, and sanitation and refuse collection. The analysis utilised the 10% samples of the 1996, 2001 and 2011 Census as well as the CS 2007 data.

The average deprivation experienced by South Africa was a whole had decreased from 1996 to 2011 (decreasing from 0.441 to 0.292). In addition, the results indicated a sharp fall in the average level of deprivation across all provinces. Special mention needs to be made for three provinces that were found to be the poorest or most deprived provinces in 1996 but managed to achieve a decline of deprivation index of at least 0.15: Eastern Cape (0.20), Limpopo (0.18) and the Free State (0.16). When examining the trends in deprivation dimensions by province, generally deprivation declined across all dimensions expect dwelling, employment, refuse and water in certain provinces. Regarding deprivation by race, when comparing only the African and White population, it was found that deprivation had reduced for both groups. The results suggested a strong association between race, poverty and geography as deprivation levels of different races varied between provinces but within limited bands. Poverty was also found to be worse for households with an unemployed household head compared to households with an employed household head.

Finn, Leibbrandt and Woolard (2013) examined multidimensional poverty in South Africa by using the 1993 PSLSD and NIDS 2010 data. The MPI was constructed by considering three dimensions (health, education and standard of living) which were comprised of nine indicators[26] accompanied by a balanced weighting scheme. On the multidimensional front, it was found that MPI poverty had actually reduced quite significantly. Not only did a reduction in money-metric poverty occur, the reduction in multidimensional poverty was deemed to be

[26] The nine indicators are schooling years, attendance, child mortality, nutrition, cooking fuel, assets, water, sanitation and electricity.

greater between the two. Reasons attributed to the significant reduction of multidimensional poverty ranged from improved and expanded access for citizens to public services (e.g. sanitation and electricity) and accompanied increases in public expenditure in an attempt to improve school enrolment at an universal level and to achieve a reduction in child mortality rates (Finn *et al*., 2013: 13). It should however be noted that the main drawback is that the data did not allow the derivation of poverty trends by smaller geographical units (e.g. municipality).

In a study by Statistics South Africa (2014) the focus was placed on MPI poverty at provincial level between 2001 and 2011. Unlike the study by Finn *et al*. (2013) as discussed above, Stats SA's MPI comprised of four dimensions (health, education, standard of living and economic activity) and 10 indicators[27]. It was found that the poverty headcount in both 2001 and 2011 was the highest in Eastern Cape at 30.2% and 14.4% respectively. The average intensity of poverty was surprisingly the highest in Gauteng when compared to the other provinces in both years. Overall, the multidimensional poverty situation in South Africa had indeed improved but this improvement was more associated with a reduction in the poverty headcount rather than decline in the intensity of poverty.

Another local study which utilised the MPI approach was conducted by Rogan (2016) who analysed and compared money-metric and multidimensional gendered poverty risks in the South African context. The study only employed NIDS 2008 data which meant that no meaningful poverty trend analysis was conducted and the main reason as to why the MPI method was employed was to establish gender differences in human poverty. Overall, the key finding of the study suggests that in South Africa, the gendered risk of poverty is a multidimensional and money-metric phenomenon. Moreover, poverty differential between female- and male-headed households in relation to the multidimensional approach may be overstated due to income poverty. By utilising the global MPI, it was found that female individuals and female-headed households experienced greater deprivations when compared to male individuals and male-head households.

[27] They include child mortality, years of schooling, school attendance, lighting, heating, cooking, water, sanitation, dwelling, assets and labour market status of the adult household members.

Omotoso and Koch (2017), using the MPI approach, focused on child poverty. Considering indicators from four dimensions (living conditions, education, health and labour market activities) and using the 2002 and 2014 GHS data, the authors found that child MPI decreased over time, but the proportion of children who were deprived in at least one-third of the weighted indicators remained high, with one particular concerning finding being the increase of deprivation in connection with the children's health status.

Mushongera et al. (2017) is the most recent local study using the MPI approach. The study was aimed at expanding the analysis of poverty by the computation of a MPI for Gauteng as well as the examination of the spatial configuration of the multidimensional poverty in the province. The study utilised data from the Quality of Life survey for 2011 and 2013. Four dimensions were considered in the computation of the MPI, namely standard of living, food security, economic activity and education. Findings of the paper suggested that multidimensional poverty is correlated with income poverty as households with low incomes were found to be more likely to be multidimensionally poor and were also found to suffer from higher intensities of poverty. Spatially, areas associated with low economic activity revealed higher multidimensional poverty trends and these were areas were mainly located on the edges of the province. Overall, it was found that the MPI for Gauteng is low.

3.4 Studies that considered both money-metric and non-money-metric variables

There are few local studies considering both money-metric and non-money-metric variables in the poverty analysis. First, Bhorat, Van der Westhuizen and Goga (2007) examined welfare shifts in post-apartheid South Africa. The aim of the study was to build a more comprehensive poverty measure which would allow for all elements of household welfare to be accounted for. The 1993 PSLD, 1999 OHS and the 2005 GHS data was used. Three indices were constructed with the FA method: the authors referred to the first index as the Comprehensive Welfare Index which was comprised of three categories of variables namely public assets, private assets (including education) and household income. Public assets comprised of type of dwelling, type of wall, type of toilet, type of roof, source of energy for lighting purposes and source of water; private household assets included radio, telecommunication, and television, the ownership of a vehicle and the average years of

education of adults in the households; finally, real per capita household from social grants and wages were used to determine household income.

The Comprehensive Welfare Index indicated that when public services, private assets and income were taken into consideration the average household had experienced improvements in their level of welfare over the 12-year period, where this improvement was found to be the biggest within the first half of the period. With regard to the Public Asset Index, it was found that there was an increase in the number of households with access to government provided services, however the rate at which this increase occurred seemed to slow down during the 1999 to 2005 period. The Private Asset index showed that the average household increased their ownership of private assets from 1993 to 2005, where the rate at which this increase occurred was much greater for the period of 1999 to 2005. Overall, the study suggested that household welfare increased for the period 1993 to 2005. It was also found that between 1993 and 1999 the increase was largely attributed to improved service delivery by government, whilst for the period 1999 to 2005 it was due to growth in private asset ownership.

Schiel (2012) investigated money-metric and non-money metric levels of wellbeing at two different points in time, explicitly 1993 and 2008. This was done in order to establish whether real welfare gains have occurred in post-apartheid South Africa. The PSLSD 1993 and NIDS 2008 data was used by the author. The study of metric measures was based on income and expenditure[28] measures which were adjusted to real household per capita incomes and expenditure to allow for the comparison of real wellbeing over time. The examination of non-money metric measures was based on the construction of an asset index by the use of two statistical techniques, namely PCA and FA.

With regard to the asset index, it comprised of household durables and public assets. On the non-money metric front for the period 1993 to 2008, the data suggested that private asset ownership had increased drastically. For example, the percentage of asset ownership for assets such as a television, radio, elective stove and bicycles had all increased to a large extent. With regard to public assets, data presented a similar finding with the largest increases

[28] In the actual study, income and expenditure was accessed as a household total adjusted for household size. This method is preferred as it includes all household members as well as children and those who are not active in the labour market, before the assumption that each member gets an equal share of household income.

gained in electric lighting, electric cooking and piped water. With respect to money-metric measures, the FGT poverty indices for the upper and lower bound poverty line[29] indicated a decrease in poverty during the period.

Schiel (2012) then went on to conduct a within-period analysis and a post-period analysis of the differences between money-metric and non-money-metric poverty measures where the within-period analysis represented 1993 and the post-period analysis represented 2008. Overall, when comparing the two periods it was found that the African population had made significant welfare gains in the context of both money-metric and non-money-metric measures in the post-apartheid period. With the inclusion of race in the analysis, little differences between money-metric and non-money metric measures of well-being within the two specific periods existed. Both metrics indicated that South Africa as a whole had become less segregated over time, which in turn implied an aggregate real welfare gain over the period.

3.5 Conclusion

Chapter Three presented a review of poverty levels and trends in South Africa since the transition by examining poverty from both money-metric and non-money-metric perspectives. On the money-metric front, although different poverty lines were utilised amongst the studies, the general trend indicated that poverty worsened in the 1990s, before declining since 2000.

With regard to non-money metric poverty, the overall finding was that the majority of the South Africans had become less asset-poor. One of the foremost reasons for this according to the various studies was attributed to improved service delivery by government which was considered to be pro-poor. Despite this finding, it was also noted that the Africans still constitutes the majority of the population classified as being poor. With reference to non-money-metric poverty especially multidimensional poverty using the MPI approach, recent empirical studies suggest that MPI poverty had decreased. Finally, studies which had considered both money-metric and non-money-metric variables also concluded that there had been an aggregate real welfare gain over the period.

[29] The upper bound poverty line was set at R940 and the lower bound poverty line was set at R515.

CHAPTER FOUR: METHODOLOGY AND DATA

4.1 Introduction

The main purpose of this chapter is to provide an overview of the methodology and data employed in this study. More specifically, Section 4.2 provides an overview and explanation of the methodology used in the study. Section 4.3 examines the data used for the study namely Census and Community survey data. The limitations of the study are then discussed in Section 4.4, before Section 4.5 concludes the chapter.

4.2 Methodology

The empirical modelling undertaken in this study seeks to investigate multidimensional poverty in South Africa in 2001-2016 by the application of the MPI approach. This section presents a brief discussion on the origin of the MPI approach and what the MPI methodology entails.

The MPI methodology, which has already been adopted in over 100 developing countries, was initially developed in 2010 by Alkire and Foster from Oxford University, for the purpose of measuring acute poverty which refers to proportion of people who experience multiple deprivations as well the intensity of such deprivations (Santos and Alkire, 2011:1). The MPI was deemed to be the first international measure to reflect the intensity of poverty which made reference to the number of deprivations that each household faces at the same time. At this stage of the study, it should be evident that these deprivations make reference to several factors which include a lack of education, health, inadequate living standards and a lack of income, which are all aspects that constitute poverty (Statistics South Africa, 2014:1). The MPI is said to complement traditional money-metric poverty measures as it allows for deprivations to be measured directly, which in turn implies that the most vulnerable people can be identified. The MPI approach is thus said to be based on an intuitive and axiomatic counting approach in which a vector of deprivations is identified (Rogan, 2016:991).

According Santos and Alkire (2011:1) the beauty of the MPI lies in its versatility. MPI methodology can thus be adjusted as seen fit in terms of a regional, subnational and a national context. Instead of employing aggregate country-level data, which is used in the case

of the HDI for example, the MPI method uses household-level data which is then aggregated to the country level (Ravallion, 2011:4). Another advantage of the MPI methodology is that it enables comparisons to be made between rural and urban areas, between regions and ethnic groups, and between household and community characteristics as it has a robust functional form and direct measures of acute deprivation. What is more, it is possible to conduct an analysis of the patterns of poverty with the MPI; this refers to analysing the extent to which each indicator and dimension contributes to overall poverty (Santos and Alkire, 2011: 4).

Lastly, another advantage of the MPI approach to examining poverty strongly lies in the extent to which it is flexible in terms of the inclusion of the indicators. For this reason it is important to firstly provide an explanation about how the methodology originally works (as invented by Alkire and Foster), followed by how the methodology is adapted in order to be correctly utilised in the context of this study.

4.2.1 The original MPI methodology

Originally, the MPI is comprised of three dimensions which are made up of 10 indicators. The three dimensions of poverty as proposed by Alkire and Foster are health, education and living standard. Once these dimensions are established, each dimension is further broken down into sub-sections referred to as indicators: the health dimension comprises of nutrition and child morality, the education dimension accounts for years of schooling and school attendance, and the living standard dimension consists of cooking fuel, water, sanitation, electricity, floor material as well as asset ownership.

Linked to each indicator is a certain minimum level of satisfaction[30] which is referred to as a deprivation cut-off point. Therefore each person within a household is assessed by taking household achievements into account to determine if he or she is above or below the deprivation cut-off for each indicator. From a statistical perspective, the indicators cut-offs are denoted as z_i where i represents the person considered to be deprived in his or her achievement in a particular indicator x_i is below the cut-off implying that $x_i < z_i$.

[30] The minimum level of satisfaction is based on international consensus such as the Millennium Development Goals.

According to Alkire and Foster, pertaining to the health dimension, firstly for the nutrition indicator there is deprivation if any adult or child is malnourished. Secondly, a household is also deemed to be deprived if any child (any age) within the household has died. With regard to the education dimension a household is considered to be deprived if no household member has completed five years of schooling or if in years 1 to 8, any school-age child is not attending school pertaining to the school attendance indicator. Shifting the focus to the living standards dimension, the deprivation cut-offs are follows:

- A household is considered to be deprived if it does not have access to clean drinking water or if access to clean water is more than 30 minutes away (walking distance) from home (roundtrip);
- A households who lack adequate sanitation or if their toilet is shared is deemed to be deprived;
- If the household has no electricity, this is considered as deprivation;
- Households with a dirt, sand or dung floor are considered to be deprived;
- The use of charcoal, dung or wood used as a cooking fuel implies deprivation;
- With regard to asset ownership, a household is considered deprived if it does not own more than one of the following: bicycle, motorcycle, refrigerator, telephone, radio, and television and does not own a car or a tractor.

Once the indicators' deprivation cut-offs are determined, the indicators' weights are chosen. The weighting scheme as proposed by Alkire and Foster is that the dimensions and the indicators weights should sum to 1. Thus it can be noted that the indicator weight is denoted as w_i with $\sum_{i=1}^{d} w_i = 1$ (Santos and Alkire, 2011:11). Each MPI dimension carries an equal weight of one-third (1/3). An equal weighting scheme is also applied to the indicators within each dimension. Therefore, for the health and education dimension, each of the indicators will be weighted 1/6. With regard to the living standard dimension, the indicators within the dimension will receive a weight of 1/18 (that is, 1/3 divided by 6). The method allows for weights to be adjusted based on the same principal above if the number of indicators per dimension or a dimension itself is changed. After the indicators' weights have been chosen, in order to identify the poor, a poverty cut-off must be chosen. The first set of cut-offs determine poverty lines for each indicator (e.g. someone is considered poor in the fuel source for cooking indicator, if he/she reports that the fuel source is something other than

electricity), while the second cut-off stipulates that the individual is identified as poor if he/she is deprived in at least one-third of the weighted indicators).

Table 4.1: The dimensions, indicators, deprivation cut-offs and weights for the MPI as derived by Santos and Alkire

Dimension	Indicator	Deprivation cut-off	Weight
Education	Years of schooling	No household member has completed five years of schooling.	1 / 6
	School attendance	Any school-age child is not attending school.	1 / 6
Health	Child morality	Any child in the family has died.	1 / 6
	Nutrition	Any child or adult for whom there is nutritional information is malnourished.	1 / 6
Standard of living	Electricity	There is no electricity.	1 / 18
	Drinking water	No access to clean drinking water or if water is more than 30 minutes walking distance from home.	1 / 18
	Cooking fuel	Cooking with wood, charcoal or dung	1 / 18
	Sanitation type	Lacking adequate sanitation or if their toilet is shared.	1 / 18
	Flooring	Deprived if household has a dirt, sand or dung floor.	1 / 18
	Asset ownership	Does not own more than one of radio, television, telephone, bicycle, motorcycle or refrigerator AND does not own a car or tractor	1 / 18

Source: Santos and Alkire, 2011:6.

To identify the poor, each person is assigned a deprivation score based on his or her deprivations in each of the indicators. In order to calculate the deprivation score, the weighted sum of the number of deprivations is taken into account so that the deprivation score lies between 0 and 1 for each person (Santos and Alkire, 2011:11). Thus a dummy variable is derived for each dimension I_1. Therefore I_1 would be equal to 1 if a person is deprived or I_1 could be equal to 0 if the person is not deprived for the relevant dimension. Formally the deprivation score c_i is calculated by taking:

$$c_i = w_1 I_1 + w_2 I_2 + \cdots + w_d I_d$$

Where d represents the number of dimensions in total while w represents the weights.

The second cut off or threshold is used to identify the multidimensionally poor and is referred to as the poverty cut-off by Alkire and Foster. Formally defined, a poverty cut off is referred to as the share of (weighted) deprivations a person must have in order to be considered as being poor. This second cut-off is thus denoted by k. The MPI approach defines an individual as being poor if he or she has a deprivation score higher than or equal to 1/3. Therefore somebody will be considered as poor if $c_i \geq k$. This in turn implies that if c_i < 1/3 an individual is considered to be non-poor and if $c_i \geq$1/3 an individual is considered to be poor in terms of overall multidimensional terms. In the case where the deprivation score is below the poverty cut-off, even if it is non-zero, it is replaced by 0.[31] Also, $c_i(k)$, which represents the censored deprivation score, is used to differentiate the original deprivation score from the censored one. It should be noted that when $c_i \geq k$, then $c_i(k) = c_i$ but if $c_i < k$ then $c_i(k)$ represents the deprivation score of the poor (Santos and Alkire, 2011: 11).

Once the indicators' deprivation cut-offs, weights and poverty cut-offs have been defined, it is then possible to compute the MPI. As mentioned earlier, the MPI reflects both the proportion of the population that is multidimensionally poor (this is denoted by H, which simply stands for the poverty headcount ratio) as well as the average intensity of poverty, denoted by A. In other words, A stands for the average proportion of indicators in which the person is deprived. In more practical terms, the multidimensional headcount ratio, also referred to as (H) is denoted by:

$$H = \frac{q}{n}$$

H therefore represents the first component required to calculate the MPI.

In this case q represents the number of people who are multidimensionally poor while n represents the total population. On the other hand, (A) refers to the second component which refers to the intensity of poverty denoted as $A = \frac{\sum_{i-1}^{n} c_{i\,(k)}}{q}$

In this case, $c_{i\,(k)}$ indicates the censored deprivation of individual i while q represents the number of people who are multidimensionally poor. Finally, the MPI is derived by

[31] This is referred to as censoring in poverty measurement.

multiplying the incidence of poverty by the average intensity across the poor, that is, $MPI = H \times A$ (Santos and Alkire, 2011: 11).

To better understand how the MPI is computed, consider a hypothetical example (of a country with a population size of 20; there are four households in total, with two of them living in urban areas and the other two residing in rural areas) in Table 4.2, using the MPI indicators, thresholds and weights from Table 4.1. This hypothetical example only assumes three dimensions; namely health, education and living standards as found in most MPI studies.

Table 4.2: A hypothetical example of MPI

Indicators	**Household (household size in brackets)**				**Weight**
	[A] (4)	**[B]** (7)	**[C]** (5)	**[D]** (4)	
	Urban	Urban	Rural	Rural	
Education					
No one has completed five years of schooling	0	1	0	1	1/6
At least one school –age child not enrolled in school	0	1	0	0	1/6
Health					
At least one member is malnourished	0	0	1	0	1/6
One or more children have died	1	1	0	1	1/6
Living standards					
No electricity	0	1	1	1	1/18
No access to clean drinking water	0	0	1	0	1/18
No access to adequate sanitation	0	1	1	0	1/18
Dirt, sand or dung floor	0	0	0	0	1/18
Dung, firewood or charcoal as cooking fuel	1	1	1	1	1/18
Household has no car/tractor AND owns at most one bicycle, motorcycle, radio, refrigerator, telephone or television	0	1	0	1	1/18
Score ci (sum of each deprivation multiplied by its weight)	0.222	0.722	0.389	0.500	
Is the household poor ($c \geq 1/3$?)	No	Yes	Yes	Yes	
Censored score $c_i(k)$	0	0.722	0.389	0.500	

Source: Santos and Alkire, 2011: 12.

Based on the hypothetical example in Table 4.2, it should be noted that 1 indicates deprivation in the indicator while 0 on the other hand indicates non-deprivation. It is evident that from the table that the score of each person in household [A] for example will be 0.222. Also, the country's poverty headcount ratio (H) was calculated as 0.800 while the intensity of poverty (A) was found to be 0.5625. These values were determined as follows:

Deprivation score of household [A][32]	= (1 × 1/6) + (1 × 1/18) = 0.222
The headcount ratio (H)	= (7 + 5 + 4) / (4 + 7 + 5+ 4) = 0.800
The intensity of poverty (A)	= [(0×4) + (0.722×7) + (0.389×5) + (0.500×4)] / [7 + 5 + 4] = 0.562
MPI	= H × A = 0.8000 × 0.562 = 0.450

With regard to the interpretation of these figures, the headcount ratio (H) tells us that in this hypothetical society, 80 percent of the people (or 16 out of 20 people in the hypothetical example) are considered to be MPI poor. This refers to individuals who experience severe poverty as they are the ones who are either deprived of all the indicators within a dimension or they are those being deprived across the various dimensions. In addition, the intensity of poverty (A) indicates that in this case, on average, the poor is deprived in 56 percent of the weighted indicators. The MPI of 0.450 means that the hypothetical society is deprived in 45 percent of the aggregate potential deprivations it could experience overall (Santos and Alkire, 2011: 14). To reiterate, these calculations once again illustrate how the MPI approach is able to depict both the incidence of poverty as well as the intensity of deprivation.

4.2.2 The revised MPI methodology

Table 4.3 below provides a brief explanation of how this study revises the MPI dimensions, indicators, deprivation cut-offs and weights from what was originally proposed by Alkire and Foster to make it more applicable to this study and in turn the South African context. Based on the overview of the dimensions, indicators and weights above, it is evident that the three main dimensions of the MPI as proposed by Alkire and Foster are retained. The only difference with regard to the dimensions is that an additional dimension is added, namely labour market outcome (as discussed in Section 3.3.2, Statistics South Africa as well as Omotoso and Koch included this indicator in their respective 2014 and 2017 MPI studies). The majority of the indicators selected remained the same with a few being changes made and new indicators being added due to the inclusion of a fourth dimension. As a result, the

[32] Using a similar approach, the deprivation score of the other three households are calculated as follows:
Household [B]: 1/6 + 1/6 + 1/6 + 1/18 + 1/18 + 1/18 + 1/18 = 0.722
Household [C]: 1/6 + 1/18 + 1/18 + 1/18 + 1/18 = 0.389
Household [D]: 1/6 + 1/6 + 1/18 + 1/18 + 1/18 = 0.500

weights too are adapted to correspond with the various dimensions and indicators. Before the adjustments to the respective indicators are discussed, the alterations of the weights have to be explained. As previously mentioned, $\sum_{i=1}^{d} w_i = 1$, which means that the sum of the weights should sum 1. Since all of the indicators are weighted equally and this thesis includes a fourth dimension, each dimension carries a weight of 0.25.

As the standard of living dimension contains the most indicators, for simplicity it is weighted first with each indicator having a weight of 1/28. The education and health dimensions which have two indicators each are equally weighted at 3.5/28 each, while the labour dimension is weighted 7/28. The adjustments to the indicators are further explained below, with the aid of information in Table A.1 in the Appendix.

Table 4.3: Dimensions, indicators, deprivation cut-offs and weights for the MPI

Dimension	Indicator	Deprivation cut-off	Weight
Education	[A]:Years of schooling	If no household member aged 15 years or above has completed 7 years of schooling	3.5 / 28
	[B]: School attendance	If at least one child between the ages of 7 to 15 years is not attending an educational institution	3.5 / 28
Health	[C]: Child morality	If at least one child aged 0 to 4 years has passed away in the past year	3.5 / 28
	[D]: Disability	If at least one household member is disabled	3.5 / 28
Standard of living	[E]: Fuel for lighting	Using paraffin / candles / other / none	1 / 28
	[F]: Fuel for heating	Using paraffin / wood / coal / dung / other / none	1 / 28
	[G]: Fuel for cooking	Using paraffin / wood / coal / dung / other / none	1 / 28
	[H]: Water	There is no piped water in the dwelling or on stand	1 / 28
	[I]: Sanitation type	No access to a flush toilet	1 / 28
	[J]: Dwelling type	Living in an informal shack / traditional dwelling / caravan / tent / other	1 / 28
	[K]: Asset ownership	Does not own more than one of the following: radio, television, fridge, computer, landline phone, cellular phone	1 / 28
Labour market outcome	[L]: Unemployment	All household members aged 15 to 65 years are unemployed (narrow definition)	7 / 28

Source: Adapted from Santos and Alkire, 2011:6.

4.2.2.1 Education

As in the Alkire and Foster's original MPI methodology, years of schooling and school attendance remain the two indicators which form the education dimension. Even though these two indicators are considered to be imperfect proxies as they do not capture skills, knowledge attained or the quality of schooling, they are robust indicators which provide the closest feasible approximation to the levels of education within households (Santos and Alkire, 2011:6).

Pertaining to the years of schooling indicator, the indicator differs in the sense that it only takes household members who were at least 15 years at the time of the census / CS into consideration. Furthermore, instead of looking at household members who have completed five years of schooling, that number has been increased to seven years of schooling as it seems the cut-off threshold of five years may be too lenient. According to Schindler (2005:14) illiteracy usually refers to an educational level representing less than seven years of formal schooling. This in turn makes it more applicable to the South African context as it would make reference to all individuals who did not complete Grade 7.

The original MPI threshold for school attendance refers to deprivation occurring for all children of school age who were not attending Grades 1 to 8 of school at the time of the survey. Once again, this deprivation has been altered to focus on children who are between the ages of 7 to 15 years. This would in turn imply that Grade 9 learners are also considered as most learners turned 14 years of age during the year they were at Grade 8.

4.2.2.2 Health

Originally, in the Alkire and Foster methodology, the health dimension is comprised of both child morality and nutrition. With regards to the child morality, a household would be considered as being deprived if at least one child aged 0 to 4 years passed away in the past year. The aim of the nutrition indictor is to detect malnutrition among households by utilising the Body Mass Index (BMI). Unfortunately, both the Census and Community Survey data do not capture information in connection with BMI (i.e. height and weight of the respondents) and asked no questions on malnutrition, hunger or food security (GHS asked two questions

on child and adult hunger). This in turn means that it is not possible to identify malnutrition among South Africans in this study.

