# On the Multidimensional Measurement of Poverty: An Empirical Study on South Africa

Hasan Basarir
University of York

## 1 Abstract

An evaluation of a poverty measure should assign a higher weight on the measure's policy implications, or equally, how well it satisfies the decomposability axiom. It is clear that even if an income-based and a multidimensional poverty measure yield the same poverty ranking, the multidimensional measure should be favoured as multidimensional decomposability is more helpful for policy-makers. Income may not be used to alleviate certain deprivations and the assumption of complete markets is not realistic in a developing-country context. In other words, having the financial power to pay for a service is meaningless if the market for that service does not exist and hence, income-based approach can be misleading. This paper looks at the same picture from different perspectives to see if this would help us to suggest alternative solutions to various deprivation problems faced in South Africa. In total, fourteen distinct dimensions have been considered. It turns out that unidimensional measures, such as Foster-Greer and Thorbecke family of measures that are based on expenditure data, lead to different provincial deprivation rankings than the multidimensional ones such as Anand-Sen and Alkire-Foster family of measures in South Africa.

# 2 Introduction

The poverty measurement literature has evolved with the increasing availability of data. The development has been centred on two main steps, identification and aggregation, as it is clear that a measure should define who the poor is and how the individual deprivations should be accumulated into a social indicator. Identification is usually limited to suggesting a normative poverty line as there is not a generally-accepted principle to define the poor. Aggregation has relatively robust foundations based on the plausible axioms suggested by pioneers such as Amartya Sen (1976, 1982, 1985, 1992). Even if attempts to quantify poverty dates back to the beginning of last century, it is relatively new to investigate deprivation as a multidimensional phenomenon rather than a unidimensional one based on income (and later, expenditure) data. The well-being of an individual cannot merely be explained by the income/expenditure of that individual, as this may be far from being a robust reflector under many circumstances. Along the same lines, complete market assumptions may be a strong one, especially for the analysis on developing countries. The papers that have developed multidimensional measures based on unidimensional ones and the others that have axiomatic grounds have been listed by Alkire and Foster (2007), where a family of dimension-adjusted multidimensional measures analogous to Foster, Greer and Thorbecke (1984) has been developed. These measures yield robust rankings even with ordinal data. In addition to these two families, this paper investigates the Anand-Sen family of measures (of which Human Poverty Index(HPI) is a special case) in order to rank the nine provinces of South Africa based on their deprivation levels. The rankings obtained as a result of the analysis shows that each measure suggests a different ranking where the difference is less significant between the two multidimensional ones. These rankings have been further decomposed according to the gender of the household head and, even though in general the results confirm that female-led households are poorer than male-led ones as expected, it is clear

that especially in certain dimensions this is not always true.

# 3 A Class of Decomposable Measures by Foster, Greer and Thorbecke (1984)

Motivated by the importance of decomposability for policy-makers and, unlike Sen(1976) which uses a "rank order" weighting scheme, FGT measures use the gap of each individual as its shortfall weight and can be generalised as:

$P_\alpha(x;z) = \frac{1}{n}\sum_{i=1}^{q}(\frac{z-x_i}{z})^\alpha$

and the decomposability property of the measure can be seen by:

$P_\alpha(x;z) = \sum_{j=1}^{m}\frac{n_j}{n}P_\alpha(x^{(j)};z)$

where $x$ is the household expenditure (which can be broken down into subgroup income vectors $x^{(1)},...,x^{(m)}$), $z$ is the predetermined poverty line(cut-off level), $q = q(x;z)$ is the number of poor households and $n = n(x)$ is the number of households.

Depending on the non-negative value that $\alpha$ takes, FGT measures take different names and satisfy different axioms. Taking $\alpha = 0$ results in headcount ratio($H$), which shows the share of poor individuals in the total population. When $\alpha = 1$, normalised poverty gap($G$), which sums up the individual deprivations and divide the result with the total population times the poverty line, can be obtained. $G$ satisfies the monotonicity axiom (which is explained in the Appendix). If $\alpha = 2$ is chosen, average of squared normalised shortfalls, $P_2$, is the result. This measure satisfies the transfer axiom in addition to monotonicity and measures obtained similarly by using higher $\alpha$ values satisfy transfer-sensitivity axiom as well. In addition to these specific ones, all FGT measures satisfy core axioms such as decomposability, symmetry, replication invariance and subgroup inconsistency (for technical definitions, please see Kanbur and Mukherjee, 2003)

In this paper, expenditure of households on transport, housing, clothing, food, personal appearance and other (for the month before the survey was held) have been summed up as an overall cardinal 'expenditure' variable to which three traditional FGT measures have been applied for comparison purposes.

An official national poverty line does not exist for South Africa. July 2007-adjusted (month of General Household Survey 2007) values for R800 ($PL_1$), R1600($PL_2$), and R2400($PL_3$) have been adopted, as The Department of Provincial and Local Government recommends R800 but different municipalities use different multiples of this value (Woolard and Leibbrandt, 2006). Technical notes on the adjustment process can be found in the Appendix.

# 4 The Necessity for Multidimensionality

Anand and Sen (2003) draws on the notion that a measure should focus merely on the poor for a better accounting of the development process, so that "lack of progress in reducing the disadvantages of the deprived cannot be 'washed away' by large advances – no matter how large – by the better-off people". In addition, as the income dimension by itself is not capable to represent the vital aspects that have a crucial impact on the living standard of the individuals, multidimensionality was a need rather than a luxury. This deprivation-based approach has led to HPI, which is widely criticised for its randomness (Krishnaji 1997). Sen himself accepts the "vulgarity" of the measure but claims that the reason for that vulgarity, its simplicity, is also its main attraction (Qizilbash, 2007).

Following the technical notes of Human Development Report 1997 which has been further exploited by Anand and Sen (2003), the Anand-Sen family of measures (Qizilbash 2004) can be generalised as:

$$AS(\alpha) = \left( \frac{\sum_{i=1}^{n} (w_i P_i^{\alpha})}{\sum_{i=1}^{n} w_i} \right)^{\frac{1}{\alpha}}$$

where $P_i$ is the headcount ratio of dimension $i$ and $w_i$ is the weight assigned to this dimension. Human Poverty Index is the power mean of order three of the Anand-Sen measures ($AS$).

HPI is an example (implicitly) for the union approach, in terms of identification criterion, where an individual is considered as poor if the individual is deprived in at least one dimension. Let $k$ be the across dimension cut-off where $(k = 1, ..., D)$. Union approach is when $k = 1$. This approach is labelled as over-inclusive since an individual may be deprived in a certain dimension due to other reasons (norms, beliefs etc.) than lack of opportunity. Furthermore, in general, not all dimensions are equally crucial for the overall poverty aggregation, especially as the number of dimensions increase. The other end of the spectrum is the intersection approach where an individual is considered as poor if the individual is deprived in all the dimensions that have been taken into account ($k = D$). Analogously, this approach is labelled as under-inclusive as deprivation in certain dimensions may be enough to have a standard of life that is unacceptable. Alkire-Foster ($AF$) measure offers the option to select an intermediate across-dimension cut-off number $(k = 1, ..., D)$ to the researcher.

Following the standard notation in the literature as well as Alkire and Foster (2007), the set up consist of an achievement matrix with size $N \times D$ where $n$ $(n = 1, ..., N)$ is the number of households (observations) and $d(d = 1, ..., D)$ is the number of dimensions (where $D \geq 2$). $X$ is a typical element of this matrix where each element, $x_{nd}$, indicates the achievement of $n_{th}$ individual on $d_{th}$ dimension. The row vector $x_{n:}$ corresponds to the achievements of individual $n$ in each dimension whereas the column vector $x_{:d}$ shows each individual achievement in a particular dimension d. The cut-off vector Z is a $1 \times D$ vector where $z_d$ is the within dimension cut-off level for dimension $d$, which separates poor individuals (with $x_{nd} < z_d$) from non-poor

ones (with $x_{nd} \geq z_d$).

A dictomised deprivation matrix $g^0$ can be obtained by using the binary values 0 (if $x_{nd} \geq z_d$) and 1(if $x_{nd} < z_d$). Obviously, this matrix would have the same size with the achievement matrix above. Hence, an individual will be considered as poor in a certain dimension if the value on the individual's achievement matrix is not as high as pre-specified cut-off level.

Many poverty measures require cardinal data, which leads to cardinalisation of the ordinal data that does not have an absolute zero; however, AF measure uses a dictomisation technique for a robust treatment of ordinal data. However, this comes with a cost, as the poverty gap information (distance between the individual achievement level and the cut-off level) has to be forgone. For example, in this paper, an individual with a house made of mud and cement has received the same treatment with a house made of mud only – they are both poor. Likewise, an individual with a house made of bricks have been considered as non-poor just like one living in a house made of zinc. As the answers are picked among predetermined multiple choices in the General Household Survey(GHS), some dimensions have to be based on dictomised data (ie. yes/no questions). Even with the limitations mentioned, multidimensional poverty measurement is more useful for the policy-makers as unidimensional measures may not appreciate the lack of certain services that are not closely related with income.

If cardinal data is thought to be appropriate for this analysis and is available, a normalised gap matrix, $g^1$, would be more appropriate to save the additional information that would have been lost in $g^0$. In this case, deprivation-matrix elements of the poor would take values such as $(z_d - x_{nd})/z_d$ if $(x_{nd} < z_d)$ and zero otherwise as before, therefore $0 \leq x_{nd} \leq 1$. This and higher powers $(\alpha > 0)$ of the matrix $(g^\alpha)$ can be labelled as the normalised gap matrices.

Consequently, a separate $N \times 1$ column vector $C$ can be used to accumulate the dimensional individual deprivations where the total number of

deprivations experienced by $n_{th}$ individual is:

$$c_n = \sum_{d=1}^{D} g^0_{nd}$$

As $X$ has been compared with $Z$ for the identification of the poor in a given dimension, the same concept is used between $C$ and $k$ to decide if an individual is poor overall. Specifically, an individual is labelled as multidimensional poor (with the set $Z_k = \{\rho_k(x_n; z)\} = 1$ if $(c_n \geq k)$ where $\rho_k$ represents across-dimension identification method) and non-poor otherwise. Hence, AF measure uses a *dual cut-off method of identification*.

Accordingly, $g^0$ matrix can be censored by replacing the non-poor nth individual's $1 \times D$ vector with a vector of zeros, whereas for higher powers $(\alpha > 0)$ of $g$, in addition to this non-poor restriction, the entries of the poor $(c_n \geq k)$ is given by $g^\alpha_{nd}(k) = g^\alpha_{nd}$. As the goal is to focus merely on the poor, these censored deprivation matrices $(g^\alpha(k))$ will be helpful to construct (dimension) adjusted FGT measures in the next section.

# 5 Dimension-adjusted FGT measures

The seminal paper by Sen (1976) begins by criticising the headcount ratio for not satisfying the core axioms such as monotonicity and transfer. In a multidimensional setting, the concern about the monotonicity (defined by Sen as "given other things, a reduction in income of a person below the poverty line must increase the poverty measure") is extended to dimensional monotonicity as well. Briefly, this is the requirement that, for a poor person, a new deprivation in a previously non-deprived dimension should increase the overall poverty level. $H$ shows the incidence but does not satisfy monotonicity, dimensional monotonicity or deprivation severity axioms.

