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ABSTRACT

This study uses the Census 2001 and 2011 as well as Community Survey 2007 and 2016 data to derive a multidimensional poverty index (MPI) in South Africa for each year, before assessing the changes in non-money-metric, multidimensional poverty over time. Both the incidence and intensity of multidimensional poverty decreased continuously, and these declines were more rapid than that of money-metric poverty. The decrease of multidimensional poverty between 2001 and 2016 was most rapid for female Africans residing in rural areas in Eastern Cape and KwaZulu-Natal provinces. Multidimensional poverty was most serious in numerous district councils (DCs) in these two provinces, despite the fact that poverty decline was also most rapid in these DCs. The results of the MPI decomposition indicated that Africans contributed more than 95% to multidimensional poverty, while unemployment, years of schooling and disability were the three indicators contributing most to poverty.

Keywords: Multidimensional poverty, Multidimensional poverty index, South Africa

JEL codes: J30, J32

1. Introduction

Since the advent of democracy, one of the key objectives of the South African government has been the reduction of poverty, disparities and imbalances stemming from the Apartheid regime. Several large-scale economic programs were implemented [1], specifically aiming at the achievement of various economic goals, such as more rapid economic growth and job creation, improved service delivery, poverty and inequality alleviation. With regard to poverty, it is important to accurately identify the most deprived areas and effectively target these areas by implementing appropriate poverty-reduction strategies. Hence, numerous approaches have come up to derive the extent of poverty and profile of the poor.

Poverty can be measured objectively or subjectively. For the latter, an individual assesses whether or not they feel poor relative to a reference group (Ravallion, 1992 & 1998; Statistics South Africa (StatsSA), 2012:8), and this may or may not involve a poverty line. For example, a person declares the income level he/she considers to be minimal to make ends meet (this amount may differ amongst the respondents), and if his/her income is below this self-rated poverty line, he/she is identified as poor. Alternatively, the person self-assesses whether his/her income or overall welfare is below the average level of the people living in the same area. A person could also declare on a scale of, for instance, zero (very dissatisfied) to 10 (very satisfied), how he/she feels about his/her life as a whole, and the person is distinguished as poor if his/her life satisfaction level is below a particular level, such as the midpoint of five.[2]

Objective money-metric poverty can be measured with either absolute or relative approach. The absolute approach entails the use of a poverty line, which represents the required income level to purchase a basket of essential items for survival (cost of basic needs method), or the level at which a person's food energy intake is enough to meet a predetermined food energy requirements like 2 100 calories per day (energy intake method) (Ravallion, 1998:10; Haughton & Khandker, 2009:49-50). Relative money-metric poverty involves the identification of the poorest (e.g. 20% or 40%) segment of the population using a relative

[1] These programmes include the Reconstruction and Development Program (RDP), Growth, Employment and Redistribution (GEAR), Accelerated and Shared Growth Initiative of South Africa (AsgiSA), and the more recent New Growth Path (NGP) and National Development Plan (NDP).

[2] For more detailed discussion of subjective poverty measures, refer to Govendor et al., 2006 and Jansen et al., 2015.

poverty line, or setting a poverty line at a certain percentage of the mean or median per capita income (Govendor et al., 2006:9).

In South Africa, there is an abundance of empirical studies on money-metric poverty since the early 1990s using numerous datasets, ranging from the Income and Expenditure Surveys (Simkins, 2004; Hoogeveen and Özler, 2006; Yu, 2008), Census and Community Surveys (CSs) (Leibbrandt et al., 2006; Yu, 2009) and All Media Products Survey (AMPS) (Van der Berg et al., 2005 & 2007), to National Income Dynamics Study (NIDS) (Yu, 2013), October Household Surveys (OHSs) and General Household Surveys (GHSs) (Posel and Rogan, 2012). In general, these studies found that money-metric poverty increased in the 1990s until 2000, before a downward trend took place.

The money-metric approach, while focusing on the low income or expenditure level when identifying the poor, does not capture "the multiple aspects that constitute poverty" (StatsSA, 2014:2), as poverty involves numerous non-money-metric dimensions, such as health and educational deprivation, physical and social isolation, lack of asset possession and access to services, feeling of vulnerability, powerlessness and helplessness (Woolard and Leibbrandt, 1999:3; World Bank, 2000:18; Philip and Rayhan, 2004:1). Furthermore, numerous factors influence the reliability and comparability of money-metric poverty estimates, such as recall bias (respondents may not remember income earned long time ago), telescoping (respondents include income or consumption events before the reference period), whether income is captured in exact amounts or intervals, the number of intervals and width of each interval, and the presence of a high proportion of households with unspecified or zero income.[3]

Given these drawbacks of the money-metric approach and the multidimensional nature of poverty, South African studies on non-money-metric, multidimensional poverty have increasingly emerged in the 2000s and early 2010s by using statistical techniques (such as principal components analysis (PCA), multiple correspondence analysis (MCA), factor analysis (FA), as well as totally fuzzy and relative (TFR) approach) to derive a non-income welfare index. Nonetheless, one serious shortcoming of these studies is that the analysis is

[3] Refer to Yu (2016) for a more detailed discussion.

mainly confined to two groups of non-money-metric indicators, namely access to public services and ownership of private assets.

In recent years, the multidimensional poverty index (MPI) approach introduced by Alkire and Foster (2011a) has evolved in international literature. This approach "assesses the simultaneous or joint deprivations poor people or households experience in a set of indicators" (Alkire and Foster, 2011a:17). The MPI comprises two measures, namely poverty incidence and poverty intensity; the former means the percentage of population classified as multidimensionally poor (poverty headcount ratio), while the latter represents the proportion of average deprivation experienced by the poor (Santos and Alkire, 2011:34). An added advantage of this approach is that the index could be decomposed by sub-groups (such as gender and race) and indicators, to identify the key sub-groups and indicators that contribute most to deprivation.

The MPI approach is still a relatively new method in South Africa, as indicated by the presence of few studies applying this method to examine poverty. This may be due to the fact that this approach is more data hungry, covering a broader range of non-money-metric indicators. In fact, only one local study (StatsSA, 2014) derived comprehensive MPI poverty trends over time (2001-2011) by creating a South African Multidimensional Poverty Index (SAMPI), but numerous shortcomings are associated with the SAMPI approach on the selection of indicators and deprivation cut-off threshold of each indicator.

Therefore, this study aims to address these shortcomings to derive an improved, revised version of the SAMPI, before exploring the levels and trends of MPI poverty in South Africa in 2001-2016. MPI poverty is examined by gender, race and geographical units, with specific focus on what happened by province and district councils (DC). A wide range of non-money-metric indicators are considered when deriving the multidimensional deprivation score instead of restricting to private asset ownership and access to public services. The empirical analysis allows for the establishment of the main contributors of poverty in the South African context and a comparison to be made between multidimensional poverty and money-metric poverty. This approach can be viewed as a tool to identify the most vulnerable people, leading to the formation of better poverty-reduction policy as well as better allocation of resources to alleviate poverty.

2. Literature review

For the recent local empirical studies examining multidimensional, non-money-metric poverty, some adopted the methods mentioned in Section 1, namely FA (Bhorat, Naidoo and Van der Westhuizen, 2006; Bhorat, Van der Westhuizen and Goga, 2007; Bhorat and Van der Westhuizen, 2013; Bhorat, Van der Westhuizen and Yu, 2014), MCA (Adams et al., 2015; Ntsalaze and Ikhide, 2016), PCA (Nieftagodien and Van der Berg, 2007; Schiel, 2012; Bhorat, Stanwix and Yu, 2015) and TFR approach (Ngwane et al., 2001; Qizilbash, 2002; Burger et al., 2017). A composite welfare index was constructed by considering household access to public services (e.g. fuel source, water source, sanitation facility) and ownership of private assets (e.g. television, fridge, telephone). These studies found a downward trend in non-money-metric poverty since 1993; this finding is not surprising, given the government's ongoing effort to improve the provision of free basic services since the economic transition (Bhorat and Van der Westhuizen 2013:1). Also, significant backlogs at the bottom income deciles still took place, especially for African- and female-headed households.

Some studies adopted methods other than the abovementioned statistical methods and included additional non-money-metric indicators to examine multidimensional poverty more comprehensively. First, six studies used the MPI method. Frame et al. (2016) focused on youth 15-24 years while Omotoso and Koch concentrated on children 0-17 years. Rogan (2016) examined gendered poverty while Mushongera et al. (2017) focused on Gauteng municipalities. Finn et al. (2013) is a general study examining MPI poverty by race, province and area type using the 1993 PSLSD and 2010/2011 NIDS data. StatsSA (2014) is the most inclusive MPI poverty study by province and municipality using the 2001 and 2011 census data. In general, these studies found that MPI poverty declined.

Few studies adopted alternative approaches to examine non-money-metric multidimensional poverty. Hirschowitz (2000), using an interim scoring approach[4], derived the household infrastructure and household circumstance indices to examine poverty using Census 1996 data, and found that Northern Cape and Eastern Cape were the least and most deprived provinces respectively. StatsSA (2013) adopted the Bristol method[5] to derive the severe poverty and less severe poverty indices with the 2008/2009 Living Conditions Survey data, and found that

[4] For detailed explanation of this approach, refer to Hirschowitz, 2000:76-79.
[5] For more information on the Bristol method, refer to Gordon et al., 2003.

Western Cape was least deprived while the opposite took place in Eastern Cape and Limpopo. The 2017 StatsSA study, analysing the 2016 CS data, adopted the Van der Walt and Haarhoff composite index approach[6] to derive infrastructure quality index and reliability index to examine poverty by municipality.

Noble et al. (2006), using the Census 2001 data, derived five indices (one from each deprivation domain: income, employment, education, health and living environment) by province, before aggregating these indices (20% equal weight to each index) into a provincial index of multiple deprivation (PIMD) with the aid of standardisation and exponential distribution (refer to Noble et al. (2006:29-31) for detailed explanation) to identify the most deprived municipalities. The later studies by Noble et al. (2010) as well as Noble and Wright (2013), using the same data, adopted a similar approach to derive the index of multiple deprivation, but the former study focused on the Eastern Cape while the latter study examined the former homeland areas.

Noble et al. (2006), Noble et al. (2010), Noble & Wright (2013), Burger et al. (2017), Mushongera et al. (2017) and StatsSA (2014 & 2017) are the rare ones that examined multidimensional poverty by smaller geographical areas. Of these studies, StatsSA (2014) and Burger et al. (2017) derived multidimensional poverty trends over time. Nonetheless, there are drawbacks to these two studies: it is not possible to decompose the index to identify the sub-groups and indicators that contribute most to deprivation with the TFR approach adopted in Burger et al. (2017)[7]; for StatsSA (2014), there is big room for improvement on the choice of the indicators and deprivation cut-off point of some indicators (see Section 3).

None of the existing local studies examined multidimensional poverty trends by DCs and including the most recently available CS 2016 data. Finally, not all of these studies included labour market activities as an indicator for deriving the multidimensional poverty index. As the persistently high unemployment rate (26.6% in the fourth quarter of 2018) is one of the major causes of poverty, it is imperative to include this dimension.

3. Methodology and data

3.1 Methodology

[6] Van der Walt and Haarhoff (2004) provide a thorough explanation of this composite index approach.
[7] This is also the main drawback of the other statistical approaches mentioned in Section 2.

The global MPI approach was introduced in 2011 by Alkire and Foster for the purpose of measuring acute poverty across countries. This approach is relatively simpler compared to other highly statistical approaches and highly flexible in terms of the inclusion of dimensions and indicators. The global MPI comprises three dimensions: health, education and living standard. Each dimension is broken down into m indicators in total: health dimension consists of nutrition and child morality, education dimension accounts for years of schooling and school attendance, and living standard dimension includes cooking fuel, water, sanitation, electricity, floor material and asset ownership (Santos and Alkire, 2011:5-6).