For this reason, in the revised methodology, the nutrition indicator is replaced with a disability indicator to give a better overview of the health dimension within the South African context. Thus, the deprivation cut-off would be the presence of at least one household member with serious disability problem. In each census or CS, someone is defined as disabled as follows:

- In the Census 2001, the respondent were asked if he/she suffered serious sight, hearing, communication, physical, intellectual and emotional disabilities that prevent his/her full participation in life activities. If the respondent's answer is "yes" to at least one of these dimensions, he/she is defined as a disabled household member.
- In the CS 2007, the respondent was asked if he/she suffered sight, heating, communication, physical, intellectual and emotional disabilities (i.e. the word "serious" was removed from the question, compared with the Census 2001). If the respondent's answer is "yes" to at least one of these dimensions, he/she is defined as a disabled household member.
- In the Census 2011 and CS 2016, the respondent was asked if he/she (A) has no difficulty, (B) has some difficulty, (C) has a lot of difficulty, (D) cannot do at all, (E), do not know or (F) cannot be determined, with regard to seeing, hearing, communication, walking/climbing, remembering/concentrating, and self-care. For this study, if the respondent's answer is either (C) or (D) to at least one of these activities, he/she is defined as a disabled household member.

4.2.2.3 Standard of living

When comparing the original standard of living dimension to the one used in this study, a few alternations have been made. First, instead of only focusing on cooking fuel, fuel for heating and fuel for lighting are included as additional indicators. Secondly, since the Census data does not provide any information relating to floor type, this indicator has been replaced with a dwelling type indicator which allows one to determine if people reside at formal dwellings. Thirdly, asset ownership only takes television, landline telephone, cellular telephone, fridge,

computer and radio into consideration. Other assets like bike, motorbike, car and tractor were excluded as information on these additional assets were not provided by the data set.

Fourthly, pertaining to the water indicator when compared to the original methodology the deprivation cut-off used in this study is narrower as it only examines households with no piped water in dwelling or on their stand. This cut-off replaces the original cut-off which refers to individuals' access to clean drinking water if the water source is from any of the following types namely: a public tap, piped water, borehole or pump, rainwater, a protected spring or a protected well and is within a distance of a 30-minute walk (roundtrip)[33] (Santos and Alkire, 2011:8)[34]. Lastly, the sanitation indicator has also been narrowed down so that it only accounts for households who do not have access to flush toilets. Composting pit and ventilated improved pit have been excluded. Therefore, by simply not having a flushed toilet, a household would be considered as being deprived.

4.2.2.4 Labour market outcome

It is evident that one of the major causes of poverty is related to unemployment. In the South African context unemployment is still considered to be a major socio-economic issue to date as unemployment rates still remain persistently high (the unemployment rate was 26.5 % in the fourth quarter of 2016). For this reason it becomes imperative to add this dimension to the computation of the MPI. It should be noted that only those aged between 15 and 65 years of age defined as unemployed under the narrow definition of unemployment are considered. In the context of this study, a household would be deprived if all individuals of working age were unemployed. Thus, discouraged work seekers are not taken into account and would therefore not be classified as deprived in this respective indicator.

4.2.3 MPI decomposition

Since the MPI condenses a great deal of information, for analytical purposes, it is important to breakdown the composition of poverty. The MPI decomposition therefore allows for the

[33] This question was not asked in the Census and CS (but rather asked in the GHS).

[34] As indicated by Statistics South Africa (2014:6) arguments have been raised that this revised narrow indicator is not in line with minimum standards as set out by the Reconstruction and Development Programme (RDP) which refers to piped water within 200 metres. The argument presented by Stats SA on the other hand is that piped water within 200 meters was deemed to be a short term aim of the RDP when the long term goal being the '*provision of accessible water and sanitation to all South Africans*' which in turn implies that this strict cut off may therefore be a better long-term measurement.

most predominant deprivations to be identified on various levels ranging from a household level to a national level. The MPI decomposition can be done by population sub-groups or by dimensions/indicators, to be discussed below with the aid of the hypothetical example in Table 4.2.

4.2.3.1 MPI decomposition by population sub-groups

The population sub-groups that could be identified include, for instance, gender, race, area type, province, district council and municipality. First, the MPI of the country could be decomposed: $MPI_{COUNTRY} = \sum_{i=1}^{k} \frac{n_i}{n} \cdot MPI_i$, where

i = the i-th sub-group

k = the total number of sub-groups (e.g. there are two gender groups and four population groups in South Africa)

n_i = total population in the i-th sub-group

n = total population of the country

MPI_i = MPI of the i-th sub-group

The contribution of the i-th sub-group to the overall MPI is denoted as $\frac{\frac{n_i}{n} \cdot MPI_i}{MPI_{COUNTRY}} \times 100$

Using the hypothetical example in Table 4.2, MPI decomposition by area type could be conducted. In this example:

- Urban area (first sub-group): H = 0.64, A = 0.72, MPI = 0.46, population = 11;
- Rural area (second sub-group): H = 1.00, A = 0.44, MPI = 0.44, population = 9;
- $MPI_{COUNTRY} = \sum_{i=1}^{2} \frac{n_i}{n} \cdot MPI_i = \frac{11}{20} \cdot 0.46 + \frac{9}{20} \cdot 0.44 = 0.45$
- Contribution of urban area to MPI: $\frac{\frac{n_1}{n} \cdot MPI_1}{MPI_{COUNTRY}} \times 100 = \frac{\frac{11}{20} \cdot 0.46}{0.45} \times 100 = 56.22\%$
- Contribution of rural area to MPI: $\frac{\frac{n_2}{n} \cdot MPI_2}{MPI_{COUNTRY}} \times 100 = \frac{\frac{9}{20} \cdot 0.44}{0.45} \times 100 = 44.78\%$

Therefore, the urban population contributes 56.22% to the total poverty while the rural population contributes to a lower 44.78%. In the event where the contribution of poverty by a particular sub-group greatly exceeds its population share, it implies a very unequal distribution of poverty in a country as this sub-group bears a disproportionate share of poverty (for example, in case females account for 50% of the total population but contribute a very high 90% to total poverty of the country).

4.2.3.2 MPI decomposition by dimensions and indicators

The MPI of the country could be decomposed: $MPI_{COUNTRY} = \sum_{i=1}^{k} w_i CH_i$, where

i = the i-th indicator

k = the total number of indicators (e.g. there are 10 indicators in Table 4.2)

w_i = weight of the i-th indicator

CH_i = the censored headcount ratio of the i-th indicator

The contribution of the i-th indicator to the overall MPI is denoted as $\frac{w_i \cdot CH_i}{MPI_{COUNTRY}} \times 100$

Table 4.4 below illustrates the MPI decomposition by indicator, using the hypothetical example from Table 4.2. The results of Table 4.4 indicate that those deemed to be poor are greatly deprived in access to electricity and cooking fuel (as indicated by the highest CH of 0.80), followed by sanitation, years of education morality and assets indicators. Another important observation is that electricity, assets and sanitation are not the indicators that make the biggest contribution to poverty; the indicators that are in actual fact the largest contributors to poverty are rather the years of education (20.37%), mortality (20.37%) and school attendance (12.96%), as shown in the last column of the table. The reason for this finding is related to the weights of the various indicators: the weights of the years of education, school attendance and mortality indicators are greater (0.17) when compared to the other indicators' weights.

A few important points should also be highlighted: first, when the overall MPI is low, the censored headcount ratios will also be low which can be very misrepresentative. An indicator

may have a high contribution for that particular indicator but this might not necessarily imply extreme deprivation in that particular indicator. The reason for the high contribution of a particular indicator is the result of that indicator being one of the few indicators which have a zero-censored headcount ratio. Secondly, it is important to take censored headcount ratios into account as they help determine the extent of absolute deprivation (Santos and Alkire, 2011: 23). Lastly, to determine the decomposition of poverty by dimensions, one would simply have to add the contribution of each indicator in each dimension. Based on the same hypothetical example, education dimension contributes 33.33% (20.37% + 12.96%), health dimension contributes 29.63% (9.26% + 20.37%) and living standards dimension contributes 37.04% (9.88% + 3.09% + 7.41% + 0.005 + 9.88% + 6.79%) to the overall poverty.

Table 4.4: A hypothetical example of MPI decomposition by indicator

Household	**A**	**B**	**C**	**D**	**Weight (w_i)**	**Censored headcount ratio per indicator (CH_i)**	$w_i \cdot CH_i$	**Decomposition by indicator** $\frac{w_i \cdot CH_i}{MPI_{COUNTRY}} \times 100$
Household size	4	7	5	4				
Area type	Urban	Urban	Rural	Rural				
Years of education	0	1	0	1	0.17	11/20 = 0.55	0.092	20.37%
School attendance	0	1	0	0	0.17	7/20 = 0.35	0.058	12.96%
Nutrition	0	0	1	0	0.17	5/20 = 0.25	0.042	9.26%
Mortality	1	1	0	1	0.17	11/20 = 0.55	0.092	20.37%
Electricity	0	1	1	1	0.06	16/20 = 0.80	0.044	9.88%
Water	0	0	1	0	0.06	5/20 = 0.25	0.014	3.09%
Sanitation	0	1	1	0	0.06	12/20 = 0.60	0.033	7.41%
Floor	0	0	0	0	0.06	0/20 = 0.00	0.000	0.00%
Cooking fuel	1	1	1	1	0.06	16/20 = 0.80	0.044	9.88%
Assets	0	1	0	1	0.06	11/20 = 0.55	0.031	6.79%
						Total:	0.450	100.00%
Poverty status	Not poor	Poor	Poor	Poor				

Source: Adapted from Santos and Alkire, 2011: 12.

4.3 Data

In this study, four datasets are used, namely the 10% sample of Census 2001, Community Survey 2007, 10% sample of Census 2011 and Community Survey 2016, all conducted by Stats SA. These censuses and surveys provide ample information on demographics, educational attainment, economic activities, migration status, labour market status, ownership of assets and access to household goods and services, as well as personal and household

income in bands (see Table A.1 in the Appendix). This study thus differs from other studies as it examines multidimensional poverty in greater detail as its measures not only focuses on multidimensional poverty in relation to demographic factors such as race and gender but also looks at smaller geographical units like district council and municipality within South Africa. Furthermore, unlike the other studies, this study will also give a better overview of trend analysis as three data sources will be used as discussed below, unlike other recent studies which only analysed one or two datasets. Lastly, these data sets also contain information on the smaller geographical areas like district councils and municipalities (see Tables A.2 and A.3 in the Appendix).

4.4 Limitations

In addition to the limitations already discussed in the methodology section (when explaining why the MPI methodology needs to be revised), other limitations do exist which needs to be mentioned. With regard to the data the following important issues need to be raised.

The first issue relates to the exclusion of the 1996 Census data. It is not possible to include the 1996 data for this study due to two main reasons: (1) the district council variable is not available; (2) the data does not capture any information on private asset ownership except landline telephone and cellular telephone, as shown in Table A.1 in the Appendix.

The second issue relates to the matching of the various district councils across the two censuses and two CSs. This issue is mainly due to a few of the district councils changing their names, districts being separated or districts being integrated over the years. However, this problem can be solved by means of few ‘merging’ exercises – as clearly shown in Table A.2, so that it becomes possible to conduct consistent MPI comparisons across districts over time in Chapter 5. The third issue refers to municipalities: a definite limitation is that it is not possible to have one hundred percent matching of all the municipalities across the four datasets, as the geographical demarcation of municipalities has changed throughout the years. The fourth issue relates to the absence of the urban/rural area type variable in CS 2007. Hence, when MPI results by area type are presented in Chapter 5, only the results of 2001, 2011 and 2016 is discussed.

The most serious limitation relates to the fact that when Stats SA released the 2016 CS data, information on variables in connection with the labour market activities was inexplicably not released (despite the fact that the questionnaire did capture labour market activities of the respondents). The author and the supervisor contacted Stats SA numerous times between March and May of 2017 to request for the data, but it was not successful in the end. Hence, the MPI is conducted twice in Chapter 5 as follows:

- Includes all four dimensions (education, health, standard of living and labour market outcome) to conduct the analysis for 2001, 2007 and 2011;
- Includes the first three dimensions (education, health and standard of living) to conduct the analysis for 2001, 2007, 2011 and 2016.

The last limitation is that information on personal income and household income, despite being asked in the CS 2016 questionnaire, was also not yet released. Hence, the comparison between MPI poverty and money-metric poverty (using real per capita income) is only possible for 2001, 2007 and 2011 in Chapter 5 (the results are presented in Section 5.5).

4.5 Conclusion

Chapter four discussed the methodology and data employed in this study. The section presented an overview and insight into the MPI methodology by firstly discussing the original MPI methodology as proposed by Alkire and Foster after which the revised methodology as well as MPI decomposition (by population sub-groups and dimensions / indicators) was discussed. The chapter also discussed the four data sets used in the study namely the Census 2001, CS 2007, Census 2011 and CS 2016. Lastly, the limitations of the study were highlighted.

CHAPTER FIVE: EMPIRICAL ANALYSIS

5.1 Introduction

The aim of this chapter is to examine multidimensional poverty in South Africa by using the MPI index to determine both the incidence of poverty and intensity of deprivation among the poor for the period of 2001 to 2016. Section 5.2 first examines the descriptive statistics on the proportion of population deprived in each indicator (note that it is not possible to derive this proportion for the labour market dimension in 2016, as already mentioned in Section 4.4), before Section 5.3 considers all four dimensions in an examination of multidimensional poverty in 2001-2011, focusing on MPI poverty by gender, population group, area type, province, district and municipality, as well as the MPI decomposition by these sub-groups and the indicators. Section 5.4 re-examines the MPI by including the 2016 CS data and by excluding the labour market outcome dimension. Section 5.5 compares MPI poverty and real per capita income poverty in 2001-2011, before Section 5.6 concludes the chapter.

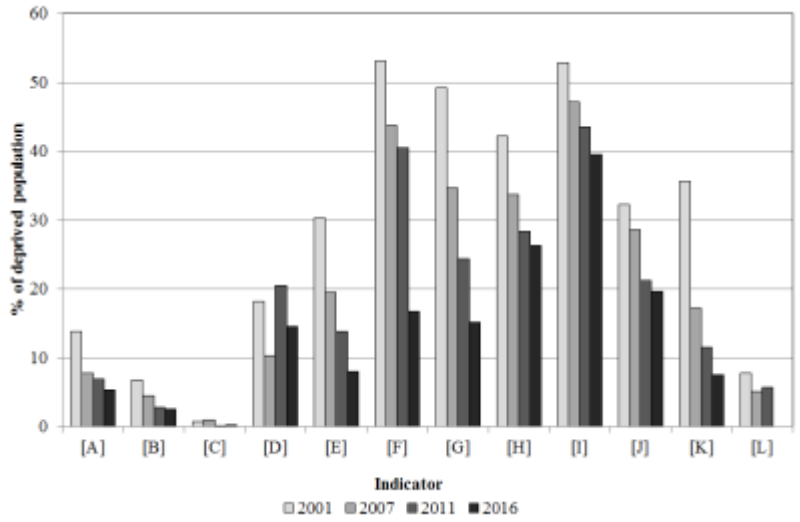
5.2 Proportion of population deprived in each indicator

Figure 5.1 illustrates the proportion of the overall South African population deprived in each indicator for the 15-year period. At a glance, it is evident that the highest proportions of deprivation among the overall population are associated with these five indicators (all of them fall under the standards of living dimension): fuel for lighting, fuel for heating, fuel for cooking, water and sanitation. Even though there was a downward trend in these proportions, mention needs to be made of the fact that a high proportion of the population still lacked adequate sanitation in 2016 (nearly 40%). In contrast, much lower levels of deprivation were experienced in the other three dimensions, with the population being the least deprived in child mortality, followed by the two education indicators.

Pertaining to deprivation trends over the period, generally a downward trend in the proportion of population deprived in each indicator took place for all indicators, except disability – this proportion went down in 2007, then increased in 2011 before decreasing again in 2016. Nonetheless, this unusual trend could be attributed to the inconsistent questionnaire design

(refer to Section 4.2.2.2) which in turn may have resulted in the under-estimation of proportion of population deprived in this indicator in 2001 and 2007.[35]

Figure 5.1: The proportion (%) of overall population deprived in each indicator



Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

[A]: Years of schooling	[B]: School attendance	[C]: Child mortality	[D]: Disability
[E]: Fuel for lighting	[F]: Fuel for heating	[G]: Fuel for cooking	[H]: Water
[I]: Sanitation type	[J]: Dwelling type	[K]: Asset ownership	[L]: Unemployment

Although the above findings are indeed encouraging, they are not particularly surprising, given government's ongoing effort to improve the provision of free basic services since the economic transition (Bhorat and Van der Westhuizen 2013:1). The provision of these free basic services was particularly aimed at assisting previously disadvantaged communities and included services such as housing, electricity, water and sanitation. For example, with regard to housing, one of government's main pro-poor programs adopted in 1994 was low-cost housing which was implemented mainly through the Housing Subsidy Programme. Regarding electricity, government's aim was to ensure that all households in the country had access to electricity and that provision be made for poor households. More specifically, this means that poor households would receive 50 kWh of free electricity per month. The continuous downward trend observed for the water indicator may strongly be linked to

[35] As explained in Section 4.2.2.2, in Census 2001 and CS 2007 respondents were asked to answer the question pertaining to disability with a simple "yes" or "no" response. Some respondents may have responded incorrectly due to confusion created by these two unclear categories as it was not specified how serious their disability should be before they declare "yes" and as a result they may have more likely opted for the "no" response.

government's promotion of free basic water which refers to 6 kilolitres of free water to each household. Lastly, the provision of at least a ventilated improved toilet pit was one of the primary aims of the government with regard to sanitation.

Table 5.1 shows the proportion of the population who are deprived in each indictor by various demographic characteristics, namely gender, area type and race. Firstly with regards to gender, the results indicate that greater deprivation was experienced for individuals coming from female-headed households in all indicators in all four years. This finding may thus help us to make a better connection with the theory that suggests that poverty be the result of structural failing as discussed earlier in Chapter Two. The theory which is based on the premise that poverty is the result of structural factors that are inherent to the economy or due to various interrelated institutional environments which may tend to favour certain groups over others, which in this case would be a particular gender group. Even though a definite reason why individuals coming from female-headed households were more deprived than those from male-headed households cannot be given, one could perhaps explore reasons pertaining to family structure, gender roles and expectations which also in turn are largely related to education and educational aspiration.

When considering the urban-rural divide, deprivation per indicator was considerably higher for those residing in rural areas in 2001, 2011 and 2016. Overall, a downward trend in the percentage of the population deprived in relation to area type is observed. Lastly, in the examination of deprivation per indicator by province, the deprivation proportion was much higher for the African population. In contrast to this, the White population were the least deprived overall. It should however be noted that even though this is the case, the results also indicate that the percentage of the deprived in each indicator decreased at a more rapid pace for the African population than any of the other race groups over the period.

Table 5.2 presents the proportion of population deprived in each indicator by province. Overall, results suggest that Gauteng and the Western Cape are the least deprived provinces while the Eastern Cape, Limpopo and the North West are the most deprived provinces. Furthermore, in most instances, when examining this proportion per indicator for each province over the period, there was a downward trend across the provinces.

Table 5.1: Proportion of population (%) deprived in each indicator by gender, race and area type, 2001-2016

	Male				Female				Urban				Rural			
	2001	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**
[A]	12.7	7.7	6.6	5.2	15.2	8.0	7.3	5.6	7.8	N/A	4.3	3.8	21.6	N/A	11.2	8.5
[B]	6.1	4.1	2.5	2.1	7.7	5.0	3.4	3.0	4.6	N/A	2.5	2.2	9.7	N/A	3.6	3.1
[C]	0.6	0.8	0.0	0.3	1.0	1.3	0.1	0.4	0.5	N/A	0.0	0.2	1.1	N/A	0.1	0.5
[D]	16.5	9.2	17.6	12.0	20.3	11.8	24.1	17.6	14.8	N/A	17.0	12.9	22.6	N/A	26.4	18.0
[E]	26.8	17.5	12.8	7.8	34.7	22.2	15.3	8.3	15.7	N/A	8.3	5.8	49.2	N/A	23.3	12.2
[F]	46.7	37.9	36.2	14.3	61.1	51.6	45.8	19.8	32.6	N/A	27.3	7.6	79.6	N/A	62.8	34.8
[G]	42.7	29.4	20.7	12.9	57.5	41.7	28.9	17.9	27.5	N/A	9.9	6.4	77.4	N/A	48.7	32.4
[H]	36.3	28.3	24.0	22.9	49.5	40.7	33.9	30.5	17.5	N/A	9.9	9.1	74.0	N/A	59.6	59.9
[I]	46.1	40.1	37.4	34.0	61.2	56.4	51.2	46.2	22.7	N/A	15.3	13.3	91.8	N/A	91.3	90.6
[J]	29.0	26.4	20.0	18.4	36.3	31.6	22.9	21.1	22.4	N/A	15.6	14.4	45.0	N/A	30.7	29.7
[K]	30.4	14.6	10.2	7.1	42.2	20.7	13.1	8.1	22.3	N/A	7.8	5.8	52.9	N/A	17.7	11.1
[L]	6.8	4.1	5.0	N/A	9.0	6.4	6.6	N/A	8.2	N/A	5.8	N/A	7.2	N/A	5.4	N/A
	African				**Coloured**				**Indian**				**White**			
	2001	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**
[A]	16.3	9.1	8.0	5.9	8.1	5.9	4.3	3.6	1.9	2.0	2.0	3.2	0.8	0.8	0.9	2.2
[B]	7.6	4.7	3.0	2.6	6.3	5.8	3.7	3.5	2.8	3.0	2.2	1.9	1.6	1.9	1.0	0.9
[C]	0.9	1.2	0.1	0.4	0.3	0.3	0.0	0.2	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1
[D]	19.7	11.0	22.0	15.0	15.7	10.8	21.5	15.2	12.0	10.3	11.7	12.2	9.5	4.7	8.7	10.1
[E]	37.1	24.0	16.9	9.4	9.1	4.9	4.5	2.7	0.9	1.3	0.9	0.6	0.5	0.8	0.5	0.3
[F]	64.3	53.3	46.8	19.9	19.0	13.9	21.7	3.8	2.0	2.7	6.1	1.3	4.0	3.2	12.4	1.2
[G]	60.5	43.1	29.9	18.2	12.6	5.8	5.0	2.8	1.2	1.2	1.4	0.6	0.9	0.3	1.0	0.3
[H]	51.4	41.4	34.9	31.0	9.9	5.1	4.9	3.9	4.5	1.8	1.9	1.6	4.5	3.3	1.3	6.3
[I]	64.7	58.4	53.4	47.3	14.6	9.0	10.3	6.5	2.1	1.8	2.5	1.8	1.4	0.5	1.0	0.7
[J]	39.3	35.1	25.5	23.0	9.3	7.7	8.5	7.3	2.7	2.0	2.4	1.7	1.9	1.2	1.4	0.9
[K]	42.6	20.7	13.5	8.6	18.8	8.6	7.1	4.8	2.1	1.2	1.1	1.3	1.2	0.4	0.5	0.9
[L]	9.3	6.1	6.7	N/A	3.3	2.6	3.0	N/A	1.3	1.0	1.2	N/A	0.7	0.6	0.7	N/A

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

Table 5.2: Proportion of population (%) deprived in each indicator by province, 2001-2016

	Western Cape				Eastern Cape				Northern Cape				Free State				KwaZulu-Natal			
	2001	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**
[A]	6.2	4.2	3.4	3.0	20.4	11.2	10.4	8.1	17.8	11.4	10.1	6.7	14.4	8.9	7.3	5.8	15.0	7.8	7.3	5.1
[B]	4.8	4.5	2.7	2.7	9.3	5.4	3.3	2.8	7.1	5.6	3.8	3.4	5.3	2.4	2.2	1.9	9.4	6.0	4.8	3.6
[C]	0.2	0.3	0.0	0.1	0.8	1.1	0.1	0.3	0.6	0.8	0.1	0.4	0.8	1.0	0.1	0.3	1.3	1.7	0.1	0.4
[D]	13.7	7.8	16.7	11.9	21.9	14.0	24.7	17.4	18.3	12.0	30.4	20.0	21.3	12.0	25.6	18.9	20.0	13.1	22.0	17.8
[E]	9.6	5.1	4.7	2.4	50.8	34.5	24.2	12.0	20.6	10.9	11.0	7.6	23.2	12.3	8.6	5.5	41.2	30.3	22.7	11.7
[F]	24.2	18.1	31.8	3.5	77.9	70.0	69.0	26.6	43.8	35.0	34.3	11.2	59.7	46.8	42.1	8.0	57.0	47.5	44.4	21.2
[G]	15.9	6.1	4.4	2.0	71.6	55.3	35.8	20.8	32.8	18.2	14.4	9.3	50.5	23.2	11.6	6.2	54.0	41.9	31.9	19.1
[H]	13.1	8.0	9.3	9.1	66.3	60.5	53.8	49.8	16.9	20.1	21.7	22.5	28.9	12.3	10.2	8.9	56.4	46.2	39.5	36.8
[I]	12.2	6.9	8.9	5.6	70.7	65.9	60.2	55.1	32.8	33.7	34.0	31.2	55.7	42.7	33.5	28.3	65.0	63.1	61.0	60.0
[J]	16.7	14.5	15.7	14.6	51.9	48.5	39.2	35.7	15.5	16.2	16.1	15.4	32.7	25.7	18.2	16.0	43.2	42.4	30.1	29.4
[K]	17.8	8.0	6.7	4.2	55.3	31.4	20.4	14.1	33.8	18.0	14.2	10.8	34.1	14.7	8.6	5.7	41.4	20.7	14.4	9.0
[L]	4.6	3.1	4.1	N/A	8.4	5.4	5.8	N/A	5.6	4.3	4.4	N/A	9.0	6.5	6.7	N/A	8.0	4.5	5.0	N/A
	North West				**Gauteng**				**Mpumalanga**				**Limpopo**				**South Africa**			
	2001	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**
[A]	17.2	12.9	11.2	7.6	7.1	4.8	3.8	3.8	15.8	8.4	7.9	6.0	16.6	8.6	8.2	7.7	13.8	7.8	6.9	5.4
[B]	8.8	4.7	3.1	2.7	3.8	3.6	1.8	1.9	6.1	3.6	2.5	2.7	5.5	3.7	1.7	1.8	6.8	4.5	2.9	2.5
[C]	0.8	1.2	0.1	0.5	0.4	0.6	0.0	0.2	1.1	1.3	0.1	0.4	0.6	0.8	0.0	0.4	0.8	1.0	0.1	0.3
[D]	20.9	10.9	25.2	15.7	12.0	6.2	13.6	11.4	20.7	10.4	20.6	14.5	19.6	9.7	24.0	13.0	18.2	10.3	20.5	14.6
[E]	27.3	15.5	13.3	8.5	16.1	14.1	9.8	7.6	29.6	15.8	11.3	8.0	34.2	16.2	10.0	5.3	30.3	19.5	13.9	8.0
[F]	55.8	43.4	37.0	15.5	26.7	21.2	19.2	8.7	62.8	57.9	42.5	20.2	74.6	66.8	57.3	39.4	53.1	43.8	40.5	16.8
[G]	54.1	34.6	21.9	13.0	23.5	16.0	10.6	7.9	60.7	47.0	31.4	20.7	76.4	63.4	53.6	40.1	49.2	34.7	24.4	15.2
[H]	49.0	38.7	31.4	36.7	14.6	11.6	8.7	8.4	42.1	32.8	28.9	26.6	63.9	59.1	50.0	52.6	42.2	33.7	28.4	26.4
[I]	67.6	57.7	55.7	53.0	16.9	15.7	13.0	12.4	65.7	64.5	60.8	57.6	87.3	84.7	82.3	80.4	52.8	47.2	43.6	39.5
[J]	25.8	27.6	21.0	19.0	22.9	22.4	16.4	15.4	29.0	19.8	14.2	13.5	26.1	14.6	8.4	10.0	32.2	28.6	21.3	19.6
[K]	33.6	17.6	13.0	8.6	20.5	10.4	7.3	6.0	33.3	13.3	8.9	5.9	45.3	19.6	11.7	6.9	35.6	17.2	11.5	7.6
[L]	7.7	5.7	5.8	N/A	8.9	5.7	6.3	N/A	7.1	5.0	5.9	N/A	7.9	5.7	6.8	N/A	7.8	5.1	5.7	N/A