The number of poor $(q_k)$ is defined as the number of individuals in set $Z_k$. Therefore, the headcount ratio $(H = q_k/n)$ is defined by a dual cut-off identification approach shown previously. To overcome the violation of

dimensional monotonicity, the vector of deprivation counts $C$ needs to be censored in order to focus on the poor. Hence, $c_n(k) = c_n$ if $c_n \geq k$, or else, $c_n(k) = 0$. As $0 \leq c_n \leq D$, $c_n(k)/D$ is the individual deprivation share whereas the deprivation average among the poor ($A$) is:

$A = \frac{1}{q_k D} \sum_{n=1}^{N} (c_n(k))$

Therefore:

$M_0 = HA = \frac{1}{ND} \sum_{n=1}^{N} c_n(k) = \frac{1}{ND} \sum_{n=1}^{N} \sum_{d=1}^{D} g_{nd}^0 = \mu(g^0(k))$

As $A$ provides the information about the share of total number of deprivation out of all the possible ones, dimension-adjusted headcount measure, $M_0$, considers changes in the number of deprivations of the poor, unlike its unidimensional counterpart. Hence, it can be used with ordinal data and takes care of the dimensional monotonicity.

As the extent of deprivations is ignored by $M_0$, the monotonicity axiom can be satisfied by constructing a measure based on the normalised gap matrix, $g^1$. Hence, implementing $G$ into our analysis, which eliminates the non-poor as the matrices are censored, should satisfy monotonicity, where $G$ is:

$$G = \frac{\sum_{n=1}^{N} \sum_{d=1}^{D} g_{nd}^1}{\sum_{n=1}^{N} \sum_{d=1}^{D} g_{nd}^0}$$

Therefore, $M_1$is:

$M_1 = HAG = \frac{1}{ND} \sum_{n=1}^{N} \sum_{d=1}^{D} g_{nd}^1 = \mu(g^1(k))$

As a particular amount of deprivation increase may have a larger impact on a more deprived individual than a less deprived one, this can be reflected on the overall poverty levels by incorporating $S$ rather than $G$ into the measure:

$$S = \frac{\sum_{n=1}^{N} \sum_{d=1}^{D} g_{nd}^2}{\sum_{n=1}^{N} \sum_{d=1}^{D} g_{nd}^0}$$

Since the numerator is the sum of the squared deprivations, the following measure takes the initial severity of the individual deprivation into account:

$M_2 = HAS = \frac{1}{ND}\sum_{n=1}^{N}\sum_{d=1}^{D} g_{nd}^2 = \mu(g^2(k))$

Clearly, there is a trend which can easily be generalised as multidimensional counterpart of the FGT family of measures or AF family:

$M_\alpha = \frac{1}{ND}\sum_{n=1}^{N}\sum_{d=1}^{D} g_{nd}^\alpha = \mu(g^\alpha(k))$ for $\alpha \geq 0$.

The technical notation of previously mentioned axioms satisfied by the various powers of $M_\alpha$, the ratio of the sum of the normalised gaps of the poor to the highest possible value of this summation process, can be found in the Appendix. A further list is available by Alkire and Foster (2007).

Dimensional weighting is a significant aspect of multidimensional analysis since depending on the context of the study, unequal weights might be more appropriate than equal (unitary) weights for each dimension. AF measure can easily be adjusted for unequal weighting through elements of the generalised gap matrix:

$g_{nd}^\alpha = w_d[(\frac{z_d - x_{nd}}{z_d})]^\alpha$ if $(x_{nd} < z_d)$ and zero otherwise, where $\sum_{d=1}^{D} w_d = D$.

Next section gives an overview of the data before moving on to the empirical results.

# 6 Data

This paper uses the General Household Survey (GHS) 2007 data, which can be obtained from Statistics South Africa (SSA) website (http://statssa.gov.za/). The survey interviews 29,280 households from all nine provinces of South Africa and the households were chosen based on a two-step approach: Primary sampling units (PSUs) were randomly selected using Probability Proportional to Size (PPS) sampling technique and dwelling units were randomly selected as Secondary Sampling Units (SSUs) consequently. Ten dwelling units have been selected from each of approximately 3,000 PSUs, yielding to a

total of nearly 30,000 interviews. Out of these 29,280 available observations, I have eliminated another 21 as they were not informative on the dimensions of this paper's interest; hence, 29,259 observations have been used for poverty measurement in total. By using the given population weights, these observations represent around 13,246,000 households, of which 8,283,000 are male-headed and 4,962,000 are female-headed. Due to the nature of the matrix calculations and data availability, Alkire-Foster measure underestimates the poverty but this is no higher than half a percent in any case. Analogously, for the FGT measures, I have eliminated the households who have not indicated a value for at least one of the five consumption dimensions. This measure is more precise as single dimension data is easier to handle.

The population weights have been assigned based on the inclusion probability of the PSU and the household-inclusion probability per PSU. The intention is to represent the total population. These assigned weights have been used in the analysis following the General Household Survey report. Applying unitary weights has given similar results as the sample size is large.

According to the General Household Survey (2007) Technical Notes (page 57), a household is defined as "a person, or group of persons, who occupy a common dwelling unit (or part of it) for at least four nights in a week on average during the past four weeks prior to the survey interview. Basically, they live together and share resources as a unit. (...) Persons, who occupy the same dwelling unit but do not share food or other essentials, are regarded as separate households. (...) Conversely, a household may occupy more than one structure. If persons on a plot, stand or yard eat together but sleep in separate structures (e.g. a room at the back of the house for single young male members of a family), all these persons should be regarded as one household."

Furthermore, on the same page, a household head has been defined as "the person identified by the household as the head of that household and must (by definition of "household") be a member of the household. If there

is difficulty in identifying the head, the head must be selected in order of precedence as the person who:

- Owns the household accommodation.
- Is responsible for the rent of the household accommodation.
- Has the household accommodation as an allowance (entitlement), etc.
- Has the household accommodation by virtue of some relationship to the owner, lessee, etc. who is not in the household.
- Makes the most decisions in the household.

If two or more persons have equal claim to be head of the household, or if people state that they are joint heads or that the household has no head, then denote the eldest as the head."

# 7 Empirical Results

Table 1.a shows the result of the poverty measurement by FGT measures, using the poverty lines indicated above. The results have been further analysed according to the gender of the household head. There are a small number of variations in the rankings, given in Table 1.b, when different poverty lines have been used. Western Cape is the province with lowest number of poor households, lowest level of average poverty gap and lowest level of average squared poverty gap for every $PL$-level, followed by Gauteng whereas Limpopo is on the other end of the spectrum (its rankings switched with Eastern Cape in a couple of cases).

Most of the ranking variations in terms of the measures can be observed in the mid-ranking provinces. Kwazulu-Natal is an interesting example as it is sixth among nine provinces in terms of $H$ (first being the least-deprived), however, it is only third in $G$ and $P_2$. This can be evaluated as the province having a lot of people under the lowest poverty line $PL_1$ but at the same time, a good number of these poor people being right under the line as their average gap and average squared gap are smaller than those of other provinces

with fewer people under $PL_1$.Households with female household heads have a ranking as fifth for $H$ but are only second for $P_2$. A similar trend can be observed for $PL_2$ and $PL_3$ for KwaZulu-Natal.

A reverse case is true in the rankings of Free State, as the province is fifth in $H$ but seventh in other measures under $PL_1$. Male-led households have a significant effect on the rankings of this province due to their weighted size. Even though the trends are similar, the rankings of the province get better under higher poverty lines. This means most of the poor people of this province are grouped at the very bottom of the expenditure scale and it can be listed as evidence (in addition to $P_2$ rankings) that inequality is high in Free State and low in Kwazulu-Natal relative to other provinces.

Under $PL_1$, female-led households are relatively better-off than male-led households in Northern Cape whereas the opposite is true for North West. Higher poverty lines have a general "smoothing" effect on the rankings based on the gender differences of the household heads but interestingly, the above conclusion reverses for North West. Clearly, extremely close (as close as 0.13%, in some cases) $H$ values are the key for these variations.

In general, unidimensional poverty measures help us to get a general feeling of who is more deprived financially and needs to be "saved" first, though the policy implications are very limited as we do not know much about their standard of living as financial superiority may not mean as much in a province where markets to experience that financial power is weak or do not exist at all. Likewise, superior local governmental bodies (such as municipalities) may help to compensate the lack of finances up to a certain level by providing better services to the households living in that particular province.

Table 2.a shows the percentage of poor by using the headcount ratio ($H$) for each dimension in each province. In addition, Table 2.b shows the ranking obtained from Table 2.a. The overall provincial results have been analysed further, according to the gender of the household head. There are

some significant changes in the rankings among the provinces and variations in the household head gender-specific rankings do not always follow the overall ranking variations closely. Unexpected results include the hunger and sexual/physical harassment rankings of Western Cape, which has the lowest deprivation levels in most of the other dimensions. One of the lower ranking provinces, Northern Cape, is especially deprived in telephone possession dimension, whereas Gauteng seems to be deprived in terms of electricity the most. Limpopo, a rather poor province, has the best hunger and sexual/physical harassment numbers, which is rather unexpected. Overall, female-led households are less deprived in four or five dimensions out of eleven in all provinces other than Eastern Cape, Kwazulu-Natal and Limpopo, where female-led households are better off only in a single dimension in each. These three are rather poor provinces and therefore, it can be argued that female-led households suffer from poverty especially under circumstances where multidimensional poverty is particularly high. Furthermore, female-led households are less deprived than male-led households in services such as electricity, rubbish removal and telephone ownership in most of the provinces; however, are worse in access to agricultural land, hunger and household expenditure in every province.

Table 3 shows $H$ and $M_0$ results, as well as the values that average deprivation among poor ($A$) takes for each $k$. We know that $H > M_0$ for every k as every poor individual is not deprived in every dimension, or $c_n(k) \neq D$ for every $n$. Indeed, this is rarely the case as we know that $0 \leq c_n \leq D$. In addition, there is a diminishing rate of reduction in both measures as k goes up, shrinking the gap between the male and female-led household values. On the other hand, $A$ is increasing with $k$ as an increase in $k$ lowers the numerator by $c_n$ where $0 \leq c_n \leq D$, and lowers the denominator by $D$, for every unit of reduction in $q_k$.

In addition to Table 2 that ranks provinces according to the deprivation level in each dimension, Table 4 compares the rankings as a result of expen-

diture based FGT measures, AS measures due to various power mean options used, and the multidimensional headcount ratio as well as its dimension adjusted counterpart, Alkire-Foster measure (where $k = 4$), and the average deprivation among poor, which has been used to adjust the headcount ratio.

The results show that there are variations in the rankings obtained from the results of the measures mentioned above. As expected, two multidimensional measures indicate closer rankings to one another than to the unidimensional FGT measure, though there are a number of variations between the two as well. Western Cape and Gauteng take the first two places independent of the measure or the gender of the household head (FGT $P_2$ female-led household rank is the only exception for Gauteng). Northern Cape, Free State and Limpopo would be considered poorer if the policy-makers would take the FGT measures as their criteria rather than AS or AF measures whereas the opposite is true for Kwazulu-Natal and North West provinces.