A two-step, 'dual cut-off' approach is involved to derive the MPI index (Alkire and Foster, 2011b: 296). Linked to each indicator is a certain minimum level of satisfaction which is referred to as the deprivation cut-off point, denoted as z_i. A person i is deprived if his/her achievement in this indicator, x_i, is below the cut-off, that is, if $x_i < z_i$, the dummy variable I_i equals 1; if $x_i \geq z_i$, I_i equals zero. Next, the indicators' weights are chosen, and these weights sum to 1 ($\sum_{i=1}^{m} w_i = 1$). Each dimension carries an equal weight of one-third, and an equal weighing scheme is also applied to the indicators within each dimension. The deprivation score c_i is calculated as: $\sum_{i=1}^{m} w_i I_i$. This score ranges between zero and one.

Next, a specific cut-off point, k, represents the share of weighted deprivations a person must have to be considered as multidimensionally poor. Somebody is considered poor if $c_i \geq k$. In the MPI, k = 1/3, meaning the person's deprivation must be at least a third of the weighted indicators to be identified as MPI poor. Furthermore, $c_i(k)$, the censored deprivation score, is derived as follows: if $c_i \geq k$, $c_i(k) = c_i$; if $c_i < k$, $c_i(k) = 0$ (Santos and Alkire, 2011:11).

The MPI reflects both the proportion of the population that is multidimensionally poor (H, the poverty headcount ratio) and the average proportion of weighted deprivation the person experiences (A, the intensity of poverty). In equation terms, H = q/n, where q and n represent the number of multidimensionally poor and the total population respectively; $A = \frac{\sum_{i=1}^{n} c_{i\,(k)}}{q}$, which indicates the fraction of the m indicators in which the multidimensionally poor individual is deprived. The MPI is calculated as the product of H and A. Assuming two areas with the same H, the area with higher A is associated with a higher MPI. That is, if the poor

are deprived in an additional dimension, MPI would increase even though H is unchanged. This is one of key strengths of MPI compared to other statistical approaches.

The MPI index can be decomposed by population sub-groups or indicators. The country's MPI equals $\sum_{i=1}^{j} \frac{n_i}{n} \times MPI_i$, where j represents the total number of sub-groups (for example, j = 4 for race and j = 9 for province), $\frac{n_i}{n}$ is the population share of the i-th sub-group, and MPI_i is the MPI of this sub-group. The contribution of the i-th sub-group to the overall MPI is derived as $\frac{\frac{n_i}{n} \times MPI_i}{MPI_{country}}$.[8] The MPI of the country could also be decomposed as: $MPI_{country} = \sum_{i=1}^{m} w_i \times CH_i$, where CH_i is the censored headcount ratio of the i-th indicator.[9] The contribution of the i-th indicator to the overall MPI is denoted as $\frac{w_i \times CH_i}{MPI_{country}}$.

There were already numerous adaptations made to the global MPI in terms of the indicators chosen and respective cut-off points of the indicators to develop the StatsSA SAMPI, but this study makes further adaptations to construct an improved version of the SAMPI. These adaptations are influenced by the Millennium Development Goals (MDGs) (United Nations, 2008), the South African poverty context, the commonly chosen indicators in recent empirical studies, and the availability of data in the four datasets used for the study.

Table 1 shows that in the education dimension, as in the global MPI and StatsSA approaches, years of schooling and school attendance are the two indicators. Nonetheless, for the former indicator, the years of completed education threshold is changed from five to seven years for this study. Illiteracy usually refers to an educational level representing less than seven years of formal schooling (Barker, 2008:223), and this is more applicable to the South African context as it makes reference to all individuals who did not complete Grade 7.[10]

[INSERT TABLE 1 ABOUT HERE]

[8] 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, for example, in case females account for only 40% of the total population but contribute 90% to multidimensional poverty of the country.

[9] This means someone is only included as part of the poor in an indicator if both of these two conditions are met: $x_i < z_i$ and $c_i \geq 1/3$.

[10] Noble et al. (2006), Noble et al. (2010), Noble and Wright (2012) also used Grade 7 as the threshold.

In the global MPI, the health dimension includes child mortality and nutrition, with the latter indicator involving the Body Mass Index (BMI). Unfortunately, both Census and CS did not capture information on height and weight, and asked nothing on malnutrition, hunger or food security. While StatsSA (2014) included child mortality as the only indicator of the health dimension, disability is introduced in this study as the second indicator[11]. Disability is included because it is associated with lower living standard and a greater likelihood of marginalisation and discrimination, through its adverse impact on human capital formation opportunities in childhood, employment opportunities and productivity in adulthood, and access to appropriate transportation and social participation (Schultz & Tandel, 1997; Elwan, 1999; World Health Organisation and World Bank, 2011; Mitra et al., 2013).

The deprivation cut-off of this indicator is the presence of at least one disabled household member. In each dataset, the disabled is defined as follows:

- 2001 and 2007: the respondent was asked in 2001 if he/she suffered serious sight, hearing, communication, physical, intellectual and emotional disabilities that prevent his/her full participation in life activities. The same questions were asked in 2007 except the word "serious" was removed. If the respondent's answer is "yes" to at least one type of disability, he/she is defined as disabled.
- 2011 and 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. If the respondent's answer is either (C) or (D) to at least one activity, he/she is identified as disabled.

For the living standard dimension, few alternations are made to the thresholds of each indicator. As in StatsSA (2014), stricter cut-off points are used for water (no piped water in the dwelling or in stand) and sanitation (no flush toilet), compared to the original cut-off points of the global MPI, to be in line with the longer-term goals of the RDP. In contrast, while StatsSA (2014) included all three fuel indicators (cooking, heating and lighting), we revert back to the global MPI methodology by only including the cooking fuel indicator, to avoid the unnecessary increase of overall importance of fuel in the weighting.

[11] Disability was also included in recent local (Frame et al., 2016; Omotoso and Koch 2017) and international (e.g. Suppa, 2015; Hanandita and Tampubolon, 2016; Martinez Jr and Perales, 2017) studies.

The floor type and electricity access (only captured in 2011 and 2016 respectively) indicators are excluded from the MPI approach, but are replaced by dwelling type, overcrowding and refuse removal frequency indicators. The respective cut-off points for these indicators are as follows: residing at formal dwellings (same as StatsSA (2014)); more than two persons per room (as adopted in Mushongera et al. (2017), Omotoso and Koch (2017)); less than once a week or no concrete refuse removal system (same as Adams et al. (2015)). Finally, asset ownership only takes television, landline telephone, cellular telephone, fridge, computer and radio into consideration as they are the only asset variables asked across all four datasets.

Economic activity is the fourth dimension as in some local MPI studies (Statistics SA, 2014; Frame et al., 2016; Mushongera et al., 2017; Omotoso and Koch, 2017), with unemployment being the indicator: if all working-age members of the household are unemployed under the narrow definition, this household is deprived.

3.2 Data

Four StatsSA datasets are used: 10% sample of Census 2001 and 2011, CS 2007 and 2016. These data provide ample information on demographics, educational attainment, economic activities, asset ownership, access to household goods and services, and income in bands. Nonetheless, some data limitations exist; first, it is impossible to include Census 1996 data as only landline telephone and cellular telephone information was captured as far as private asset ownership is concerned (Table A.1). The second issue relates to the matching of the various DCs across the datasets, as some DCs were separated while others were integrated over the years. However, this problem can be solved, as shown in Table A.2. The second limitation relates to the absence of the area type variable in CS 2007.

One serious drawback is the non-availability of the 2016 CS data on labour market activities, even though the information was captured. Also, the question on the number of rooms in the dwelling was not asked in 2016. Hence, the MPI is conducted twice (see Table 1): [I]: including all 12 indicators to conduct the analysis for 2001, 2007 and 2011; [II]: including the first 10 indicators to conduct the analysis for all four years. Finally, information on income, despite being asked in CS 2016, was not released by StatsSA. Hence, comparison between MPI poverty and money-metric poverty is not possible for 2016.

4. Empirical findings

4.1 Extent of deprivation per indicator

Figure 1 illustrates that there was generally a continuous downward trend in the proportion of deprived population for all 12 indicators, except disability: its proportion went down in 2007, increased in 2011 before decreasing again in 2016. This unusual trend may be attributed to the inconsistent questionnaire design. In 2016, there was still as high as 39.5% and 41.3% of the population not having their refuse removed at least once a week and with no access to a flush toilet respectively. Only less than 1% of the population was deprived in the child mortality indicator in 2016, while the deprivation proportion was as low as 2.5% and 5.4% in the school attendance and years of schooling indicators.

[INSERT FIGURE 1 ABOUT HERE]

Tables A.3 and A.4 indicate that greater deprivation was experienced by individuals from female-headed households. Also, deprivation per indicator was considerably higher for rural residents. The deprivation proportions were the highest for the Africans but lowest for the whites. Furthermore, Gauteng and the Western Cape were the least deprived provinces while the Eastern Cape, Limpopo and the North West were most deprived. Finally, the decline of the deprivation proportions between 2001 and 2016 was greater for Africans, females, rural residents and those staying in the abovementioned three provinces.

Tables A.5 and A.6 examine the proportion of the deprived population in each indicator by DC in 2001 and 2016 respectively. These proportions were high in the Eastern Cape and KwaZulu-Natal DCs (e.g. Alfred Nzo, Harry Gwala, OR Tambo and uMzinyathi) but low in the Western Cape and Gauteng DCs (e.g. Cape Winelands, City of Cape Town, City of Johannesburg and West Coast).

4.2 MPI by sub-groups

The MPI estimates by gender, race, area type and province are shown in Tables 2 and A.7. For the overall population, a downward trend of MPI took place under both weighting schemes, with the decline being relatively more rapid between 2001 and 2007. Also, poverty headcount estimates decreased more rapidly compared to poverty intensity estimates.

[INSERT TABLE 2 ABOUT HERE]

Table A.7 shows that MPI poverty was more severe amongst those coming from female-headed households, but the gap between the male MPI and female MPI narrowed over the years. MPI was the highest for the Africans, followed by Coloureds, Indians and whites. The decline of MPI was most rapid for the Africans while the white MPI stagnated. MPI was higher for rural residents as expected, even though a more drastic reduction of MPI poverty also occurred to them. Table 2 indicates that a downward trend of MPI poverty took place across all provinces, with Western Cape and Gauteng boasting the lowest MPI estimates while the Eastern Cape, KwaZulu-Natal and Limpopo had the highest estimates.

Comparing Tables A.8 and A.9, despite minor changes in the MPI ranking of the DCs before and after including the labour dimension, Cape Winelands, City of Cape Town, City of Johannesburg, Overberg and West Coast are associated with the lowest MPIs. In contrast, Alfred Nzo, Harry Gwala, OR Tambo, uMkhanyakude and uMzinyathi are amongst the DCs with the highest MPIs. Table 3 shows that the DCs with the highest MPIs are also the ones enjoying the greatest absolute decline in the estimates under both weighting schemes. These results suggest that resources were allocated to the right DCs to improve the non-income welfare of the poorest of the poor.[12]

[INSERT TABLE 3 ABOUT HERE]

4.3 MPI decomposition

Table A.11 shows that regardless of which weighting scheme was adopted, the relative contribution by individuals from female-headed households was more dominant. Moreover, even though the African population represented about 80% of the population, their MPI contribution to poverty exceeded 95%. The relative contribution of the rural population (about two-thirds) greatly exceeded its population share (40%). Lastly, KwaZulu-Natal and Eastern Cape were the provinces with the first and second largest MPI contributions; they accounted

[12] Table A.10 shows the MPI results by municipality. Since the geographical demarcation of municipalities has changed drastically during the 15-year period, this study rather focuses on MPI poverty by DC.

for about 50% share of MPI poverty (see Figures 2 and 3), despite only accounting for about one-third of the population.