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

Table 5.3: Proportion of population (%) deprived in each indicator by district council, 2001

Abbreviation (2016)	Name (2016)	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
DC1	West Coast	11.2	6.2	0.3	12.5	9.9	23.7	12.6	9.4	14.0	7.9	24.5	2.1
DC2	Cape Winelands	9.4	5.8	0.2	17.1	10.1	26.1	14.3	12.0	12.9	13.5	22.1	2.5
DC3	Overberg	10.1	5.6	0.2	11.4	13.8	26.9	16.4	13.3	15.3	15.2	22.0	4.0
DC4	Eden	10.1	5.7	0.2	16.8	13.4	30.4	22.7	15.7	19.6	16.0	24.6	4.1
DC5	Central Karoo	15.6	8.9	0.3	26.6	11.0	45.8	30.9	5.5	13.2	3.7	31.8	5.3
DC6	Namakwa	12.7	3.4	0.3	16.9	19.4	39.7	17.1	12.0	39.2	9.2	30.7	5.1
DC7	Pixley ka Seme	25.5	10.5	0.9	16.9	19.8	52.8	37.5	17.9	47.7	13.9	37.9	6.1
DC8	ZF Mgcawu	15.8	7.4	0.7	16.7	24.5	43.3	30.4	19.3	30.2	15.4	39.0	4.3
DC9	Frances Baard	15.6	6.2	0.6	22.1	18.7	41.2	36.0	16.0	26.4	17.7	28.5	6.8
DC10	Sarah Baartman	16.8	8.3	0.3	21.4	25.6	57.0	46.6	24.7	51.2	22.9	35.3	5.9
DC12 & BUF	Amathole & Buffalo City	16.4	6.8	0.4	20.3	44.6	77.9	71.1	65.9	66.6	49.2	50.2	9.9
DC13	Chris Hani	24.6	8.8	0.7	27.4	48.7	86.9	79.2	70.4	79.5	49.2	58.4	7.5
DC14	Joe Gqabi	25.3	10.0	0.9	26.0	55.9	89.5	82.7	74.2	87.5	41.5	65.0	7.5
DC15	OR Tambo	29.7	14.7	1.7	22.6	72.9	94.0	89.7	93.5	94.3	75.0	74.2	7.5
DC16	Xhariep	25.8	9.4	0.5	23.8	22.0	69.5	56.4	17.9	31.4	18.3	42.5	7.4
DC18	Lejweleputswa	16.0	6.4	1.0	19.6	25.5	56.7	50.1	27.5	53.9	37.1	36.4	10.5
DC19	Thabo Mofutsanyana	14.2	5.1	1.0	24.2	35.1	73.5	63.8	40.2	74.9	40.7	39.5	9.2
DC20	Fezile Dabi	13.4	4.4	0.8	21.5	17.5	59.4	47.9	15.1	38.3	27.6	28.8	8.2
DC21	Ugu	20.7	11.3	1.4	21.7	54.0	71.6	70.0	82.6	83.3	50.7	51.4	6.4
DC22	uMgungundlovu	12.0	7.2	1.1	17.4	25.4	50.8	45.9	39.6	60.2	40.6	35.8	8.7
DC23	uthukela	16.7	10.4	2.0	25.9	44.6	77.8	72.8	69.8	78.9	51.8	45.7	8.4
DC24	uMzinyathi	31.1	15.2	1.5	22.5	77.8	88.2	83.6	82.6	85.0	65.7	67.2	7.4
DC25	Amajuba	9.2	8.1	1.4	26.9	28.0	60.6	54.8	53.6	56.8	23.1	30.6	8.8
DC26	Zululand	20.0	11.7	2.2	29.6	65.7	82.8	78.8	76.9	85.9	54.9	57.4	6.6
DC27	uMkhanyakude	25.1	17.2	1.5	23.9	81.1	87.6	83.2	88.3	92.2	56.3	61.0	6.4
DC28	King Cetshwayo	18.2	12.5	1.6	20.4	52.8	65.8	63.2	70.7	81.5	53.5	49.6	7.0
DC29	iLembe	18.6	10.6	1.5	21.4	54.7	65.9	61.9	71.6	80.3	57.9	49.8	6.7
DC30	Gert Sibande	17.0	7.2	1.7	22.1	44.6	76.4	73.2	42.9	55.1	46.8	38.7	7.3
DC31	Nkangala	12.4	4.7	0.6	20.9	17.8	54.9	53.2	30.3	58.9	23.2	24.6	7.4
DC32	Ehlanzeni	18.7	6.8	1.0	18.9	31.8	58.2	54.9	50.2	78.4	19.2	38.2	6.6
DC33	Mopani	20.6	6.9	0.7	19.1	25.5	74.0	78.9	63.3	88.9	28.7	44.2	8.2
DC34	Vhembe	14.3	3.7	0.4	18.3	35.9	78.8	80.0	60.1	89.7	37.0	45.9	9.3
DC35	Capricorn	13.0	4.4	0.6	19.6	41.1	70.7	70.4	59.4	85.1	15.8	42.8	7.3
DC36	Waterberg	18.4	7.6	0.8	20.5	31.3	64.0	65.3	53.7	69.5	23.4	42.3	6.1
DC37	Bojanala	13.0	6.0	0.6	15.9	19.8	50.1	49.7	48.8	75.5	31.3	29.2	8.3
DC38	Ngaka Modiri Molema	21.8	13.0	1.0	25.6	30.0	61.0	59.0	60.5	77.1	18.1	38.0	6.9
DC39	Dr Ruth Segomotsi Mompati	28.8	14.6	1.2	29.8	37.8	71.2	66.6	65.7	77.4	20.7	46.3	6.3
DC40	Dr Kenneth Kaunda	15.3	7.1	0.9	19.9	20.8	49.8	47.9	21.6	37.1	31.8	29.8	7.4
DC42	Sedibeng	8.0	3.7	0.5	16.5	11.7	27.1	20.4	11.2	15.6	17.3	21.6	9.7
DC43	Harry Gwala	21.9	11.4	1.1	21.9	68.1	88.3	83.8	68.7	79.6	68.0	67.5	9.4
DC44	Alfred Nzo	24.4	9.2	1.4	24.8	75.0	95.2	91.8	92.8	97.9	75.8	71.0	8.7
DC45	John Taolo Gaetsewe	24.0	10.1	1.5	26.9	44.1	72.2	63.8	75.9	81.2	27.4	46.8	4.8
DC47	Sekhukhune	16.4	5.5	0.6	22.3	36.1	80.0	81.4	81.7	95.9	22.2	48.9	6.8
DC48	West Rand	11.4	5.5	0.7	12.9	24.8	36.2	32.9	18.1	23.9	28.8	26.5	9.0
CPU	City of Cape Town	4.0	4.2	0.2	12.5	8.5	22.2	15.0	13.4	10.5	18.8	14.5	5.4
EKU	Ekurhuleni	7.6	4.0	0.5	11.9	21.2	35.0	31.2	15.7	15.2	26.5	23.6	10.4
ETH	eThekwini	7.3	5.6	0.7	13.8	16.7	26.2	25.2	29.6	38.1	26.4	23.4	9.0
JHB	City of Johannesburg	6.5	3.7	0.4	11.8	12.4	19.7	17.1	13.9	14.1	19.5	19.2	9.2
MAN	Mangaung	11.6	4.2	0.6	19.4	12.9	47.0	37.7	29.1	53.3	26.2	28.3	8.1
NMA	Nelson Mandela Bay	5.5	4.8	0.2	16.3	20.5	37.8	30.4	16.8	17.0	21.1	25.4	9.2
TSH	City of Tshwane	6.5	3.7	0.4	11.3	18.6	30.0	28.8	20.4	31.2	23.9	18.2	6.4

Source: Own calculations using the Census 2001 data.

Table 5.4: Proportion of population (%) deprived in each indicator by district council, 2007

Abbreviation (2016)	Name (2016)	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
DC1	West Coast	6.4	4.7	0.1	8.3	3.4	5.9	2.7	3.2	6.3	5.9	8.4	1.8
DC2	Cape Winelands	7.9	4.1	0.2	9.8	5.2	15.0	6.4	8.5	5.7	14.1	9.4	1.4
DC3	Overberg	6.8	5.0	0.6	8.6	4.7	19.4	6.1	7.2	5.8	10.5	9.2	3.2
DC4	Eden	5.7	4.1	0.3	9.3	8.2	29.4	13.0	9.2	13.2	19.1	12.4	2.0
DC5	Central Karoo	10.3	4.6	0.3	18.0	5.4	35.2	13.4	4.6	5.5	2.5	15.9	3.9
DC6	Namakwa	7.9	4.5	0.4	11.0	5.8	12.3	4.6	6.4	29.3	10.6	16.3	3.2
DC7	Pixley ka Seme	15.7	8.1	0.4	10.4	10.2	40.1	15.0	8.0	31.9	11.0	19.6	5.3
DC8	ZF Mgcawu	12.7	6.1	0.7	11.2	12.2	29.2	13.6	14.2	28.9	20.1	21.8	3.3
DC9	Frances Baard	9.2	5.0	0.6	11.5	14.2	31.1	19.1	12.4	18.4	14.1	13.8	4.7
DC10	Sarah Baartman	10.4	6.6	0.5	12.4	13.5	31.8	20.5	11.1	25.3	11.0	18.4	5.8
DC12 & BUF	Amathole & Buffalo City	10.0	4.7	0.7	14.3	32.4	70.2	53.7	60.3	64.4	44.5	28.2	6.0
DC13	Chris Hani	15.2	4.5	1.5	18.0	36.3	84.9	62.1	62.9	73.4	49.3	34.0	8.1
DC14	Joe Gqabi	17.2	5.5	1.4	15.3	39.7	84.2	67.2	70.2	81.6	47.7	33.9	6.2
DC15	OR Tambo	14.0	7.7	1.6	13.8	48.5	89.9	79.1	90.7	94.3	75.9	44.4	2.6
DC16	Xhariep	17.6	4.1	0.7	11.1	13.0	59.4	32.8	14.8	28.3	20.3	22.4	4.7
DC18	Lejweleputswa	10.3	2.4	1.2	10.7	11.2	43.1	23.6	8.3	35.0	30.0	16.1	7.3
DC19	Thabo Mofutsanyana	8.2	2.9	1.1	17.0	18.3	60.8	34.1	16.5	63.9	30.2	15.9	7.5
DC20	Fezile Dabi	9.0	1.5	1.4	10.2	8.3	34.3	13.4	7.3	16.4	25.7	13.6	6.3
DC21	Ugu	9.5	6.0	2.2	16.2	31.1	61.7	57.3	78.4	85.1	54.8	26.1	4.8
DC22	uMgungundlovu	6.6	6.1	1.2	12.9	17.9	35.0	28.3	27.3	54.3	38.0	17.2	4.9
DC23	uthukela	9.2	7.4	4.1	17.5	36.3	77.6	61.5	63.2	76.6	53.8	22.1	3.4
DC24	uMzinyathi	18.0	6.6	3.2	13.6	67.3	83.2	75.0	77.2	84.7	61.3	34.9	5.1
DC25	Amajuba	5.4	5.9	1.1	16.8	19.4	49.8	33.5	38.8	53.4	18.5	13.1	6.3
DC26	Zululand	8.7	7.6	3.2	18.0	47.1	69.6	61.6	65.7	86.6	60.0	26.2	4.3
DC27	uMkhanyakude	12.1	8.7	1.2	13.9	66.7	75.8	73.0	73.5	91.1	47.1	30.4	2.6
DC28	King Cetshwayo	9.1	5.7	2.0	12.6	38.7	49.2	46.9	48.6	80.0	48.7	27.8	3.7
DC29	iLembe	11.5	6.4	1.0	12.3	40.3	50.5	48.9	62.1	80.8	55.9	29.1	4.0
DC30	Gert Sibande	8.6	3.8	2.1	13.3	22.6	66.6	53.7	23.8	42.4	32.7	14.9	5.9
DC31	Nkangala	7.5	3.5	0.8	10.0	14.7	52.6	41.1	22.0	57.1	22.6	8.8	4.4
DC32	Ehlanzeni	9.0	3.5	1.3	9.0	12.4	56.6	47.3	46.3	83.5	9.9	15.8	5.0
DC33	Mopani	9.9	4.7	0.8	9.7	14.3	71.3	72.5	55.4	85.3	13.6	22.4	5.3
DC34	Vhembe	8.1	3.7	0.5	8.6	17.0	78.2	72.1	55.7	87.7	17.1	18.4	6.0
DC35	Capricorn	7.0	3.1	0.5	10.0	15.5	54.9	50.6	54.0	83.8	9.1	17.1	5.8
DC36	Waterberg	9.0	3.4	1.2	7.6	12.7	56.4	49.8	46.9	61.8	16.6	16.0	4.4
DC37	Bojanala	9.9	4.2	1.3	8.6	12.5	35.4	29.7	33.6	66.8	34.1	14.4	5.5
DC38	Ngaka Modiri Molema	15.6	6.6	1.3	13.5	18.2	54.4	42.8	61.6	72.4	19.0	19.1	6.0
DC39	Dr Ruth Segomotsi Mompati	19.0	5.3	1.6	15.8	16.6	61.1	44.4	61.2	68.9	18.2	23.0	4.8
DC40	Dr Kenneth Kaunda	11.5	3.4	0.7	9.4	17.0	35.8	29.3	13.8	25.6	31.0	18.2	6.0
DC42	Sedibeng	6.0	4.3	0.6	8.6	6.9	14.2	8.3	7.8	12.0	15.4	9.2	9.0
DC43	Harry Gwala	12.3	7.2	2.1	13.9	50.8	86.9	78.7	76.6	91.2	73.8	35.9	3.7
DC44	Alfred Nzo	10.6	4.4	0.8	11.5	59.0	89.0	74.8	85.5	95.0	67.6	39.7	5.8
DC45	John Taolo Gaetsewe	12.2	4.6	2.2	16.4	7.4	61.3	35.6	64.3	73.4	24.4	20.4	4.4
DC47	Sekhukhune	9.7	3.6	1.1	11.8	19.7	68.0	65.8	79.7	94.6	17.6	23.2	6.5
DC48	West Rand	9.4	4.2	0.8	5.5	17.8	25.1	19.0	16.8	19.3	32.0	14.5	5.6
CPU	City of Cape Town	2.8	4.6	0.3	6.9	4.7	17.7	5.2	8.2	6.4	15.0	6.8	3.6
EKU	Ekurhuleni	4.4	3.1	0.7	6.6	17.7	26.4	19.7	11.2	12.6	23.9	12.0	6.2
ETH	eThekwini	3.8	4.6	0.9	9.8	10.5	18.3	15.8	19.6	33.1	25.2	10.5	4.9
JHB	City of Johannesburg	4.2	3.5	0.4	5.9	9.2	13.6	9.6	7.7	10.3	19.0	8.5	5.9
MAN	Mangaung	6.8	2.4	0.5	9.7	9.9	42.5	17.1	14.5	47.7	19.0	12.0	5.2
NMA	Nelson Mandela Bay	3.9	3.5	0.5	11.7	8.2	24.5	12.0	10.6	10.5	12.6	12.5	6.6
TSH	City of Tshwane	4.6	3.8	0.6	5.4	19.0	28.5	23.3	18.2	28.0	26.1	10.9	4.0

Source: Own calculations using the CS 2007 data.

Table 5.5: Proportion of population (%) deprived in each indicator by district council, 2011

Abbreviation (2016)	Name (2016)	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
DC1	West Coast	6.3	2.7	0.0	21.8	4.1	26.3	4.1	3.0	10.7	8.8	9.1	2.9
DC2	Cape Winelands	4.6	3.2	0.0	18.4	5.3	28.3	4.7	8.6	8.3	14.0	8.6	2.3
DC3	Overberg	5.8	2.7	0.0	15.9	6.6	34.1	7.0	9.0	9.2	14.2	9.3	3.1
DC4	Eden	5.3	3.2	0.0	20.7	7.8	39.1	8.4	9.8	14.2	14.0	9.9	4.1
DC5	Central Karoo	9.3	3.7	0.0	25.4	5.9	29.6	10.8	3.1	8.2	2.7	12.7	4.3
DC6	Namakwa	7.7	4.2	0.0	30.5	7.0	28.6	7.4	3.4	28.8	5.1	13.2	3.4
DC7	Pixley ka Seme	12.7	5.0	0.0	30.2	10.7	42.5	13.0	9.5	25.1	11.5	16.9	4.6
DC8	ZF Mgcawu	8.8	3.3	0.0	32.5	10.8	29.0	10.9	13.0	28.7	20.9	16.8	3.3
DC9	Frances Baard	8.4	3.6	0.1	25.5	13.8	28.0	13.3	12.2	17.6	15.6	11.9	5.4
DC10	Sarah Baartman	8.7	3.7	0.1	24.3	10.4	46.2	12.7	12.7	24.9	12.1	14.0	4.6
DC12 & BUF	Amathole & Buffalo City	9.0	2.7	0.0	23.6	22.9	68.9	31.6	53.8	58.5	38.0	18.2	6.4
DC13	Chris Hani	14.4	2.7	0.1	26.8	22.1	75.2	33.8	59.2	68.2	40.3	20.1	5.6
DC14	Joe Gqabi	15.9	2.9	0.1	28.3	27.3	77.5	38.7	57.8	73.6	40.1	22.7	5.8
DC15	OR Tambo	13.3	4.7	0.1	26.2	29.8	82.9	55.2	86.1	91.9	61.5	28.8	4.7
DC16	Xhariep	15.3	3.0	0.0	30.6	6.0	50.0	11.3	5.1	18.3	11.4	12.0	5.9
DC18	Lejweleputswa	7.4	2.5	0.1	24.8	7.5	35.8	9.1	8.3	22.0	19.7	9.3	7.6
DC19	Thabo Mofutsanyana	7.7	2.2	0.1	28.6	12.0	50.8	18.7	12.4	50.3	23.0	9.5	6.9
DC20	Fezile Dabi	7.2	2.0	0.0	26.3	8.8	31.2	10.5	8.6	19.7	16.7	7.8	7.3
DC21	Ugu	10.1	5.0	0.1	25.7	27.7	56.0	41.1	71.4	80.4	38.5	20.7	4.5
DC22	uMgungundlovu	6.5	4.9	0.1	21.4	12.1	31.4	19.2	21.8	55.7	32.9	11.5	5.2
DC23	uthukela	8.0	4.5	0.1	25.8	27.0	62.6	46.1	56.5	73.8	39.0	16.8	4.4
DC24	uMzinyathi	15.8	5.1	0.1	24.2	52.0	76.2	64.0	71.6	83.9	49.9	25.1	3.8
DC25	Amajuba	4.7	3.4	0.1	26.2	14.9	41.3	25.7	24.8	56.0	12.1	8.7	5.4
DC26	Zululand	9.2	5.7	0.2	27.8	32.0	63.0	47.6	51.6	83.1	31.0	16.1	3.8
DC27	uMkhanyakude	11.9	5.6	0.1	26.4	62.3	76.1	68.1	67.7	92.2	28.4	23.3	4.1
DC28	King Cetshwayo	8.3	5.6	0.1	24.2	26.1	50.4	39.4	41.7	76.5	34.4	17.5	4.1
DC29	iLembe	9.8	4.2	0.1	22.3	31.9	49.6	37.0	59.0	77.8	38.8	20.1	4.5
DC30	Gert Sibande	7.9	3.1	0.1	23.1	17.0	54.2	42.3	20.7	38.8	27.7	9.5	5.5
DC31	Nkangala	6.7	2.2	0.1	20.5	10.9	38.6	25.5	16.7	52.1	14.2	7.5	5.3
DC32	Ehlanzeni	8.9	2.3	0.0	19.1	8.2	38.6	29.6	43.0	80.3	6.2	9.6	6.6
DC33	Mopani	9.9	1.8	0.1	22.4	9.2	64.3	64.6	51.4	85.1	6.3	12.7	6.8
DC34	Vhembe	7.9	1.6	0.0	20.6	9.7	66.1	69.4	56.9	86.9	10.8	11.7	6.5
DC35	Capricorn	6.9	1.3	0.0	23.2	9.9	46.9	39.9	40.0	77.1	5.9	10.4	6.9
DC36	Waterberg	8.5	2.2	0.1	25.6	9.9	41.6	36.0	31.4	56.8	9.9	11.5	5.4
DC37	Bojanala	8.5	2.3	0.1	20.2	11.8	30.2	18.7	25.0	63.1	26.6	11.3	6.5
DC38	Ngaka Modiri Molema	14.6	4.4	0.1	31.0	18.0	44.9	30.2	50.0	71.6	17.6	16.4	5.0
DC39	Dr Ruth Segomotsi Mompati	17.7	3.9	0.1	33.4	15.1	53.3	28.5	53.1	66.1	13.2	17.5	5.1
DC40	Dr Kenneth Kaunda	8.4	2.8	0.1	23.4	9.8	31.4	14.2	7.8	13.5	18.3	9.5	6.0
DC42	Sedibeng	4.4	1.6	0.0	18.1	7.2	15.5	8.0	6.2	9.8	12.9	6.1	6.8
DC43	Harry Gwala	10.2	4.7	0.1	25.4	37.9	81.0	64.2	73.2	85.3	64.8	24.5	4.5
DC44	Alfred Nzo	14.0	4.3	0.1	27.5	53.0	88.6	68.2	86.7	95.3	61.9	32.2	5.0
DC45	John Taolo Gaetsewe	12.9	3.5	0.2	35.9	9.0	45.7	24.0	63.3	74.2	21.4	13.5	4.0
DC47	Sekhukhune	8.0	1.8	0.1	29.6	11.6	60.4	49.2	62.4	94.6	9.8	12.4	8.1
DC48	West Rand	6.8	2.1	0.0	16.1	15.0	25.0	15.9	14.1	16.5	21.9	10.7	6.6
CPU	City of Cape Town	2.3	2.5	0.0	15.1	4.1	31.7	3.4	10.1	8.0	17.4	5.3	4.6
EKU	Ekurhuleni	3.7	1.7	0.0	14.5	13.9	27.1	14.5	9.7	10.5	17.7	9.2	7.3
ETH	eThekwini	3.6	4.4	0.0	16.4	6.6	20.2	9.6	15.4	32.0	18.2	7.6	6.0
JHB	City of Johannesburg	3.3	2.0	0.0	11.4	7.0	11.7	7.2	6.8	9.4	15.1	6.0	6.0
MAN	Mangaung	5.3	2.1	0.1	21.9	6.3	43.9	7.3	11.6	38.1	14.3	6.8	5.6
NMA	Nelson Mandela Bay	2.9	2.5	0.0	20.3	7.5	43.3	9.0	8.0	9.0	10.9	8.4	7.1
TSH	City of Tshwane	3.4	1.7	0.0	13.8	8.8	21.3	10.7	9.6	21.4	16.7	6.6	5.4

Source: Own calculations using the Census 2011 data.