Table 5 shows the dimensional break-down of poverty in each province, according to the AF measure. This is a key table for the policy-makers as it shows the contribution of each dimension to the overall provincial poverty. Dimensional deprivation percentages indicate the dimensional contributions to the overall $M_0$ (which is taken as 100%) and these are independent of other provinces' deprivation results. For example, two of the least deprived provinces Western Cape and Gauteng have relatively similar poverty levels; however, the dimensional contributions vary significantly. Former isbetter of in terms of health dimension whereas education levels is more satisfactory in the latter. On the other hand, the municipal services such as electricity and rubbish removal contribute less in Western Cape than Gauteng. Moreover, Mpumalanga and North West, two of the mid-poor provinces, have very close $M_0$ levels and the break-down is very similar as well.

# 8 Applications of Ordinal Data

As there may be no natural zero for the variable represented in the ordinal format, comparison of two dimensions can be random and meaningless. A relatively trivial increase in one dimension can offset a relatively large increase in another random dimension, depending on the cardinal values assigned to each 'level' of each dimensions. Dictomisation, or grouping the available data into two main subgroups, is a robust way of dealing with ordinal data, which is what is usually available in a multidimensional context.

When the dimension of interest has a natural zero, such as the expenditure data, it is usually collected in the cardinal format in order to save the additional information that ordinal data ignores, as I have discussed before. These ratio-scale variables indicate the same level of poverty when the same arbitrary constant ($\beta$) is used to multiply these variables as well as the related poverty line (cut-off level) such that $M_\alpha(\beta x; \beta z) = M_\alpha(x; z)$.

On the other hand, dimensions that do not have a natural zero are subject to an arbitrary transformation process in order to be used in the calculations. Following Alkire and Foster (2007), for any $d = 1, ..., D$ let $f_d : \mathbb{R}_+ \to \mathbb{R}_+$ be any strictly increasing function on the nonnegative real numbers $\mathbb{R}_+$. $f(y)$ denote a matrix with a typical entry of $f_d(y_{nd})$and $f(z)$ is the poverty line vector with a typical entry of $f_d(z_d)$. Then, it is clear that $M_0(f(y); f(z)) = M_0(y; z)$ hence the values and the rankings constructed as a result of those values, obtained by using ordinal data, are meaningful. However, other adjusted FGT measures ($\alpha > 0$) than adjusted headcount ratio may have cases where $M_\alpha(x; z) > M_\alpha(y; z)$ and yet $M_\alpha(f(y); f(z)) < M_\alpha(f(x); f(z))$. This is especially unreliable as there can be inconsistent rankings as a result of the monotonic transformations. Headcount ratio is robust in this sense; however, it violates the dimensional monotonicity. As $M_0$ is the only robust measure in the multidimensional that satisfies favourable axioms and produce consistent results with ordinal data, we employed this measure in our analysis.

# 9 Dimensions and the Cut-off Levels

The choice of dimensions is clearly one of the key issues in multidimensional poverty measurement. There are no generally-accepted list of dimensions in applied work, as there are none in the underlying theoretical framework of Amartya Sen's Capability Approach. This condition has been evaluated as an advantage of the framework as it allows the study to be case-specific. On the other hand, it has been interpreted as a disadvantage as well, since it makes the comparisons less meaningful.

Housing is an important dimension as it effects the health and safety of the household as well as being seen as a potential social status indicator. Indicators for Monitoring the Millennium Development Goals (IMMDG) report, prepared by United Nations Development Group(UNDG) in 2003, suggests the use of "number of persons per room, or average floor area per person" indicator for the housing dimension, together with a number of papers (Qizilbash 2002). However, having the data on the quality of the wall material, I believe this indicator is more relevant to the overall well-being of the household than the space each can enjoy within the house.

The source of drinking water is vital for health and its location may affect the duty allocation of the household members, especially women. The type of toilet available to the household is a key dimension for sanitation and health. MDG criteria of the "improved water sources" (p. 64) and "improved sanitation" (p.66) have been employed (IMMDG). Electricity dimension has a rather straightforward assessment process as the data is implicitly dictomised.

Cooking fuel is a frequently used dimension in multidimensional framework as it is has an instrumental value towards health. As IMMDG points out (p. 63), consequences of solid waste usage can be health-damaging as well as its linkages with deforestation and soil erosion; this report's cut-off suggestion has been employed.

Rubbish removal is an essential dimension for the overall hygiene and,

similar to sanitation an electricity, is another dimension that can be listed as a public service. Cut-off level differentiates households that are served by the local authority (once a week of less frequently) and those that are not.

Phone/cell phone possession is a dimension that captures the essential communications needs of the household. Having either a phone or a cell phone that is available for the household is also part of the broader goal of "developing a global partnership for development" (IMMDG p. 90).

Years of education is one of the core dimensions of multidimensional poverty measurement as it has intrinsic and instrumental value and may not be reflected accurately by the income level of the household. IMMDG (p.20) stresses the fact that "achieving universal primary education" is one of the fundamental goals of MDG. This dimension have been constructed by taking the average of the years of education of the household members over age 16 and the cut-off level was Grade 7/Standard 5, indicating the completion of primary school. This dimension structure is vulnerable to cases where a student repeats a year of primary education. In order to alleviate this, I have considered household members over 16 rather than 13, which is the usual completion age of primary education. I have used "proximity to the nearest primary school" as a dimension in a previous edition of this paper and reported here for comparison purposes.

Hunger dimension points out the availability of food for the adults (above 18) within the household, as children (below 17) data was not as useful. As body weight information was not provided, we have relied on the respondent's answer about this vital dimension.

Total expenditure has been included in the analysis as it has an intrinsic value as well as instrumental value as an independent dimension. As it is mentioned in Part 3, there is not a national or generally-agreed poverty line and municipalities use different poverty lines. Following Woolard and Leibbrandt (2006) paper and considering data availability, I have chosen R1200 as the cut-off level per household, which might be considered between

the extreme "indigence" level and the medium one. The relativity of this line with "$1-a-day" and "$2-a-day" poverty lines can be found in the Appendix.

Physical harassment dimension have been constructed based on data indicating if any member of the household has been exposed to a list of different harassment types over the past 12 months. Nassbaum (2003) comes up with a list of capabilities where "bodily integrity" element could be associated with the dimension I used here. In a similar study on South Africa, Klasen (2000) uses "perception of safety inside and outside of the house, compared to 5 years ago" as his safety dimension.

Asset dimension is another frequently-used one as it is useful to overcome the complete markets assumption, which as we said, may not necessarily be realistic in a developing-country case. Klasen (2000) recorded the number of goods each household has from a wider list whereas I had data on ownership of television, radio and books only. Therefore, the cut-off level has been chosen as "having at least two of these items" to guarantee household has access to current news at least via one source.

Health dimension, a core dimensions due to numerous reasons, was captured by using "proximity of the house to the nearest clinic or hospital". This, of course, does not guarantee that the household will use these sources in case of an emergency but at least that they have access to one. Data on "the kind of health worker" the household used in a recent consultation is not as helpful as it is conditioned on being ill recently. Furthermore, Klasen (2000) indicates the reason that he used latter rather than former is due to 'unfortunate' lack of reliable data (p.38).

Employment is a vital part of overall welfare in a country such as South Africa where unemployment has consistently been the root of various problems. The dimension looks at the ratio of household members at the working age (between 15-64, inclusive) within a household and identifies the one where at least the half of the household members are employed as a non-poor household in terms of employment. IMMDG report (p.94) uses the ratio of

employed individuals to overall population as a "common country assessment indicator" as well.

Clark (2003) analyses the overall satisfaction levels of the people in South Africa in a wide list of dimensions and asks the poor to prioritise the dimensions they see as most relevant for their welfare. It turns out that employment (jobs), housing and education are the most important three dimensions according to poor. The main driver of employment is the desire to earn money and education is seen as a key for access to income. These are included in the dimension list of this paper. The following dimension, such as good family, Christian life-style, and happiness are more abstract and harder to observe. A detailed explanation of the cut-off choices among all the options possible in the GHS dataset is given in the Appendix.

# 10 Robustness Analysis

Considering the significant normative aspect of multidimensional poverty measurement, robustness analysis should be used to justify the choices that have been made. Starting with the Pearson correlation coefficient that computes linear correlation among the dimensions, it can be seen that only five coefficients are above 0.4-level (out of 91). This is a good sign as it shows a wide range of well-being indicators have been used. A particularly striking example is the sexual/physical harassment dimension, with a maximum 0.06 correlation coefficient (with hunger), and zero with six other dimensions.

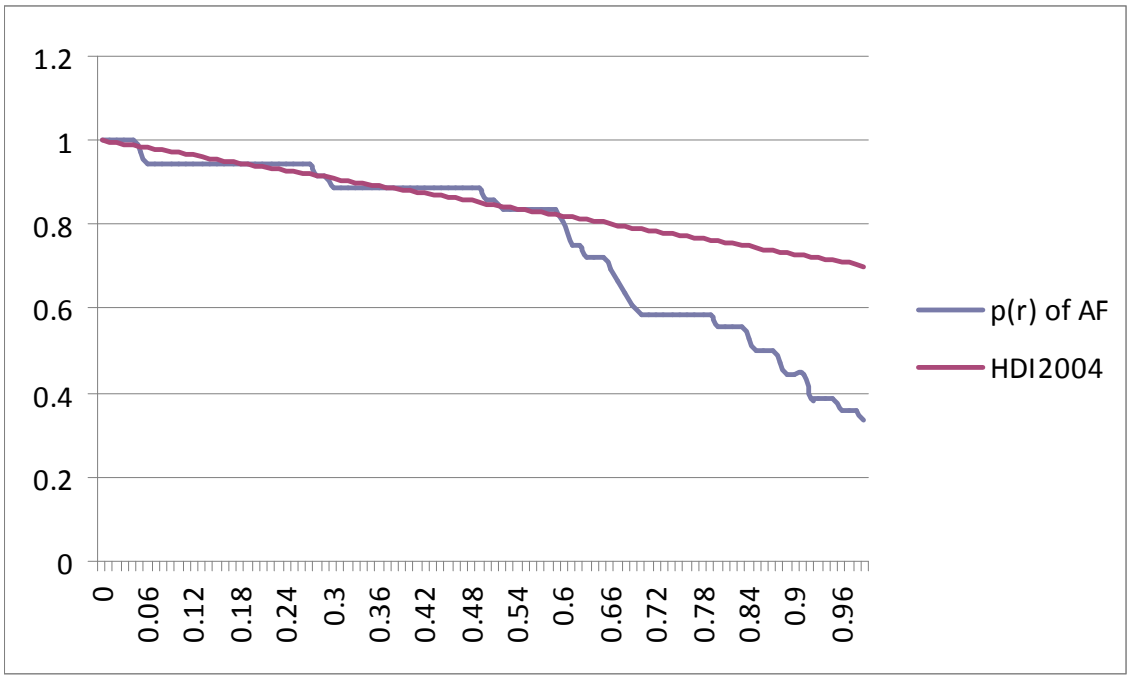
Choice of the interdimensional cut-off level $k$ can be crucial and there is not a generally-agreed method to identify optimal $k$. A similar correlation matrix to the one above reveals the fact that different choices of $k$ lead to highly correlated results (over 99% between $k$=3 and $k$=6). In another study on AF measure, Batana (2008) suggests picking up the $k$ which yields to realistic results. As his study was on various African countries, the extreme ends of the results were more obvious. Here, $k = 4$ has been used, which leads

to a multidimensional headcount ratio of 46.6%, which may seem reasonable considering a large number of dimensions (14) have been considered.