[INSERT FIGURE 2 ABOUT HERE]

[INSERT FIGURE 3 ABOUT HERE]

Table 4 shows that, using weighting scheme [I], unemployment was the indicator contributing most to MPI, followed by years of schooling and disability. Using weighting scheme [II], disability and years of schooling contributed most to MPI poverty, with their respective shares being 24% and 13% in 2016 (Frame et al. (2016:18) and Rogan (2016:999) rather found years of schooling and nutrition as the respective indicator with the greatest contribution to MPI). Sanitation has the third highest contribution to MPI (nearly 13% in 2016), and this is not surprising, given the findings in Figure 1.

[INSERT TABLE 4 ABOUT HERE]

Child mortality contributed least to MPI poverty (as also found by StatsSA (2014:10)). This finding contradicts the results of Finn et al. (2013:10-11) and Rogan (2016:999), but it may be attributed to the way the data was captured: in censuses and CSs, the respondents were asked if any household member passed away in the past year, but in the datasets used by Finn et al. and Rogan, the respondents were asked about the death of household members regardless of when it took place (these two studies used 20 years as threshold).

4.4 MPI poverty versus income poverty

The final part of the empirical analysis compares MPI with income poverty. The absolute lower bound poverty line was derived by StatsSA (2015:11) as R501 per capita per month in 2011 February-March prices (equivalent to R689 in 2016 December prices, using StatsSA's latest CPI series (StatsSA, 2017)), using the IES 2010/2011 consumption basket. The original Census and CS income data is problematic to some extent, with a high proportion of households reporting zero or unspecified income – 37% in 2001, 19% in 2007 and 29% in 2011. Hence,

the income amounts for these households were imputed with the aid of sequential regression multiple imputation (SRMI).[13]

Table 5 shows that MPI poverty prevalence declined across all income quintiles, but the decrease in absolute terms was the greatest in the two poorest quintiles. Money-metric poverty decreased between 2001 and 2007 before a negligent increase took place in 2011. The latter increase was also found by Yu (2016:156).

[INSERT TABLE 5 ABOUT HERE]

Figure 4 shows that the proportion of population defined as both MPI and income poor decreased continuously. Upon examining these "poorest of the poor", they were predominantly female African rural residents in Eastern Cape, KwaZulu-Natal and Limpopo. Finally, the last four columns of Table A.8 compares MPI and income poverty by DC in 2011 and the rankings of the DCs from the two approaches are highly correlated – the Spearman's rank correlation coefficient was 0.9039 (it was 0.9732 in 2001 and 0.8980 in 2007).

[INSERT FIGURE 4 ABOUT HERE]

5. Conclusion

This study examined multidimensional poverty in South Africa in 2001-2016 with the MPI approach. This is the first local MPI study by DC and the first poverty study that included the CS 2016 data for analysis. Numerous adaptions were made to the original global MPI and StatsSA's SAMPI to cater for the South African poverty context to create an improved local version of the MPI. The empirical findings indicated a continuous and significant decline in MPI poverty, with this decline mainly driven by large reductions in the poverty headcount, whereas only a slight decrease of the intensity of poverty took place. Unemployment, years of schooling and disability were the top drivers of MPI poverty.

Regarding the results at DC level, the DCs with the lowest MPIs were concentrated in Western Cape (such as Cape Winelands, City of Cape Town, Overberg and West Coast) whereas the

[13] For detailed explanation of this approach, see Raghunathan et al. (2001), Lacerda et al. (2008) and Yu (2009).

DCs associated with the highest MPIs were mainly located in Eastern Cape (e.g. Alfred Nzo and OR Tambo) and KwaZulu-Natal (Harry Gwala, uMkhanyakude and uMzinyathi). Furthermore, the DCs with the highest MPIs enjoyed the greatest absolute decline in the indices under both weighting schemes, and there was a strong correlation between MPI and income poverty.

Even though the empirical findings generally are in line with what was found by most recent local studies on multidimensional poverty and this study adds to the existing literature by comprehensively examining MPI poverty at DC level with an improved version of SAMPI, there is still room for improving the SAMPI further. First, assuming it is a difficult task to collect information on height and weight, it remains crucial for StatSA (in the next round of Census or CS) to capture as more information on the health dimension so that a wider range of indicators can be included, such as food hunger, food security (e.g. whether the size of the meals was cut, meals were skipped or a smaller variety of foods were eaten) and visit to health institutions (e.g. whether any household members did not consult a health worker despite being ill). Currently such information is captured comprehensively in the GHS.

For the living standard dimension, four separate groups of asset ownership indicators may be included: (1) household operation assets such as fridge, stove and washing machine; (2) communication assets such as telephone, computer and internet connection (this was adopted by the 2017 Mushongera et al. study); (3) transport assets such as motor vehicles and motorcycles; (4) financial assets such as bank account, provident fund and informal savings like stokvel (at present, such information is captured by the GHS).

One may consider adding a second indicator to the economic activity dimension, namely the proportion of working-age population who did not seek work due to illness, disability, lack of available transport and no money to pay for transport as these reasons relate to deprivation. This indicator was included by Noble et al. (2006 & 2010) and Noble & Wright (2013) albeit they only considered the illness and disability reasons.

It was mentioned in Section 1 that poverty is associated with physical and social isolation, as well as feeling of vulnerability, powerlessness and helplessness, yet the global MPI, StatsSA MPI and this study did not consider these dimensions. For the physical isolation indicators,

some were asked for the first time in CS 2016 (e.g. time taken to the place of work, distance of the main water source from the dwelling) but others were never asked in both Census and CS (e.g. distance to the nearest accessible telephone, time needed to get to the health institution the household normally visits). Information on social isolation (such as attendance to health club and religious group, as well as attending parties with families and friends) is thoroughly captured by the AMPS but hardly in the StatsSA datasets. Therefore, StatsSA may consider including a detailed section on isolation so that a fifth dimension can be added to the SAMPI.

Finally, whilst questions on crime experience, perception of safety, and interruption of water and electricity supply were asked for the first time in CS 2016, questions on other indicators relating to vulnerability, powerlessness and helplessness should also be asked (e.g. home security system, community crime watch unit, life cover policy, disease or death of livestock and crop failure), before this dimension can also be added to improve the construction of the SAMPI further.

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Table 1: Dimensions, indicators, deprivation cut-offs and weights for the MPI

Dimension	Indicator	Deprivation cut-off	Weighting scheme [I]	Weighting scheme [II]
Education	[A]: Years of schooling	If no household member aged 15 years or above has completed 7 years of schooling	3.5 / 28	3 / 18
	[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	3 / 18
Health	[C]: Child mortality	If at least one child aged 0 to 4 years has passed away in the past year	3.5 / 28	3 / 18
	[D]: Disability	If at least one household member is disabled	3.5 / 28	3 / 18
Standard of living	[E]: Fuel for cooking	Using paraffin / wood / coal / dung / other / none	1 / 28	1 / 18
	[F]: Water	There is no piped water in the dwelling or on stand	1 / 28	1 / 18
	[G]: Sanitation type	No access to a flush toilet	1 / 28	1 / 18
	[H]: Dwelling type	Living in an informal shack / traditional dwelling / caravan / tent / other	1 / 28	1 / 18
	[I]: Refuse removal frequency	Refuse is removed less than once a week or there is no concrete refuse removal system	1 / 28	1 / 18
	[J]: Asset ownership	Does not own more than one of the following: radio, television, fridge, computer, landline phone, cellular phone	1 / 28	1 / 18
	[K]: Overcrowding	More than two people per room	1 / 28	N/A
Economic activity	[L]: Unemployment	All household members aged 15 to 65 years are unemployed (narrow definition)	7 / 28	N/A

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

Table 2: Multidimensional poverty by province, 2001-2016

	2001			2007			2011			2016		
	H	**A**	**MPI**	**H**	**A**	**MPI**	**H**	**A**	**MPI**	**H**	**A**	**MPI**
Weighting scheme [I]												
Western Cape	0.0437	0.4312	0.0189	0.0171	0.4154	0.0071	0.0227	0.4119	0.0094			
Eastern Cape	0.2992*	0.4223*	0.1263*	0.1486*	0.4021*	0.0598*	0.1407*	0.4009*	0.0564*			
Northern Cape	0.0971*	0.4269*	0.0414*	0.0587*	0.4172*	0.0245*	0.0673*	0.4139*	0.0279*			
Free State	0.1434*	0.4309	0.0618*	0.0520*	0.4117*	0.0214*	0.0517*	0.4155*	0.0215*			
KwaZulu-Natal	0.2225*	0.4257*	0.0947*	0.1053*	0.4013*	0.0422*	0.0938*	0.4012*	0.0376*			
North West	0.1777*	0.4481*	0.0796*	0.0895*	0.4168	0.0373*	0.0839*	0.4169*	0.0350*			
Gauteng	0.0679*	0.4324	0.0294*	0.0329*	0.4197*	0.0138*	0.0326*	0.4179*	0.0136*			
Mpumalanga	0.1574*	0.4246*	0.0668*	0.0694*	0.4089*	0.0284*	0.0629*	0.4113	0.0259*			
Limpopo	0.1911*	0.4276*	0.0817*	0.0875*	0.4114*	0.0360*	0.0876*	0.4151*	0.0364*			
Weighting scheme [II]												
Western Cape	0.0716	0.4082	0.0292	0.0334	0.3795	0.0127	0.0371	0.3808	0.0141	0.0218	0.3683	0.0080
Eastern Cape	0.5007*	0.4569*	0.2288*	0.3315*	0.4222*	0.1399*	0.2940*	0.4248*	0.1249*	0.2103*	0.4096*	0.0861*
Northern Cape	0.1923*	0.4342*	0.0835*	0.1303*	0.4155*	0.0541*	0.1695*	0.4098*	0.0695*	0.1148*	0.3901*	0.0448*
Free State	0.2676*	0.4237*	0.1134*	0.0992*	0.4039*	0.0401*	0.0960*	0.4001*	0.0384*	0.0600*	0.3827*	0.0230*
KwaZulu-Natal	0.3873*	0.4508*	0.1746*	0.2462*	0.4178*	0.1029*	0.2229*	0.4148*	0.0925*	0.1598*	0.4005*	0.0640*
North West	0.3351*	0.4481*	0.1502*	0.1859*	0.4175*	0.0776*	0.2029*	0.4079*	0.0828*	0.1363*	0.3911*	0.0533*
Gauteng	0.0927*	0.4047	0.0375*	0.0576*	0.3880*	0.0223*	0.0470*	0.3895*	0.0183*	0.0435*	0.3782*	0.0165*
Mpumalanga	0.3250*	0.4319*	0.1404*	0.1573*	0.4033*	0.0634*	0.1587*	0.3947*	0.0627*	0.1133*	0.3847*	0.0436*
Limpopo	0.3913*	0.4329*	0.1694*	0.2018*	0.4026*	0.0813*	0.2497*	0.3888*	0.0971*	0.1620*	0.3848*	0.0623*

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

* The value is statistically significant compared to that of the reference province category (Western Cape) at $\alpha = 5\%$.