Table 5.6: Proportion of population (%) deprived in each indicator by district council, 2016

Abbreviation (2016)	Name (2016)	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
DC1	West Coast	3.8	2.9	0.1	14.5	3.8	3.7	2.6	6.4	6.2	11.1	7.2	N/A
DC2	Cape Winelands	3.5	4.8	0.1	11.9	3.7	4.4	3.4	10.3	3.5	15.5	5.4	N/A
DC3	Overberg	5.0	2.9	0.2	12.6	4.0	4.6	3.5	9.3	4.0	15.3	4.9	N/A
DC4	Eden	4.1	2.6	0.2	14.4	3.2	6.3	3.7	6.9	6.2	12.5	5.2	N/A
DC5	Central Karoo	5.8	3.6	0.5	20.7	2.4	5.0	5.1	4.0	2.6	1.2	8.6	N/A
DC6	Namakwa	5.3	2.9	0.1	23.8	2.8	5.5	4.0	4.2	18.5	4.4	7.5	N/A
DC7	Pixley ka Seme	11.0	4.0	0.4	22.5	6.4	9.6	8.0	10.9	18.9	10.4	12.4	N/A
DC8	ZF Mgcawu	5.3	4.2	0.8	16.4	8.8	9.8	8.6	12.2	27.4	24.4	13.2	N/A
DC9	Frances Baard	5.0	2.6	0.2	15.8	7.4	6.5	5.7	11.4	15.1	14.8	8.8	N/A
DC10	Sarah Baartman	7.2	2.6	0.2	17.8	7.1	9.9	6.1	13.7	17.3	11.5	8.5	N/A
DC12 & BUF	Amathole & Buffalo City	7.1	2.1	0.2	15.9	12.7	21.0	17.3	49.5	51.5	35.4	12.5	N/A
DC13	Chris Hani	12.5	3.8	0.3	17.6	7.3	20.6	12.8	54.1	64.4	42.7	11.6	N/A
DC14	Joe Gqabi	10.4	2.9	0.2	14.0	18.5	30.8	21.4	55.0	67.3	31.1	18.9	N/A
DC15	OR Tambo	11.2	3.7	0.6	20.1	15.0	45.4	34.4	84.4	92.5	59.0	20.0	N/A
DC16	Xhariep	11.1	2.0	0.2	19.2	3.9	7.4	5.9	7.4	12.4	11.6	9.5	N/A
DC18	Lejweleputswa	4.8	1.9	0.4	19.5	4.7	6.6	4.7	6.6	16.6	16.4	5.7	N/A
DC19	Thabo Mofutsanyana	5.8	1.7	0.3	19.8	7.4	12.1	10.5	13.3	44.2	22.0	5.9	N/A
DC20	Fezile Dabi	6.4	2.3	0.3	17.6	6.8	7.6	6.0	6.0	18.2	13.4	6.3	N/A
DC21	Ugu	6.7	4.7	0.4	21.3	13.6	25.0	23.4	69.6	80.3	42.3	13.4	N/A
DC22	uMgungundlovu	3.9	3.9	0.5	14.5	5.8	12.2	9.8	20.8	56.4	24.8	6.2	N/A
DC23	uthukela	4.3	3.6	1.1	21.4	13.7	30.1	29.2	49.9	75.4	32.8	8.6	N/A
DC24	uMzinyathi	11.0	3.8	0.7	20.0	29.0	48.6	42.1	65.4	82.8	55.0	16.3	N/A
DC25	Amajuba	3.0	3.1	0.5	17.5	7.5	13.9	13.4	12.6	50.3	17.0	6.0	N/A
DC26	Zululand	5.3	3.5	0.6	24.3	15.4	28.6	27.1	53.2	84.5	43.2	10.5	N/A
DC27	uMkhanyakude	6.9	4.4	0.3	17.1	44.1	55.9	51.9	72.5	93.9	31.6	17.7	N/A
DC28	King Cetshwayo	5.7	4.1	0.3	19.7	8.6	21.6	20.3	33.8	75.7	32.9	7.3	N/A
DC29	iLembe	6.0	2.5	0.5	19.2	15.8	27.6	23.0	61.0	78.7	27.4	13.4	N/A
DC30	Gert Sibande	5.8	2.6	0.6	16.4	10.9	26.6	28.4	16.9	34.2	21.5	7.7	N/A
DC31	Nkangala	4.9	2.4	0.3	14.3	11.0	18.4	17.8	17.8	47.8	15.6	7.0	N/A
DC32	Ehlanzeni	7.0	3.0	0.4	13.4	3.6	17.5	18.1	39.9	80.7	6.5	3.8	N/A
DC33	Mopani	9.2	1.5	0.3	11.6	4.2	48.9	51.3	55.6	85.4	8.8	6.5	N/A
DC34	Vhembe	7.9	1.7	0.3	11.7	3.7	48.2	57.6	60.6	84.3	13.1	6.3	N/A
DC35	Capricorn	7.3	1.8	0.3	12.2	3.6	26.5	22.7	36.3	73.8	6.1	5.4	N/A
DC36	Waterberg	6.3	1.9	0.6	14.7	9.0	30.2	26.6	36.9	54.4	11.6	9.1	N/A
DC37	Bojanala	6.0	2.2	0.4	12.5	8.7	14.2	12.3	34.3	61.1	25.5	7.3	N/A
DC38	Ngaka Modiri Molema	9.1	3.4	0.7	17.6	8.7	19.5	16.2	53.2	68.1	16.8	10.8	N/A
DC39	Dr Ruth Segomotsi Mompati	11.9	3.6	1.1	23.8	9.6	21.3	16.7	60.6	63.1	9.0	12.1	N/A
DC40	Dr Kenneth Kaunda	7.1	2.3	0.4	16.2	7.1	10.2	8.6	8.4	10.3	12.4	6.9	N/A
DC42	Sedibeng	4.0	2.1	0.2	13.1	4.8	5.2	4.7	6.3	7.5	11.6	4.5	N/A
DC43	Harry Gwala	9.8	3.4	0.7	17.7	17.1	49.8	43.0	68.2	82.3	61.7	18.7	N/A
DC44	Alfred Nzo	10.1	2.6	0.8	23.5	24.4	57.2	49.8	85.7	95.9	58.9	27.7	N/A
DC45	John Taolo Gaetsewe	7.9	3.6	0.6	25.9	10.0	22.8	18.2	64.2	72.1	16.7	11.6	N/A
DC47	Sekhukhune	7.2	2.4	0.5	15.8	8.1	39.3	35.4	68.4	94.2	11.2	8.2	N/A
DC48	West Rand	4.8	2.0	0.3	12.8	13.3	14.1	13.0	15.9	14.2	20.1	7.5	N/A
CPU	City of Cape Town	2.4	2.2	0.1	11.0	1.8	2.7	1.2	9.6	6.0	15.3	3.4	N/A
EKU	Ekurhuleni	4.0	1.7	0.2	12.1	9.8	11.5	10.8	9.2	10.5	15.6	7.7	N/A
ETH	eThekwini	3.5	3.3	0.2	15.1	3.2	5.3	4.5	13.8	29.7	17.9	4.7	N/A
JHB	City of Johannesburg	3.4	1.9	0.2	10.7	6.7	6.9	6.2	6.1	8.4	15.1	5.9	N/A
MAN	Mangaung	5.3	1.7	0.2	18.2	3.6	5.6	3.6	8.9	32.8	12.1	4.4	N/A
NMA	Nelson Mandela Bay	2.7	2.2	0.1	13.6	3.4	5.2	4.0	5.9	6.2	6.8	4.3	N/A
TSH	City of Tshwane	3.7	1.9	0.2	10.8	6.0	7.8	6.8	9.7	21.6	15.4	4.5	N/A

Source: Own calculations using the CS 2016 data.

Tables 5.3 to 5.6 examine the proportion of the deprived population in each indicator by District Council (DC) in each Census or CS. A general observation from these tables is that the proportion of deprived was relatively higher for the indicators associated with the standard of living dimension. Comparing these proportions by DCs over the four surveys and censuses more thoroughly, they were persistently high in DCs such as Alfred Nzo, Harry Gwala, OR Tambo and uMzinyathi, but very low in DCs like Cape Winelands, City of Cape Town, City of Johannesburg and West Coast. Finally, Tables A.4 to A.15 show the 10 least deprived and 10 most deprived municipalities in each indicator in each year.

5.3 Profiling multidimensional poverty in South Africa, 2001-2011

5.3.1 MPI by sub-groups

The examination of multidimensional poverty begins with the presentation of the MPI estimates by gender, race, area type and province in 2001, 2007 and 2011, as shown in Table 5.7. The table not only provides the MPI, but also presents the poverty headcount rate or incidence of poverty (H) and the intensity of poverty experienced (A). Based on the estimates for the overall population, a downward trend took place as the MPI decreased from 0.0827 in 2001 to 0.0319 in 2011. A similar finding is observed when comparing the poverty headcount estimates over the period which decreased by more than half (0.1856 in 2001 versus 0.0755 in 2011). With regard to the intensity of poverty however, it only decreased slightly from 0.4457 to 0.4227.

When examining multidimensional poverty by gender, poverty was relatively more severe amongst the population coming from female-headed households. On the race front, the African population showed a more significant reduction in MPI poverty. The overall MPI score had decreased by more than half from 0.1019 in 2001 to 0.0441 in 2007 after which it further decreased to 0.0388 by 2011. Furthermore, the African poverty headcount (H) reduced by more than half over the period with a slight decline in the intensity (A) indicating an reduction in the number of African individuals experiencing severe poverty in all of the relevant indicators within a dimension or who are deprived across the various dimensions.

Table 5.7: Multidimensional poverty by gender, race, area type and province, 2001-2011

	2001			2007			2011		
	H	**A**	**MPI**	**H**	**A**	**MPI**	**H**	**A**	**MPI**
All	0.1856	0.4457	0.0827	0.0848	0.4227	0.0359	0.0755	0.4227	0.0319
Male	0.1579	0.4451	0.0703	0.0716	0.4218	0.0302	0.0626	0.4238	0.0265
Female	0.2202	0.4463	0.0983	0.1022	0.4236	0.0433	0.0916	0.4218	0.0386
African	0.2285	0.4461	0.1019	0.1044	0.4228	0.0441	0.0918	0.4227	0.0388
Coloured	0.0460	0.4300	0.0198	0.0210	0.4222	0.0089	0.0241	0.4225	0.0102
Indian	0.0038	0.4145	0.0016	0.0044	0.3959	0.0017	0.0044	0.4206	0.0019
White	0.0018	0.4092	0.0007	0.0013	0.4066	0.0005	0.0015	0.4029	0.0006
Urban	0.0941	0.4540	0.0427	N/A	N/A	N/A	0.0415	0.4328	0.0179
Rural	0.3041	0.4424	0.1345	N/A	N/A	N/A	0.1329	0.4174	0.0555
Western Cape	0.0535	0.4496	0.0241	0.0199	0.4257	0.0085	0.0267	0.4284	0.0114
Eastern Cape	0.3279	0.4461	0.1463	0.1648	0.4213	0.0694	0.1442	0.4190	0.0604
Northern Cape	0.1171	0.4405	0.0516	0.0617	0.4323	0.0267	0.0729	0.4259	0.0310
Free State	0.1638	0.4454	0.0729	0.0646	0.4227	0.0273	0.0582	0.4281	0.0249
KwaZulu-Natal	0.2482	0.4476	0.1111	0.1213	0.4177	0.0507	0.1032	0.4157	0.0429
North West	0.1933	0.4465	0.0863	0.0931	0.4293	0.0400	0.0871	0.4295	0.0374
Gauteng	0.0821	0.4538	0.0373	0.0407	0.4388	0.0178	0.0399	0.4356	0.0174
Mpumalanga	0.1814	0.4392	0.0797	0.0771	0.4175	0.0322	0.0655	0.4217	0.0276
Limpopo	0.2023	0.4381	0.0886	0.0852	0.4212	0.0359	0.0827	0.4240	0.0351

Source: Own calculations using the Census 2001, CS 2007 and Census 2011 data.

When comparing the MPI estimates on the basis of area type, the 2001 estimates can only be compared to the 2011 estimates as the CS 2007 did not provide any information pertaining to area type, as already mentioned in Chapter 4. Generally, the MPI was higher for rural residents in both years, although mention needs to be made of the fact that a drastic reduction in the poverty headcount (H) had occurred for the rural population between 2001 and 2011. This was accompanied by a slight reduction in intensity (A) which in turn produced a much lower MPI score of 0.555 in 2011 compared to the 0.1345 score in 2001. Similarly, the urban MPI declined from 0.0427 in 2001 to 0.0179 in 2011. Finally, when looking at MPI by province, a downward trend took place in all provinces, with Western Cape and Gauteng boasting the lowest MPI estimates over the period while the Eastern Cape and KwaZulu-Natal were associated with the highest MPI estimates in 2011.

Shifting the focus to the profiling of poverty by DC some interesting results are depicted in Table 5.8. Not only is the poverty headcount (H), intensity (A) and MPI score depicted, but the DCs are ranked according to its MPI score in each survey/census to better illustrate which DCs were better or worse off over the years. In 2001, the City of Tshwane had the lowest MPI score, followed by the West Coast, Cape Winelands, the City of Cape Town and the

Overberg. In 2007, the MPI score for the City of Tshwane almost immediately catches one's attention as its ranking abruptly dropped to 13th despite a decrease in both the headcount (H) and intensity (A) when compared to its 2001 estimate. In that year, the top five DCs were the West Coast, Cape Winelands, Eden, the City of Cape Town and Central Karoo. In 2011, the West Coast and Cape Winelands were still ranked as the top two with the City of Cape Town ranked third. The City of Johannesburg was however ranked fourth with the Overberg back in the top five at fifth place. In 2011, an improvement took place in the City of Tshwane as its ranking moved up to eighth (its MPI decreased from 0.0200 in 2007 to 0.0155 in 2011), ranking the district council as eighth.

OR Tambo, uMkhanyakude, Umzinyathi and Alfred Nzo were the four DCs that persistently ended up with the highest MPI scores in all three years even though their rankings had changed. In 2001, OR Tambo had the highest MPI score (0.2188) and in 2011, Alfred Nzo was associated with the highest MPI score (0.1072).

Finally, Table 5.9 lists the 10 least and 10 most deprived municipalities for the period of 2001 to 2011. With regard to the least deprived municipalities, Saldanha Bay (located in Western Cape) was continuously ranked amongst the top ten municipalities with the lowest MPI in all three years. In contrast to this, an interesting finding depicted in the table pertains to the fact that over the period, five municipalities, namely Msinga (situated in KwaZulu-Natal), Ntabankulu, Mbhashe, Elundini and Engcobo (these four municipalities are located in Eastern Cape) were constantly among the ten municipalities with the highest MPI. Nonetheless, comparing the MPIs of the ten most deprived municipalities in each year, the results from Table 5.9 clearly show that a continuous downward trend took place.

Table 5.8: Multidimensional poverty by district council, 2001-2011

Abbre-viation (2016)	Name (2016)	2001				2007				2011			
		H	A	MPI	Rank	H	A	MPI	Rank	H	A	MPI	Rank
DC1	West Coast	0.0309	0.4134	0.0128	2	0.0123	0.4175	0.0051	1	0.0159	0.4092	0.0065	1
DC2	Cape Winelands	0.0435	0.4385	0.0191	3	0.0130	0.4109	0.0053	2	0.0192	0.4191	0.0081	2
DC3	Overberg	0.0596	0.4606	0.0275	5	0.0271	0.4166	0.0113	7	0.0305	0.4303	0.0131	5
DC4	Eden	0.0708	0.4357	0.0309	8	0.0201	0.4378	0.0088	3	0.0395	0.4298	0.0170	10
DC5	Central Karoo	0.0723	0.4228	0.0306	7	0.0247	0.4070	0.0101	5	0.0365	0.4194	0.0153	7
DC6	Namakwa	0.0677	0.4252	0.0288	6	0.0250	0.4118	0.0103	6	0.0349	0.4160	0.0145	6
DC7	Pixley ka Seme	0.1524	0.4398	0.0670	23	0.0624	0.4391	0.0274	21	0.0709	0.4332	0.0307	28
DC8	ZF Mgcawu	0.1101	0.4373	0.0482	14	0.0579	0.4261	0.0246	17	0.0623	0.4175	0.0260	20
DC9	Frances Baard	0.1185	0.4480	0.0531	17	0.0579	0.4401	0.0255	18	0.0711	0.4334	0.0308	29
DC10	Sarah Baartman	0.1516	0.4324	0.0656	22	0.0444	0.4261	0.0189	12	0.0519	0.4257	0.0221	15
DC12 & BUF	Amathole & Buffalo City	0.2832	0.4443	0.1258	37	0.1558	0.4231	0.0659	41	0.1332	0.4197	0.0559	43
DC13	Chris Hani	0.3549	0.4382	0.1555	44	0.2064	0.4266	0.0880	47	0.1479	0.4205	0.0622	44
DC14	Joe Gqabi	0.3665	0.4404	0.1614	45	0.2220	0.4243	0.0942	49	0.1686	0.4211	0.0710	46
DC15	OR Tambo	0.4850	0.4511	0.2188	51	0.2310	0.4146	0.0958	50	0.2054	0.4160	0.0854	49
DC16	Xhariep	0.1688	0.4491	0.0758	26	0.0818	0.4114	0.0336	30	0.0618	0.4324	0.0267	22
DC18	Lejweleputswa	0.1843	0.4573	0.0843	30	0.0641	0.4340	0.0278	23	0.0573	0.4298	0.0246	19
DC19	Thabo Mofutsanyana	0.2100	0.4430	0.0930	34	0.0959	0.4174	0.0400	33	0.0737	0.4220	0.0311	31
DC20	Fezile Dabi	0.1268	0.4343	0.0551	18	0.0406	0.4195	0.0170	10	0.0543	0.4268	0.0232	17
DC21	Ugu	0.3229	0.4432	0.1431	43	0.1647	0.4255	0.0701	43	0.1513	0.4175	0.0632	45
DC22	uMgungundlovu	0.1754	0.4440	0.0779	27	0.0797	0.4173	0.0333	29	0.0744	0.4163	0.0310	30
DC23	uthukela	0.3080	0.4465	0.1375	42	0.1639	0.4155	0.0681	42	0.1275	0.4109	0.0524	40
DC24	uMzinyathi	0.4600	0.4550	0.2093	50	0.2679	0.4246	0.1138	51	0.2242	0.4142	0.0929	50
DC25	Amajuba	0.1947	0.4437	0.0864	31	0.0793	0.4143	0.0328	28	0.0676	0.4220	0.0285	25
DC26	Zululand	0.3800	0.4420	0.1679	46	0.1737	0.4131	0.0717	44	0.1247	0.4082	0.0509	38
DC27	uMkhanyakude	0.4189	0.4517	0.1892	48	0.1938	0.4095	0.0793	45	0.1747	0.4184	0.0731	47
DC28	King Cetshwayo	0.2976	0.4446	0.1323	40	0.1359	0.4138	0.0562	38	0.1194	0.4120	0.0492	37
DC29	iLembe	0.2991	0.4394	0.1314	39	0.1553	0.4106	0.0638	40	0.1304	0.4122	0.0538	41
DC30	Gert Sibande	0.2446	0.4388	0.1073	36	0.1055	0.4172	0.0440	35	0.0900	0.4163	0.0375	33
DC31	Nkangala	0.1279	0.4378	0.0560	19	0.0621	0.4192	0.0260	19	0.0510	0.4267	0.0218	14
DC32	Ehlanzeni	0.1865	0.4432	0.0826	28	0.0710	0.4166	0.0296	25	0.0620	0.4232	0.0262	21
DC33	Mopani	0.3917	0.0870	0.0341	10	0.0925	0.4163	0.0385	32	0.0910	0.4231	0.0385	34
DC34	Vhembe	0.2063	0.4402	0.0908	32	0.0875	0.4261	0.0373	31	0.0869	0.4209	0.0366	32
DC35	Capricorn	0.1727	0.4362	0.0753	25	0.0676	0.4192	0.0283	24	0.0643	0.4261	0.0274	23
DC36	Waterberg	0.1890	0.4374	0.0827	29	0.0641	0.4188	0.0268	20	0.0658	0.4230	0.0278	24
DC37	Bojanala	0.1448	0.4406	0.0638	21	0.0649	0.4229	0.0275	22	0.0689	0.4316	0.0297	26
DC38	Ngaka Modiri Molema	0.2379	0.4487	0.1067	35	0.1377	0.4301	0.0592	39	0.1278	0.4316	0.0552	42
DC39	Dr Ruth Segomotsi Mompati	0.3065	0.4471	0.1370	41	0.1306	0.4292	0.0561	37	0.1203	0.4261	0.0512	39
DC40	Dr Kenneth Kaunda	0.1560	0.4483	0.0699	24	0.0736	0.4359	0.0321	26	0.0552	0.4229	0.0233	18
DC42	Sedibeng	0.0777	0.4417	0.0343	11	0.0380	0.4180	0.0159	9	0.0393	0.4210	0.0165	9
DC43	Harry Gwala	0.3938	0.4446	0.1751	47	0.2170	0.4147	0.0900	48	0.1922	0.4093	0.0787	48
DC44	Alfred Nzo	0.4506	0.4438	0.2000	49	0.2077	0.4211	0.0875	46	0.2578	0.4160	0.1072	51
DC45	John Taolo Gaetsewe	0.2883	0.4403	0.1269	38	0.0997	0.4278	0.0427	34	0.1062	0.4207	0.0447	36
DC47	Sekhukhune	0.2125	0.4274	0.0908	33	0.1071	0.4232	0.0453	36	0.1001	0.4267	0.0427	35
DC48	West Rand	0.1248	0.4582	0.0572	20	0.0727	0.4455	0.0324	27	0.0691	0.4393	0.0304	27
CPU	City of Cape Town	0.0542	0.4563	0.0247	4	0.0213	0.4273	0.0091	4	0.0268	0.4306	0.0116	3
EKU	Ekurhuleni	0.1005	0.4584	0.0461	12	0.0464	0.4409	0.0205	15	0.0513	0.4430	0.0227	16
ETH	eThekwini	0.1127	0.4586	0.0517	15	0.0484	0.4277	0.0207	16	0.0443	0.4274	0.0189	11
JHB	City of Johannesburg	0.0700	0.4545	0.0318	9	0.0292	0.4353	0.0127	8	0.0290	0.4319	0.0125	4
MAN	Mangaung	0.1198	0.4391	0.0526	16	0.0478	0.4241	0.0203	14	0.0454	0.4361	0.0198	12
NMA	Nelson Mandela Bay	0.1034	0.4580	0.0473	13	0.0391	0.4471	0.0175	11	0.0460	0.4335	0.0199	13
TSH	City of Tshwane	0.0686	0.0538	0.0037	1	0.0451	0.4435	0.0200	13	0.0359	0.4317	0.0155	8

Source: Own calculations using the Census 2011, CS 2007 and Census 2011 data.

Table 5.9: The 10 least and 10 most deprived municipalities in MPI, 2001-2011

10 municipalities with the lowest MPI				10 municipalities with the highest MPI			
Municipality	**H**	**A**	**MPI**	**Municipality**	**H**	**A**	**MPI**
Census 2001							
Kruger Park	0.0130	0.3525	0.0046	Msinga	0.6125	0.4620	0.2830
Swartland	0.0152	0.4013	0.0061	Port St Johns	0.6021	0.4642	0.2795
Bergrivier	0.0261	0.3779	0.0099	Ntabankulu	0.5789	0.4547	0.2632
Saldanha Bay	0.0309	0.4344	0.0134	Qaukeni	0.5618	0.4623	0.2598
Cape Agulhas	0.0353	0.4066	0.0144	Engcobo	0.5370	0.4431	0.2379
Cederberg	0.0357	0.4096	0.0146	Umhlabuyalingana	0.5120	0.4617	0.2363
Swellendam	0.0371	0.4027	0.0150	Mbizana	0.5138	0.4530	0.2327
Langeberg	0.0432	0.3894	0.0168	Mbhashe	0.5093	0.4428	0.3355
Breede Valley	0.0373	0.4514	0.0168	Elundini	0.4940	0.4461	0.2204
Stellenbosch	0.0416	0.4156	0.0173	Nkandla	0.4861	0.4509	0.2192
CS 2007							
Overberg	0.0000	0.0000	0.0000	Umkhanyakude	0.3963	0.4123	0.1634
Ehlanzeni	0.0000	0.0000	0.0000	Msinga	0.3819	0.4227	0.1614
Cederberg	0.0052	0.3864	0.0020	Elundin	0.3299	0.4246	0.1401
Swellendam	0.0061	0.3659	0.0022	Engcobo	0.3167	0.4396	0.1392
Stellenbosch	0.0059	0.3838	0.0023	Vulamehlo	0.3098	0.4347	0.1346
Breede River/Winelands	0.0067	0.3812	0.0026	Intsika Yethu	0.3144	0.4201	0.1321
Breede Valley	0.0097	0.4038	0.0039	Mbhashe	0.3120	0.4168	0.1300
Saldanha Bay	0.0090	0.4450	0.0040	Ntabankulu	0.2947	0.4236	0.1248
Hessequa	0.0111	0.4129	0.0046	Port St Johns	0.3013	0.4092	0.1233
Bergrivier	0.0114	0.4058	0.0046	Mthonjaneni	0.2676	0.4308	0.1153
Census 2011							
Bergrivier	0.0077	0.3974	0.0030	Ntabankulu	0.3526	0.4125	0.1454
Saldanha Bay	0.0125	0.4002	0.0050	Msinga	0.3209	0.4115	0.1320
Swartland	0.0126	0.4058	0.0051	Vulamehlo	0.3108	0.4139	0.1287
Laingsburg	0.0153	0.3999	0.0061	Mbhashe	0.2818	0.4127	0.1163
Hessequa	0.0149	0.4185	0.0062	Elundini	0.2740	0.4190	0.1148
Drakenstein	0.0155	0.4159	0.0065	Emadlangeni	0.2746	0.4165	0.1144
Nama Khoi	0.0153	0.4228	0.0065	Engcobo	0.2673	0.4181	0.1117
Witzenberg	0.0153	0.4220	0.0065	Umzumbe	0.2554	0.4190	0.1070
Cape Agulhas	0.0163	0.3981	0.0065	Mbizana	0.2572	0.4148	0.1067
Langeberg	0.0174	0.4249	0.0074	Ngquza Hill	0.2521	0.4200	0.1059

Source: Own calculations using the Census 2001, CS 2007 and Census 2011 data.

5.3.2 MPI decomposition by sub-groups

Profiling the MPI poor on its own merely presents one side of the poverty situation in South Africa. To further extend the analysis, identification of the main drivers of poverty is also of great significance. This stands for MPI decomposition and allows for the most predominant deprivations to be identified either by population sub-group or by indicator. In other words, this type of analysis makes it possible to determine the extent to which each sub-group, dimension or indicator contributes to overall poverty at a particular point in time.