Assigning weights is another essential part of poverty measurement and is often done arbitrarily as well. As discussed in the literature, main explanation of equal-weights assumption is lack of guidance otherwise. In a study like this where $D$ is relatively high, equal weights would put equal importance to each dimension, which is not necessarily the case. I have assigned higher weights for the HDI dimensions, namely education, health and income, and divided the rest among the other 11 dimension equally. HDI dimensions are generally-agreed dimensions that affect the well-being of an individual most directly. The correlation between equal and unequal weights for the $M_0$ results is significantly large for all corresponding dimensions (at least 96%) and therefore, weights hardly affect the overall picture in this paper.

In a recent paper by Foster et al. (2009), the dominance-based relationship of variable weights has been analysed. A unit simplex $S$ where $S = \{s \epsilon R^D : s \geq 0 \; and \sum_{d=1}^{D} s_d = 1\}$ has been constructed, which contains all possible ways of weighting. Number of dimensions determine the vertices of the simplex where $v^0$ is central point, meaning it is the simple average of the vertices (equal weights). A smaller version towards a given point $w^0$ can be derived, using $r \epsilon (0,1] \; and \; d = 1, ...D$, and defining vertices $v_d^r = (1-r)w^0 + rv_d$. Let $S^r$ be the regular simplex generated by the vertices $v_d^r$, noting that when $r = 0$, $S^r = w^0$ and when $r = 1$, $S^r = S$.Hence, to conclude a robust relationship between two vectors $x$ and $y$, one need to check if achievement levels in $x$ is at least as high as that of $y$. The paper proposes $r^* = \Delta_0/(\Delta_0 + \Delta_m)$ as its robustness measure, where $\Delta_0 = C(x; w^0) - C(y; w^0) > 0$ is the composite value difference between $x$ and $y$, given initial weights $w^0$ and $\Delta_m = \max_{we S}[C(y; w) - C(x; w)] = C(y; w) - C(x; w) = (y - x).w$, which is the maximal 'contrary' difference between $y$ and $x$. Prevalence function $p(r)$ is the proportion of comparison that are robust (cannot be reversed) up to a certain level $r$. Hence, $p(0) = 1$ and $p(1)$ gives the share of fully robust

comparison out of all the possible ones. The following diagram shows the prevalence functions of this paper's results as well as Human Development Index 2004 results given in Foster et al. (2009):




It is interesting to see how the robustness level of $M_0$ result of this paper varies around $\text{HDI}_{2004}$up to a certain level of $r$ (around 0.6) and loses its competence afterwards. Please see robustness matrix on Diagram 1 for an extensive list of pair-wise robustness levels. Finally, *Kendall's coefficient of positive association,* $\tau = (A - B) + (A + B)$ for $D > 0$, where $A$ is the *concordant* pairs (one observation has a higher achievement in both dimensions considered) and $B$ is the *discordant* ones (one higher each), is only $\tau = -0.33$ whereas it is significantly higher (0.396) for $\text{HDI}_{2004}$.

# 11 Conclusion

The necessity for multidimensionality in poverty measurement is widely accepted and various measures have been developed for this purpose. However, the number of empirical studies comparing the rankings obtain by these measures have been limited. In this paper, I have applied the Foster-Greer-Thorbecke, Anand-Sen and Alkire-Foster family of measures to South Africa and found out that each measure leads to a different inter-provincial deprivation ranking. FGT went as far as income-inequality suggestions, AS have analysed the same notion based on a number of dimensions without being able to decompose the results dimensionally whereas AF was able to decompose even with the ordinal data. Valid treatment of ordinal data is important as most of the data available in the multidimensional context is ordinal by nature. These rankings have been further analysed by the gender of the household head for policy-making purposes.

# Appendix

## Poverty-Line Adjustments for FGT measures

To estimate the headcount ratio at the household level, we consider five poverty lines corresponding to \$1/day, \$2/day, and three lines derived from the indigence policies (Hoogeven and Ozler (2004)). In order to calculate the purchasing power parity (PPP) conversion factors to adjust for inflation changes since the Apartheid (1993), we use the CPI for the month of survey (Jul2007) and the technical explanations are given in Woolard and Leibbrandt (2006). CPI data is available in Statistics South Africa (SSA) and the PPP data is from Penn World Tables at http://pwt.econ.upenn.edu/. Hence, for South Africa, we have:

Current PPP = 1993PPP * (CPIcurrent/ CPIave1993)

where

1993PPP= 1.67

CPIjul2007 = 144.4

CPIave1993 = 61.2

Thus:

Jul2007PPP = R1.67/$ * (144.4/61.2) = R3.94/$

Hence the "$1-a-day" (which is really $370 per annum or $1.08 per day in 1993PPP prices) is equivalent to R4.26 per day at October 2008 prices. (R127.7/month)

Likewise, "$2-a-day" is the equivalent of R255.4/month.

By looking at the Population and Household Projections 2001 – 2021 report (Aart 2007), a crude estimate of the average household size would be 3.51 (given that it was 4.48 in 1996 and 3.69 in 2005 and the trend is downwards since then). Therefore, the household correspondence of the "$1-a-day" (per person) would be R448.23 (and similarly, "$2-a-day" would be R896.46).

Indigence-policy evaluation varies according to different municipalities. Department of Provincial and Local Government (DPLG) recommends R800 as an income threshold but municipalities use two and three-folds of this quantity per month (Woolard and Leibbrandt, 2006). This yields R827, R1655 and R2483, respectively, in July 2007 prices. These values have been used in this paper.

## Axioms (mentioned)

*Decomposability* – for any two subgroups ($n_1$ and $n_2$) of the population n, with achievement matrices $x_1$ and $x_2$, we have

$M(x; z) = \frac{n_1}{n} M(x_1; z) + \frac{n_2}{n} M(x_2; z)$

*Weak Monotonicity* – if a new matrix $x$ is obtained from another matrix $y$ by a simple increment, then $M(x; z) \leq M(y; z)$.

*Monotonicity* – in addition to weak monotonicity condition, following condition should be satisfied: if a new matrix $x$ is obtained from another matrix $y$ by a deprived increment among the poor, then $M(x; z) \leq M(y; z)$.

*Dimensional Monotonicity* – if a new matrix $x$ is obtained from another matrix $y$ by a dimensional increment among the poor, then $M(x; z)$

$\leq M(y; z)$.

*Sensitivity to Inequality* – There are two poor individuals where one initially has weakly more of each dimension than the other, but after switching one or more dimension among themselves, the ranking no longer holds. Following Atkinson and Bourguignon (1982) and Boland and Proschan (1988), $x$ is obtained from $y$ by a simple rearrangement among the poor if there are two individuals ($a$ and $b$) who are poor in $y$, such that for each $d$, either $(x_{ad}; x_{bd})$ $= (y_{ad}; y_{bd})$ or $(x_{ad}; x_{bd}) = (y_{bd}; y_{ad})$ and for every other individual$c \neq a$, $b$ we have $x_{cd} = y_{cd}$. Furthermore, $x$ is obtained from $y$ by a decreasing rearrangement among the poor if achievement vectors of $a$ and $b$ are comparable by vector dominance in $y$ but not in $x$.

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Diagram 1.a Correlation Coefficient for Each Pair of Dimension

| | 1. Hou | 2.Drinkii | 3.Sanita | 4.Electri | 5.Cook | 6.Rub | 7.Hom | 8.Years | 9.Hun | 10.Hh | 11.Ha | 12. As | 13. H | 14. Emp Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Housing | 1 | | | | | | | | | | | | | |
| 2.Drinking Wate | 0,43 | 1 | | | | | | | | | | | | |
| 3.Sanitation | 0,21 | 0,21 | 1 | | | | | | | | | | | |
| 4.Electricity | 0,37 | 0,35 | 0,29 | 1 | | | | | | | | | | |
| 5.Cooking Fuel | 0,39 | 0,40 | 0,21 | 0,40 | 1 | | | | | | | | | |
| 6.Rubb Removal | 0,40 | 0,38 | 0,22 | 0,36 | 0,47 | 1 | | | | | | | | |
| 7.Home/Cell phc | 0,15 | 0,11 | 0,13 | 0,20 | 0,17 | 0,16 | 1 | | | | | | | |
| 8.Years of Edu | 0,23 | 0,20 | 0,16 | 0,21 | 0,32 | 0,30 | 0,27 | 1 | | | | | | |
| 9.Hunger | 0,14 | 0,10 | 0,11 | 0,11 | 0,13 | 0,10 | 0,11 | 0,13 | 1 | | | | | |
| 10.Hh exp | 0,21 | 0,17 | 0,17 | 0,23 | 0,27 | 0,30 | 0,28 | 0,30 | 0,17 | 1 | | | | |
| 11.Harassment | 0,00 | 0,00 | 0,02 | 0,01 | -0,01 | -0,01 | 0,00 | 0,00 | 0,06 | 0,00 | 1 | | | |
| 12. Assets | 0,24 | 0,19 | 0,20 | 0,36 | 0,23 | 0,25 | 0,32 | 0,27 | 0,15 | 0,31 | 0,02 | 1 | | |
| 13. Health Prox | 0,26 | 0,27 | 0,15 | 0,24 | 0,29 | 0,38 | 0,09 | 0,18 | 0,09 | 0,17 | 0,01 | 0,16 | 1 | |
| 14. Emp Ratio | 0,19 | 0,16 | 0,06 | 0,08 | 0,25 | 0,18 | 0,08 | 0,20 | 0,15 | 0,25 | 0,00 | 0,06 | 0,12 | 1 |

Diagram 1.b Correlation Coefficient for Each k level between 3-6

| k | 3 | 4 | 5 | 6 |
|---|---|---|---|---|
| 3 | 1 | | | |
| 4 | 0,9996 | 1 | | |
| 5 | 0,9959 | 0,998 | 1 | |
| 6 | 0,9931 | 0,996 | 0,9996 | 1 |