Table 3: The ten district councils with the greatest absolute decline in MPI

Weighting scheme [I]				
District council	**MPI in 2001**	**MPI in 2011**	**Decrease**	**MPI Rank in 2011**
OR Tambo	0.1931	0.0857	0.1075	50
uMzinyathi	0.1745	0.0726	0.1019	49
uMkhanyakude	0.1575	0.0579	0.0995	45
Zululand	0.1405	0.0451	0.0954	36
Alfred Nzo	0.1706	0.0913	0.0794	51
Joe Gqabi	0.1392	0.0626	0.0766	46
Harry Gwala	0.1434	0.0668	0.0766	48
Chris Hani	0.1379	0.0627	0.0752	47
Dr Ruth Segomotsi Mompati	0.1204	0.0495	0.0709	41
uThukela	0.1181	0.0472	0.0709	39
Weighting scheme [II]				
District council	**MPI in 2001**	**MPI in 2016**	**Decrease**	**MPI Rank in 2016**
OR Tambo	0.3502	0.1484	0.2018	50
uMzinyathi	0.3203	0.1301	0.1902	49
uMkhanyakude	0.2980	0.1091	0.1888	46
Zululand	0.2736	0.0995	0.1741	43
Joe Gqabi	0.2597	0.0878	0.1719	41
Chris Hani	0.2566	0.0941	0.1625	42
Alfred Nzo	0.3277	0.1724	0.1553	51
King Cetshwayo	0.2323	0.0787	0.1537	37
uThukela	0.2281	0.0850	0.1432	39
iLembe	0.2293	0.0876	0.1417	40

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

Table 4: MPI decomposition (%) by indicator, 2001-2011

Dimension	Indicator	Weighting scheme [I]				Weighting scheme [II]				
		Contribution to total weight	Contribution to MPI			Contribution to total weight	Contribution to MPI			
			2001	2007	2011		2001	2007	2011	2016
Education	[A]:Years of schooling	0.1250	14.35	12.49	10.51	0.1667	14.99	13.74	12.59	13.28
	[B]: School attendance	0.1250	7.12	6.13	4.03	0.1667	6.99	6.76	4.61	5.33
Health	[C]: Child mortality	0.1250	0.75	1.58	0.08	0.1667	0.80	1.76	0.09	0.80
	[D]: Disability	0.1250	12.15	10.00	16.40	0.1667	15.41	14.36	25.25	23.60
Standard of living	[E]: Fuel for cooking	0.0357	7.54	7.22	6.14	0.0556	11.21	11.11	9.43	7.78
	[F]: Water	0.0357	6.94	7.00	6.65	0.0556	10.32	10.85	10.50	10.97
	[G]: Sanitation type	0.0357	7.62	8.00	7.73	0.0556	11.73	12.63	12.77	12.98
	[H]: Dwelling type	0.0357	5.86	6.23	5.40	0.0556	8.26	9.18	7.25	7.83
	[I]: Refuse removal	0.0357	7.07	7.45	7.21	0.0556	11.15	12.09	12.30	12.73
	[J]: Asset ownership	0.0357	6.62	5.11	3.99	0.0556	9.13	7.52	5.22	4.71
	[K]: Overcrowding	0.0357	3.32	3.49	3.24	N/A	N/A	N/A	N/A	N/A
Economic activity	[L]: Unemployment	0.2500	20.65	25.31	28.62	N/A	N/A	N/A	N/A	N/A

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

Table 5: MPI in each population quintile using weighting scheme [I], 2001-2011

Income quintile	2001			2007			2011			Absolute change, 2001-2011
	H	A	MPI	H	A	MPI	H	A	MPI	
Quintile 1	0.2817	0.4251	0.1197	0.1338	0.4142	0.0554	0.1318	0.4145	0.0546	0.0651
Quintile 2	0.2446	0.4303	0.1053	0.1090	0.4045	0.0441	0.1002	0.4029	0.0404	0.0649
Quintile 3	0.1664	0.4252	0.0708	0.0812	0.4047	0.0328	0.0675	0.4058	0.0274	0.0434
Quintile 4	0.0885	0.4248	0.0376	0.0417	0.3998	0.0167	0.0442	0.4043	0.0179	0.0197
Quintile 5	0.0253	0.4229	0.0107	0.0101	0.3992	0.0040	0.0065	0.3980	0.0026	0.0081
All	0.1663	0.4268	0.0710	0.0759	0.4073	0.0309	0.0707	0.4080	0.0288	0.0422
Income poverty headcount ratio	0.5462			0.4267			0.4424			0.1037

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

Table A.1: Available information relating to the MPI indicators in the Censuses and Community Surveys, 1996-2016

	Census 1996	**Census 2001**	**CS 2007**	**Census 2011**	**CS 2016**
Education					
Education year	✓	✓	✓	✓	✓
Education attendance	✓	✓	✓	✓	✓
Labour market status					
Labour narrow	✓	✓	✓	✓	#
Labour broad		✓		✓	#
Work status (Employee / Employer)	✓	✓	✓		
Occupation	✓	✓	✓	✓	#
Industry	✓	✓	✓	✓	#
Formal / Informal sector			✓	✓	#
Hours worked past week		✓			
Health					
Mortality	✓	✓	✓	✓	✓
Disability	✓	✓	✓	✓	✓
Public assets and services					
Dwelling type	✓	✓	✓	✓	✓
Number of rooms	✓	✓	✓	✓	
Roof material				✓	
Floor material				✓	
Water source	✓	✓	✓	✓	✓
Sanitation facility	✓	✓	✓	✓	✓
Access to electricity					✓
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			✓	✓	
Social grant					
Receipt of each type of social grant			✓		✓

[#] All the labour market-related data is not released by Statistics South Africa, despite the information being captured.

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

Province	Census 2001	CS 2007	Census 2011	CS 2016
Eastern Cape	Alfred Nzo	Alfred Nzo	Alfred Nzo	Alfred Nzo
KwaZulu-Natal	Amajuba	Amajuba	Amajuba	Amajuba
Eastern Cape	Amatole	Amatole	Amathole[#]	Amathole[#]
			Buffalo City[#]	Buffalo City[#]
North West	Bojanala	Bojanala	Bojanala	Bojanala
Western Cape	Boland	Boland	Boland	Cape Winelands
Limpopo	Capricorn	Capricorn	Capricorn	Capricorn
Western Cape	Central Karoo	Central Karoo	Central Karoo	Central Karoo
Eastern Cape	Chris Hani	Chris Hani	Chris Hani	Chris Hani
Western Cape	City of Cape Town	City of Cape Town	City of Cape Town	City of Cape Town
Gauteng	Johannesburg	Johannesburg	City of Johannesburg	City of Johannesburg
Gauteng	City of Tshwane[##]	City of Tshwane[##]	City of Tshwane	City of Tshwane
	Metsweding[##]	Metsweding[##]		
North West	Southern	Southern	Dr Kenneth Kaunda	Dr Kenneth Kaunda
North West	Bophirima	Bophirima	Dr Ruth Segomotsi Mompati	Dr Ruth Segomotsi Mompati
Western Cape	Eden	Eden	Eden	Eden
Mpumalanga	Ehlanzeni	Ehlanzeni	Ehlanzeni	Ehlanzeni
Gauteng	East Rand	East Rand	Ekurhuleni	Ekurhuleni
KwaZulu-Natal	Durban	Durban	eThekwini	eThekwini
Free State	Northern Free State	Northern Free State	Fezile Dabi	Fezile Dabi
Northern Cape	Frances Baard	Frances Baard	Frances Baard	Frances Baard
Mpumalanga	Govan Mbeki	Govan Mbeki	Gert Sibande	Gert Sibande
KwaZulu-Natal	Sisonke	Sisonke	Sisonke	Harry Gwala
KwaZulu-Natal	iLembe	iLembe	iLembe	iLembe
Eastern Cape	Ukhahlamba	Ukhahlamba	Ukhahlamba	Joe Gqabi
Northern Cape	Kgalagadi	Kgalagadi	John Taolo Gaetsewe	John Taolo Gaetsewe
KwaZulu-Natal	Uthungulu	Uthungulu	Uthungulu	King Cetshwayo
Free State	Lejweleputswa	Lejweleputswa	Lejweleputswa	Lejweleputswa

Table A.2: Continued

Province	Census 2001	CS 2007	Census 2011	CS 2016
Free State	Motheo	Motheo	Mangaung	Mangaung
Limpopo	Mopani[###]	Mopani	Mopani	Mopani
	Bohlabela[###]			
Northern Cape	Namakwa	Namakwa	Namakwa	Namakwa
Eastern Cape	Port Elizabeth	Port Elizabeth	Nelson Mandela Bay	Nelson Mandela Bay
North West	Central	Central	Ngaka Modiri Molema	Ngaka Modiri Molema
Mpumalanga	Nkangala	Nkangala	Nkangala	Nkangala
Eastern Cape	OR Tambo	OR Tambo	OR Tambo	OR Tambo
Western Cape	Overberg	Overberg	Overberg	Overberg
Northern Cape	Karoo	Karoo	Pixley ka Seme	Pixley ka Seme
Eastern Cape	Cacadu	Cacadu	Cacadu	Sarah Baartman
Gauteng	Sedibeng	Sedibeng	Sedibeng	Sedibeng
Limpopo	Sekhukhune Cross	Greater Sekhukhune	Greater Sekhukhune	Sekhukhune
Free State	Thabo Mofutsanyana	Thabo Mofutsanyana	Thabo Mofutsanyana	Thabo Mofutsanyana
KwaZulu-Natal	Ugu	Ugu	Ugu	Ugu
KwaZulu-Natal	uMgungundlovu	uMgungundlovu	uMgungundlovu	uMgungundlovu
KwaZulu-Natal	uMkhanyakude	uMkhanyakude	uMkhanyakude	uMkhanyakude
KwaZulu-Natal	uMzinyathi	uMzinyathi	uMzinyathi	uMzinyathi
KwaZulu-Natal	Uthukela	Uthukela	Uthukela	Uthukela
Limpopo	Vhembe	Vhembe	Vhembe	Vhembe
Limpopo	Waterberg	Waterberg	Waterberg	Waterberg
Western Cape	West Coast	West Coast	West Coast	West Coast
Gauteng	West Rand	West Rand	West Rand	West Rand
Free State	Xhariep	Xhariep	Xhariep	Xhariep
Northern Cape	Siyanda	Siyanda	Siyanda	ZF Mgcawu
KwaZulu-Natal	Zululand	Zululand	Zululand	Zululand

[#] In the 2011 and 2016 data, Amathole and Buffalo City are integrated into one district council, Amathole, for consistent comparison purpose with 2001 and 2007.
[##] In the 2001 and 2007 data, City of Tshwane and Metsweding are integrated into one district council, City of Tshwane, for consistent comparison purpose with 2011 and 2016.
[###] In the 2001 data, Mopani and Bohlabela are integrated into one district council, Mopani, for consistent comparison purpose with 2007, 2011 and 2016.