First, Table 5.10 presents the MPI decomposition by the various demographic factors for the period under study. From the table, with respect to gender it is apparent that the relative contribution by the population coming from female-headed households was greater in all three years, as the female share of the MPI contribution was greater than 50% (hovering between 52% and 54%). On the race front, even though the African population accounts for about 80% of our population, their MPI contribution to poverty exceeds their population share at about 97%.

Table 5.10: MPI decomposition by gender, race, area type and province, 2001-2011

		2001		2007		2011	
		Population share (%)	**MPI contribution (%)**	**Population share (%)**	**MPI contribution (%)**	**Population share (%)**	**MPI contribution (%)**
Gender	Male	55.53	47.16	56.82	47.87	55.37	46.01
	Female	44.47	52.82	43.18	52.13	44.63	53.99
Race	African	79.30	97.71	79.31	97.64	79.53	96.66
	Coloured	8.91	2.13	8.45	2.09	8.80	2.81
	Indian	2.63	0.05	2.54	0.12	2.50	0.15
	White	9.16	0.08	9.7	0.14	8.75	0.17
Area type	Urban	56.44	29.14	N/A	N/A	62.76	35.27
	Rural	43.56	70.84	N/A	N/A	37.24	64.73
Province	Western Cape	9.93	2.89	10.60	2.50	11.18	4.00
	Eastern Cape	14.55	25.73	13.49	26.13	12.60	23.86
	Northern Cape	1.83	1.14	2.13	1.59	2.21	2.15
	Free State	6.21	5.48	5.70	4.34	5.53	4.32
	KwaZulu-Natal	20.91	28.08	20.82	29.42	19.48	26.17
	North West	8.19	8.54	6.67	7.44	6.96	8.16
	Gauteng	19.73	8.89	22.32	11.11	23.54	12.83
	Mpumalanga	6.89	6.64	7.79	6.99	7.76	6.71
	Limpopo	11.76	12.60	10.48	10.48	10.74	11.80

Source: Own calculations using the Census 2001, CS 2007 and Census 2011 data.

With regard to area type, for both 2001 and 2011 it can be seen that the relative contribution of the rural population (about two-thirds) greatly exceeds its population share (about 40%). This therefore means that the rural population in South Africa bears a disproportionate share of poverty. Lastly, with regard to province, KwaZulu-Natal and the Eastern Cape are the provinces with the first and second largest MPI contributions; altogether, these two provinces accounted for about 50% share of MPI, despite only accounting for one-third of the population.

5.3.3 MPI decomposition by indicator

By decomposing the MPI by indicator, it is possible to examine the extent to which each indicator contributes to overall poverty. As shown in Table 5.11, in all three years, unemployment was the indicator contributing most to MPI (this share even increased from 18.72% in 2001 to 25.44% in 2011), followed by years of schooling and disability as the three indicators with the greatest contribution to the MPI.

Regarding the dimensions, in 2001, the biggest contribution to overall poverty was by the standard of living dimension (47.99%) while education followed in second contributing (20.72%), followed by labour market outcome (18.72%) and lastly health (12.56%). In 2007, the standard of living dimension (47.81%) was still the biggest contributor to the overall MPI, followed by the labour market outcome (21.99%), education (18.84%) and lastly the health (11.37%) dimensions. In 2011, the standard of living dimension once again made the biggest contribution, despite its share to overall poverty dropping to 43.60%. This was followed by the labour market outcome (25.44%). Finally, the contribution of the health dimension (16.05%) surpassed that of the education dimension (14.93%) for the first time in 2011.

Table 5.11: MPI decomposition by indicator, 2001-2011

Dimension	Indicator	Contribution to total weight (%)	Contribution to MPI (%)		
			2001	2007	2011
Education	[A]:Years of schooling	12.50	14.25	13.18	11.22
	[B]: School attendance	12.50	6.47	5.66	3.71
Health	[C]: Child morality	12.50	0.71	1.54	0.08
	[D]: Disability	12.50	11.85	9.83	15.97
Standard of living	[E]: Fuel for lighting	3.57	6.14	5.96	5.39
	[F]: Fuel for heating	3.57	7.75	7.97	7.49
	[G]: Fuel for cooking	3.57	7.65	7.65	6.66
	[H]: Water	3.57	6.81	6.97	6.69
	[I]: Sanitation type	3.57	7.45	7.92	7.61
	[J]: Dwelling type	3.57	5.68	6.28	5.52
	[K]: Asset ownership	3.57	6.51	5.06	4.24
Labour market outcome	[L]: Unemployment	25.00	18.72	21.99	25.44

Source: Own calculations using the Census 2001, CS 2007 and Census 2011 data.

5.4 Re-examining MPI by including Census 2016 data

As mentioned in Chapter Four, due to the Stats SA CS 2016 data withholding information on labour market activities (and income), to include CS 2016 data for the longer-term MPI

analysis along with the 2001, 2007 and 2011 data, unfortunately the labour market dimension has to be excluded from the analysis. As a result, new weights have to be assigned to each indicator, as shown in Table 5.12.

Table 5.12: Dimensions, indicators and weights for the revised MPI

Dimension	Indicator	Weight
Education	[A]:Years of schooling	3.5 / 21
	[B]: School attendance	3.5 / 21
Health	[C]: Child morality	3.5 / 21
	[D]: Disability	3.5 / 21
Standard of living	[E]: Fuel for lighting	1 / 21
	[F]: Fuel for heating	1 / 21
	[G]: Fuel for cooking	1 / 21
	[H]: Water	1 / 21
	[I]: Sanitation type	1 / 21
	[J]: Dwelling type	1 / 21
	[K]: Asset ownership	1 / 21

Source: Adapted from Santos and Alkire, 2011:6.

5.4.1 MPI by sub-groups

With reference to Table 5.13, it is evident that with the inclusion of the 2016 CS data, the estimates once again suggest a downward trend in MPI poverty, which decreased from 0.1223 in 2001 to 0.0283 in 2016. This was accompanied by a drastic reduction in headcount poverty (dropping from 0.2731 to 0.0699) and a slight decline of the intensity estimate (dropping from 0.4478 to 0.4040) during the period under the study.

In addition, when comparing Tables 5.7 and 5.13, very similar findings are observed, as the MPI was relatively higher for individuals coming from female-headed households, living in rural areas in Eastern Cape and KwaZulu-Natal. Looking at the results by race in greater detail, the decline of the African MPI (0.1499 in 2001 versus 0.0322 in 2016) was much more rapid than that of the White MPI (0.0018 in 2001 versus 0.0016 in 2016), and as a result, the difference between the African and White MPI narrowed significantly.

When comparing Tables 5.8 and 5.14, despite some minor changes in the ranking of DCs after excluding the labour dimension, in 2001-2011, the City of Cape Town, City of Johannesburg, West Coast, Cape Winelands and Overberg remained the DCs with the lowest

MPI estimates, while OR Tambo, uMzinyathi and Alfred Nzo were the DCs with the highest MPI estimates. Furthermore, in 2016, City of Cape Town and Alfred Nzo were the DCs with the lowest and highest MPI respectively.

Table 5.13: Revised multidimensional poverty by gender, race, area type and province, 2001-2016

	2001			2007		
	H	**A**	**MPI**	**H**	**A**	**MPI**
All	0.2731	0.4478	0.1223	0.1435	0.4191	0.0601
Male	0.2336	0.4463	0.1042	0.1222	0.4207	0.0514
Female	0.3224	0.4492	0.1448	0.1715	0.4176	0.0716
African	0.3342	0.4485	0.1499	0.1754	0.4197	0.0736
Coloured	0.0820	0.4288	0.0352	0.0430	0.4033	0.0173
Indian	0.0120	0.3694	0.0044	0.0129	0.3703	0.0048
White	0.0048	0.3720	0.0018	0.0040	0.3771	0.0015
Urban	0.1242	0.4216	0.0524	N/A	N/A	N/A
Rural	0.4659	0.4568	0.2128	N/A	N/A	N/A
Western Cape	0.0816	0.4106	0.0335	0.0352	0.3838	0.0135
Eastern Cape	0.4767	0.4603	0.2194	0.2935	0.4260	0.1250
Northern Cape	0.1876	0.4470	0.0839	0.1134	0.4251	0.0482
Free State	0.2412	0.4362	0.1052	0.0900	0.4195	0.0377
KwaZulu-Natal	0.3609	0.4566	0.1648	0.2129	0.4251	0.0905
North West	0.2867	0.4581	0.1313	0.1457	0.4326	0.0630
Gauteng	0.1065	0.4088	0.0435	0.0626	0.3928	0.0246
Mpumalanga	0.2770	0.4438	0.1229	0.1189	0.4179	0.0497
Limpopo	0.3245	0.4374	0.1419	0.1463	0.4074	0.0596
	2011			**2016**		
	H	**A**	**MPI**	**H**	**A**	**MPI**
All	0.1220	0.4196	0.0512	0.0699	0.4040	0.0283
Male	0.1019	0.4170	0.0425	0.0592	0.4000	0.0237
Female	0.1470	0.4218	0.0620	0.0828	0.4075	0.0337
African	0.1474	0.4202	0.0619	0.0818	0.4052	0.0332
Coloured	0.0447	0.4067	0.0182	0.0248	0.3829	0.0095
Indian	0.0111	0.3781	0.0042	0.0101	0.3488	0.0035
White	0.0037	0.3702	0.0014	0.0046	0.3411	0.0016
Urban	0.0546	0.4020	0.0219	0.0378	0.3819	0.0144
Rural	0.2356	0.4264	0.1005	0.1325	0.4164	0.0552
Western Cape	0.0363	0.3919	0.0142	0.0171	0.3685	0.0063
Eastern Cape	0.2461	0.4299	0.1058	0.1355	0.4176	0.0566
Northern Cape	0.1277	0.4282	0.0547	0.0714	0.4036	0.0288
Free State	0.0792	0.4183	0.0331	0.0448	0.3913	0.0175
KwaZulu-Natal	0.1762	0.4281	0.0754	0.0983	0.4163	0.0409
North West	0.1387	0.4315	0.0599	0.0801	0.4130	0.0331
Gauteng	0.0511	0.3948	0.0202	0.0446	0.3806	0.0170
Mpumalanga	0.0092	0.4175	0.0414	0.0664	0.4011	0.0266
Limpopo	0.1492	0.3994	0.0596	0.0852	0.3959	0.0337

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

Table 5.14: Revised multidimensional poverty by district council, 2001-2016

Abbreviation (2016)	Name (2016)	2001				2007			
		H	A	MPI	Rank	H	A	MPI	Rank
DC1	West Coast	0.0764	0.4082	0.0312	2	0.0234	0.3940	0.0092	1
DC2	Cape Winelands	0.0864	0.4212	0.0364	4	0.0401	0.3905	0.0156	5
DC3	Overberg	0.0954	0.4221	0.0403	6	0.0409	0.3758	0.0154	3
DC4	Eden	0.1170	0.4310	0.0504	8	0.0547	0.3931	0.0215	9
DC5	Central Karoo	0.1424	0.4205	0.0613	13	0.0509	0.3941	0.0201	7
DC6	Namakwa	0.1315	0.4170	0.0548	10	0.0390	0.4227	0.0165	6
DC7	Pixley ka Seme	0.2310	0.4591	0.1061	22	0.1122	0.4291	0.0481	27
DC8	ZF Mgcawu	0.1839	0.4507	0.0829	18	0.0953	0.4314	0.0411	19
DC9	Frances Baard	0.1815	0.4412	0.0801	17	0.0996	0.4250	0.0423	21
DC10	Sarah Baartman	0.2406	0.4444	0.1069	23	0.0969	0.3963	0.0384	18
DC12 & BUF	Amathole & Buffalo City	0.4118	0.4470	0.1841	37	0.2610	0.4249	0.1109	40
DC13	Chris Hani	0.5170	0.4645	0.2401	44	0.3273	0.4331	0.1418	45
DC14	Joe Gqabi	0.5374	0.4610	0.2478	45	0.3497	0.4355	0.1523	47
DC15	OR Tambo	0.6937	0.4762	0.3303	51	0.4481	0.4308	0.1930	51
DC16	Xhariep	0.2642	0.4594	0.1214	27	0.1431	0.4190	0.0600	32
DC18	Lejweleputswa	0.2646	0.4384	0.1160	25	0.0826	0.4254	0.0351	16
DC19	Thabo Mofutsanyana	0.3148	0.4396	0.1384	31	0.1311	0.4250	0.0557	28
DC20	Fezile Dabi	0.1831	0.4305	0.0788	16	0.0580	0.4074	0.0236	10
DC21	Ugu	0.4899	0.4604	0.2256	43	0.2950	0.4302	0.1269	42
DC22	uMgungundlovu	0.2546	0.4396	0.1119	24	0.1375	0.4207	0.0579	30
DC23	uthukela	0.4501	0.4612	0.2076	39	0.2998	0.4357	0.1306	43
DC24	uMzinyathi	0.6591	0.4787	0.3155	50	0.4416	0.4350	0.1921	50
DC25	Amajuba	0.2818	0.4494	0.1266	28	0.1324	0.4215	0.0558	29
DC26	Zululand	0.5578	0.4680	0.2610	46	0.3186	0.4264	0.1358	44
DC27	uMkhanyakude	0.6088	0.4763	0.2900	48	0.3534	0.4306	0.1522	46
DC28	King Cetshwayo	0.4642	0.4549	0.2112	41	0.2553	0.4194	0.1071	39
DC29	iLembe	0.4662	0.4506	0.2100	40	0.2866	0.4220	0.1210	41
DC30	Gert Sibande	0.3606	0.4524	0.1631	35	0.1578	0.4241	0.0669	34
DC31	Nkangala	0.1970	0.4264	0.0840	19	0.0917	0.4181	0.0383	17
DC32	Ehlanzeni	0.2832	0.4504	0.1275	29	0.1157	0.4127	0.0477	26
DC33	Mopani	0.3418	0.4446	0.1520	33	0.1631	0.4099	0.0668	33
DC34	Vhembe	0.3201	0.4281	0.1370	30	0.1433	0.4048	0.0580	31
DC35	Capricorn	0.2797	0.4329	0.1211	26	0.1178	0.4030	0.0475	25
DC36	Waterberg	0.3221	0.4445	0.1432	32	0.1122	0.4097	0.0460	24
DC37	Bojanala	0.2214	0.4317	0.0956	20	0.1072	0.4161	0.0446	23
DC38	Ngaka Modiri Molema	0.3603	0.4723	0.1702	36	0.2040	0.4486	0.0915	37
DC39	Dr Ruth Segomotsi Mompati	0.4528	0.4816	0.2181	42	0.2319	0.4437	0.1029	38
DC40	Dr Kenneth Kaunda	0.2172	0.4561	0.0991	21	0.1039	0.4155	0.0432	22
DC42	Sedibeng	0.0934	0.4231	0.0395	5	0.0528	0.3935	0.0208	8
DC43	Harry Gwala	0.5791	0.4550	0.2635	47	0.3912	0.4296	0.1681	49
DC44	Alfred Nzo	0.6871	0.4537	0.3117	49	0.3946	0.4114	0.1623	48
DC45	John Taolo Gaetsewe	0.4326	0.4767	0.2062	38	0.2177	0.4198	0.0914	36
DC47	Sekhukhune	0.3554	0.4357	0.1548	34	0.1843	0.4097	0.0755	35
DC48	West Rand	0.1682	0.4359	0.0733	14	0.0988	0.4181	0.0413	20
CPU	City of Cape Town	0.0733	0.4012	0.0294	1	0.0317	0.3795	0.0120	2
EKU	Ekurhuleni	0.1314	0.4038	0.0531	9	0.0715	0.3892	0.0278	12
ETH	eThekwini	0.1437	0.4249	0.0610	12	0.0725	0.4030	0.0292	14
JHB	City of Johannesburg	0.0851	0.4038	0.0344	3	0.0400	0.3877	0.0155	4
MAN	Mangaung	0.1766	0.4241	0.0749	15	0.0691	0.4099	0.0283	13
NMA	Nelson Mandela Bay	0.1412	0.4085	0.0577	11	0.0627	0.3821	0.0240	11
TSH	City of Tshwane	0.1204	0.4144	0.0499	7	0.0822	0.3929	0.0323	15

Source: Own calculations using the Census 2011, CS 2007, Census 2011 and CS 2016 data.

Table 5.14: Continued

Abbreviation (2016)	Name (2016)	2011				2016			
		H	A	MPI	Rank	H	A	MPI	Rank
DC1	West Coast	0.0354	0.3851	0.0136	3	0.0271	0.3609	0.0098	4
DC2	Cape Winelands	0.0388	0.3911	0.0152	4	0.0192	0.3691	0.0071	2
DC3	Overberg	0.0489	0.4048	0.0198	7	0.0303	0.3721	0.0113	6
DC4	Eden	0.0633	0.4142	0.0262	11	0.0251	0.3802	0.0095	3
DC5	Central Karoo	0.0658	0.4011	0.0264	12	0.0401	0.3770	0.0151	13
DC6	Namakwa	0.0717	0.4053	0.0291	14	0.0401	0.3845	0.0154	14
DC7	Pixley ka Seme	0.1229	0.4353	0.0535	31	0.0729	0.3923	0.0286	30
DC8	ZF Mgcawu	0.1114	0.4274	0.0476	28	0.0528	0.4026	0.0212	19
DC9	Frances Baard	0.1086	0.4239	0.0460	26	0.0507	0.3843	0.0195	16
DC10	Sarah Baartman	0.0942	0.4100	0.0386	20	0.0505	0.3925	0.0198	17
DC12 & BUF	Amathole & Buffalo City	0.2229	0.4243	0.0946	39	0.0995	0.4204	0.0418	36
DC13	Chris Hani	0.2606	0.4302	0.1121	44	0.1254	0.4157	0.0521	41
DC14	Joe Gqabi	0.2755	0.4359	0.1201	46	0.1515	0.4132	0.0626	45
DC15	OR Tambo	0.3720	0.4357	0.1621	49	0.2336	0.4211	0.0984	49
DC16	Xhariep	0.0986	0.4232	0.0417	23	0.0557	0.3893	0.0217	22
DC18	Lejweleputswa	0.0725	0.4199	0.0304	15	0.0428	0.3946	0.0169	15
DC19	Thabo Mofutsanyana	0.1014	0.4260	0.0432	24	0.0551	0.4058	0.0224	24
DC20	Fezile Dabi	0.0749	0.4087	0.0306	16	0.0401	0.3728	0.0149	12
DC21	Ugu	0.2668	0.4317	0.1152	45	0.1617	0.4231	0.0684	46
DC22	uMgungundlovu	0.1200	0.4273	0.0513	30	0.0559	0.4034	0.0225	25
DC23	uthukela	0.2370	0.4242	0.1005	42	0.1219	0.4155	0.0506	39
DC24	uMzinyathi	0.3684	0.4420	0.1628	50	0.2334	0.4259	0.0994	50
DC25	Amajuba	0.1201	0.4187	0.0503	29	0.0534	0.4048	0.0216	21
DC26	Zululand	0.2405	0.4290	0.1031	43	0.1346	0.4156	0.0559	43
DC27	uMkhanyakude	0.3256	0.4367	0.1422	47	0.1953	0.4223	0.0825	47
DC28	King Cetshwayo	0.2126	0.4343	0.0924	37	0.1039	0.4234	0.0440	38
DC29	iLembe	0.2213	0.4294	0.0950	40	0.1341	0.4200	0.0563	44
DC30	Gert Sibande	0.1392	0.4301	0.0599	32	0.0916	0.4066	0.0373	33
DC31	Nkangala	0.0759	0.4127	0.0313	17	0.0620	0.3907	0.0242	27
DC32	Ehlanzeni	0.0933	0.4095	0.0382	19	0.0532	0.4047	0.0215	20
DC33	Mopani	0.1650	0.4011	0.0662	34	0.0999	0.3942	0.0394	35
DC34	Vhembe	0.1641	0.3987	0.0654	33	0.0972	0.3963	0.0385	34
DC35	Capricorn	0.1104	0.3972	0.0439	25	0.0515	0.3926	0.0202	18
DC36	Waterberg	0.1182	0.4025	0.0476	27	0.0861	0.3986	0.0343	31
DC37	Bojanala	0.0990	0.4138	0.0410	22	0.0690	0.4019	0.0277	28
DC38	Ngaka Modiri Molema	0.2093	0.4480	0.0938	38	0.1023	0.4254	0.0435	37
DC39	Dr Ruth Segomotsi Mompati	0.2260	0.4332	0.0979	41	0.1228	0.4216	0.0518	40
DC40	Dr Kenneth Kaunda	0.0808	0.4236	0.0342	18	0.0536	0.4051	0.0217	23
DC42	Sedibeng	0.0414	0.4033	0.0167	5	0.0371	0.3773	0.0140	10
DC43	Harry Gwala	0.3603	0.4274	0.1540	48	0.2286	0.4198	0.0960	48
DC44	Alfred Nzo	0.4356	0.4353	0.1896	51	0.2881	0.4229	0.1218	51
DC45	John Taolo Gaetsewe	0.2044	0.4328	0.0885	36	0.1305	0.4218	0.0551	42
DC47	Sekhukhune	0.1777	0.3989	0.0709	35	0.0933	0.3979	0.0371	32
DC48	West Rand	0.0926	0.4170	0.0386	21	0.0706	0.4052	0.0286	29
CPU	City of Cape Town	0.0304	0.3841	0.0117	1	0.0131	0.3656	0.0048	1
EKU	Ekurhuleni	0.0674	0.3930	0.0265	13	0.0626	0.3775	0.0236	26
ETH	eThekwini	0.0560	0.4012	0.0225	8	0.0299	0.3894	0.0116	7
JHB	City of Johannesburg	0.0348	0.3867	0.0135	2	0.0350	0.3761	0.0132	8
MAN	Mangaung	0.0615	0.4102	0.0252	10	0.0376	0.3811	0.0143	11
NMA	Nelson Mandela Bay	0.0587	0.3962	0.0233	9	0.0269	0.3702	0.0100	5
TSH	City of Tshwane	0.0494	0.3924	0.0194	6	0.0350	0.3812	0.0133	9

Source: Own calculations using the Census 2011, CS 2007, Census 2011 and CS 2016 data.

Table 5.15: The 10 least and 10 most deprived municipalities in revised MPI, 2001-2016

10 municipalities with the lowest MPI				10 municipalities with the highest MPI			
Municipality	**H**	**A**	**MPI**	**Municipality**	**H**	**A**	**MPI**
Census 2011							
Richtersveld	0.0398	0.3798	0.0151	Port St Johns	0.8216	0.4967	0.4081
Saldanha Bay	0.0424	0.3831	0.0162	Msinga	0.8194	0.4964	0.4068
Cape Agulhas	0.0555	0.4215	0.0234	Ntabankulu	0.8147	0.4838	0.3941
Swartland	0.0678	0.3852	0.0261	Qaukeni	0.7401	0.4965	0.3675
Drakenstein	0.0666	0.4173	0.0278	Engcobo	0.7760	0.4709	0.3654
Kruger Park	0.0779	0.3757	0.0293	Mbhashe	0.7813	0.4635	0.3621
City of Cape Town	0.0733	0.4012	0.0294	Nkandla	0.7758	0.4559	0.3537
Stellenbosch	0.0721	0.4285	0.0309	Mbizana	0.7214	0.4797	0.3461
Bergrivier	0.0767	0.4061	0.0312	Umhlabuyalingana	0.6977	0.4897	0.3416
Emfuleni	0.0746	0.4180	0.0312	Jozini	0.6976	0.4796	0.3346
CS 2007							
Overberg	0.0000	0.0000	0.0000	Msinga	0.5990	0.4430	0.2654
Ehlanzeni	0.0000	0.0000	0.0000	Ntabankulu	0.5875	0.4224	0.2482
Overstrand	0.0149	0.3559	0.0053	Umkhanyakude	0.5097	0.4788	0.2440
Saldanha Bay	0.0158	0.3528	0.0056	Port St Johns	0.5381	0.4497	0.2420
Swartland	0.0139	0.4469	0.0062	Vulamehlo	0.5238	0.4420	0.2316
Stellenbosch	0.0169	0.3688	0.0062	Mbhashe	0.5240	0.4383	0.2297
Nama Khoi	0.0188	0.4211	0.0079	Engcobo	0.5147	0.4429	0.2279
Khai-Ma	0.0202	0.4079	0.0083	Elundini	0.5142	0.4378	0.2251
Cederberg	0.0282	0.3738	0.0105	Ingwe	0.4960	0.4338	0.2152
Bergrivier	0.0295	0.3614	0.0107	Ndwedwe	0.5123	0.4175	0.2139
Census 2011							
Saldanha Bay	0.0106	0.3677	0.0039	Ntabankulu	0.5648	0.4370	0.2468
Overstrand	0.0285	0.3948	0.0113	Msinga	0.4978	0.4472	0.2226
Drakenstein	0.0295	0.3833	0.0113	Mbhashe	0.4952	0.4396	0.2177
Richtersveld	0.0283	0.4083	0.0116	Vulamehlo	0.4956	0.4391	0.2176
City of Cape Town	0.0304	0.3841	0.0117	Port St Johns	0.4622	0.4448	0.2056
Swartland	0.0310	0.3781	0.0117	Mbizana	0.4470	0.4431	0.1981
Stellenbosch	0.0307	0.3873	0.0119	Ingwe	0.4564	0.4317	0.1971
Bergrivier	0.0322	0.3701	0.0119	Engcobo	0.4502	0.4352	0.1959
Nama Khoi	0.0321	0.3886	0.0125	Elundini	0.4307	0.4417	0.1903
Emfuleni	0.0330	0.3960	0.0130	Umzumbe	0.4272	0.4415	0.1886
CS 2016							
Bergrivier	0.0069	0.3576	0.0025	Ntabankulu	0.4065	0.4187	0.1702
Bitou	0.0117	0.3692	0.0043	Port St Johns	0.3454	0.4633	0.1600
Swartland	0.0132	0.3456	0.0046	Msinga	0.3691	0.4235	0.1563
City of Cape Town	0.0131	0.3656	0.0048	Umzumbe	0.3280	0.4409	0.1446
Drakenstein	0.0150	0.3471	0.0052	Mbizana	0.3262	0.4272	0.1394
uMhlathuze	0.0143	0.4129	0.0059	Ubuhlebezwe	0.3152	0.4194	0.1322
Overstrand	0.0155	0.3926	0.0061	Ndwedwe	0.2956	0.4124	0.1219
Witzenberg	0.0170	0.3773	0.0064	Maphumulo	0.2747	0.4326	0.1188
Stellenbosch	0.0175	0.3812	0.0067	Umhlabuyalingana	0.2718	0.4309	0.1171
George	0.0186	0.3842	0.0072	Elundini	0.2813	0.4127	0.1161

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

Lastly, in the examination of MPI by municipality presented in Table 5.15, Swartland and Stellenbosch (both located in Western Cape) were consistently amongst the ten least deprived municipalities with the lowest MPIs in all four years (this did not happen in Table 5.9). In contrast to this, Msinga, Ntabankulu and Port St Johns were constantly ranked among the ten municipalities with the highest MPIs in all four years.