## Indicators and Cut-off of the Dimensions used

| *Dimensions* | Weights | The household is considered as deprived if |
|---|---|---|
| *1. Housing* | 8/11 | The main material used for the walls of the house is cardboard, mixture of mud and cement, wattle and daub, tile, mud, thatching, asbestos or other (and NOT bricks, cement block/concrete, corrugated iron/zinc, wood or plastic). |
| *2.Drinking Water* | 8/11 | The household's main source of drinking water is a water carrier/tanker, borehole off site/communal, flowing water/stream/river, stagnant water/dam/pool, well, spring or other (and NOT piped (tap) water in dwelling, piped (tap) water on site or in yard, borehole in site, rain-water tank on site, neighbour's tap or public/communal tap). |
| *3.Sanitation* | 8/11 | The type of toilet facility available for the household is (off-site) a chemical toilet, (off-site) pit latrine with ventilation, (off-site) pit latrine without ventilation, (off-site) bucket toilet or none (and NOT a flush toilet with offsite disposal, a flush toilet with on site disposal (septic tank), (on-site) a chemical toilet, (on-site) pit latrine with ventilation or (on-site) pit latrine without ventilation). |
| *4.Electricity* | 8/11 | The household does not have a connection to the MAINS electricity supply (and NOT does have a connection to the MAINS electricity supply). |
| *5. Cooking Fuel* | 8/11 | The main source of cooking fuel for this household is either wood, coal, candles, animal dung, solar energy or other (and is NOT electricity from MAINS, electricity from generator, gas or paraffin). |
| *6.Rubbish Removal* | 8/11 | The refuse or rubbish removal for this household is taken care of (removed) by community members at least once a week, removed by community members less often than once a week, communal refuse dump/communal container, own refuse dump, no rubbish removal or other (and NOT removed by local authority at least once a week or removed by local authority less often than once a week). |
| *7.Home/Cellular phone* | 8/11 | Neither a functional/working landline telephone nor a cellular telephone is available for the household for regular use (and NOT if either one of the above is available). |
| *8.Years of Education* | 22/11 | The members of the household who are at least 16 years old have, on average, failed to complete their primary school education at least up to Grade 7/Standard 5, (and NOT if they have completed their primary school education as a household, based-on simple average of years of schooling of the individual members who are at least 16 years old). |
| *9.Hunger* | 8/11 | In the last 12 months, any adult (18 years and above) in this household sometimes, often or always went hungry because there wasn't enough food (and NOT in the last 12 months, any adult (18 years and above) in this household never or seldom went hungry because there wasn't enough food). |

| | | |
|---|---|---|
| *10.Household expenditure* | 22/11 | The total household expenditure in the last month (include everything that the household and its members spent money on, including food, clothing, transport, rent and rates, alcohol and tobacco, school fees, entertainment and any other expenses) was R 1200 or below (and NOT the total household expenditure in the last month was above R1200). |
| *11.Sexual/physical harassment* | 8/11 | During the past 12 months, any member of this household has been harassed or threatened by a household member, been harassed or threatened by someone outside the household, been sexually molested by a household member, been sexually molested by someone outside the household, been beaten up or hurt by a household member, been beaten up or hurt by someone outside the household, been murdered by a household member, been murdered by someone outside the household (and NOT if NONE of the above has happened in the past 12 months to any member of this household). |
| *12. Assets* | 8/11 | The household does not own at least two of the following: television, radio and books (and NOT if the household owns at least two of these three items). |
| *13. Health Proximity* | 22/11 | The household does not have access (within 30 minutes by usual means of transport) to a clinic or a hospital (and NOT if the household has access to a clinic or a hospital within 30 minutes by usual means of transport). |
| *14. Employment Ratio* | 8/11 | On average, at least half of the members of the household who are aged between 15-64 did not do any work for a wage, salary, commission or payment in kind (including domestic work) in the last seven days AND they do not have a job, business or other economic activity or farming activity that they will definitely return to (and NOT if, on average, at least half of the members of the household who are aged between 15-64 did some work for a wage, salary, commission or payment in kind in the last seven days OR even if they did not, they have a job, business or other economic activity or farming activity that they will definitely return to) |

**Table 1.a: Income-based population-weighted FGT measures by province (in percentages)**

| Provinces | | | Number of poor | HC Ratio α=0 | Pov Gap (α=1) | FGT P2(α=2) |
|---|---|---|---|---|---|---|
| Western Cape | **PL=827** | Male-headed | 185730 | 21,33% | 8,01% | 4,39% |
| | | Female-headed | 110110 | 26,60% | 8,54% | 3,96% |
| | | Overall | 295840/1284822 | 23,03% | 8,18% | 4,25% |
| | **PL=1656** | Male-headed | 366390 | 42,07% | 20,26% | 12,34% |
| | | Female-headed | 240790 | 58,17% | 26,32% | 15,08% |
| | | Overall | 607180/1284823 | 47,26% | 22,21% | 13,22% |
| | **Pl=2483** | Male-headed | 458550 | 52,66% | 29,30% | 19,54% |
| | | Female-headed | 289080 | 69,83% | 39,15% | 25,38% |
| | | Overall | 747640/1284824 | 58,19% | 32,48% | 21,42% |
| Eastern Cape | **PL=827** | Male-headed | 471120 | 49,24% | 21,23% | 12,07% |
| | | Female-headed | 512260 | 65,50% | 26,88% | 14,44% |
| | | Overall | 983380/1738884 | 56,55% | 23,77% | 13,14% |
| | **PL=1656** | Male-headed | 697750 | 72,93% | 42,68% | 28,72% |
| | | Female-headed | 678510 | 86,76% | 53,28% | 36,18% |
| | | Overall | 1376300/1738884 | 79,15% | 47,45% | 32,08% |
| | **Pl=2483** | Male-headed | 753910 | 78,80% | 53,76% | 40,06% |
| | | Female-headed | 722100 | 92,33% | 65,56% | 49,66% |
| | | Overall | 1476000/1738884 | 84,88% | 59,07% | 44,38% |
| Northern Cape | **PL=827** | Male-headed | 76472 | 40,97% | 17,16% | 9,89% |
| | | Female-headed | 38869 | 44,42% | 18,53% | 10,45% |
| | | Overall | 115340/274153 | 42,07% | 17,59% | 10,07% |
| | **PL=1656** | Male-headed | 118430 | 63,45% | 35,90% | 23,83% |
| | | Female-headed | 67968 | 77,67% | 41,01% | 26,43% |
| | | Overall | 186400/274153 | 67,99% | 37,53% | 24,66% |
| | **Pl=2483** | Male-headed | 138200 | 74,04% | 47,19% | 34,10% |
| | | Female-headed | 76575 | 87,51% | 55,06% | 39,02% |
| | | Overall | 214770/274153 | 78,34% | 49,70% | 35,67% |
| Free State | **PL=827** | Male-headed | 226060 | 42,04% | 18,03% | 10,40% |
| | | Female-headed | 180290 | 57,35% | 22,66% | 12,02% |
| | | Overall | 406350/853434 | 47,69% | 19,74% | 11,00% |
| | **PL=1656** | Male-headed | 356980 | 66,39% | 37,26% | 24,75% |
| | | Female-headed | 254810 | 81,06% | 47,36% | 31,44% |
| | | Overall | 611790/853434 | 71,81% | 40,99% | 27,22% |
| | **Pl=2483** | Male-headed | 411550 | 76,54% | 48,59% | 35,29% |
| | | Female-headed | 277680 | 88,34% | 59,90% | 44,33% |
| | | Overall | 689230/853434 | 80,89% | 52,76% | 38,62% |
| Kwazulu-Natal | **PL=827** | Male-headed | 574020 | 42,72% | 15,60% | 7,86% |
| | | Female-headed | 557750 | 54,51% | 19,78% | 9,76% |
| | | Overall | 1131800/2366889 | 47,82% | 17,41% | 8,68% |
| | **PL=1656** | Male-headed | 903690 | 67,25% | 36,59% | 23,21% |
| | | Female-headed | 830280 | 81,15% | 45,68% | 29,22% |
| | | Overall | 1734000/2366889 | 73,26% | 40,52% | 25,81% |
| | **Pl=2483** | Male-headed | 1048100 | 78,00% | 48,80% | 34,52% |
| | | Female-headed | 917300 | 89,65% | 59,20% | 42,70% |
| | | Overall | 1965300/2366889 | 83,04% | 53,30% | 38,06% |
| | **PL=827** | Male-headed | 229450 | 40,26% | 17,14% | 9,82% |
| | | Female-headed | 181570 | 52,39% | 22,32% | 12,49% |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Overall | 411020/916501 | 44,85% | 19,10% | 10,83% |
| | **PL=1656** | Male-headed | 390170 | 68,46% | 36,65% | 23,95% |
| North West | | Female-headed | 272560 | 78,65% | 45,07% | 30,19% |
| | | Overall | 662720/916501 | 72,31% | 39,84% | 26,31% |
| | **Pl=2483** | Male-headed | 451800 | 79,27% | 49,03% | 34,95% |
| | | Female-headed | 297200 | 85,76% | 57,47% | 42,44% |
| | | Overall | 749000/916501 | 81,72% | 52,22% | 37,78% |
| | **PL=827** | Male-headed | 729730 | 32,55% | 13,32% | 7,50% |
| | | Female-headed | 318220 | 39,23% | 17,40% | 10,26% |
| | | Overall | 1048000/3053622 | 34,32% | 14,40% | 8,23% |
| | **PL=1656** | Male-headed | 1307200 | 58,32% | 30,05% | 19,14% |
| Gauteng | | Female-headed | 537290 | 66,24% | 35,99% | 23,79% |
| | | Overall | 1844500/3053622 | 60,40% | 31,62% | 20,37% |
| | **Pl=2483** | Male-headed | 1549600 | 69,13% | 41,50% | 28,83% |
| | | Female-headed | 623970 | 76,92% | 48,02% | 34,37% |
| | | Overall | 2173500/3053622 | 71,18% | 43,22% | 30,29% |
| | **PL=827** | Male-headed | 234470 | 44,14% | 17,52% | 9,23% |
| | | Female-headed | 186590 | 56,85% | 21,72% | 11,27% |
| | | Overall | 421060/859415 | 48,99% | 19,12% | 10,01% |
| | **PL=1656** | Male-headed | 367910 | 69,26% | 38,60% | 25,04% |
| Mpumalanga | | Female-headed | 280380 | 85,42% | 48,37% | 31,32% |
| | | Overall | 648290/859415 | 75,43% | 42,33% | 27,44% |
| | **Pl=2483** | Male-headed | 409030 | 77,00% | 50,24% | 36,31% |
| | | Female-headed | 300110 | 91,43% | 61,74% | 45,14% |
| | | Overall | 709140/859415 | 82,51% | 54,64% | 39,68% |
| | **PL=827** | Male-headed | 365120 | 58,05% | 23,56% | 12,48% |
| | | Female-headed | 438600 | 67,24% | 25,11% | 12,31% |
| | | Overall | 804940/1282586 | 62,76% | 24,36% | 12,39% |
| | **PL=1656** | Male-headed | 511930 | 81,38% | 48,07% | 32,12% |
| Limpopo | | Female-headed | 596670 | 91,47% | 53,93% | 35,39% |
| | | Overall | 1109800/1282586 | 86,53% | 51,07% | 33,80% |
| | **Pl=2483** | Male-headed | 554510 | 88,15% | 60,48% | 44,98% |
| | | Female-headed | 623210 | 95,54% | 67,15% | 50,01% |
| | | Overall | 1178900/1282586 | 91,92% | 63,89% | 47,56% |
| | **PL=827** | Male-headed | 3098100 | 39,37% | 15,91% | 8,73% |
| | | Female-headed | 2526400 | 53,09% | 20,80% | 10,93% |
| | | Overall | 5626000/1263030 | 44,54% | 17,75% | 9,56% |
| | **PL=1656** | Male-headed | 5030700 | 63,93% | 34,81% | 22,57% |
| Country Total | | Female-headed | 3764700 | 79,11% | 44,95% | 29,40% |
| | | Overall | 8796900/1263030 | 69,65% | 38,63% | 25,14% |
| | **Pl=2483** | Male-headed | 5786100 | 73,53% | 46,24% | 33,01% |
| | | Female-headed | 4132700 | 86,85% | 57,79% | 42,17% |
| | | Overall | 9920300/1263030 | 78,54% | 50,59% | 36,46% |