Table A.3: 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]	12.68	7.66	6.61	5.22	15.20	8.05	7.26	5.64	7.77	N/A	4.33	3.82	21.61	N/A	11.22	8.51
[B]	6.06	4.07	2.49	2.09	7.71	5.05	3.36	3.03	4.57	N/A	2.47	2.24	9.68	N/A	3.57	3.06
[C]	0.61	0.76	0.04	0.25	0.97	1.31	0.06	0.41	0.51	N/A	0.04	0.22	1.11	N/A	0.08	0.52
[D]	16.51	9.20	17.56	12.03	20.30	11.78	24.07	17.64	14.81	N/A	16.95	12.87	22.59	N/A	26.38	17.95
[E]	42.67	29.44	20.75	12.94	57.45	41.67	28.89	17.94	27.49	N/A	9.94	6.42	77.44	N/A	48.73	32.37
[F]	36.27	28.30	23.98	22.85	49.50	40.74	33.86	30.52	17.54	N/A	9.90	9.13	74.05	N/A	59.56	59.90
[G]	46.11	40.12	37.44	33.95	61.17	56.41	51.18	46.18	22.68	N/A	15.26	13.32	91.84	N/A	91.29	90.59
[H]	28.99	26.37	19.95	18.37	36.30	31.60	22.88	21.07	22.39	N/A	15.63	14.42	45.01	N/A	30.75	29.69
[I]	43.74	38.43	36.52	36.74	56.74	51.78	48.31	46.70	13.73	N/A	12.02	16.44	95.89	N/A	91.96	89.67
[J]	30.35	14.60	10.23	7.10	42.23	20.65	13.06	8.12	22.30	N/A	7.81	5.76	52.91	N/A	17.70	11.08
[K]	19.69	19.19	13.52	N/A	24.90	24.48	18.25	N/A	18.66	N/A	12.80	N/A	26.34	N/A	20.40	N/A
[L]	6.83	4.12	4.99	N/A	9.01	6.38	6.56	N/A	8.22	N/A	5.84	N/A	7.24	N/A	5.43	N/A
	African				**Coloured**				**Indian**				**White**			
	2001	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2016**
[A]	16.34	9.08	7.98	5.94	8.08	5.91	4.31	3.57	1.93	1.99	1.98	3.22	0.78	0.81	0.90	2.15
[B]	7.58	4.72	3.02	2.59	6.29	5.81	3.67	3.45	2.77	2.97	2.25	1.95	1.64	1.93	0.95	0.87
[C]	0.94	1.21	0.06	0.37	0.27	0.31	0.03	0.20	0.08	0.06	0.00	0.06	0.04	0.09	0.00	0.05
[D]	19.68	10.95	21.96	14.99	15.71	10.84	21.52	15.24	12.01	10.32	11.72	12.24	9.50	4.66	8.67	10.12
[E]	60.55	43.08	29.90	18.18	12.60	5.83	4.98	2.83	1.19	1.18	1.39	0.58	0.87	0.32	1.05	0.29
[F]	51.38	41.44	34.90	31.03	9.90	5.11	4.90	3.93	4.51	1.80	1.90	1.63	4.49	3.32	1.28	6.34
[G]	64.73	58.38	53.35	47.29	14.56	9.01	10.35	6.53	2.11	1.78	2.55	1.80	1.35	0.50	1.00	0.68
[H]	39.30	35.06	25.48	22.97	9.34	7.70	8.49	7.27	2.68	1.97	2.35	1.66	1.86	1.24	1.36	0.86
[I]	59.61	53.35	49.97	47.52	14.45	11.36	11.47	10.84	3.13	3.37	3.86	9.77	9.59	8.64	9.82	14.77
[J]	42.61	20.69	13.52	8.60	18.85	8.62	7.12	4.78	2.14	1.19	1.13	1.27	1.17	0.43	0.52	0.89
[K]	25.17	24.63	17.90	N/A	20.82	20.27	14.07	N/A	3.83	4.71	2.30	N/A	0.99	1.09	0.61	N/A
[L]	9.33	6.05	6.69	N/A	3.34	2.58	2.97	N/A	1.25	1.05	1.15	N/A	0.73	0.56	0.74	N/A

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

Table A.4: 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]	6.21	4.20	3.38	2.96	20.41	11.22	10.37	8.09	17.76	11.44	10.06	6.72	14.38	8.88	7.30	5.78	15.02	7.84	7.34	5.11
[B]	4.81	4.47	2.71	2.65	9.26	5.44	3.33	2.76	7.06	5.62	3.81	3.38	5.29	2.44	2.22	1.91	9.45	6.00	4.78	3.57
[C]	0.21	0.26	0.01	0.12	0.84	1.06	0.06	0.35	0.62	0.83	0.07	0.43	0.84	0.97	0.06	0.30	1.27	1.75	0.08	0.43
[D]	13.70	7.82	16.66	11.91	21.94	13.98	24.67	17.40	18.32	12.04	30.36	20.01	21.32	11.97	25.63	18.88	19.96	13.13	21.96	17.82
[E]	15.85	6.11	4.38	1.98	71.60	55.34	35.81	20.83	32.75	18.24	14.40	9.27	50.46	23.19	11.59	6.24	54.00	41.91	31.94	19.11
[F]	13.11	7.97	9.29	9.10	66.33	60.47	53.81	49.77	16.87	20.12	21.70	22.52	28.85	12.33	10.18	8.91	56.39	46.20	39.52	36.80
[G]	12.20	6.90	8.92	5.57	70.65	65.91	60.15	55.12	32.80	33.68	34.04	31.18	55.73	42.68	33.53	28.28	65.04	63.07	60.99	59.98
[H]	16.73	14.47	15.72	14.57	51.85	48.46	39.17	35.72	15.55	16.20	16.12	15.43	32.66	25.74	18.17	15.98	43.16	42.43	30.12	29.43
[I]	11.63	9.40	9.44	11.75	66.99	66.85	62.30	60.04	27.37	28.18	33.95	37.82	42.88	25.51	28.72	30.28	58.87	57.08	55.35	58.65
[J]	17.76	7.98	6.71	4.21	55.32	31.38	20.35	14.07	33.77	17.98	14.18	10.76	34.12	14.75	8.56	5.71	41.40	20.74	14.45	8.96
[K]	19.41	22.55	13.49	N/A	28.65	25.04	25.02	N/A	23.95	22.46	15.30	N/A	20.94	17.25	10.69	N/A	24.01	24.95	21.19	N/A
[L]	4.58	3.05	4.05	N/A	8.38	5.42	5.78	N/A	5.62	4.26	4.36	N/A	9.00	6.45	6.71	N/A	7.96	4.47	4.95	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]	17.19	12.88	11.19	7.64	7.10	4.77	3.76	3.76	15.82	8.44	7.93	5.98	16.62	8.65	8.16	7.71	13.80	7.83	6.90	5.41
[B]	8.81	4.69	3.11	2.68	3.79	3.57	1.81	1.87	6.15	3.58	2.46	2.67	5.47	3.71	1.71	1.84	6.80	4.49	2.88	2.52
[C]	0.84	1.19	0.08	0.53	0.43	0.57	0.02	0.21	1.09	1.33	0.05	0.42	0.62	0.77	0.05	0.40	0.77	1.00	0.05	0.32
[D]	20.95	10.89	25.15	15.75	11.97	6.16	13.61	11.39	20.69	10.41	20.56	14.52	19.62	9.71	23.99	12.96	18.20	10.32	20.46	14.59
[E]	54.08	34.65	21.88	13.01	23.49	15.95	10.56	7.87	60.67	46.98	31.45	20.74	76.43	63.39	53.55	40.11	49.25	34.72	24.38	15.22
[F]	48.97	38.73	31.37	36.71	14.63	11.61	8.65	8.38	42.15	32.77	28.94	26.56	63.86	59.09	49.98	52.63	42.16	33.67	28.39	26.35
[G]	67.65	57.72	55.75	53.00	16.85	15.69	13.04	12.38	65.66	64.48	60.79	57.56	87.31	84.74	82.32	80.41	52.81	47.16	43.57	39.54
[H]	25.78	27.64	21.03	18.95	22.89	22.42	16.43	15.38	28.96	19.80	14.16	13.49	26.15	14.56	8.43	10.02	32.24	28.63	21.26	19.60
[I]	65.46	48.84	52.71	44.86	14.65	13.99	10.67	14.90	65.00	63.23	61.31	62.80	88.55	85.33	82.12	80.64	49.52	44.20	41.78	41.29
[J]	33.62	17.65	13.00	8.60	20.53	10.38	7.31	6.05	33.31	13.34	8.90	5.89	45.30	19.62	11.72	6.86	35.64	17.21	11.49	7.57
[K]	20.25	21.68	14.13	N/A	17.57	18.60	12.79	N/A	18.38	17.96	9.67	N/A	23.46	19.61	10.88	N/A	22.01	21.48	15.63	N/A
[L]	7.71	5.67	5.84	N/A	8.88	5.75	6.27	N/A	7.08	5.04	5.90	N/A	7.87	5.72	6.85	N/A	7.79	5.10	5.69	N/A

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

Table A.5: Proportion of population (%) deprived in each indicator by district council, 2001

District council	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
Alfred Nzo	24.4	9.2	1.4	24.8	91.8	92.8	97.9	75.8	97.5	71.0	26.4	8.7
Amajuba	9.2	8.1	1.4	26.9	54.8	53.6	56.8	23.1	49.0	30.6	24.3	8.8
Amathole & Buffalo City	16.4	6.8	0.4	20.3	71.1	65.9	66.6	49.2	63.4	50.2	29.2	9.9
Bojanala	13.0	6.0	0.6	15.9	49.7	48.8	75.5	31.3	74.7	29.2	17.6	8.3
Cape Winelands	9.4	5.8	0.2	17.1	14.3	12.0	12.9	13.5	28.4	22.1	23.4	2.5
Capricorn	13.0	4.4	0.6	19.6	70.4	59.4	85.1	15.8	85.5	42.8	22.2	7.3
Central Karoo	15.6	8.9	0.3	26.6	30.9	5.5	13.2	3.7	17.3	31.8	24.5	5.3
Chris Hani	24.6	8.8	0.7	27.4	79.2	70.4	79.5	49.2	75.7	58.4	32.2	7.5
City of Cape Town	4.0	4.2	0.2	12.5	15.0	13.4	10.5	18.8	4.6	14.5	17.5	5.4
City of Johannesburg	6.5	3.7	0.4	11.8	17.1	13.9	14.1	19.5	7.7	19.2	21.0	9.2
City of Tshwane	6.5	3.7	0.4	11.3	28.8	20.4	31.2	23.9	24.7	18.2	12.3	6.4
Dr Kenneth Kaunda	15.3	7.1	0.9	19.9	47.9	21.6	37.1	31.8	23.0	29.8	17.0	7.4
Dr Ruth Segomotsi Mompati	28.8	14.6	1.2	29.8	66.6	65.7	77.4	20.7	74.3	46.3	27.1	6.3
Eden	10.1	5.7	0.2	16.8	22.7	15.7	19.6	16.0	17.9	24.6	22.8	4.1
Ehlanzeni	18.7	6.8	1.0	18.9	54.9	50.2	78.4	19.2	77.2	38.2	24.9	6.6
Ekurhuleni	7.6	4.0	0.5	11.9	31.2	15.7	15.2	26.5	10.2	23.6	17.2	10.4
eThekwini	7.3	5.6	0.7	13.8	25.2	29.6	38.1	26.4	18.0	23.4	20.7	9.0
Fezile Dabi	13.4	4.4	0.8	21.5	47.9	15.1	38.3	27.6	36.7	28.8	13.3	8.2
Frances Baard	15.6	6.2	0.6	22.1	36.0	16.0	26.4	17.7	25.7	28.5	21.5	6.8
Gert Sibande	17.0	7.2	1.7	22.1	73.2	42.9	55.1	46.8	52.3	38.7	15.9	7.3
Harry Gwala	21.9	11.4	1.1	21.9	83.8	68.7	79.6	68.0	82.0	67.5	28.3	9.4
iLembe	18.6	10.6	1.5	21.4	61.9	71.6	80.3	57.9	81.6	49.8	26.9	6.7
Joe Gqabi	25.3	10.0	0.9	26.0	82.7	74.2	87.5	41.5	78.1	65.0	36.7	7.5
John Taolo Gaetsewe	24.0	10.1	1.5	26.9	63.8	75.9	81.2	27.4	83.7	46.8	26.2	4.8
King Cetshwayo	18.2	12.5	1.6	20.4	63.2	70.7	81.5	53.5	83.6	49.6	28.3	7.0
Lejweleputswa	16.0	6.4	1.0	19.6	50.1	27.5	53.9	37.1	29.8	36.4	21.2	10.5
Mangaung	11.6	4.2	0.6	19.4	37.7	29.1	53.3	26.2	41.9	28.3	24.3	8.1
Mopani	20.6	6.9	0.7	19.1	78.9	63.3	88.9	28.7	90.2	44.2	23.8	8.2
Namakwa	12.7	3.4	0.3	16.9	17.1	12.0	39.2	9.2	21.7	30.7	20.9	5.1
Nelson Mandela Bay	5.5	4.8	0.2	16.3	30.4	16.8	17.0	21.1	12.3	25.4	16.0	9.2
Ngaka Modiri Molema	21.8	13.0	1.0	25.6	59.0	60.5	77.1	18.1	80.1	38.0	24.5	6.9
Nkangala	12.4	4.7	0.6	20.9	53.2	30.3	58.9	23.2	61.4	24.6	14.8	7.4
OR Tambo	29.7	14.7	1.7	22.6	89.7	93.5	94.3	75.0	95.0	74.2	34.7	7.5
Overberg	10.1	5.6	0.2	11.4	16.4	13.3	15.3	15.2	21.9	22.0	19.7	4.0
Pixley ka Seme	25.5	10.5	0.9	16.9	37.5	17.9	47.7	13.9	26.3	37.9	27.6	6.1
Sarah Baartman	16.8	8.3	0.3	21.4	46.6	24.7	51.2	22.9	29.9	35.3	21.4	5.9
Sedibeng	8.0	3.7	0.5	16.5	20.4	11.2	15.6	17.3	51.0	21.6	14.7	9.7
Sekhukhune	16.4	5.5	0.6	22.3	81.4	81.7	95.9	22.2	95.8	48.9	21.9	6.8
Thabo Mofutsanyana	14.2	5.1	1.0	24.2	63.8	40.2	74.9	40.7	61.8	39.5	21.3	9.2
Ugu	20.7	11.3	1.4	21.7	70.0	82.6	83.3	50.7	86.6	51.4	28.5	6.4
uMgungundlovu	12.0	7.2	1.1	17.4	45.9	39.6	60.2	40.6	60.7	35.8	16.6	8.7
uMkhanyakude	25.1	17.2	1.5	23.9	83.2	88.3	92.2	56.3	96.3	61.0	33.6	6.4
uMzinyathi	31.1	15.2	1.5	22.5	83.6	82.6	85.0	65.7	86.8	67.2	25.2	7.4
Uthukela	16.7	10.4	2.0	25.9	72.8	69.8	78.9	51.8	77.3	45.7	21.3	8.4
Vhembe	14.3	3.7	0.4	18.3	80.0	60.1	89.7	37.0	91.2	45.9	23.8	9.3
Waterberg	18.4	7.6	0.8	20.5	65.3	53.7	69.5	23.4	74.1	42.3	25.7	6.1
West Coast	11.2	6.2	0.3	12.5	12.6	9.4	14.0	7.9	28.7	24.5	23.8	2.1
West Rand	11.4	5.5	0.7	12.9	32.9	18.1	23.9	28.8	21.3	26.5	20.4	9.0
Xhariep	25.8	9.4	0.5	23.8	56.4	17.9	31.4	18.3	31.0	42.5	24.7	7.4
ZF Mgcawu	15.8	7.4	0.7	16.7	30.4	19.3	30.2	15.4	34.2	39.0	27.3	4.3
Zululand	20.0	11.7	2.2	29.6	78.8	76.9	85.9	54.9	85.3	57.4	27.5	6.6