5.4.2 MPI decomposition by sub-groups

Table 5.16 presents the results of MPI decomposition by demographic characteristics, and the results are highly similar to what was found in Table 5.10, as the relative contribution was greater by individuals coming from female-headed households, from those who are African (this contribution was persistently high at about 95%), as well as people living in rural areas in the Eastern Cape and KwaZulu-Natal provinces.

Table 5.16: Revised MPI decomposition by gender, race, area type and province, 2001-2016

		2001		2007		2011		2016	
		Population share (%)	**MPI contribution (%)**	**Population share (%)**	**MPI contribution (%)**	**Population share (%)**	**MPI contribution (%)**	**Population share (%)**	**MPI contribution (%)**
Gender	Male	55.53	47.34	56.82	48.59	55.37	45.95	55.37	46.37
	Female	44.47	52.66	43.18	51.41	44.63	54.05	44.63	53.26
Race	African	79.30	97.21	79.31	97.12	79.53	96.23	79.53	93.32
	Coloured	8.91	2.56	8.45	2.44	8.80	3.12	8.80	2.96
	Indian	2.63	0.10	2.54	0.20	2.50	0.20	2.50	0.31
	White	9.16	0.13	9.7	0.24	8.75	0.23	8.75	0.49
Area type	Urban	56.44	24.18	N/A	N/A	62.76	26.90	62.76	32.08
	Rural	43.56	75.82	N/A	N/A	37.24	73.10	37.24	72.68
Province	Western Cape	9.93	2.72	10.60	2.38	11.18	3.11	11.18	2.50
	Eastern Cape	14.55	26.11	13.49	28.05	12.60	26.04	12.60	25.24
	Northern Cape	1.83	1.25	2.13	1.71	2.21	2.36	2.21	2.25
	Free State	6.21	5.34	5.70	3.58	5.53	3.58	5.53	3.43
	KwaZulu-Natal	20.91	28.18	20.82	31.34	19.48	28.71	19.48	28.21
	North West	8.19	8.80	6.67	6.99	6.96	8.14	6.96	8.14
	Gauteng	19.73	7.02	22.32	9.13	23.54	9.28	23.54	14.13
	Mpumalanga	6.89	6.93	7.79	6.44	7.76	6.28	7.76	7.31
	Limpopo	11.76	13.65	10.47	10.38	10.74	12.50	10.74	12.82

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

5.4.3 MPI decomposition by indicator

While Table 5.11 showed that the top three indicators with the greatest contribution to the MPI were unemployment, disability and years of schooling, Table 5.17 shows that, after adding 2016 data but omitting the unemployment indicator, the revised MPI decomposition results indicate that disability and years of schooling still contributed most to MPI poverty, with their respective shares being 21% and 14% respectively in 2016. Sanitation moved up to become the indicator with the third highest contribution to the revised MPI, and this result is not surprising, given the findings in Figure 5.1 (there was still a high 40% of the population not having access to flush toilets. Lastly, pertaining to the three dimensions, the standard of living dimension was the biggest contributor to overall poverty across the entire time period, despite its share dropping from 62% in 2001 to 58% in 2016.

Table 5.17: Revised MPI decomposition by indicator, 2001-2016

Dimension	Indicator	Contribution to total weight (%)	Contribution to MPI (%)			
			2001	2007	2011	2016
Education	[A]:Years of schooling	16.67	15.17	13.91	13.37	14.19
	[B]: School attendance	16.67	7.15	6.75	5.10	6.13
Health	[C]: Child morality	16.67	0.79	1.77	0.10	0.86
	[D]: Disability	16.67	14.99	13.79	22.84	21.01
Standard of living	[E]: Fuel for lighting	4.76	7.76	7.69	6.72	6.29
	[F]: Fuel for heating	4.76	10.06	10.64	10.30	9.35
	[G]: Fuel for cooking	4.76	9.94	10.27	9.32	9.00
	[H]: Water	4.76	8.88	9.43	9.18	9.35
	[I]: Sanitation type	4.76	9.80	10.54	10.39	10.42
	[J]: Dwelling type	4.76	7.29	8.24	7.12	7.67
	[K]: Asset ownership	4.76	8.17	6.97	5.55	5.74

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

5.5 Multidimensional poverty vs. Per capita income poverty

The final part of the empirical analysis involves a comparison between money-metric poverty and MPI poverty in 2001, 2007 and 2011 only. The inclusion of the 2016 Census data is not possible, as discussed in Section 4.4. According to Stats SA (2015:11), the lower bound poverty line was set at R501 per capita per month in 2011 February-March prices, derived by using the consumption basket from the IES 2010/2011 data. This amount is equivalent to R689 per capita per month or R8 264 per capita per annum in 2016 December prices, in accordance with Stats SA's recent revision of the CPIs where 2016 December is used as a base month (Stats SA, 2017).

It should also be noted that the original Census / CS income data as captured by Stats SA is considered to be problematic, as there is a huge proportion of households with either zero or unspecified income – 37% in 2001, 19% in 2007 and 29% in 2011. To address this issue, the income amounts for these households were imputed with the aid of the sequential regression multiple imputation (SRMI) approach.[36]

Table 5.18 presents an overall comparison between MPI poverty and money-metric poverty for 2001, 2007 and 2011 respectively. From the table, it is evident that multidimensional poverty enjoys a continuous downward trend over the 10-year period. Money-metric poverty, in contract, decreased between 2001 and 2007 before a slight increase took place in 2011. The latter increase was also found by Yu (2016:156).

Table 5.18: MPI versus money-metric poverty, 2001-2011

	2001	**2007**	**2011**
H	0.1856	0.0848	0.0755
A	0.4457	0.4227	0.4227
MPI	0.0827	0.0359	0.0319
Poverty headcount ratio using real per capita income	0.5462	0.4267	0.4424

Source: Own calculations using the Census 2001, CS 2007 and Census 2011 data.

Table 5.19 below presents the poverty headcount; intensity and MPI score in each population quintile which is derived by the per capita income variable after SRMI. Quintile 1 represents the poorest 20% of the population while quintile 5 represents the richest 20% of the population. The empirical estimates indicate that MPI poverty prevalence declines, moving across from the poorest to the richest quintiles. Furthermore, MPI poverty decreased continuously across all five quintiles, with such a decrease in absolute terms being the greatest for the two poorest income quintiles, as shown in the last column of the table.

[36] The SRMI approach falls beyond the scope of the dissertation and will not be discussed in further detail. For more information on the detailed methodology, refer to Yu (2012).

Table 5.19: MPI in each population quintile, 2001-2011

	2001			2007			2011			Absolute change, 2001-2011
	H	A	MPI	H	A	MPI	H	A	MPI	
Quintile 1	0.2991	0.4435	0.1327	0.1417	0.4302	0.0609	0.1337	0.4286	0.0573	0.0754
Quintile 2	0.2699	0.4488	0.1211	0.1192	0.4191	0.0499	0.1042	0.4172	0.0435	0.0776
Quintile 3	0.1940	0.4442	0.0861	0.0953	0.4199	0.0400	0.0762	0.4199	0.0320	0.0541
Quintile 4	0.1073	0.4459	0.0478	0.0521	0.4177	0.0218	0.0527	0.4238	0.0223	0.0255
Quintile 5	0.0312	0.4443	0.0139	0.0120	0.4116	0.0049	0.0074	0.4106	0.0030	0.0109

Source: Own calculations using the Census 2001, CS 2007 and Census 2011 data.

Table 5.20 compares multidimensional poverty likelihood with income poverty likelihood, and it was found that the proportion of population defined as poor in both approaches (that is, deprivation score is below 1/3 and real per capita income is below R689 per capita per month) decreased continuously – 14.25% in 2001, 5.48% in 2007 and 5.13% in 2011.

Table 5.20: Multidimensional poverty versus income poverty (%), 2001-2011

2001				
		Income poverty status		
		Poor	Not poor	Total
Multidimensional poverty status	Poor	14.25	4.31	18.56
	Not poor	40.38	41.07	81.44
	Total	54.62	45.38	100.00
2007				
		Income poverty status		
		Poor	Not poor	Total
Multidimensional poverty status	Poor	5.48	3.00	8.48
	Not poor	37.19	54.33	91.52
	Total	42.67	57.33	100.00
2011				
		Income poverty status		
		Poor	Not poor	Total
Multidimensional poverty status	Poor	5.13	2.42	7.55
	Not poor	39.11	53.33	92.45
	Total	44.24	55.76	100.00

Source: Own calculations using the Census 2001, CS 2007 and Census 2011 data.

Finally, Table 5.21 shows the profile of people identified as poor under both approaches. As expected, they are predominantly female Africans, living in the rural areas in the Eastern Cape, KwaZulu-Natal and Limpopo provinces.

Table 5.21: Demographic characteristics of people identified as both multidimensional and income poor, 2001-2011

		%		
		2001	**2007**	**2011**
Gender	Male	43.1	42.3	39.0
	Female	56.9	57.7	61.0
Population group	African	98.1	98.0	97.0
	Coloured	1.8	1.8	2.7
	Indian	0.0	0.1	0.1
	White	0.0	0.1	0.1
Area type	Urban	23.1	N/A	30.5
	Rural	76.9	N/A	69.5
Province	Western Cape	2.2	2.2	3.4
	Eastern Cape	27.3	26.0	25.5
	Northern Cape	1.1	1.5	2.0
	Free State	5.0	4.1	4.2
	KwaZulu-Natal	30.0	31.5	28.3
	North West	8.2	7.2	7.7
	Gauteng	6.1	9.3	10.0
	Mpumalanga	6.7	7.4	6.5
	Limpopo	13.6	10.9	12.4

Source: Own calculations using the Census 2001, CS 2007 and Census 2011 data.

5.6 Conclusion

This chapter examined multidimensional poverty in South Africa by using the MPI index to determine both the incidence of poverty and intensity of deprivation among the poor for the period of 2001 to 2016. Section 5.2 looked at the descriptive statistics on the proportion of population deprived in each indicator. Section 5.3 examined multidimensional poverty in 2001-2011 for three dimensions namely education, health and standard of living, focusing on MPI poverty by gender, population group, area type, province, district and municipality, as well as the MPI decomposition by these sub-groups and the indicators. The analysis was further extended in Section 5.4 as MPI poverty was re-examined but this time with the inclusion of the 2016 CS data and the exclusion of the labour market outcome dimension. Lastly, Section 5.5 examined the relationship between MPI poverty and per capita income poverty in 2001-2011. The general findings were that female Africans residing in rural areas in Eastern Cape, KwaZulu-Natal and Limpopo were associated with multidimensional poverty (and income poverty). Nonetheless, a continuous downward trend in MPI poverty was observed between 2001 and 2011 (Section 5.4) and between 2001 and 2016 (Section 5.5).

CHAPTER SIX: CONCLUSION

6.1 Introduction

Traditional methods to measuring poverty generally make reference to money-metric poverty which takes income and expenditure into consideration in relation to a pre-determined absolute or relative poverty line. However, in the context of poverty analysis, it is not only important to determine poverty rates, the extent of deprivation experienced by the poor should also be determined and only in this way can better policy be formulated to aid poverty reduction. Since poverty extends beyond monetary terms due to its complexity, in order to exemplify the non-monetary aspect of poverty, this study examined multidimensional poverty in South Africa from 2001 to 2016 by utilising the MPI approach. This approach allows for the determination of the incidence of poverty (proportion of the population experiencing multiple deprivations) and the intensity of poverty (the average proportion of deprivations people experience), when deriving the MPI.

6.2 Review of findings

The empirical findings of this study suggest a continuous and significant decline in MPI poverty for the period 2001 to 2016. With MPI poverty estimates portraying a continuous downward trend over the 15-year period, it has been established that the MPI scores for the overall population had fallen by more than 50 percent. This large fall in MPI poverty was found to be driven mainly by large reductions in the poverty headcount (H), as only a slight decrease of the intensity of poverty (A) took place during the period under study.

The results also indicated that MPI poverty was more prevalent among individuals from female-headed households, who lived in rural areas and who were from the African race group. A constructive finding particularly related to the race and area type sub-groups was that even though MPI poverty was found to be the most severe for these two groups, the African population and rural population enjoyed a more significant reduction in MPI poverty as well a reduction in the headcount poverty over the period. At the provincial level, Eastern Cape and KwaZulu-Natal were the two provinces who reported the highest MPI scores while the Western Cape and Gauteng boasted the lowest MPI scores over the period.

In the examination of multidimensional poverty by DC, even though minor changes in the ranking of the various DC's occurred with the inclusion of the 2016 CS data, a general observation pertains to the fact there were a few DCs that were consistently ranked amongst the best and worst in terms of MPI scores. Similarly, in the examination of MPI poverty by municipality, Msinga and Ntabankulu were constantly ranked among the ten municipalities with the highest MPIs in all four years. This finding is particularly interesting given the number of municipalities in South Africa and the fact that the same result had occurred before and after the inclusion of the 2016 CS data.

Another important finding suggests that the population coming from female-headed households, the African race group, the rural population and those residing in KwaZulu-Natal and the Eastern Cape were deemed to be the sub-groups making the biggest contribution to overall poverty over the period. Furthermore, when conducting the MPI decomposition on the basis of the various indicators, years of schooling, disability and unemployment were found to the biggest drivers of poverty over the period. The fact that unemployment was among the top three drivers of poverty emphasises the relevance of this indictor within the context of this study and this result is no surprise given the high unemployment rate in South Africa. Finally, in the comparison of MPI poverty against money-metric poverty over the period, it was found that the reduction in MPI poverty was continuous and more rapid.

6.3 Conclusion

With regard to policy recommendations, since the incidence of poverty was found to be much greater among some groups than others, poverty reduction policy should be directed towards these groups to a much greater extent. Here reference is made to the African population, women and the rural population in particular who may benefit from various forms of better targeted government aid. Also, as indicated by the empirical analysis employed in this study, years of schooling, disability and unemployment were found to be the top three drivers of the overall poverty in the country. This finding thus serves as a clear indication that much reform still has to occur in these three spheres.

Education can be viewed as a means to escape poverty, enhance productivity and increase employment likelihood as well as earnings capacity (Tsujita, 2012:33). While the easiest

policy recommendation would be to increase government spending in relation to education, the increase in expenditure alone would not guarantee the desired results to be achieved for three reasons: firstly, the provision of additional resources to poor schools has done little to improve the educational performance of learners (Van der Berg, 2007:877). Secondly, when compared to world standards, South Africa's public education spending as proportion of GDP is considered to be very high and even though access to education has indeed improved since 1994, the government has been less successful on improving the quality of education (Van der Berg, 2007:871). For example, South African learners were found to be performing below acceptable standards regardless of the subject or grade under study. In addition to this, a major concern was raised around literacy and numeracy skills and ability (Spaull, 2013:57). Lastly, with the current economic and political state of South Africa, it seems as if there is no fiscal budget for education at the moment. The above mentioned reasons may therefore give rise to various debates regarding the significant budget allocations to education provision over the past few years and whether this increased spending on education has truly yielded quality education for the entire population as intended.

Thus, instead of merely increasing annual spending on education with the focus on the projected Rand value presented in the budget each year and whether this value has increased or decreased from year to year, education policy should perhaps take a difference route. The overall aim should be to utilise the given budget in a way that actually brings about evident improvements in the quality of education which will at the end of the day justify increased funding. Ultimately, good policy pertaining to education involves teacher competency, passion and whether the teaching methods utilised are actually relevant and effective. It is also imperative for government to stress policy related to early childhood development and teaching methods as learning becomes easier once the basics are understood at an early age. For this reason, (1): a greater proportion of resources needs to be invested in the quality of foundation phase education, with the particular reference to mathematics and literacy but not excluding primary and secondary level education where core skills such as numeracy, English reading, writing and computer literacy should be the main focus as they are directly associated with employment likelihood (Van der Berg *et al.,* 2011:13); (2): capacity within the teaching force should be developed. This implies the need for institutional structures that are required to encourage good teaching and to ensure that the most competent teachers are

employed and retained (Van der Berg *et al.*, 2011: 2); (3): improvements in assessment quality and standardised national assessments as feedback. This suggests that drastic improvements in the quality of assessments occurs which will allow information regarding learner's true performance to be revealed. Standardised national assessments will also allow for better subject choices to be made (Van der Berg *et al.*, 2011:13).

Pertaining to the health dimension, policy suggestions should be centred on (1): improved access to healthcare. Health care capacity should match the health needs of the population and more resources and spending should be allocated to making health care more accessible and affordable to all South Africans with special reference to the previously disadvantaged, women, rural residents and individuals with disabilities. For example, with reference to HIV/AIDS only, the South African health workforce still requires that its current workforce be three times larger than what it currently is to adequately care for patients with HIV/AIDS. Policy therefore needs to be centred on increasing the output of trained community health workers and the development of front-line work-based programs in an attempt to control TB and HIV infection (Mayosi and Benatar, 2014:1349); (2): build the capacity to improve the quality of healthcare. Appropriate training should be provided to all healthcare staff and professionals on a regular basis to ensure best practise and to help increase motivation levels. More resources should also be allocated to fostering evidence-based practice and innovation; (3) the implementation of the National Health Insurance (NHI). The two previously mentioned points regarding improved access to healthcare and quality can in some way be related to the proposed NHI. There is debate that the proposed NHI will enable all South Africans to achieve universal access to quality healthcare and improve overall health outcomes if designed well and implemented effectively (Ataguba and Akazili, 2010:78).

Finally, with regard to labour market outcomes, given that the unemployment rate at the end of the first quarter of 2017 stood at a high 27.7%, it is of no surprise that the unemployment indicator was ranked among the top three contributors to overall MPI poverty. When considering these three indicators, once cannot help but notice how interrelated they are as poor education or health would ultimately definitely hinder labour market outcomes. The overall solution to the problem of unemployment would ideally be a rapid increase in the pace of job creation but the implementation of such a plan in a strategic and realistic way is

not without difficulty. One of the leading reasons for this pertains to the fact that the problem of unemployment in South Africa is deemed to be more structural rather than cyclical. It is no secret our workforce is characterised by an oversupply of unskilled and semiskilled labour and a shortage of skilled labour which without a doubt prompts considerations pertaining to the quality of education in South Africa.

Possible policy interventions aimed a job creation are suggested here. First, the implementation of a transport subsidy for unemployed youth: this policy suggestion acknowledges the transport cost associated with job search. It is based on the premise that frictions are occurring in the labour market due to job search costs and that for individuals to have better access to employment and employment information these costs should be reduced which will definitely assist cash constrained individuals (Fraklin, 2015:4). It is also of particular importance as relatively large percentages of discouraged work seekers as well as the unemployed are located in areas with the lowest density of jobs (Bhorat, 2012: 8).

Bhorat (2012) thus suggests that a pilot project first be implemented by government to determine whether the spatial disconnect between jobs and unemployment can be improved through the implementation of a transport subsidy which allows job seekers to enter into areas where jobs are highly concentrated. Briefly, the idea around its implementation is that it be administered through the Department of Labour via their Labour Centres where information regarding the subsidy will be easy for job seekers to obtain. Lastly, in terms of value, mobility costs should be used as a proxy for the cost associated with job search. Thus, the Rand value of the subsidy would be depended on where the relevant locations are situated. If the pilot project turns out to be successful the implementation of this policy should be considered on a national scale.

Secondly, change in state procurement rules as a means to grow the informal sector: the ability of the informal section as a means of job creation should not be undermined. According to Bhorat (2012: 9), if certain state procurement contracts are specially targeted at formal microenterprises, it will result in growth of these businesses but also job creation. State procurement is allegedly governed by a structures which ensure that black business are included to ensure that growth is promoted (derived from the principal of BBBEE). The

inclusion of formal microenterprises and the informal economic is however yet to be included. Policy should therefore ensure that a system of indirect access to state procurement be established where it becomes compulsory for beneficiaries of large state contracts to include informal sector partners with the tender submissions where feasible. Although only two policy intervention suggestions have been discussed above, other suggestions around the improvements in wage flexibility and the re-consideration of the wage subsidy are also possible avenues that may be explored.

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APPENDIX

Table A.1: Available information relating to the MPI dimensions in the Censuses and Community Surveys

	Census 1996	Census 2001	CS 2007	Census 2011	CS 2016
Education					
Education year	✓	✓	✓	✓	✓
Education attendance	✓	✓	✓	✓	✓
Labour market status					
Labour narrow	✓	✓	✓	✓	###
Labour broad		✓		✓	###
Health					
Mortality	✓	✓	✓	✓	✓
Disability	✓	✓	✓	✓	✓
Public assets and services					
Dwelling type	✓	✓	✓	✓	✓
Roof material				✓	
Floor material				✓	
Water source	✓	✓	✓	✓	✓
Sanitation facility	✓	✓	✓	✓	✓
Fuel source for cooking	✓	✓	✓	✓	✓
Fuel source for heating	✓	✓	✓	✓	✓
Fuel source for lighting	✓	✓	✓	✓	✓
Refuse removal frequency	✓	✓	✓	✓	✓
Private assets					
Landline telephone	✓	✓	✓	✓	✓
Cellular telephone	✓	✓	✓	✓	✓
Fridge		✓	✓	✓	✓
Stove				✓	✓
Washing machine				✓	✓
Computer		✓	✓	✓	✓
Vacuum cleaner				✓	✓
TV		✓	✓	✓	✓
Satellite dish				✓	✓
Car				✓	✓
Radio		✓	✓	✓	✓
Internet			✓	✓	✓
Post box			✓	✓	

Since all the labour market-related information is not released in the Community Survey 2016 data (despite the presence of a section in the questionnaire capturing labour market activities of the respondents), it is not known if Stats SA would release the data on labour market status at a later stage.