**Table 1.b: Income-based population-weighted FGT measures by province (rankings)**

| | Overall PL=827 | | | Male PL=827 | | | Female PL=827 | | |
|---|---|---|---|---|---|---|---|---|---|
| | **(α=0)** | **(α=1)** | **(α=2)** | **(α=0)** | **(α=1)** | **(α=2)** | **(α=0)** | **(α=1)** | **(α=2)** |
| Western Cape | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Eastern Cape | 8 | 8 | 9 | 8 | 8 | 8 | 8 | 9 | 9 |
| Northern Cape | 3 | 4 | 5 | 4 | 5 | 6 | 3 | 3 | 4 |
| Free State | 5 | 7 | 7 | 5 | 7 | 7 | 7 | 7 | 6 |
| Kwazulu-Natal | 6 | 3 | 3 | 6 | 3 | 3 | 5 | 4 | 2 |
| North West | 4 | 5 | 6 | 3 | 4 | 5 | 4 | 6 | 8 |
| Gauteng | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |
| Mpumalanga | 7 | 6 | 4 | 7 | 6 | 4 | 6 | 5 | 5 |
| Limpopo | 9 | 9 | 8 | 9 | 9 | 9 | 9 | 8 | 7 |

| | Overall PL=1656 | | | Male PL=1656 | | | Female PL=1656 | | |
|---|---|---|---|---|---|---|---|---|---|
| | **(α=0)** | **(α=1)** | **(α=2)** | **(α=0)** | **(α=1)** | **(α=2)** | **(α=0)** | **(α=1)** | **(α=2)** |
| Western Cape | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Eastern Cape | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 9 |
| Northern Cape | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 |
| Free State | 4 | 6 | 6 | 4 | 6 | 6 | 5 | 6 | 7 |
| Kwazulu-Natal | 6 | 5 | 4 | 5 | 4 | 3 | 6 | 5 | 4 |
| North West | 5 | 4 | 5 | 6 | 5 | 5 | 4 | 4 | 5 |
| Gauteng | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mpumalanga | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 |
| Limpopo | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 8 |

| | Overall PL=2483 | | | Male PL=2483 | | | Female PL=2483 | | |
|---|---|---|---|---|---|---|---|---|---|
| | **(α=0)** | **(α=1)** | **(α=2)** | **(α=0)** | **(α=1)** | **(α=2)** | **(α=0)** | **(α=1)** | **(α=2)** |
| Western Cape | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Eastern Cape | 8 | 8 | 8 | 7 | 8 | 8 | 8 | 8 | 8 |
| Northern Cape | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 |
| Free State | 4 | 4 | 6 | 4 | 4 | 6 | 5 | 6 | 6 |
| Kwazulu-Natal | 7 | 6 | 5 | 6 | 5 | 4 | 6 | 5 | 5 |
| North West | 5 | 5 | 4 | 8 | 6 | 5 | 3 | 4 | 4 |
| Gauteng | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mpumalanga | 6 | 7 | 7 | 5 | 7 | 7 | 7 | 7 | 7 |
| Limpopo | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |

Table 2.a The Headcount Ratio in Each Dimension (%)

| Region | Gender of HH-head | 1. Housing | 2.Drinking Water | 3.Sanitation | 4.Electricity | 5.Cooking Fuel | 6.Rubb Removal | 7.Home/Cell phone | 8.Years of Edu | 9.Hunger | 10.Hh exp | 11.Harassment | 12. Assets | 13. Health Prox | 14. Emp Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Western Cape | Male-headed | 1,39 | 0,27 | 7,92 | 4,85 | 1,62 | 11,62 | 17,84 | 14,07 | 9,35 | 31,36 | 7,97 | 14,49 | 9,71 | 27,05 |
| | Female-headed | 1,49 | 0,20 | 8,25 | 2,90 | 0,98 | 6,46 | 22,35 | 14,05 | 15,35 | 42,38 | 6,75 | 16,80 | 12,09 | 42,38 |
| | Overall | 1,42 | 0,24 | 8,03 | 4,23 | 1,41 | 9,99 | 19,26 | 14,06 | 11,24 | 34,83 | 7,59 | 15,22 | 10,46 | 31,87 |
| Eastern Cape | Male-headed | 27,81 | 18,16 | 27,01 | 28,78 | 21,19 | 55,42 | 33,86 | 33,15 | 14,78 | 64,87 | 5,86 | 31,24 | 36,36 | 44,74 |
| | Female-headed | 43,92 | 28,25 | 30,49 | 31,58 | 29,95 | 65,23 | 29,80 | 41,05 | 18,92 | 79,81 | 6,43 | 37,17 | 46,08 | 66,70 |
| | Overall | 35,06 | 22,70 | 28,58 | 30,04 | 25,13 | 59,83 | 32,04 | 36,70 | 16,64 | 71,59 | 6,12 | 33,91 | 40,73 | 54,62 |
| Northern Cape | Male-headed | 1,97 | 3,59 | 13,81 | 12,46 | 8,81 | 23,82 | 29,11 | 32,33 | 7,53 | 52,62 | 5,70 | 27,16 | 24,39 | 33,26 |
| | Female-headed | 3,35 | 1,15 | 12,25 | 8,63 | 4,33 | 13,48 | 29,53 | 31,89 | 11,83 | 62,96 | 9,29 | 24,44 | 22,84 | 55,66 |
| | Overall | 2,41 | 2,82 | 13,34 | 11,27 | 7,42 | 20,58 | 29,23 | 32,19 | 8,90 | 55,89 | 6,85 | 26,32 | 23,92 | 40,31 |
| Free State | Male-headed | 4,82 | 2,18 | 13,31 | 12,29 | 11,04 | 26,63 | 25,05 | 22,87 | 7,34 | 56,72 | 8,20 | 25,29 | 19,43 | 33,51 |
| | Female-headed | 4,10 | 0,91 | 21,60 | 12,85 | 12,01 | 19,73 | 23,86 | 31,51 | 12,09 | 75,94 | 9,81 | 20,46 | 21,48 | 63,87 |
| | Overall | 4,55 | 1,71 | 16,35 | 12,49 | 11,39 | 24,09 | 24,62 | 26,05 | 9,08 | 63,78 | 8,79 | 23,52 | 20,18 | 44,66 |
| Kwazulu-Natal | Male-headed | 22,48 | 11,39 | 8,99 | 19,63 | 15,51 | 41,02 | 28,93 | 25,00 | 7,40 | 55,70 | 5,64 | 27,69 | 36,63 | 40,73 |
| | Female-headed | 33,95 | 20,99 | 14,55 | 29,96 | 29,37 | 56,41 | 28,35 | 34,09 | 12,83 | 71,25 | 5,93 | 31,02 | 45,03 | 62,53 |
| | Overall | 27,41 | 15,52 | 11,38 | 24,07 | 21,47 | 47,64 | 28,68 | 28,91 | 9,73 | 62,39 | 5,76 | 29,13 | 40,24 | 50,10 |
| North West | Male-headed | 3,81 | 7,46 | 11,25 | 16,81 | 12,60 | 49,29 | 20,07 | 30,26 | 10,22 | 56,88 | 5,96 | 35,07 | 33,36 | 38,48 |
| | Female-headed | 3,80 | 4,57 | 8,12 | 9,75 | 16,19 | 52,13 | 20,46 | 30,83 | 17,54 | 67,23 | 5,38 | 30,03 | 44,36 | 65,36 |
| | Overall | 3,81 | 6,37 | 10,06 | 14,14 | 13,96 | 50,36 | 20,22 | 30,48 | 12,99 | 60,79 | 5,74 | 33,17 | 37,52 | 48,64 |
| Gauteng | Male-headed | 1,30 | 1,36 | 4,63 | 22,58 | 3,12 | 16,26 | 20,49 | 14,77 | 5,90 | 47,28 | 5,85 | 27,12 | 20,70 | 25,36 |
| | Female-headed | 1,34 | 1,76 | 3,76 | 16,84 | 3,00 | 9,85 | 18,87 | 15,36 | 13,09 | 56,03 | 7,48 | 20,87 | 24,43 | 47,49 |
| | Overall | 1,31 | 1,47 | 4,40 | 21,06 | 3,09 | 14,56 | 20,06 | 14,92 | 7,80 | 49,59 | 6,28 | 25,46 | 21,69 | 31,24 |
| Mpumalanga | Male-headed | 9,25 | 9,08 | 11,90 | 15,04 | 24,88 | 50,65 | 18,60 | 31,76 | 10,24 | 58,33 | 6,91 | 31,02 | 32,81 | 33,33 |
| | Female-headed | 7,42 | 7,27 | 8,44 | 11,94 | 42,74 | 62,46 | 17,56 | 41,12 | 13,73 | 75,58 | 7,28 | 28,26 | 37,03 | 67,74 |
| | Overall | 8,55 | 8,40 | 10,59 | 13,86 | 31,66 | 55,13 | 18,21 | 35,31 | 11,57 | 64,88 | 7,05 | 29,97 | 34,41 | 46,39 |
| Limpopo | Male-headed | 8,12 | 9,43 | 9,98 | 14,84 | 43,82 | 77,60 | 27,17 | 33,11 | 5,95 | 70,23 | 2,03 | 28,27 | 39,17 | 55,70 |
| | Female-headed | 9,53 | 13,61 | 12,63 | 13,51 | 63,45 | 87,85 | 28,52 | 42,82 | 7,25 | 80,15 | 2,55 | 30,32 | 42,80 | 76,35 |
| | Overall | 8,83 | 11,55 | 11,32 | 14,15 | 53,78 | 82,74 | 27,83 | 38,02 | 6,61 | 75,31 | 2,39 | 29,38 | 40,98 | 66,16 |
| South Africa in Total | Male-headed | 9,66 | 6,67 | 10,60 | 18,36 | 13,22 | 35,00 | 24,14 | 23,29 | 8,34 | 53,01 | 5,99 | 27,08 | 27,25 | 35,10 |
| | Female-headed | 17,36 | 12,27 | 14,01 | 19,21 | 25,42 | 46,65 | 24,88 | 31,46 | 13,66 | 68,87 | 6,26 | 27,88 | 35,96 | 61,24 |
| | Overall | 12,54 | 8,77 | 11,88 | 18,68 | 17,79 | 39,36 | 24,41 | 26,35 | 10,33 | 58,95 | 6,10 | 27,38 | 30,51 | 44,89 |