Source: Authors' calculations using the Census 2001 data.

Table A.6: Proportion of population (%) deprived in each indicator by district council, 2016

District council	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K] #	[L] #
Alfred Nzo	10.1	2.6	0.8	23.5	49.8	85.7	95.9	58.9	95.4	27.7	30.6	5.0
Amajuba	3.0	3.1	0.5	17.5	13.4	12.6	50.3	17.0	50.8	6.0	19.6	5.4
Amathole	7.1	2.1	0.2	15.9	17.3	49.5	51.5	35.4	61.5	12.5	27.9	6.4
Bojanala	6.0	2.2	0.4	12.5	12.3	34.3	61.1	25.5	40.5	7.3	12.2	6.5
Cape Winelands	3.5	4.8	0.1	11.9	3.4	10.3	3.5	15.5	16.5	5.4	15.7	2.3
Capricorn	7.3	1.8	0.3	12.2	22.7	36.3	73.8	6.1	73.6	5.4	8.9	6.9
Central Karoo	5.8	3.6	0.5	20.7	5.1	4.0	2.6	1.2	6.9	8.6	17.3	4.3
Chris Hani	12.5	3.8	0.3	17.6	12.8	54.1	64.4	42.7	71.5	11.6	31.3	5.6
City of Cape Town	2.4	2.2	0.1	11.0	1.2	9.6	6.0	15.3	10.8	3.4	12.1	4.6
City of Johannesburg	3.4	1.9	0.2	10.7	6.2	6.1	8.4	15.1	12.8	5.9	15.2	6.0
City of Tshwane	3.7	1.9	0.2	10.8	6.8	9.7	21.6	15.4	20.7	4.5	9.1	5.4
Dr Kenneth Kaunda	7.1	2.3	0.4	16.2	8.6	8.4	10.3	12.4	18.9	6.9	10.7	6.0
Dr Ruth Segomotsi Mompati	11.9	3.6	1.1	23.8	16.7	60.6	63.1	9.0	66.4	12.1	18.0	5.1
Eden	4.1	2.6	0.2	14.4	3.7	6.9	6.2	12.5	10.3	5.2	15.9	4.1
Ehlanzeni	7.0	3.0	0.4	13.4	18.1	39.9	80.7	6.5	80.3	3.8	9.9	6.6
Ekurhuleni	4.0	1.7	0.2	12.1	10.8	9.2	10.5	15.6	12.4	7.7	13.1	7.3
eThekwini	3.5	3.3	0.2	15.1	4.5	13.8	29.7	17.9	24.2	4.7	15.7	6.0
Fezile Dabi	6.4	2.3	0.3	17.6	6.0	6.0	18.2	13.4	16.5	6.3	6.7	7.3
Frances Baard	5.0	2.6	0.2	15.8	5.7	11.4	15.1	14.8	28.8	8.8	12.8	5.4
Gert Sibande	5.8	2.6	0.6	16.4	28.4	16.9	34.2	21.5	47.4	7.7	10.7	5.5
Harry Gwala	9.8	3.4	0.7	17.7	43.0	68.2	82.3	61.7	79.8	18.7	22.8	4.5
iLembe	6.0	2.5	0.5	19.2	23.0	61.0	78.7	27.4	72.1	13.4	24.5	4.5
Joe Gqabi	10.4	2.9	0.2	14.0	21.4	55.0	67.3	31.1	66.8	18.9	24.6	5.8
John Taolo Gaetsewe	7.9	3.6	0.6	25.9	18.2	64.2	72.1	16.7	78.7	11.6	17.3	4.0
King Cetshwayo	5.7	4.1	0.3	19.7	20.3	33.8	75.7	32.9	78.5	7.3	29.9	4.1
Lejweleputswa	4.8	1.9	0.4	19.5	4.7	6.6	16.6	16.4	26.7	5.7	11.4	7.6
Mangaung	5.3	1.7	0.2	18.2	3.6	8.9	32.8	12.1	21.3	4.4	11.5	5.6
Mopani	9.2	1.5	0.3	11.6	51.3	55.6	85.4	8.8	85.5	6.5	11.0	6.8
Namakwa	5.3	2.9	0.1	23.8	4.0	4.2	18.5	4.4	14.4	7.5	13.4	3.4
Nelson Mandela Bay	2.7	2.2	0.1	13.6	4.0	5.9	6.2	6.8	14.8	4.3	8.8	7.1
Ngaka Modiri Molema	9.1	3.4	0.7	17.6	16.2	53.2	68.1	16.8	64.1	10.8	18.3	5.0
Nkangala	4.9	2.4	0.3	14.3	17.8	17.8	47.8	15.6	53.6	7.0	8.5	5.3
OR Tambo	11.2	3.7	0.6	20.1	34.4	84.4	92.5	59.0	93.4	20.0	33.2	4.7
Overberg	5.0	2.9	0.2	12.6	3.5	9.3	4.0	15.3	12.3	4.9	13.6	3.1
Pixley ka Seme	11.0	4.0	0.4	22.5	8.0	10.9	18.9	10.4	23.8	12.4	17.6	4.6
Sarah Baartman	7.2	2.6	0.2	17.8	6.1	13.7	17.3	11.5	14.9	8.5	13.1	4.6
Sedibeng	4.0	2.1	0.2	13.1	4.7	6.3	7.5	11.6	12.3	4.5	9.6	6.8
Sekhukhune	7.2	2.4	0.5	15.8	35.4	68.4	94.2	11.2	92.4	8.2	10.0	8.1
Thabo Mofutsanyana	5.8	1.7	0.3	19.8	10.5	13.3	44.2	22.0	52.2	5.9	11.7	6.9
Ugu	6.7	4.7	0.4	21.3	23.4	69.6	80.3	42.3	84.2	13.4	22.2	4.5
uMgungundlovu	3.9	3.9	0.5	14.5	9.8	20.8	56.4	24.8	61.9	6.2	14.2	5.2
uMkhanyakude	6.9	4.4	0.3	17.1	51.9	72.5	93.9	31.6	97.5	17.7	30.6	4.1
uMzinyathi	11.0	3.8	0.7	20.0	42.1	65.4	82.8	55.0	84.3	16.3	28.2	3.8
Uthukela	4.3	3.6	1.1	21.4	29.2	49.9	75.4	32.8	73.7	8.6	23.3	4.4
Vhembe	7.9	1.7	0.3	11.7	57.6	60.6	84.3	13.1	85.7	6.3	13.3	6.5
Waterberg	6.3	1.9	0.6	14.7	26.6	36.9	54.4	11.6	56.6	9.1	11.0	5.4
West Coast	3.8	2.9	0.1	14.5	2.6	6.4	6.2	11.1	13.9	7.2	18.5	2.9
West Rand	4.8	2.0	0.3	12.8	13.0	15.9	14.2	20.1	18.6	7.5	15.6	6.6
Xhariep	11.1	2.0	0.2	19.2	5.9	7.4	12.4	11.6	29.9	9.5	11.7	5.9
ZF Mgcawu	5.3	4.2	0.8	16.4	8.6	12.2	27.4	24.4	29.4	13.2	16.4	3.3
Zululand	5.3	3.5	0.6	24.3	27.1	53.2	84.5	43.2	82.5	10.5	26.7	3.8

Source: Authors' calculations using the Census 2011 and CS 2016 data.

As the 2016 results on overcrowding and unemployment are not available, the 2011 results are shown instead.

Table A.7: Multidimensional poverty by gender, race and area type, 2001-2016

		2001			2007			2011			2016		
		H	**A**	**MPI**	**H**	**A**	**MPI**	**H**	**A**	**MPI**	**H**	**A**	**MPI**
Weighting scheme [I]													
Gender	Male	0.1392	0.4265	0.0594	0.0621	0.4065	0.0252	0.0570	0.4081	0.0233	N/A		
	Female	0.2003*	0.4271	0.0855*	0.0940*	0.4080*	0.0384*	0.0876*	0.4079	0.0357*			
Race	African	0.2052	0.4271	0.0876	0.0935	0.4073	0.0381	0.0861	0.4079	0.0351			
	Coloured	0.0381#	0.4174#	0.0159#	0.0177#	0.4102#	0.0072#	0.0208#	0.4106#	0.0085#			
	Indian	0.0033#	0.3987#	0.0013#	0.0035#	0.3889#	0.0013#	0.0043#	0.4092#	0.0018#			
	White	0.0017#	0.4047#	0.0007#	0.0012#	0.4145#	0.0005#	0.0013#	0.3984#	0.0005#			
Area type	Urban	0.0783	0.4354	0.0341	N/A	N/A	N/A	0.0351	0.4163	0.0146			
	Rural	0.2805^	0.4238^	0.1189^	N/A	N/A	N/A	0.1307^	0.4043^	0.0528^			
All		0.1663	0.4268	0.0710	0.0759	0.4073	0.0309	0.0707	0.4080	0.0288			
Weighting scheme [II]													
Gender	Male	0.2512	0.4403	0.1106	0.1401	0.4135	0.0579	0.1292	0.4050	0.0523	0.0863	0.3908	0.0337
	Female	0.3502*	0.4440*	0.1555*	0.2015*	0.4113*	0.0829*	0.1937*	0.4092*	0.0792*	0.1310*	0.3961*	0.0519*
Race	African	0.3619	0.4431	0.1603	0.2043	0.4130	0.0844	0.1921	0.4078	0.0783	0.1261	0.3944	0.0497
	Coloured	0.0838#	0.4181#	0.0350#	0.0456#	0.3939#	0.0180#	0.0483#	0.3946#	0.0190#	0.0279#	0.3798#	0.0106#
	Indian	0.0128#	0.3657#	0.0047#	0.0129#	0.3690#	0.0048#	0.0119#	0.3755#	0.0045#	0.0117#	0.3544#	0.0042#
	White	0.0050#	0.3734#	0.0019#	0.0041#	0.3760#	0.0015#	0.0041#	0.3660#	0.0015#	0.0057#	0.3460#	0.0020#
Area type	Urban	0.1138	0.4155	0.0473	N/A	N/A	N/A	0.0542	0.3935	0.0213	0.0411	0.3790	0.0156
	Rural	0.5304^	0.4497^	0.2385^	N/A	N/A	N/A	0.3328^	0.4111^	0.1368^	0.2344^	0.3988^	0.0935^
All		0.2952	0.4422	0.1306	0.1666	0.4124	0.0687	0.1580	0.4073	0.0643	0.1067	0.3938	0.0420

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

* The value is statistically significant compared to that of the reference gender category (male) at α = 5%.