Table A.2: Comparability of district councils across censuses and community surveys

Census 2001		Community Survey 2007		Census 2011		Community Survey 2016	
Code	**Name**	**Code**	**Name**	**Code**	**Name**	**Code**	**Name**
1	West Coast	1	West Coast	101	West Coast	1	DC1 West Coast
2	Boland	2	Boland	102	Boland	2	DC2 Cape Winelands[(a)]
3	Overberg	3	Overberg	103	Overberg	3	DC3 Overberg
4	Eden	4	Eden	104	Eden	4	DC4 Eden
5	Central Karoo	5	Central Karoo	105	Central Karoo	5	DC5 Central Karoo
6	Namakwa	6	Namakwa	306	Namakwa	6	DC6 Namakwa
7	Karoo	7	Karoo	307	Pixley ka Seme[(b)]	7	DC7 Pixley ka Seme[(b)]
8	Siyanda	8	Siyanda	308	Siyanda	8	DC8 ZF Mgcawu[(c)]
9	Frances Baard	9	Frances Baard	309	Frances Baard	9	DC9 Frances Baard
10	Cacadu	10	Cacadu	210	Cacadu	10	DC10 Sarah Baartman[(d)]
12	Amatole	12	Amatole	212	Amathole	12	DC12 Amathole
				260	Buffalo City[(e)]	51	BUF Buffalo City[(e)]
13	Chris Hani	13	Chris Hani	213	Chris Hani	13	DC13 Chris Hani
14	Ukhahlamba	14	Ukhahlamba	214	Ukhahlamba	14	DC14 Joe Gqabi[(f)]
15	O.R.Tambo	15	O.R.Tambo	215	O.R.Tambo	15	DC15 OR Tambo
16	Xhariep	16	Xhariep	416	Xhariep	16	DC16 Xhariep
18	Lejweleputswa	18	Lejweleputswa	418	Lejweleputswa	18	DC18 Lejweleputswa
19	Thabo Mofutsanyana	19	Thabo Mofutsanyana	419	Thabo Mofutsanyana	19	DC19 Thabo Mofutsanyana
20	Northern Free State	20	Northern Free State	420	Fezile Dabi[(g)]	20	DC20 Fezile Dabi[(g)]
21	Ugu	21	Ugu	521	Ugu	21	DC21 Ugu
22	UMgungundlovu	22	UMgungundlovu	522	UMgungundlovu	22	DC22 UMgungundlovu
23	Uthukela	23	Uthukela	523	Uthukela	23	DC23 Uthukela
24	Umzinyathi	24	Umzinyathi	554	uMzinyathi	24	DC24 uMzinyathi
25	Amajuba	25	Amajuba	555	Amajuba	25	DC25 Amajuba
26	Zululand	26	Zululand	556	Zululand	26	DC26 Zululand
27	Umkhanyakude	27	Umkhanyakude	527	Umkhanyakude	27	DC27 Umkhanyakude

Table A.2: Continued

Census 2001		Community Survey 2007		Census 2011		Community Survey 2016	
Code	**Name**	**Code**	**Name**	**Code**	**Name**	**Code**	**Name**
28	Uthungulu	28	Uthungulu	528	Uthungulu	28	DC28 King Cetshwayo[h]
29	iLembe	29	iLembe	559	iLembe	29	DC29 iLembe
30	Govan Mbeki	30	Govan Mbeki	830	Gert Sibande[i]	30	DC30 Gert Sibande[i]
31	Nkangala	31	Nkangala	831	Nkangala	31	DC31 Nkangala
32	Ehlanzeni	32	Ehlanzeni	832	Ehlanzeni	32	DC32 Ehlanzeni
33	Mopani	33	Mopani	933	Mopani[j]	33	DC33 Mopani[j]
84	Bohlabela						
34	Vhembe	34	Vhembe	934	Vhembe	34	DC34 Vhembe
35	Capricorn	35	Capricorn	935	Capricorn	35	DC35 Capricorn
36	Waterberg	36	Waterberg	936	Waterberg	36	DC36 Waterberg
37	Bojanala	37	Bojanala	637	Bojanala	37	DC37 Bojanala
38	Central	38	Central	638	Ngaka Modiri Molema[k]	38	DC38 Ngaka Modiri Molema[k]
39	Bophirima	39	Bophirima	639	Dr Ruth Segomotsi Mompati[l]	39	DC39 Dr Ruth Segomotsi Mompati[l]
40	Southern	40	Southern	640	Dr Kenneth Kaunda[m]	40	DC40 Dr Kenneth Kaunda[m]
42	Sedibeng	42	Sedibeng	742	Sedibeng	42	DC42 Sedibeng
43	Sisonke	43	Sisonke	543	Sisonke	43	DC43 Harry Gwala[n]
44	Alfred Nzo	44	Alfred Nzo	244	Alfred Nzo	44	DC44 Alfred Nzo
81	Kgalagadi	45	Kgalagadi	345	John Taolo Gaetsewe[o]	45	DC45 John Taolo Gaetsewe[o]
83	Sekhukhune Cross	47	Greater Sekhukhune	947	Greater Sekhukhune	47	DC47 Sekhukhune
88	West Rand	48	West Rand	748	West Rand	48	DC48 West Rand
171	City of Cape Town	171	City of Cape Town	199	City of Cape Town	52	CPU City of Cape Town
773	East Rand	773	East Rand	797	Ekurhuleni[p]	53	EKU Ekurhuleni[p]
572	Durban	572	Durban	599	eThekwini[q]	54	ETH eThekwini[q]
774	Johannesburg	774	Johannesburg	798	City of Johannesburg	55	JHB City of Johannesburg
17	Motheo	17	Motheo	499	Mangaung[r]	56	MAN Mangaung[r]
275	Port Elizabeth	275	Port Elizabeth	299	Nelson Mandela Bay[s]	57	NMA Nelson Mandela Bay[s]

Table A.2: Continued

Census 2001		Community Survey 2007		Census 2011		Community Survey 2016	
Code	**Name**	**Code**	**Name**	**Code**	**Name**	**Code**	**Name**
76	City of Tshwane	776	City of Tshwane	799	City of Tshwane	58	TSH City of Tshwane
82	Metsweding(t)	46	Metsweding(t)				

Note:
(a): Formerly known as Boland.
(b): Formerly known as the Karoo.
(c): Formerly known as Siyanda.
(d): Formerly known as Cacadu.
(e): Buffalo city was separated from the Amathole district since May 2011.
(f): Formerly known as Ukhahlamba.
(g): Formerly known as the Northern Free State.
(h): Formerly known as Uthungulu.
(i): Formerly known as Govan Mbeki.
(j): The majority of the Bohlabela district area was integrated into Mopani (the remainder was integrated into Ehlanzeni).
(k) Formerly known as Central.
(l): Formerly known as Bophirima.
(m): Formerly known as Southern.
(n): Formerly known as Sisonke.
(o): Formerly known as Kgalagadi.
(p): Formerly known as East Rand.
(q): Formerly known as Durban.
(r): Formerly known as Motheo.
(s): Formerly known as Port Elizabeth.
(t): The Metsweding district was integrated into the City of Tshwane since May 2011.

Table A.3: List of municipalities in each census and Community Survey, in each province

Census 2001	Community Survey 2007	Census 2011	Community Survey 2016
Western Cape			
Matzikama	Beaufort West	Beaufort West	Beaufort West
Cederberg	Bergrivier	Bergrivier	Bergrivier
Bergrivier	Bitou	Bitou	Bitou
Saldanha Bay	Breede River/Winelands	Breede Valley	Breede Valley
Swartland	Breede Valley	Cape Agulhas	Cape Agulhas
Witzenberg	Cape Agulhas	Cederberg	Cederberg
Drakenstein	Cape Winelands	City of Cape Town	City of Cape Town
Stellenbosch	Cederberg	Drakenstein	Drakenstein
Breede Valley	Central Karoo	George	George
Breede River/Winelands	City of Cape Town	Hessequa	Hessequa
Theewaterskloof	Drakenstein	Kannaland	Kannaland
Overstrand	Eden	Knysna	Knysna
Cape Agulhas	George	Laingsburg	Laingsburg
Swellendam	Hessequa	Langeberg	Langeberg
Kannaland	Kannaland	Matzikama	Matzikama
Langeberg	Knysna	Mossel Bay	Mossel Bay
Mossel Bay	Laingsburg	Oudtshoorn	Oudtshoorn
George	Matzikama	Overstrand	Overstrand
Oudtshoorn	Mossel Bay	Prince Albert	Prince Albert
Plettenberg Bay	Oudtshoorn	Saldanha Bay	Saldanha Bay
Knysna	Overberg	Stellenbosch	Stellenbosch
Laingsburg	Overstrand	Swartland	Swartland
Prince Albert	Prince Albert	Swellendam	Swellendam
Beaufort West	Saldanha Bay	Theewaterskloof	Theewaterskloof
City of Cape Town	Stellenbosch	Witzenberg	Witzenberg
West Coast	Swartland		
Breede River	Swellendam		
South Cape	Theewaterskloof		
Central Karoo	West Coast		
	Witzenberg		

Table A.3: Continued

Census 2001	Community Survey 2007	Census 2011	Community Survey 2016
Eastern Cape			
Aberdeen Plain	Amahlathi	Amahlathi	Amahlathi
Amahlathi	Baviaans	Baviaans	Blue Crane Route
Baviaans	Blue Crane Route	Blue Crane Route	Buffalo City
Blue Crane Route	Buffalo City	Buffalo City	Dr Beyers Naude
Buffalo City	Cacadu	Camdeboo	Elundini
Camdeboo	Camdeboo	Elundini	Emalahleni
Elundini	Elundini	Emalahleni	Engcobo
Emalahleni	Emalahleni	Engcobo	Enoch Mgijima
Engcobo	Engcobo	Gariep	Great Kei
Gariep	Gariep	Great Kei	Intsika Yethu
Great Kei	Great Kei	Ikwezi	Inxuba Yethemba
Ikwezi	Ikwezi	Inkwanca	King Sabata Dalindyebo
Inkwanca	Inkwanca	Intsika Yethu	Kouga
IntsikaYethu	Intsika Yethu	Inxuba Yethemba	Kou-Kamma
Inxuba Yethemba	Inxuba Yethemba	King Sabata Dalindyebo	Makana
King Sabata Dalindyebo	King Sabata Dalindyebo	Kouga	Matatiele
Kouga	Kouga	Kou-Kamma	Mbhashe
Kou-Kamma	Kou-Kamma	Lukanji	Mbizana
Lukanji	Lukanji	Makana	Mhlontlo
Makana	Makana	Maletswai	Mnquma
Maletswai	Maletswai	Matatiele	Ndlambe
Mbhashe	Matatiele	Mbhashe	Nelson Mandela Bay
Mbizana	Mbhashe	Mbizana	Ngqushwa
Mhlontlo	Mbizana	Mhlontlo	Ngquza Hill
Mnquma	Mhlontlo	Mnquma	Ntabankulu
Ndlambe	Mnquma	Ndlambe	Nyandeni
Nelson Mandela	Ndlambe	Nelson Mandela Bay	Port St Johns
Ngqushwa	Nelson Mandela Bay	Ngqushwa	Raymond Mhlaba
Nkonkobe	Ngqushwa	Ngquza Hill	Sakhisizwe
Ntabankulu	Nkonkobe	Nkonkobe	Senqu

Table A.3: Continued

Census 2001	Community Survey 2007	Census 2011	Community Survey 2016
Eastern Cape			
Nxuba	Ntabankulu	Ntabankulu	Sundays River Valley
Nyandeni	Nxuba	Nxuba	Umzimvubu
Port St Johns	Nyandeni	Nyandeni	Walter Sisulu
Qaukeni	Port St Johns	Port St Johns	
Sakhisizwe	Qaukeni	Sakhisizwe	
Senqu	Sakhisizwe	Senqu	
Sunday River Valley	Senqu	Sundays River Valley	
Tsolwana	Sunday's River Valley	Tsolwana	
Umzimkhulu	Tsolwana	Umzimvubu	
Umzimvubu	Umzimvubu		
Northern Cape			
Benede Oranje	!Kheis	!Kheis	!Kheis
Bo Karoo	Dikgatlong	Dikgatlong	Dawid Kruiper
Diamondfields	Emthanjeni	Emthanjeni	Dikgatlong
Dikgatlong	Frances Baard	Gamagara	Emthanjeni
Emthanjeni	Gamagara	Ga-Segonyane	Gamagara
Gamagara	Ga-Segonyana	Hantam	Ga-Segonyana
Ga-Segonyana	Hantam	Joe Morolong	Hantam
Hantam	Kai !Garib	Kai !Garib	Joe Morolong
Kai Garib	Kamiesberg	Kamiesberg	Kai !Garib
Kalahari	Kareeberg	Kareeberg	Kamiesberg
Kamiesberg	Karoo Hoogland	Karoo Hoogland	Kareeberg
Kareeberg	Kgalagadi	Kgatelopele	Karoo Hoogland
Karoo Hoogland	Kgatelopele	Khara Hais	Kgatelopele
Kgatelopele	Khâi-Ma	Khâi-Ma	Khâi-Ma
Khai-Ma	Khara Hais	Magareng	Magareng
Khara Hais	Magareng	Mier	Nama Khoi
Kheis	Mier	Nama Khoi	Phokwane
Magareng	Moshaweng	Renosterberg	Renosterberg
Mier	Nama Khoi	Richtersveld	Richtersveld

Table A.3: Continued

Census 2001	Community Survey 2007	Census 2011	Community Survey 2016
Northern Cape			
NamaKhoi	Namakwa	Siyancuma	Siyancuma
Namaqualand	Phokwane	Siyathemba	Siyathemba
Phokwane	Pixley ka Seme	Sol Plaatjie	Sol Plaatjie
Renosterberg	Renosterberg	Thembelihle	Thembelihle
Richtersveld	Richtersveld	Tsantsabane	Tsantsabane
Siyancuma	Siyancuma	Ubuntu	Ubuntu
Siyathemba	Siyanda	Umsobomvu	Umsobomvu
SolPlaatje	Siyathemba		
Thembelihle	Sol Plaatjie		
Tsantsabane	Thembelihle		
Ubuntu	Tsantsabane		
Umsombomvu	Ubuntu		
	Umsobomvu		
Free State			
Dihlabeng	Dihlabeng	Dihlabeng	Dihlabeng
Kopanong	Kopanong	Kopanong	Kopanong
Letsemeng	Letsemeng	Letsemeng	Letsemeng
Mafube	Mafube	Mafube	Mafube
Malutia Phofung	Maluti a Phofung	Maluti a Phofung	Maluti a Phofung
Mangaung	Mangaung	Mangaung	Mangaung
Mantsopa	Mantsopa	Mantsopa	Mantsopa
Masilonyana	Masilonyana	Masilonyana	Masilonyana
Matjhabeng	Matjhabeng	Matjhabeng	Matjhabeng
Metsimaholo	Metsimaholo	Metsimaholo	Metsimaholo
Mohokare	Mohokare	Mohokare	Mohokare
Moqhaka	Moqhaka	Moqhaka	Moqhaka
Nala	Nala	Nala	Nala
Naledi	Naledi	Naledi	Ngwathe
Ngwathe	Ngwathe	Ngwathe	Nketoana
Nketoana	Nketoana	Nketoana	Phumelela

Table A.3: Continued

Census 2001	Community Survey 2007	Census 2011	Community Survey 2016
Free State			
Phumelela	Phumelela	Phokwane	Setsoto
Setsoto	Setsoto	Phumelela	Tokologo
Tokologo	Tokologo	Setsoto	Tswelopele
Tswelopele	Tswelopele	Tokologo	
		Tswelopele	
KwaZulu-Natal			
Abaqulusi	Abaqulusi	Abaqulusi	Abaqulusi
Dannhauser	Dannhauser	Dannhauser	Alfred Duma
eDumbe	eDumbe	eDumbe	Big Five Hlabisa
Emnambithi/Ladysmith	Emadlangeni	Emadlangeni	Dannhauser
eNdondakusuka	Emnambithi/Ladysmith	Emnambithi/Ladysmith	Dr Nkosazana Dlamini Zuma
Endumeni	Endumeni	Endumeni	eDumbe
Ethekwini	eThekwini	eThekwini	Emadlangeni
Ezingoleni	Ezingoleni	Ezingoleni	Endumeni
Gaints Castle Game Reserve	Greater Kokstad	Greater Kokstad	eThekwini
Greater Kokstad	Hibiscus Coast	Hibiscus Coast	Greater Kokstad
Hibiscus Coast	Hlabisa	Hlabisa	Impendle
Hlabisa	Imbabazane	Imbabazane	Inkosi Langalibalele
Imbabazane	Impendle	Impendle	Jozini
Impendle	Indaka	Indaka	KwaDukuza
Indaka	Ingwe	Ingwe	Mandeni
Ingwe	Jozini	Jozini	Maphumulo
Jozini	Kwa Sani	Kwa Sani	Mfolozi
KwaDukuza	KwaDukuza	KwaDukuza	Mkhambathini
KwaSani	Mandeni	Mandeni	Mpofana
Maphumulo	Maphumulo	Maphumulo	Msinga
Matatiele	Mbonambi	Mfolozi	Msunduzi
Mbonambi	Mkhambathini	Mkhambathini	Mthonjaneni
Mkhambathini	Mpofana	Mpofana	Mtubatuba
Mkhomazi Wilderness Area	Msinga	Msinga	Ndwedwe

Table A.3: Continued

Census 2001	Community Survey 2007	Census 2011	Community Survey 2016
KwaZulu-Natal			
MooiMpofana	Msunduzi	Msunduzi	Newcastle
Msinga	Mthonjaneni	Mthonjaneni	Nkandla
Msunduzi	Mtubatuba	Mtubatuba	Nongoma
Mthonjaneni	Ndwedwe	Ndwedwe	Nqutu
Mtubatuba	Newcastle	Newcastle	Okhahlamba
Ndwedwe	Nkandla	Nkandla	Ray Nkonyeni
Newcastle	Nongoma	Nongoma	Richmond
Nkandla	Nquthu	Nqutu	Ubuhlebezwe
Nongoma	Ntambanana	Ntambanana	Ulundi
Nqutu	Okhahlamba	Okhahlamba	Umdoni
Ntambanana	Richmond	Richmond	Umhlabuyalingana
Okhahlamba	The Big Five False Bay	The Big Five False Bay	uMhlathuze
Richmond	Ubuhlebezwe	Ubuhlebezwe	uMlalazi
St Lucia Park	Ulundi	Ulundi	uMngeni
The Big Five False Bay	Umdoni	Umdoni	uMshwathi
Ubuhlebezwe	Umhlabuyalingana	Umhlabuyalingana	uMuziwabantu
Ulundi	uMhlathuze	uMhlathuze	Umvoti
Umdoni	Umkhanyakude	uMlalazi	Umzimkhulu
Umhlabuyalingana	uMlalazi	uMngeni	Umzumbe
uMhlathuze	uMngeni	uMshwathi	uPhongolo
uMlalazi	uMshwathi	Umtshezi	
uMngeni	Umtshezi	UMuziwabantu	
uMshwathi	Umuziwabantu	Umvoti	
Umtshezi	Umvoti	Umzimkhulu	
uMuziwabantu	Umzimkhulu	Umzumbe	
Umvoti	Umzumbe	uPhongolo	
Umzumbe	Uphongolo	Vulamehlo	
uPhongolo	Vulamehlo		
Utrecht			
Vulamehlo			

Table A.3: Continued

Census 2001	Community Survey 2007	Census 2011	Community Survey 2016
North West			
City Council of Klerksdorp	City of Matlosana	City of Matlosana	City of Matlosana
City of Tshwane	Ditsobotla	Ditsobotla	Ditsobotla
Ditsobotla	Greater Taung	Greater Taung	Greater Taung
Ga-Segonyana	Kagisano	Kagisano-Molopo	Kagisano-Molopo
Greater Taung	Kgetlengrivier	Kgetlengrivier	Kgetlengrivier
Kagisano	Lekwa-Teemane	Lekwa-Teemane	Lekwa-Teemane
Kgetlengrivier	Madibeng	Madibeng	Madibeng
Lekwa-Teemane	Mafikeng	Mafikeng	Mafikeng
Madibeng	Mamusa	Mamusa	Mamusa
Mafikeng	Maquassi Hills	Maquassi Hills	Maquassi Hills
Mamusa	Merafong City	Moretele	Moretele
Maquassi Hills	Molopo	Moses Kotane	Moses Kotane
Merafong City	Moretele	Naledi	Naledi
Molopo	Moses Kotane	Ramotshere Moiloa	Ramotshere Moiloa
Moretele	Naledi	Ratlou	Ratlou
Moses Kotane	Potchefstroom	Rustenburg	Rustenburg
Moshaweng	Ramotshere Moiloa	Tlokwe City Council	Tswaing
Naledi	Ratlou	Tswaing	Ventersdorp/Tlokwe
Phokwane	Rustenburg	Ventersdorp	
Potchefstroom	Tswaing		
Rustenburg	Ventersdorp		
Setla-Kgobi			
Tswaing			
Ventersdorp			
Zeerust			
Gauteng			
City of Johannesburg	City of Johannesburg	City of Johannesburg	City of Johannesburg
City of Tshwane	City of Tshwane	City of Tshwane	City of Tshwane
Ekurhuleni Metro	Ekurhuleni	Ekurhuleni	Ekurhuleni
Emfuleni	Emfuleni	Emfuleni	Emfuleni

Table A.3: Continued

Census 2001	Community Survey 2007	Census 2011	Community Survey 2016
Gauteng			
Kungwini	Kungwini	Lesedi	Lesedi
Lesedi	Lesedi	Merafong City	Merafong City
Merafong City	Midvaal	Midvaal	Midvaal
Midvaal	Mogale City	Mogale City	Mogale City
Mogale City	Nokengtsa Taemane	Randfontein	Rand West City
Nokengtsa Taemane	Randfontein	Westonaria	
Randfontein	West Rand		
West Rand	Westonaria		
Westonaria			
Mpumalanga			
Albert Luthuli	Albert Luthuli	Albert Luthuli	Albert Luthuli
Bushbuckridge	Bushbuckridge	Bushbuckridge	Bushbuckridge
Delmas	Delmas	Dipaleseng	Dipaleseng
Dipaleseng	Dipaleseng	Dr JS Moroka	Dr JS Moroka
Dr JS Moroka	Dr JS Moroka	Emakhazeni	Emakhazeni
Emalahleni	Ehlanzeni	Emalahleni	Emalahleni
Greater Groblersd	Emakhazeni	Govan Mbeki	Govan Mbeki
Greater Marble Hall	Emalahleni	Lekwa	Lekwa
Greater Tubatse	Govan Mbeki	Mbombela	Mbombela
Highlands	Lekwa	Mkhondo	Mkhondo
Highveld East	Mbombela	Msukaligwa	Msukaligwa
Kruger Park	Mkhondo	Nkomazi	Nkomazi
Kungwini	Msukaligwa	Pixley Ka Seme	Pixley Ka Isaka Seme
Lekwa	Nkomazi	Steve Tshwete	Steve Tshwete
Lowveld	Seme	Thaba Chweu	Thaba Chweu
Mbombela	Steve Tshwete	Thembisile	Thembisile
Middelburg	Thaba Chweu	Umjindi	Victor Khanye
Mkhondo	Thembisile	Victor Khanye	
Msukaligwa	Umjindi		
Nkomazi			

Table A.3: Continued

Census 2001	Community Survey 2007	Census 2011	Community Survey 2016
Mpumalanga			
Seme			
Thaba Chweu			
Thembisile			
Umjindi			
Limpopo			
Aganang	Aganang	Aganang	Ba-Phalaborwa
Ba-Phalaborwa	Ba-Phalaborwa	Ba-Phalaborwa	Bela-Bela
Bela-Bela	Bela-Bela	Bela-Bela	Blouberg
Blouberg	Blouberg	Blouberg	Collins Chabane
Bushbuckridge	Elias Motsoaledi	Elias Motsoaledi	Elias Motsoaledi
Fetakgomo	Fetakgomo	Ephraim Mogale	Ephraim Mogale
Greater Giyani	Greater Giyani	Fetakgomo	Greater Giyani
Greater Groblersd	Greater Letaba	Greater Giyani	Greater Letaba
Greater Letaba	Greater Marble Hall	Greater Letaba	Greater Tubatse/Fetakgomo
Greater Marble Hall	Greater Tubatse	Greater Tubatse	Greater Tzaneen
Greater Tubatse	Greater Tzaneen	Greater Tzaneen	Lepele-Nkumpi
Greater Tzaneen	Lepele-Nkumpi	Lepele-Nkumpi	Lephalale
Kruger Park	Lephalale	Lephalale	Makhado
Lepele-Nkumpi	Makhado	Makhado	Makhuduthamaga
Lephalale	Makhuduthamaga	Makhuduthamaga	Maruleng
Makhado	Maruleng	Maruleng	Modimolle/Mookgophong
Makhuduthamaga	Modimolle	Modimolle	Mogalakwena
Maruleng	Mogalakwena	Mogalakwena	Molemole
Modimolle	Molemole	Molemole	Musina
Mogalakwena	Mookgopong	Mookgopong	Polokwane
Molemole	Musina	Musina	Thabazimbi
Mookgopong	Mutale	Mutale	Thulamela
Musina	Polokwane	Polokwane	
Mutale	Thabazimbi	Thabazimbi	
Polokwane	Thulamela	Thulamela	

Table A.3: Continued

Census 2001	Community Survey 2007	Census 2011	Community Survey 2016
Limpopo			
Thabazimbi			
Thulamela			

Note: The data indicates that there are 10 municipalities falling under two provinces in 2001.

- Ga-Segonyana municipality: 22.87% of its population fall under the Northern Cape Province and 77.13% fall under the North West Province.
- Phokwane municipality: 68.59 % of its population fall under the Northern Cape Province and 31.41% fall under the North West Province.
- City of Tshwane municipality: 21.54% of its population fall under the North West Province and 78.46% fall under the Gauteng Province.
- Merafong City municipality: 29.42% of its population fall under the North West Province and 70.58% fall under the Gauteng Province.
- Greater Marble Hall municipality: 43.84% of its population fall under the Mpumalanga Province and 56.16% fall under the Limpopo Province.
- Greater Groblersdal municipality: 59.20% of its population fall under the Mpumalanga Province and 40.80% fall under the Limpopo Province.
- Greater Tubatse municipality: 14.63% of its population fall under the Mpumalanga Province and 85.37% fall under the Limpopo Province.
- Bushbuckridge municipality: 0.19% of its population fall under the Mpumalanga Province and 99.81% fall under the Limpopo Province.
- Kungwini municipality: 63.21% of its population fall under the Mpumalanga Province and 36.79% fall under the Limpopo Province.
- Kruger Park municipality, 44.37% of its population fall under the Mpumalanga Province and 55.63% fall under the Limpopo Province.