| Region | Gender of HH-head | 1. Housing | 2.Drinking Water | 3.Sanitation | 4.Electricity | 5.Cooking Fuel | 6.Rubb Removal | 7.Home/Cellphone | 8.Years of Edu | 9.Hunger | 10.Hh exp | 11.Harassment | 12. Assets | 13. Health Prox | 14. Emp Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Western Cape | Male-headed | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1 | 8 | 1 | 1 | 2 |
| | Female-headed | 2 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 7 | 1 | 5 | 1 | 1 | 1 |
| | Overall | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 6 | 1 | 8 | 1 | 1 | 2 |
| Eastern Cape | Male-headed | 9 | 9 | 8 | 9 | 7 | 8 | 9 | 5 | 9 | 8 | 5 | 8 | 7 | 8 |
| | Female-headed | 9 | 9 | 8 | 9 | 7 | 8 | 9 | 7 | 9 | 8 | 4 | 9 | 9 | 7 |
| | Overall | 9 | 9 | 8 | 9 | 7 | 8 | 9 | 6 | 9 | 8 | 4 | 9 | 8 | 8 |
| Northern Cape | Male-headed | 3 | 4 | 3 | 3 | 3 | 3 | 8 | 2 | 5 | 3 | 3 | 4 | 4 | 3 |
| | Female-headed | 3 | 3 | 3 | 2 | 3 | 3 | 8 | 3 | 2 | 3 | 8 | 4 | 3 | 3 |
| | Overall | 3 | 4 | 3 | 2 | 3 | 3 | 8 | 2 | 3 | 3 | 6 | 4 | 4 | 3 |
| Free State | Male-headed | 5 | 3 | 4 | 2 | 4 | 4 | 5 | 4 | 3 | 5 | 9 | 2 | 2 | 5 |
| | Female-headed | 5 | 2 | 4 | 5 | 4 | 4 | 5 | 5 | 3 | 7 | 9 | 2 | 2 | 5 |
| | Overall | 5 | 3 | 4 | 3 | 4 | 4 | 5 | 4 | 4 | 6 | 9 | 2 | 2 | 4 |
| Kwazulu-Natal | Male-headed | 8 | 8 | 5 | 7 | 6 | 5 | 7 | 8 | 4 | 4 | 2 | 5 | 8 | 7 |
| | Female-headed | 8 | 8 | 6 | 8 | 6 | 6 | 6 | 8 | 4 | 5 | 3 | 8 | 8 | 4 |
| | Overall | 8 | 8 | 5 | 8 | 6 | 5 | 7 | 8 | 5 | 5 | 3 | 5 | 7 | 7 |
| North West | Male-headed | 4 | 5 | 7 | 6 | 5 | 6 | 3 | 9 | 7 | 6 | 6 | 9 | 6 | 6 |
| | Female-headed | 4 | 5 | 5 | 3 | 5 | 5 | 3 | 9 | 8 | 4 | 2 | 6 | 7 | 6 |
| | Overall | 4 | 5 | 7 | 5 | 5 | 6 | 4 | 9 | 8 | 4 | 2 | 8 | 6 | 6 |
| Gauteng | Male-headed | 1 | 2 | 2 | 8 | 2 | 2 | 4 | 3 | 1 | 2 | 4 | 3 | 3 | 1 |
| | Female-headed | 1 | 4 | 2 | 7 | 2 | 2 | 2 | 2 | 5 | 2 | 7 | 3 | 4 | 2 |
| | Overall | 1 | 2 | 2 | 7 | 2 | 2 | 3 | 3 | 2 | 2 | 5 | 3 | 3 | 1 |
| Mpumalanga | Male-headed | 7 | 6 | 6 | 5 | 8 | 7 | 2 | 7 | 8 | 7 | 7 | 7 | 5 | 4 |
| | Female-headed | 6 | 6 | 7 | 4 | 8 | 7 | 1 | 4 | 6 | 6 | 6 | 5 | 5 | 8 |
| | Overall | 6 | 6 | 6 | 4 | 8 | 7 | 1 | 5 | 7 | 7 | 7 | 7 | 5 | 5 |
| Limpopo | Male-headed | 6 | 7 | 9 | 4 | 9 | 9 | 6 | 6 | 2 | 9 | 1 | 6 | 9 | 9 |
| | Female-headed | 7 | 7 | 9 | 6 | 9 | 9 | 7 | 6 | 1 | 9 | 1 | 7 | 6 | 9 |
| | Overall | 7 | 7 | 9 | 6 | 9 | 9 | 6 | 7 | 1 | 9 | 1 | 6 | 9 | 9 |