The value is statistically significant compared to that of the reference race category (African) at α = 5%.

^ The value is statistically significant compared to that of the reference area type category (urban) at α = 5%.

Table A.8: MPI and income poverty by district council using weighting scheme [I], 2001-2011

District council	2001		2007		2011			
	MPI	Rank	MPI	Rank	MPI	Rank	Income poverty	Rank
Alfred Nzo	0.1706	49	0.0703	45	0.0913	51	0.7213	50
Amajuba	0.0753	29	0.0292	26	0.0264	25	0.5891	38
Amathole	0.1104	37	0.0579	39	0.0534	43	0.5343	29
Bojanala	0.0619	24	0.0255	24	0.0277	28	0.3641	13
Cape Winelands	0.0154	2	0.0042	1	0.0064	2	0.2855	6
Capricorn	0.0666	25	0.0302	29	0.0292	31	0.5461	31
Central Karoo	0.0233	6	0.0072	4	0.0122	7	0.4099	16
Chris Hani	0.1379	44	0.0757	46	0.0627	47	0.6084	41
City of Cape Town	0.0194	3	0.0080	6	0.0096	5	0.2853	5
City of Johannesburg	0.0256	8	0.0110	8	0.0096	4	0.2630	3
City of Tshwane	0.0292	9	0.0151	13	0.0133	8	0.2620	2
Dr Kenneth Kaunda	0.0539	21	0.0245	23	0.0193	17	0.4388	21
Dr Ruth Segomotsi Mompati	0.1204	42	0.0537	36	0.0495	41	0.6067	40
Eden	0.0240	7	0.0068	3	0.0135	9	0.3420	10
Ehlanzeni	0.0723	28	0.0295	28	0.0290	30	0.5484	32
Ekurhuleni	0.0349	12	0.0147	12	0.0169	13	0.2948	7
eThekwini	0.0438	16	0.0175	15	0.0171	14	0.3646	14
Fezile Dabi	0.0451	17	1.1202	51	0.0190	16	0.4543	23
Frances Baard	0.0435	15	0.0221	18	0.0264	24	0.4361	20
Gert Sibande	0.0800	32	0.3191	50	0.0283	29	0.4855	26
Harry Gwala	0.1434	47	0.0689	43	0.0668	48	0.6603	46
iLembe	0.1122	39	0.0546	37	0.0459	37	0.5634	35
Joe Gqabi	0.1392	45	0.0799	47	0.0626	46	0.6032	39
John Taolo Gaetsewe	0.1118	38	0.0475	35	0.0483	40	0.5400	30
King Cetshwayo	0.1159	40	0.0459	33	0.0471	38	0.5859	37
Lejweleputswa	0.0680	26	0.0202	17	0.0215	20	0.4690	25
Mangaung	0.0506	19	0.0170	14	0.0173	15	0.3627	12
Mopani	0.0925	35	0.0378	32	0.0390	34	0.6202	43
Namakwa	0.0199	4	0.0080	7	0.0113	6	0.3209	9
Nelson Mandela Bay	0.0335	11	0.0141	11	0.0153	11	0.4112	17
Ngaka Modiri Molema	0.1005	36	0.0606	42	0.0529	42	0.5622	34
Nkangala	0.0507	20	0.0240	22	0.0197	18	0.4156	18
OR Tambo	0.1931	51	0.0839	48	0.0857	50	0.7105	49
Overberg	0.0204	5	0.0073	5	0.0090	3	0.2728	4
Pixley ka Seme	0.0548	22	0.0235	20	0.0247	23	0.4453	22
Sarah Baartman	0.0460	18	0.0132	9	0.0160	12	0.4214	19
Sedibeng	0.0328	10	0.0136	10	0.0136	10	0.3599	11
Sekhukhune	0.0810	33	0.0465	34	0.0447	35	0.6422	44
Thabo Mofutsanyana	0.0777	31	0.0335	30	0.0268	26	0.5496	33
Ugu	0.1245	43	0.0700	44	0.0570	44	0.5827	36
uMgungundlovu	0.0694	27	0.0294	27	0.0294	32	0.4558	24
uMkhanyakude	0.1575	48	0.0604	41	0.0579	45	0.7252	51
uMzinyathi	0.1745	50	0.0860	49	0.0726	49	0.7057	48
Uthukela	0.1181	41	0.0570	38	0.0472	39	0.6540	45
Vhembe	0.0839	34	0.0356	31	0.0384	33	0.6164	42
Waterberg	0.0763	30	0.0265	25	0.0271	27	0.4876	27
West Coast	0.0101	1	0.0044	2	0.0057	1	0.2455	1
West Rand	0.0426	14	0.0223	19	0.0235	22	0.3032	8
Xhariep	0.0594	23	0.0237	21	0.0233	21	0.4983	28
ZF Mgcawu	0.0376	13	0.0200	16	0.0201	19	0.3732	15
Zululand	0.1405	46	0.0591	40	0.0451	36	0.7054	47

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

Table A.9: MPI by district council using weighting scheme [II], 2001-2016

District council	2001		2007		2011		2016	
	MPI	Rank	MPI	Rank	MPI	Rank	MPI	Rank
Alfred Nzo	0.3277	50	0.1762	48	0.2120	51	0.1724	51
Amajuba	0.1374	27	0.0704	30	0.0639	27	0.0330	23
Amathole	0.1951	36	0.1263	38	0.1151	35	0.0725	35
Bojanala	0.1221	25	0.0559	24	0.0591	26	0.0393	27
Cape Winelands	0.0382	5	0.0176	5	0.0159	4	0.0084	2
Capricorn	0.1409	28	0.0671	29	0.0773	31	0.0439	29
Central Karoo	0.0600	13	0.0208	8	0.0261	11	0.0139	9
Chris Hani	0.2566	44	0.1587	44	0.1410	42	0.0941	42
City of Cape Town	0.0229	1	0.0107	2	0.0114	2	0.0071	1
City of Johannesburg	0.0279	2	0.0139	4	0.0100	1	0.0120	6
City of Tshwane	0.0502	10	0.0330	15	0.0225	9	0.0168	11
Dr Kenneth Kaunda	0.0979	19	0.0449	20	0.0366	18	0.0243	18
Dr Ruth Segomotsi Mompati	0.2355	42	0.1278	40	0.1434	43	0.1045	44
Eden	0.0467	9	0.0198	6	0.0249	10	0.0095	3
Ehlanzeni	0.1493	29	0.0663	28	0.0707	29	0.0476	31
Ekurhuleni	0.0429	7	0.0224	12	0.0220	8	0.0212	16
eThekwini	0.0586	12	0.0288	13	0.0262	12	0.0191	14
Fezile Dabi	0.0834	17	0.0222	11	0.0319	15	0.0150	10
Frances Baard	0.0812	16	0.0413	19	0.0490	22	0.0258	19
Gert Sibande	0.1635	32	0.0740	31	0.0694	28	0.0463	30
Harry Gwala	0.2714	46	0.1900	49	0.1770	48	0.1298	48
iLembe	0.2293	39	0.1394	41	0.1187	37	0.0876	40
Joe Gqabi	0.2597	45	0.1671	47	0.1467	44	0.0878	41
John Taolo Gaetsewe	0.2314	40	0.1196	37	0.1492	45	0.1084	45
King Cetshwayo	0.2323	41	0.1265	39	0.1156	36	0.0787	37
Lejweleputswa	0.1171	23	0.0366	18	0.0336	16	0.0197	15
Mangaung	0.0896	18	0.0293	14	0.0287	13	0.0183	13
Mopani	0.1857	34	0.0884	34	0.1040	34	0.0683	34
Namakwa	0.0530	11	0.0199	7	0.0290	14	0.0175	12
Nelson Mandela Bay	0.0421	6	0.0214	10	0.0194	7	0.0103	5
Ngaka Modiri Molema	0.1985	37	0.1196	36	0.1295	40	0.0790	38
Nkangala	0.1077	22	0.0511	23	0.0467	21	0.0364	26
OR Tambo	0.3502	51	0.2210	51	0.1966	50	0.1484	50
Overberg	0.0351	4	0.0132	3	0.0181	6	0.0121	7
Pixley ka Seme	0.1054	21	0.0477	22	0.0543	24	0.0331	24
Sarah Baartman	0.1014	20	0.0338	16	0.0389	19	0.0240	17
Sedibeng	0.0443	8	0.0209	9	0.0162	5	0.0128	8
Sekhukhune	0.1868	35	0.1031	35	0.1210	38	0.0776	36
Thabo Mofutsanyana	0.1504	30	0.0633	27	0.0549	25	0.0354	25
Ugu	0.2464	43	0.1561	43	0.1500	46	0.1142	47
uMgungundlovu	0.1312	26	0.0742	32	0.0749	30	0.0407	28
uMkhanyakude	0.2980	48	0.1635	46	0.1597	47	0.1091	46
uMzinyathi	0.3203	49	0.1990	50	0.1799	49	0.1301	49
Uthukela	0.2281	38	0.1468	42	0.1255	39	0.0850	39
Vhembe	0.1674	33	0.0796	33	0.0990	33	0.0659	33
Waterberg	0.1616	31	0.0617	26	0.0790	32	0.0550	32
West Coast	0.0350	3	0.0103	1	0.0157	3	0.0098	4
West Rand	0.0642	14	0.0339	17	0.0363	17	0.0263	20
Xhariep	0.1204	24	0.0586	25	0.0453	20	0.0269	21
ZF Mgcawu	0.0806	15	0.0461	21	0.0526	23	0.0270	22
Zululand	0.2736	47	0.1621	45	0.1322	41	0.0995	43

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

Table A.10: The 10 least and 10 most deprived municipalities in 2011 (using weighting scheme [I]) and 2016 (using weighting scheme [II])