Table A.4: The 10 least and 10 most deprived municipalities in indicator [A], 2001-2016

10 least deprived municipalities		10 most deprived municipalities	
Municipality	**% of deprived population**	**Municipality**	**% of deprived population**
Census 2001			
Lowveld	2.1	Namaqualand	62.7
City of Cape Town	4.0	Molopo	54.0
Nelson Mandela	5.5	Diamondfields	51.1
Drakenstein	5.5	Msinga	46.7
NamaKhoi	5.9	Gaints Castle Game Reserve	44.4
City of Tshwane	6.0	Benede Oranje	41.3
Knysna	6.1	Mkhomazi Wilderness Area	40.5
Stellenbosch	6.2	Kalahari	40.4
City of Johannesburg	6.5	Port St Johns	38.6
Emfuleni	7.1	Kagisano	37.1
Community Survey 2007			
Overberg	0.0	Molopo	48.0
Ehlanzeni	1.7	Siyanda	41.1
City of Cape Town	2.8	Frances Baard	34.9
Overstrand	3.2	Kagisano	29.4
George	3.4	Msinga	25.9
NamaKhoi	3.8	Kgalagadi	24.9
eThekwini	3.8	Cape Winelands	24.8
Nelson Mandela Bay	3.9	Ratlou	24.5
Knysna	4.0	Ubuntu	24.4
Stellensbosch	4.0	Tokologo	23.3
Census 2011			
City of Cape Town	2.3	Kagisano/Molopo	24.5
Nelson Mandela Bay	2.9	Ratlou	24.1
Drakenstein	3.0	Msinga	22.9
Saldanha Bay	3.3	Tokologo	21.8
City of Johannesburg	3.3	Joe Morolong	19.8
Nama Khoi	3.3	Port St Johns	19.1
City of Tshwane	3.4	Engcobo	18.9
Stellenbosch	3.6	Karoo Hoogland	18.5
eThekwini	3.7	Elundini	18.4
Ekurhuleni	3.7	Mbhashe	18.2
Community Survey 2016			
uMhlathuze	2.0	Engcobo	18.6
Richtersveld	2.0	Kagisano	16.9
City of Cape Town	2.4	Msinga	16.5
Greater Kokstad	2.5	Intsika Yethu	15.5
Drakenstein	2.7	Emalahleni	15.0
uMngeni	2.7	Greater Letaba	15.0
Nelson Mandela Bay	2.7	Port St Johns	14.8
Newcastle	2.7	Thembelihle	14.8
The Msunduzi	2.8	Sakhisizwe	14.8
Saldanha Bay	2.8	Ratlou	14.7

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

Table A.5: The 10 least and 10 most deprived municipalities in indicator [B], 2001-2016

10 least deprived municipalities		10 most deprived provinces	
Municipality	**% of deprived population**	**Municipality**	**% of deprived population**
Census 2001			
Gaints Castle Game Reserve	0.0	Lowveld	25.7
Mkhomazi Wilderness Area	0.0	Molopo	24.4
Kruger Park	0.0	The Big5 False Bay	20.4
Kamiesberg	2.3	Qaukeni	20.3
Khai-ma	2.4	Msinga	20.1
Mier	2.8	Umhlabuyalingana	19.7
NamaKhoi	3.1	Port St Johns	19.7
Aganang	3.1	Mamusa	19.5
Emfuleni	3.4	Jozini	19.1
Richtersveld	3.4	Setla-Kgobi	18.7
Community Survey 2007			
Overberg	0.0	Umkhanyakude	14.8
Namakwa	0.0	UPhongolo	13.6
Ehlanzeni	0.0	Impendle	12.3
Cape Winelands	0.5	Ubuntu	11.1
Moqhaka	0.9	Camdeboo	11.0
Fetakgomo	1.1	Richmond	10.9
Ngwathe	1.2	Pixley ka Seme	10.9
Masilonyana	1.3	Molopo	10.8
Thabazimbi	1.4	Siyancuma	10.5
Naledi	1.5	Endumeni	10.8
Census 2011			
Laingsburg	1.1	Kannaland	11.7
Randfontein	1.1	Impendle	11.2
Makhudutham	1.2	Mthonjaneni	9.3
Polokwane	1.2	The Big 5 Fasle Bay	9.0
Thulamela	1.2	Uphongolo	8.8
Molemole	1.3	Ubuntu	8.5
Aganang	1.3	Umuziwabantu	8.0
Emfuleni	1.4	Mier	8.0
Thaba Chweu	1.4	Vulamehlo	7.6
Greater Letaba	1.4	Richmond	7.6
Community Survey 2016			
Hantam	0.0	Breede Valley	11.6
Kareeberg	0.0	Umzumbe	11.1
Great Kei	0.6	Port St Johns	9.7
Magareng	0.8	!Kheis	8.1
Dipaleseng	0.9	Mthonjaneni	7.5
uMngeni	0.9	uMlalazi	6.6
Emakhazeni	1.0	Jozini	6.6
Blouberg	1.1	Emalahleni	6.5
Siyathemba	1.1	Tswaing	6.3
Bela-Bela	1.1	Richmond	6.3

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

Table A.6: The 10 least and 10 most deprived municipalities in indicator [C], 2001-2016

10 least deprived municipalities		10 most deprived provinces	
Municipality	**% of deprived population**	**Municipality**	**% of deprived population**
Census 2001			
21 municipalities are equally least deprived – the proportion is 0%.	0.0	Lowveld	5.6
		Utrecht	4.3
		Seme	3.0
		Ulundi	2.9
		Mkhondo	2.9
		uPhongolo	2.8
		Albert Luthuli	2.6
		Port St Johns	2.6
		Indaka	2.6
		Qaukeni	2.4
Community Survey 2007			
37 municipalities are equally least deprived – the proportion is 0%.	0.0	Okhahlamba	6.3
		Ntambanana	6.2
		Mkhondo	5.2
		Abaqulusi	5.0
		Umdoni	4.9
		Msinga	4.7
		Indaka	4.3
		Dipaleseng	4.2
		Emnambithi-Ladysmith	3.7
		Nquthu	3.6
Census 2011			
129 municipalities are equally least deprived – the proportion is 0%.	0.0	eDumbe	0.4
		Gamagara	0.4
		Richmond	0.4
		Joe Morolong	0.3
		Camdeboo	0.3
		Abaqulusi	0.3
		Nkandla	0.3
		!Kheis	0.3
		Mamusa	0.3
		Victor Khan	0.3
Community Survey 2016			
21 municipalities are equally least deprived – the proportion is 0%.	0.0	Okhahlamba	2.1
		!Kheis	2.0
		Lekwa-Teemane	1.6
		Tswelope	1.5
		Tswaing	1.5
		Mkhondo	1.3
		Joe Morolong	1.3
		Emadlangeni	1.3
		Modimolle/Mookgophong	1.2
		Port St Johns	1.2

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

Table A.7: The 10 least and 10 most deprived municipalities in indicator [D], 2001-2016

10 least deprived municipalities		10 most deprived provinces	
Municipality	**% of deprived population**	**Municipality**	**% of deprived population**
Census 2001			
Namaqualand	0.0	uPhongolo	35.8
Kalahari	3.6	Ulundi	35.3
Benede Oranje	4.8	Setla-Kgobi	35.2
Kruger Park	5.6	Magareng	35.1
West Coast	6.7	Emalahleni	33.4
Bo Karoo	8.1	Greater Taung	33.3
Cape Agulhas	8.9	Moshaweng	32.8
Gamagara	9.2	Kagisano	32.6
Overstrand	10.0	Dannhauser	32.5
Thabazimbi	10.1	Utrecht	32.3
Community Survey 2007			
Overberg	0.0	Gariep	29.0
Ehlanzeni |	0.0	Inkwanca	28.6
Cacadu	2.3	Nxuba	26.6
Siyanda	2.8	Moshaweng	25.7
Thabazimbi	3.3	Dannhauser	25.4
Mookgopong	3.5	Ulundi	25.2
Kgalagadi	3.6	Vulamehlo	25.0
Frances Baard	4.0	Kagisano	22.6
Gamagara	4.1	Ratlou	22.0
Swellendam	4.4	Indaka	21.4
Census 2011			
City of Johannesburg	11.4	Kareeberg	49.1
Midvaal	12.4	Kamiesberg	47.1
Bitou	13.1	Joe Morolong	44.8
Thabazimbi	13.4	!Kheis	43.6
Overstrand	13.6	Baviaans	43.2
City of Tshwane	13.8	Tswaing	39.7
Greater Kok	13.9	Ventersdorp	39.5
Kwa Sani	14.2	Ratlou	38.0
Stellenbosch	14.5	Kagisano/Molopo	38.0
Ekurhuleni	14.5	Khai-ma	37.9
Community Survey 2016			
Greater Kokstad	6.7	Jo Morolong	37.6
Walter Sisulu	8.1	Ratlou	34.7
Stellenbosch	8.6	Umsobomvu	34.5
Ba-Phalaborwa	9.4	Greater Taung	30.2
Emalahleni	9.7	Umzumbe	30.1
Jozini	9.7	uMlalazi	30.1
Greater Giyani	10.0	The Big5 False Bay	28.7
Makhado	10.3	Nama Khoi	28.7
Mkhambathini	10.4	Masilonyana	28.5
Theewaterskloof	10.4	Nala	27.7

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

Table A.8: The 10 least and 10 most deprived municipalities in indicator [E], 2001-2016

10 least deprived municipalities		10 most deprived provinces	
Municipality	**% of deprived population**	**Municipality**	**% of deprived population**
Census 2001			
Richtersveld	5.0	Nkandla	96.8
Gamagara	5.0	Umhlabuyalingana	94.3
Saldanha Bay	5.1	The Big5 False Bay	91.6
Moses Kotane	5.7	Jozini	91.2
Dr JS Morok	6.3	Msinga	91.1
Cape Agulas	6.4	Elundini	87.9
Breede Valley	8.2	Qaukeni	85.8
Central Karoo	8.2	Mbhashe	85.2
Emfuleni	8.4	Ntabankulu	85.1
Swartland	8.4	Port St Johns	83.6
Community Survey 2007			
Overberg	0.0	Umkhanyakude	92.1
Ehlanzeni	0.0	Umhlabuyalingana	84.3
Camdeboo	0.9	The Big Five False Bay	80.7
Stellenbosch	1.7	Msinga	80.6
Bergrivier	1.9	Ntabankulu	80.4
Gamagara	1.9	Nkandla	78.9
Saldanha Bay	2.1	Ndwedwe	77.7
Breede River/Winelands	2.1	Jozini	73.1
Swartland	2.7	Mthonjaneni	73.1
Overstrand	2.8	Emadlangeni	73.0
Census 2011			
Swartland	1.5	Umhlabuyali	83.5
Richtersvel	1.6	Ntabankulu	78.4
Saldanha Bay	1.8	Jozini	73.4
Dr JS Morok	2.0	The Big 5 False Bay	71.8
Molemole	2.6	Msinga	69.6
Inxuba Yeth	2.7	Ndwedwe	63.6
Nama Khoi	3.0	Maphumulo	61.9
Cape Agulhas	3.0	Vulamehlo	60.8
Camdeboo	3.5	Emadlangeni	56.6
Aganang	4.0	Nkandla	54.9
Community Survey 2016			
Bitou	0.5	Umhlabuyalingana	72.6
Swartland	0.8	Jozini	56.3
Hessequa	1.0	Msinga	49.8
uMhlathuze	1.0	Emadlangeni	49.8
Ba-Phalaborwa	1.1	Ntabankulu	46.2
Bergrivier	1.2	Maphumulo	41.8
George	1.4	Elundini	36.2
Molemole	1.6	Ndwedwe	36.1
Moretele	1.7	Umzumbe	28.2
City of Cape Town	1.8	Dumbe	28.2

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

Table A.9: The 10 least and 10 most deprived municipalities in indicator [F], 2001-2016

10 least deprived municipalities		10 most deprived provinces	
Municipality	**% of deprived population**	**Municipality**	**% of deprived population**
Census 2001			
Saldanha Bay	13.7	Ntabankulu	97.9
Cape Agulhas	17.0	Port St Johns	97.6
Gamagara	17.8	Engcobo	97.5
Swellendam	18.0	Elundini	97.4
Stellenbosch	18.9	Nkandla	97.4
City of Johannesburg	19.7	Mbhashe	96.7
Kruger Park	20.3	Qaukeni	96.2
Swarland	20.6	Msinga	95.8
Bergrivier	20.6	Ingwe	95.6
George	21.2	Umzimvubu	95.5
Community Survey 2007			
Overberg	0.0	Port St Johns	97.0
Ehlanzeni	0.0	Umkhanyakude	96.5
Bergrivier	2.4	Mhlontlo	94.9
Saldanha Bay	2.5	Ingwe	94.6
Nama Khoi	2.6	Umzimkhulu	93.7
Cape Winelands	3.9	Intsika Yethu	93.3
Cape Agulhas	6.2	Umhlabuyalingana	93.1
Stellenbosch	6.6	Msinga	92.8
Matzikama	7.4	Emalahleni	92.4
Swartland	7.8	Mbhashe	92.3
Census 2011			
Emfuleni	10.8	Ntabankulu	94.1
City of Johannesburg	11.7	Umhlabuyali	91.2
Nama Khoi	15.2	Umzimvubu	89.7
The Msunduz	18.0	Ingwe	88.5
Kgatelopele	18.2	Mbizana	87.0
Mogale City	18.5	Mbhashe	86.4
Saldanha Bay	19.0	Elundini	86.2
eThekwini	20.2	Matatiele	86.2
Richtersveld	21.1	Msinga	85.9
City of Tshwane	21.3	Nkandla	85.8
Community Survey 2016			
Bergrivier	1.0	Umhlabuyalingana	83.4
Nama Khoi	1.5	Greater Giyani	71.1
Swartland	1.9	Ntabankulu	68.5
Matzikama	2.1	New	67.7
Richtersveld	2.6	Msinga	67.6
City of Cape Town	2.7	Ubuhlebezwe	65.7
Langeberg	2.8	Mbizana	64.2
Cape Agulhas	3.3	Nkandla	62.8
Overstrand	3.4	Maruleng	62.3
Makana	3.4	Blouberg	62.3

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

Table A.10: The 10 least and 10 most deprived municipalities in indicator [G], 2001-2016

10 least deprived municipalities		10 most deprived provinces	
Municipality	**% of deprived population**	**Municipality**	**% of deprived population**
Census 2001			
Richtersveld	4.9	Port St Johns	96.1
NamaKhoi	7.0	Ntabankulu	96.1
Cape Agulhas	7.9	Mbhashe	94.6
Saldanha Bay	9.0	Engcobo	94.2
West Coast	9.2	Ingwe	94.0
Breede Valley	9.2	Qaukeni	94.0
Swartland	11.5	Nkandla	93.9
Stellenbosch	12.1	Elundini	93.8
Bergrivier	12.5	Intsika Yethu	92.9
Swellendam	13.3	Msinga	92.4
Community Survey 2007			
Overberg	0.0	Umkhanyakude	92.4
Ehlanzeni	0.0	Ingwe	92.3
West Coast	0.8	Port St Johns	90.5
Bergrivier	1.1	Umhlabuyalingana	89.2
Richtersveld	1.2	Mbhashe	89.2
Saldanha Bay	1.4	Msinga	88.5
Stellenbosch	1.6	Ntabankulu	86.9
Nama Khoi	2.0	Mutale	86.9
Cederberg	2.4	Mhlontlo	86.6
Camdeboo	2.6	Qaukeni	85.5
Census 2011			
Saldanha Bay	1.5	Umhlabuyali	87.0
Richtersveld	1.6	Mutale	85.2
Swartland	2.5	Ntabankulu	84.4
Nama Khoi	2.7	Msinga	83.2
City of Cape Town	3.4	Ingwe	81.4
Cape Agulhas	3.6	Greater Giyani	80.6
Drakenstein	3.6	Nkandla	78.2
Bergrivier	4.0	Maruleng	77.6
Stellenbosch	4.5	Jozini	75.8
Langeberg	4.7	Greater Letaba	74.2
Community Survey 2016			
Bitou	0.6	Umhlabuyalingana	78.2
Swartland	0.8	New	72.7
Bergivier	1.2	Greater Giyani	72.2
City of Cape Town	1.2	Maruleng	65.4
Richtersveld	1.3	Ntabankulu	61.4
Cape Agulhas	1.6	Msinga	59.9
Makana	2.1	Jozini	59.7
Matzikama	2.1	Blouberg	59.0
George	2.1	Greater Letaba	58.4
Overstand	2.2	Mbizana	58.1

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

Table A.11: The 10 least and 10 most deprived municipalities in indicator [H], 2001-2016

10 least deprived municipalities		10 most deprived provinces	
Municipality	**% of deprived population**	**Municipality**	**% of deprived population**
Census 2001			
Beaufort West	4.5	Maphumlo	99.2
Richtersveld	5.3	Mbizana	97.9
Cederberg	6.0	Mtabankulu	97.9
Saldanha bay	6.1	Nyandeni	97.5
Gamagara	6.3	Engcobo	97.4
Prince Albert	6.3	Mbhashe	96.6
Siyathemba	6.4	Port St Johns	96.6
Central Karoo	7.2	Msinga	96.4
Ikwezi	7.4	Qaukeni	96.3
Langeberg	7.8	Mhlontlo	95.6
Community Survey 2007			
Overberg	0.0	Msinga	98.1
Ehlanzeni	0.0	Moshaweng	97.8
Camdeboo	1.4	Ezingoleni	97.6
Gamagara	1.8	Qaukeni	97.6
Nama Khoi	1.9	Mbizana	97.5
Saldanha bay	2.0	Port St Johns	97.0
Khâi-Ma	2.2	Imbabazane	96.1
Swartland	2.2	Mbhashe	96.0
Bergrivier	2.9	Ratlou	95.1
Kareeberg	3.2	Mhlontlo	94.2
Census 2011			
Saldanha Bay	1.6	Ngquza Hill	95.6
Lekwa-Teema	1.7	Nyandeni	95.4
Bergrivier	1.7	Port St Johns	95.4
Kgatelopele	2.0	Mbizana	95.3
Camdeboo	2.2	Mbhashe	95.0
Richtersveld	2.3	Engcobo	94.7
Hantam	2.4	Ntabankulu	94.0
Beaufort West	2.4	Intsika Yeth	92.7
Swartland	2.4	Ezingoleni	89.8
Renosterberg	2.6	Mhlontlo	89.6
Community Survey 2016			
Matzikama	1.7	Mbizana	97.0
Nama Khoi	2.1	Ngquza Hill	96.8
Emthanjeni	2.6	Nyandeni	96.1
Prince Albert	2.6	Mbhashe	95.8
Bergrivier	2.6	Port St Johns	94.4
Kh+ói-Ma	2.7	Ntabankulu	93.7
Beaufort West	3.5	Ratlou	93.2
Govan Mbeki	3.5	Intsika Yethu	92.8
George	3.5	Joe Morolong	92.1
Emfuleni	3.7	Engcobo	91.9

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

Table A.12: The 10 least and 10 most deprived municipalities in indicator [I], 2001-2016

10 least deprived municipalities		10 most deprived provinces	
Municipality	**% of deprived population**	**Municipality**	**% of deprived population**
Census 2001			
Saldanha Bay	3.0	Aganang	99.3
Kruger Park	5.2	Moshaweng	99.2
Beaufort West	8.5	Setla-Kgobi	98.9
Mossel Bay	9.4	Moretele	98.9
Drakenstein	10.2	IntsikaYeth	98.7
Overtrand	10.3	Makhudutham	98.4
City of Cape Town	10.5	Mbizana	98.2
Gamagara	10.8	Mhlontlo	98.2
Breede Valley	11.6	Ntabankulu	98.1
Cape Agulhas	12.2	Umzimvubu	98.0
Community Survey 2007			
Overberg	0.0	Intsika Yethu	99.6
Beaufort West	2.4	Mbizana	99.5
Overstrand	2.5	Imbabazane	99.4
Saldanha Bay	2.7	Ntabankulu	99.3
Bergrivier	2.8	Port St Johns	99.3
Camdeboo	3.0	Umzimkhulu	99.2
Ehlanzeni	3.4	Mhlontlo	99.1
Stellenbosch	3.7	Umzumbe	99.1
Mossel Bay	3.8	Nongoma	98.9
Cape Agulhas	4.7	Blouberg	98.9
Census 2011			
Saldanha Bay	3.0	Mbizana	98.5
Overstrand	5.6	Ngquza Hill	98.5
Beaufort West	5.8	Imbabazane	98.4
Kgatelopele	5.8	Aganang	98.3
City of Matlosana	6.4	Port St Johns	98.3
Witzenberg	6.6	Nyandeni	98.2
Drakenstein	7.0	Fetakgomo	98.1
Lekwa-Teema	7.2	Intsika Yethu	97.9
Swartland	7.6	Ratlou	97.8
City of Cape Town	8.0	Ntabankulu	97.7
Community Survey 2016			
Overstrand	1.0	Mbizana	99.4
Bergrivier	1.5	Ngquza Hill	99.1
Hessequa	1.9	Msinga	99.1
Beaufort West	2.1	Intsika Yethu	98.9
Stellenbosch	2.1	Nyandeni	98.8
Drakenstein	2.2	Port St Johns	98.8
Witzenberg	2.7	Ntabankulu	98.8
Swellendam	3.1	Maphumulo	98.7
Laingsburg	3.4	Ratlou	98.3
Swartland	3.6	Nongoma	98.3

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

Table A.13: The 10 least and 10 most deprived municipalities in indicator [J], 2001-2016

10 least deprived municipalities		10 most deprived provinces	
Municipality	**% of deprived population**	**Municipality**	**% of deprived population**
Census 2001			
Kannaland	1.5	Ntabankulu	89.0
Beaufort West	1.7	Port St Johns	86.1
Inxuba Yeth	1.9	Nkandla	84.2
South Cape	2.3	Msinga	83.7
Karoo Hoogland	3.1	Nyandeni	83.6
Laingsburg	3.7	Mbhashe	83.1
Ikwezi	4.0	Ingwe	83.1
Aberdeen Plain	4.3	Engcobo	82.4
Kareeberg	4.5	Umzimkhulu	81.5
Richtersveld	4.6	Ubuhlebezwe	80.1
Community Survey 2007			
Overberg	0.0	Ingwe	92.0
Ehlanzeni	0.0	Impendle	90.7
Central Karoo	0.3	Ntabankulu	88.8
Inxuba Yethemba	0.6	Port St Johns	87.8
Baviaans	0.9	Mbhashe	83.9
Karoo Hoogland	1.9	Qaukeni	83.7
Beaufort West	2.6	Umzimkhulu	80.7
Prince Albert	3.1	Umzimvubu	79.4
Laingsburg	3.2	Mhlontlo	78.9
Cederberg	3.5	Nkandla	78.6
Census 2011			
Beaufort West	1.4	Ntabankulu	78.7
Baviaans	2.0	Ingwe	77.8
Inxuba Yeth	2.0	Port St Johns	76.8
Kamiesberg	2.2	Ubuhlebezwe	74.9
Inkwanca	2.5	Mbhashe	74.4
Maruleng	2.7	Engcobo	73.4
Ba-Phalaborwa	2.7	Nkandla	73.3
Aganang	2.8	Nyandeni	70.4
Emthanjeni	2.9	Intsika Yethu	70.0
Hantam	2.9	Umzimkhulu	69.9
Community Survey 2016			
Beaufort West	0.3	Engcobo	86.1
Karoo Hoogland	0.8	Nkandla	86.0
Laingsburg	0.8	Umzimkhulu	76.3
Richtersveld	1.3	Msinga	73.8
Inxuba Yethemba	1.4	Intsika Yethu	73.3
Blue Crane Route	2.1	Ntabankulu	69.9
Kannaland	2.3	Ubuhlebezwe	69.4
Ba-Phalaborwa	2.6	Dr Nkosazana Dlamini Zuma	67.8
Molemole	3.0	Nongoma	66.6
Kamiesberg	3.4	Nyandeni	64.8

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

Table A.14: The 10 least and 10 most deprived municipalities in indicator [K], 2001-2016

10 least deprived municipalities		10 most deprived provinces	
Municipality	**% of deprived population**	**Municipality**	**% of deprived population**
Census 2001			
Cape Agulhas	13.8	Port St Johns	84.5
City of Cape Town	14.5	Mkhomazi Wilderness Area	83.3
Stellenbosch	14.5	Mbhashe	82.5
Saldanha Bay	14.7	Engcobo	81.0
Mossel Bay	15.9	Msinga	80.0
City of Tshwane	17.4	Ntabankulu	79.9
Richtersveld	17.5	Nkandla	79.8
Drakenstein	18.4	Elundini	77.8
City of Johnnesburg	19.2	Nyandeni	77.3
Overstrand	19.5	Lowveld	76.6
Community Survey 2007			
Overberg	0.0	Engcobo	56.7
Ehlanzeni	0.0	Ntabankulu	55.4
Saldanha Bay	3.2	Nkandla	54.9
Cape Agulhas	4.3	Mbhashe	53.0
Stellenbosch	4.9	Ndwedwe	51.6
Dr JS Moroka	5.9	Port St Johns	50.3
Steve Tshwete	6.7	Mhlontlo	49.9
Potchefstroom	6.7	Mthonjaneni	49.5
City of Cape Town	6.8	Qaukeni	48.6
Emakhazeni	7.0	Vulamehlo	46.6
Census 2011			
Saldanha Bay	3.9	Ntabankulu	44.3
Richtersveld	4.2	Port St Johns	37.0
Dr JS Morok	4.9	Mbhashe	32.2
Thembisile	5.1	Msinga	34.6
City of Cape Town	5.3	Vulamehlo	34.3
Emfuleni	5.4	Engcobo	33.3
Mossel Bay	5.7	Ndwedwe	32.2
Hessequa	5.9	Umzumbe	32.0
Cape Agulhas	5.9	Maphumulo	32.0
Steve Tshwe	6.0	Mbizana	32.0
Community Survey 2016			
Hessequa	1.3	Ntabankulu	40.9
uMhlathuze	2.9	Elundini	30.1
Richtersveld	2.9	Mbizana	27.3
Cape Agulhas	2.9	Msinga	27.2
Bushbuckridge	3.0	Umhlabuyalingana	26.6
Moretele	3.2	Ndwedwe	26.3
City of Cape Town	3.4	Umzimvubu	26.0
Drakenstein	3.5	Ubuhlebezwe	26.0
Nama Khoi	3.5	Mbhashe	25.0
City of Mbombela	3.6	Port St Johns	24.8

Source: Own calculations using the Census 2001, CS 2007, Census 2011 and CS 2016 data.

Table A.15: The 10 least and 10 most deprived municipalities in indicator [L], 2001-2011

10 least deprived municipalities		10 most deprived municipalities	
Municipality	**% of deprived population**	**Municipality**	**% of deprived population**
Census 2001			
Breede River	0.0	Greater Kok	16.0
Namaqualand	0.0	MooiMpofana	14.7
Benede Oranje	0.0	Umtshezi	13.1
Mkhomazi Wilderness Area	0.0	Nkonkobe	12.6
Lowveld	0.0	Westonaria	12.6
Diamondfields	0.4	Inkwanca	12.6
Bo Karoo	0.5	St Lucia Park	12.3
Aberdeen Plain	0.5	Renosterberg	11.9
Bergrivier	0.5	Matjhabeng	11.9
Swartland	0.8	Buffalo City	11.8
Community Survey 2007			
Cape Winelands	0.0	Tsolwana	12.0
Overberg	0.0	Nkonkobe	11.7
Namakwa	0.0	Seme	11.5
Pixley ka Seme	0.0	Kareeberg	11.4
Siyanda	0.0	Masilonyana	10.9
Frances Baard	0.0	Ikwezi	10.8
Ehlanzeni	0.0	Tswelopele	10.4
Swellendam	0.2	Makana	10.3
Karoo Hoogland	0.5	Nxuba	10.1
Port St Johns	0.5	Dipaleseng	10.1
Census 2011			
Witzenberg	1.4	Nxuba	10.5
Swellendam	1.5	Westonaria	9.9
Bergrivier	1.5	Bitou	9.6
Hessequa	1.7	Greater Tubatse	9.4
Kai !Garib	1.8	Nkonkobe	8.9
Karoo Hoogland	1.8	Dipaleseng	8.8
Laingsburg	1.8	Fetakgomo	8.7
Langeberg	1.9	Ngqushwa	8.6
Nkandla	2.3	Makhudutham	8.5
Cape Agulhas	2.3	Matjhabeng	8.5

Source: Own calculations using the Census 2001, CS 2007 and Census 2011 data.

Note: CS 2016 data on this indicator is not yet released by Stats SA.