10 municipalities with the lowest MPI					10 municipalities with the highest MPI				
Municipality	**Province**	**H**	**A**	**MPI**	**Municipality**	**Province**	**H**	**A**	**MPI**
Census 2011 (using weighting scheme [I])									
Laingsburg	Western Cape	0.0087	0.4176	0.0036	Ntabankulu	Eastern Cape	0.2910	0.3892	0.1132
Saldanha Bay	Western Cape	0.0093	0.3969	0.0037	Mbhashe	Eastern Cape	0.2819	0.3924	0.1106
Bergrivier	Western Cape	0.0099	0.3788	0.0038	Engcobo	Eastern Cape	0.2699	0.4002	0.1080
Cape Agulhas	Western Cape	0.0102	0.3993	0.0041	Mbizana	Eastern Cape	0.2677	0.3958	0.1060
Swartland	Western Cape	0.0114	0.4054	0.0046	Msinga	KwaZulu-Natal	0.2666	0.3952	0.1054
Hessequa	Western Cape	0.0126	0.3966	0.0050	Intsika Yethu	Eastern Cape	0.2592	0.4003	0.1038
Witzenberg	Western Cape	0.0126	0.4108	0.0052	Port St Johns	Eastern Cape	0.2606	0.3930	0.1024
Drakenstein	Western Cape	0.0128	0.4078	0.0052	Vulamehlo	KwaZulu-Natal	0.2517	0.3968	0.0999
Nama Khoi	Northern Cape	0.0132	0.4029	0.0053	Ngquza Hill	Eastern Cape	0.2469	0.4035	0.0996
Langeberg	Western Cape	0.0155	0.4066	0.0063	Nyandeni	Eastern Cape	0.2481	0.3906	0.0969
CS 2016 (using weighting scheme [II])									
Bergrivier	Western Cape	0.0070	0.3635	0.0025	Ntabankulu	Eastern Cape	0.5137	0.4140	0.2127
Swartland	Western Cape	0.0129	0.3499	0.0045	Port St Johns	Eastern Cape	0.4589	0.4578	0.2101
Drakenstein	Western Cape	0.0162	0.3485	0.0056	Umzumbe	KwaZulu-Natal	0.4642	0.4271	0.1983
Overstrand	Western Cape	0.0153	0.3822	0.0059	Mbizana	Eastern Cape	0.4706	0.4196	0.1974
Mossel Bay	Western Cape	0.0167	0.3714	0.0062	Joe Morolong	Northern Cape	0.4795	0.3989	0.1913
City of Cape Town	Western Cape	0.0194	0.3673	0.0071	Msinga	KwaZulu-Natal	0.4552	0.4173	0.1900
Witzenberg	Western Cape	0.0202	0.3672	0.0074	Ratlou	North West	0.4482	0.4072	0.1825
Knysna	Western Cape	0.0202	0.3669	0.0074	Ubuhlebezwe	KwaZulu-Natal	0.4184	0.4176	0.1747
Bitou	Western Cape	0.0216	0.3546	0.0077	Engcobo	Eastern Cape	0.3904	0.4285	0.1673
George	Western Cape	0.0212	0.3724	0.0079	Mbhashe	Eastern Cape	0.3885	0.4205	0.1634

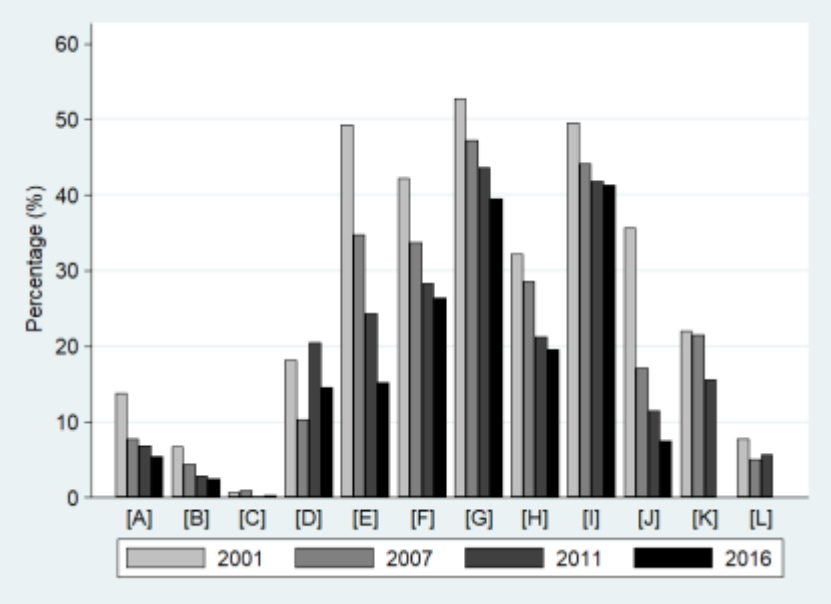
Source: Authors' calculations using the Census 2011 and CS 2016 data.

Table A.11: MPI decomposition (%) by gender, race, area type and province, 2001-2016

		Population share				MPI contribution – weighting scheme [I]			MPI contribution – weighting scheme [II]			
		2001	**2007**	**2011**	**2016**	**2001**	**2007**	**2011**	**2001**	**2007**	**2011**	**2016**
Gender	Male	55.53	56.82	55.37	54.33	46.42	46.41	44.69	47.03	47.92	45.03	43.59
	Female	44.47	43.18	44.63	45.67	53.57	53.59	55.31	52.96	52.08	54.97	56.41
Race	African	79.30	79.31	79.53	82.27	97.87	97.75	96.87	97.38	97.40	96.82	97.35
	Coloured	8.91	8.45	8.80	8.30	1.99	1.98	2.60	2.39	2.21	2.60	2.09
	Indian	2.63	2.54	2.50	2.09	0.05	0.11	0.15	0.09	0.18	0.17	0.21
	White	9.16	9.7	8.75	7.33	0.09	0.16	0.16	0.13	0.22	0.21	0.35
Area type	Urban	56.44	N/A	62.76	66.07	27.08	N/A	31.77	20.43	N/A	20.81	24.51
	Rural	43.56	N/A	37.24	33.93	72.92	N/A	68.23	79.56	N/A	79.19	75.48
Province	Western Cape	9.93	10.60	11.18	11.23	2.64	2.44	3.63	2.22	1.95	2.45	2.14
	Eastern Cape	14.55	13.49	12.60	10.52	25.89	26.08	24.64	25.50	27.48	24.46	21.56
	Northern Cape	1.83	2.13	2.21	2.31	1.07	1.69	2.13	1.17	1.68	2.39	2.46
	Free State	6.21	5.70	5.53	5.50	5.40	3.95	4.12	5.39	3.32	3.30	3.00
	KwaZulu-Natal	20.91	20.82	19.48	18.28	27.89	28.46	25.43	27.96	31.18	27.99	27.84
	North West	8.19	6.67	6.96	7.34	9.18	8.05	8.44	9.42	7.54	8.95	9.31
	Gauteng	19.73	22.32	23.54	26.85	8.16	9.98	11.11	5.67	7.26	6.69	10.52
	Mpumalanga	6.89	7.79	7.76	7.86	6.49	7.15	6.96	7.41	7.19	7.56	8.15
	Limpopo	11.76	10.47	10.74	10.13	13.54	12.19	13.54	15.26	12.39	16.21	15.02

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

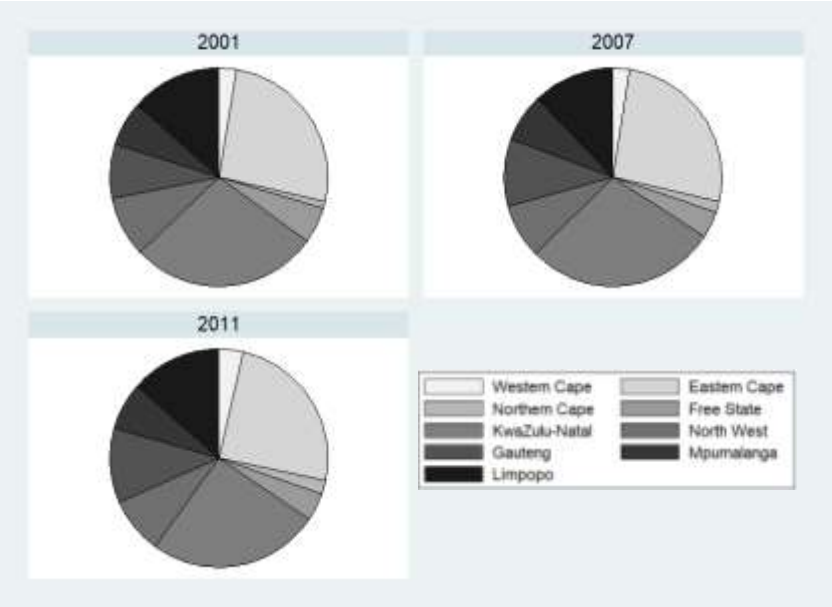
Figure 1: Proportion (%) of population deprived in each indicator



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

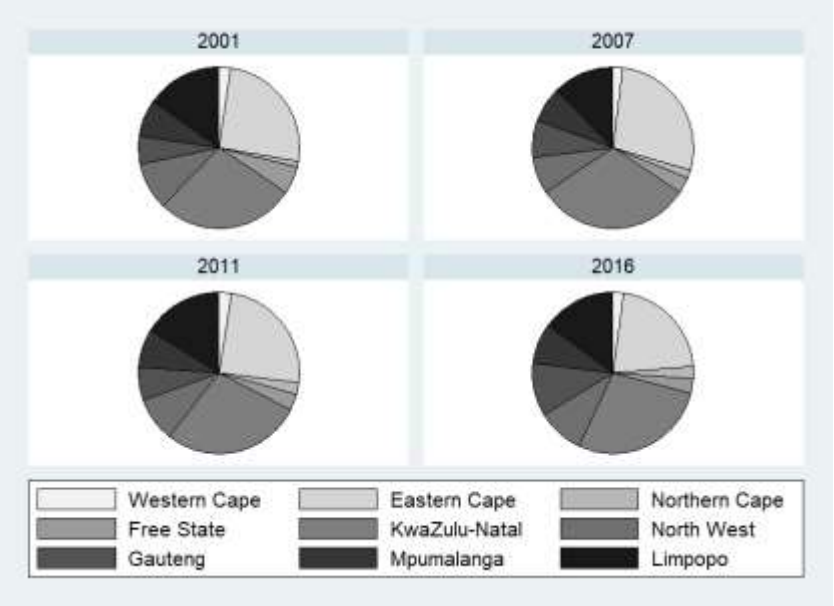
Note: the 2016 deprivation proportions of indicators [K] (overcrowding) and [L] (unemployment) are not available.

Figure 2: MPI decomposition (%) by province using weighting scheme [I], 2001-2011



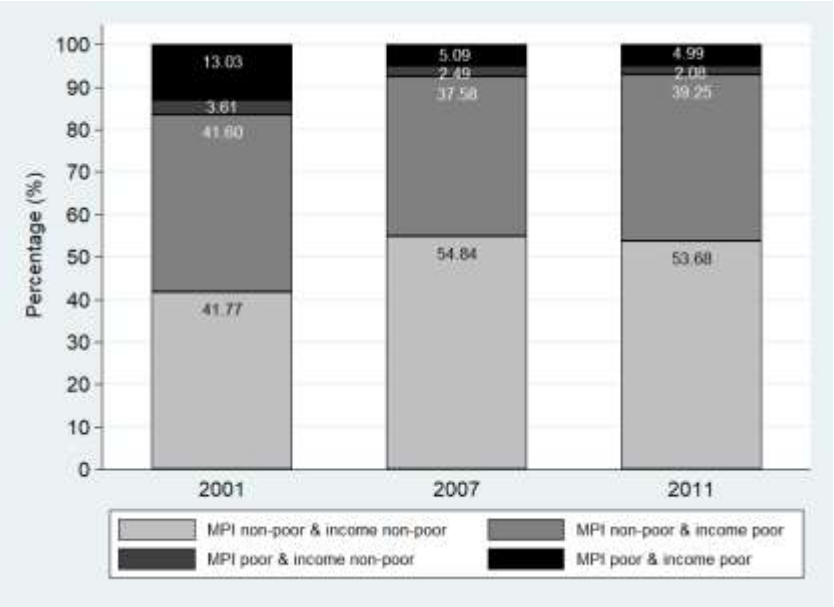
Source: Authors' calculations using the Census 2001, CS 2007 and Census 2011 data.

Figure 3: MPI decomposition (%) by province using weighting scheme [II], 2001-2016



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

Figure 4: Proportion (%) of population in each poverty status category



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