Table 3: Gender-Specific Values Within Regions for each k

| | | | Number of Dimensions | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| Western Cape | Number of Hh | Male-headed | 448430 | 411530 | 230720 | 166900 | 77448 | 55120 | 22073 | 8764,9 | 2225,7 | 1567,1 | 183,94 | | | |
| | | Female-headed | 268690 | 234320 | 128830 | 94167 | 35926 | 21442 | 7646,8 | 3623,4 | 604,38 | 161,06 | 0 | | | |
| | | Overall | 717120 | 645850 | 359540 | 261070 | 113370 | 76561 | 29720 | 12388 | 2830,1 | 1728,1 | 183,94 | | | |
| | H (%) | Male-headed | 48,02 | 44,07 | 24,71 | 17,87 | 8,29 | 5,90 | 2,36 | 0,94 | 0,24 | 0,17 | 0,02 | | | |
| | | Female-headed | 62,62 | 54,61 | 30,02 | 21,95 | 8,37 | 5,00 | 1,78 | 0,84 | 0,14 | 0,04 | 0,00 | | | |
| | | Overall | 52,62 | 47,39 | 26,38 | 19,16 | 8,32 | 5,62 | 2,18 | 0,91 | 0,21 | 0,13 | 0,01 | | | |
| | $M_0$ (%) | Male-headed | 12,37 | 11,96 | 8,70 | 7,01 | 3,94 | 3,00 | 1,37 | 0,60 | 0,17 | 0,13 | 0,02 | | | |
| | | Female-headed | 15,39 | 14,56 | 10,14 | 8,14 | 3,81 | 2,49 | 1,02 | 0,52 | 0,10 | 0,03 | 0,00 | | | |
| | | Overall | 13,32 | 12,78 | 9,15 | 7,37 | 3,90 | 2,84 | 1,26 | 0,57 | 0,15 | 0,09 | 0,01 | | | |
| | $A=M_0/H$ (%) | Male-headed | 25,76 | 27,13 | 35,22 | 39,23 | 47,49 | 50,90 | 57,75 | 63,71 | 72,72 | 74,64 | 79,22 | | | |
| | | Female-headed | 24,58 | 26,66 | 33,76 | 37,11 | 45,50 | 49,85 | 57,19 | 61,87 | 69,15 | 74,03 | NaN | | | |
| | | Overall | 25,31 | 26,96 | 34,69 | 38,47 | 46,86 | 50,60 | 57,61 | 63,17 | 71,96 | 74,58 | 79,22 | | | |
| Eastern Cape | Number of Hh | Male-headed | 781190 | 754740 | 630130 | 586890 | 458480 | 406110 | 292220 | 234130 | 152510 | 95126 | 59412 | 11190 | 3309 | 0 |
| | | Female-headed | 734880 | 720130 | 619970 | 572640 | 474800 | 424990 | 333480 | 273600 | 206000 | 127770 | 91798 | 27789 | 5340 | 578,87 |
| | | Overall | 1516100 | 1474900 | 1250100 | 1159500 | 933280 | 831110 | 625710 | 507720 | 358510 | 222900 | 151210 | 38979 | 8649 | 578,87 |
| | H (%) | Male-headed | 79,06 | 76,38 | 63,77 | 59,40 | 46,40 | 41,10 | 29,58 | 23,70 | 15,44 | 9,63 | 6,01 | 1,13 | 0,33 | 0,00 |
| | | Female-headed | 90,98 | 89,15 | 76,75 | 70,89 | 58,78 | 52,61 | 41,28 | 33,87 | 25,50 | 15,82 | 11,36 | 3,44 | 0,66 | 0,07 |
| | | Overall | 84,42 | 82,13 | 69,61 | 64,57 | 51,97 | 46,28 | 34,84 | 28,27 | 19,96 | 12,41 | 8,42 | 2,17 | 0,48 | 0,03 |
| | $M_0$ (%) | Male-headed | 34,93 | 34,65 | 32,44 | 31,36 | 27,17 | 25,07 | 19,77 | 16,60 | 11,61 | 7,70 | 5,01 | 1,03 | 0,32 | 0,00 |
| | | Female-headed | 43,85 | 43,66 | 41,50 | 40,06 | 36,18 | 33,74 | 28,49 | 24,50 | 19,40 | 12,87 | 9,57 | 3,12 | 0,63 | 0,07 |
| | | Overall | 38,94 | 38,70 | 36,52 | 35,27 | 31,22 | 28,97 | 23,69 | 20,15 | 15,12 | 10,03 | 7,06 | 1,97 | 0,46 | 0,03 |
| | $A=M_0/H$ (%) | Male-headed | 44,18 | 45,37 | 50,87 | 52,80 | 58,55 | 61,00 | 66,85 | 70,06 | 75,22 | 79,93 | 83,36 | 91,15 | 94,81 | NaN |
| | | Female-headed | 48,20 | 48,97 | 54,08 | 56,50 | 61,55 | 64,14 | 69,01 | 72,33 | 76,08 | 81,39 | 84,19 | 90,72 | 95,37 | 100,00 |
| | | Overall | 46,13 | 47,13 | 52,46 | 54,63 | 60,08 | 62,61 | 68,00 | 71,28 | 75,72 | 80,77 | 83,87 | 90,84 | 95,15 | 100,00 |
| | Number of Hh | Male-headed | 138760 | 133800 | 97275 | 80302 | 56689 | 45355 | 25005 | 14826 | 6323,5 | 2785,3 | 1685,9 | 209,1 | 166,3 | 0 |
| | | Female-headed | 70841 | 67651 | 50668 | 41883 | 27616 | 18488 | 8093,4 | 5332,7 | 2577,5 | 468,52 | 56,115 | 56,12 | 0 | 0 |
| | | Overall | 209650 | 201500 | 147990 | 122240 | 84357 | 63895 | 33151 | 20211 | 8953,1 | 3253,8 | 1742 | 265,2 | 166,3 | 0 |
| | H (%) | Male-headed | 69,09 | 66,62 | 48,43 | 39,98 | 28,23 | 22,58 | 12,45 | 7,38 | 3,15 | 1,39 | 0,84 | 0,10 | 0,08 | 0,00 |
| | | Female-headed | 76,68 | 73,23 | 54,84 | 45,34 | 29,89 | 20,01 | 8,76 | 5,77 | 2,79 | 0,51 | 0,06 | 0,06 | 0,00 | 0,00 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Northern Cape | | Overall | 71,49 | 68,71 | 50,46 | 41,68 | 28,76 | 21,79 | 11,30 | 6,89 | 3,05 | 1,11 | 0,59 | 0,09 | 0,06 | 0,00 |
| | $M_0$ (%) | Male-headed | 23,69 | 23,43 | 20,28 | 18,19 | 14,47 | 12,27 | 7,59 | 4,86 | 2,30 | 1,09 | 0,69 | 0,10 | 0,08 | 0,00 |
| | | Female-headed | 25,32 | 24,97 | 21,70 | 19,35 | 14,40 | 10,54 | 5,34 | 3,74 | 1,94 | 0,39 | 0,05 | 0,05 | 0,00 | 0,00 |
| | | Overall | 24,21 | 23,92 | 20,73 | 18,56 | 14,46 | 11,74 | 6,89 | 4,52 | 2,20 | 0,87 | 0,49 | 0,08 | 0,05 | 0,00 |
| | $A=M_0/H$ (%) | Male-headed | 34,29 | 35,17 | 41,86 | 45,50 | 51,28 | 54,34 | 60,94 | 65,87 | 72,94 | 78,92 | 82,11 | 93,74 | 94,81 | NaN |
| | | Female-headed | 33,03 | 34,09 | 39,56 | 42,69 | 48,17 | 52,67 | 60,96 | 64,75 | 69,58 | 76,57 | 89,61 | 89,61 | NaN | NaN |
| | | Overall | 33,87 | 34,82 | 41,08 | 44,54 | 50,27 | 53,86 | 60,95 | 65,57 | 71,92 | 78,58 | 82,35 | 92,87 | 94,81 | NaN |
| Free State | Number of Hh | Male-headed | 395240 | 372400 | 271930 | 204320 | 122710 | 86661 | 43531 | 26008 | 14992 | 6477,2 | 3440,1 | 386,5 | 0 | 0 |
| | | Female-headed | 272150 | 264850 | 196930 | 163950 | 103120 | 77503 | 32624 | 19775 | 6791,2 | 2429,4 | 0 | 0 | 0 | 0 |
| | | Overall | 667390 | 637260 | 468870 | 368270 | 225840 | 164160 | 76155 | 45783 | 21783 | 8906,5 | 3440,1 | 386,5 | 0 | 0 |
| | H (%) | Male-headed | 71,60 | 67,46 | 49,26 | 37,01 | 22,23 | 15,70 | 7,89 | 4,71 | 2,72 | 1,17 | 0,62 | 0,07 | 0,00 | 0,00 |
| | | Female-headed | 84,94 | 82,66 | 61,47 | 51,17 | 32,19 | 24,19 | 10,18 | 6,17 | 2,12 | 0,76 | 0,00 | 0,00 | 0,00 | 0,00 |
| | | Overall | 76,50 | 73,04 | 53,74 | 42,21 | 25,89 | 18,82 | 8,73 | 5,25 | 2,50 | 1,02 | 0,39 | 0,04 | 0,00 | 0,00 |
| | $M_0$ (%) | Male-headed | 22,39 | 21,96 | 18,77 | 15,75 | 11,03 | 8,47 | 4,88 | 3,17 | 1,97 | 0,92 | 0,51 | 0,06 | 0,00 | 0,00 |
| | | Female-headed | 28,46 | 28,23 | 24,43 | 21,88 | 15,77 | 12,65 | 6,11 | 3,96 | 1,48 | 0,56 | 0,00 | 0,00 | 0,00 | 0,00 |
| | | Overall | 24,62 | 24,26 | 20,85 | 18,00 | 12,77 | 10,00 | 5,33 | 3,46 | 1,79 | 0,79 | 0,32 | 0,04 | 0,00 | 0,00 |
| | $A=M_0/H$ (%) | Male-headed | 31,28 | 32,56 | 38,11 | 42,55 | 49,60 | 53,96 | 61,93 | 67,39 | 72,41 | 78,40 | 82,26 | 89,61 | NaN | NaN |
| | | Female-headed | 33,51 | 34,15 | 39,74 | 42,77 | 49,00 | 52,29 | 60,02 | 64,16 | 69,89 | 74,03 | NaN | NaN | NaN | NaN |
| | | Overall | 32,19 | 33,22 | 38,79 | 42,65 | 49,33 | 53,17 | 61,11 | 66,00 | 71,63 | 77,21 | 82,26 | 89,61 | NaN | NaN |
| Kwazulu-Natal | Number of Hh | Male-headed | 1079300 | 1040100 | 764540 | 664320 | 491740 | 408190 | 268390 | 207410 | 131970 | 76718 | 50066 | 10641 | 2565 | 202,08 |
| | | Female-headed | 953520 | 928900 | 769880 | 673810 | 538090 | 465910 | 343570 | 273160 | 198040 | 119660 | 77876 | 21261 | 5982 | 245,84 |
| | | Overall | 2033000 | 1969200 | 1534600 | 1338300 | 1030000 | 874100 | 611960 | 480570 | 330010 | 196370 | 127940 | 31902 | 8547 | 447,92 |
| | H (%) | Male-headed | 74,69 | 71,98 | 52,91 | 45,97 | 34,03 | 28,25 | 18,57 | 14,35 | 9,13 | 5,31 | 3,46 | 0,74 | 0,18 | 0,01 |
| | | Female-headed | 87,44 | 85,19 | 70,60 | 61,79 | 49,35 | 42,73 | 31,51 | 25,05 | 18,16 | 10,97 | 7,14 | 1,95 | 0,55 | 0,02 |
| | | Overall | 80,18 | 77,66 | 60,52 | 52,78 | 40,62 | 34,47 | 24,13 | 18,95 | 13,02 | 7,74 | 5,05 | 1,26 | 0,34 | 0,02 |
| | $M_0$ (%) | Male-headed | 28,15 | 27,87 | 24,58 | 22,86 | 19,05 | 16,78 | 12,27 | 10,00 | 6,84 | 4,26 | 2,89 | 0,67 | 0,17 | 0,01 |
| | | Female-headed | 38,19 | 37,95 | 35,38 | 33,20 | 29,17 | 26,57 | 21,37 | 17,88 | 13,72 | 8,86 | 6,01 | 1,78 | 0,52 | 0,02 |
| | | Overall | 32,47 | 32,21 | 29,22 | 27,31 | 23,40 | 20,99 | 16,18 | 13,39 | 9,80 | 6,24 | 4,23 | 1,15 | 0,32 | 0,02 |
| | $A=M_0/H$ (%) | Male-headed | 37,69 | 38,72 | 46,45 | 49,73 | 55,99 | 59,40 | 66,06 | 69,69 | 74,95 | 80,22 | 83,32 | 90,96 | 95,22 | 100,00 |
| | | Female-headed | 43,67 | 44,55 | 50,10 | 53,73 | 59,11 | 62,18 | 67,81 | 71,39 | 75,53 | 80,77 | 84,21 | 91,13 | 95,02 | 100,00 |
| | | Overall | 40,50 | 41,47 | 48,28 | 51,74 | 57,62 | 60,88 | 67,05 | 70,66 | 75,30 | 80,55 | 83,86 | 91,08 | 95,08 | 100,00 |
| | Number | Male-headed | 450410 | 430290 | 328980 | 275650 | 197700 | 154940 | 93960 | 64528 | 33786 | 16714 | 8244,5 | 524,4 | 0 | 0 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | of Hh | Female-headed | 302020 | 291850 | 242000 | 204670 | 149920 | 115140 | 66609 | 44323 | 20562 | 11923 | 3635,1 | 1212 | 176 | 0 |
| | | Overall | 752420 | 722140 | 570980 | 480320 | 347620 | 270080 | 160570 | 108850 | 54348 | 28636 | 11880 | 1736 | 176 | 0 |
| | H (%) | Male-headed | 76,70 | 73,27 | 56,02 | 46,94 | 33,67 | 26,38 | 16,00 | 10,99 | 5,75 | 2,85 | 1,40 | 0,09 | 0,00 | 0,00 |
| | | Female-headed | 84,71 | 81,86 | 67,88 | 57,41 | 42,05 | 32,29 | 18,68 | 12,43 | 5,77 | 3,34 | 1,02 | 0,34 | 0,05 | 0,00 |
| North | | Overall | 79,72 | 76,52 | 60,50 | 50,89 | 36,83 | 28,62 | 17,01 | 11,53 | 5,76 | 3,03 | 1,26 | 0,18 | 0,02 | 0,00 |
| West | $M_0$ (%) | Male-headed | 27,60 | 27,24 | 24,28 | 22,03 | 17,78 | 14,92 | 10,08 | 7,37 | 4,19 | 2,20 | 1,13 | 0,08 | 0,00 | 0,00 |
| | | Female-headed | 32,08 | 31,78 | 29,29 | 26,71 | 21,71 | 17,90 | 11,59 | 8,23 | 4,23 | 2,57 | 0,85 | 0,31 | 0,05 | 0,00 |
| | | Overall | 29,29 | 28,96 | 26,17 | 23,80 | 19,26 | 16,04 | 10,65 | 7,70 | 4,21 | 2,34 | 1,03 | 0,17 | 0,02 | 0,00 |
| | $A=M_0/H$ (%) | Male-headed | 35,99 | 37,18 | 43,33 | 46,94 | 52,80 | 56,54 | 62,99 | 67,08 | 72,90 | 77,27 | 80,54 | 89,61 | NaN | NaN |
| | | Female-headed | 37,87 | 38,82 | 43,16 | 46,52 | 51,64 | 55,43 | 62,02 | 66,21 | 73,35 | 77,00 | 83,78 | 90,37 | 94,81 | NaN |
| | | Overall | 36,74 | 37,85 | 43,26 | 46,76 | 52,30 | 56,06 | 62,59 | 66,72 | 73,07 | 77,16 | 81,53 | 90,14 | 94,81 | NaN |
| | Number of Hh | Male-headed | 1563500 | 1467000 | 911180 | 707930 | 360580 | 265950 | 87686 | 49585 | 12837 | 1048,8 | 542,44 | 542,4 | 0 | 0 |
| | | Female-headed | 618810 | 592500 | 372880 | 293160 | 151860 | 94121 | 42015 | 24771 | 6322,7 | 1845,5 | 260,92 | 0 | 0 | 0 |
| | | Overall | 2182300 | 2059500 | 1284100 | 1001100 | 512440 | 360070 | 129700 | 74356 | 19160 | 2894,4 | 803,36 | 542,4 | 0 | 0 |
| | H (%) | Male-headed | 65,66 | 61,61 | 38,27 | 29,73 | 15,14 | 11,17 | 3,68 | 2,08 | 0,54 | 0,04 | 0,02 | 0,02 | 0,00 | 0,00 |
| | | Female-headed | 72,08 | 69,01 | 43,43 | 34,15 | 17,69 | 10,96 | 4,89 | 2,89 | 0,74 | 0,21 | 0,03 | 0,00 | 0,00 | 0,00 |
| Gauteng | | Overall | 67,34 | 63,56 | 39,63 | 30,89 | 15,81 | 11,11 | 4,00 | 2,29 | 0,59 | 0,09 | 0,02 | 0,02 | 0,00 | 0,00 |
| | $M_0$ (%) | Male-headed | 18,25 | 17,83 | 13,86 | 11,75 | 7,16 | 5,60 | 2,17 | 1,31 | 0,37 | 0,04 | 0,02 | 0,02 | 0,00 | 0,00 |
| | | Female-headed | 20,60 | 20,29 | 15,85 | 13,55 | 8,33 | 5,69 | 2,89 | 1,81 | 0,52 | 0,16 | 0,02 | 0,00 | 0,00 | 0,00 |
| | | Overall | 18,87 | 18,47 | 14,38 | 12,23 | 7,47 | 5,62 | 2,36 | 1,44 | 0,41 | 0,07 | 0,02 | 0,02 | 0,00 | 0,00 |
| | $A=M_0/H$ (%) | Male-headed | 27,79 | 28,93 | 36,22 | 39,53 | 47,28 | 50,11 | 58,97 | 62,94 | 69,49 | 82,71 | 89,61 | 89,61 | NaN | NaN |
| | | Female-headed | 28,59 | 29,39 | 36,48 | 39,69 | 47,07 | 51,90 | 58,96 | 62,66 | 70,73 | 74,76 | 79,22 | NaN | NaN | NaN |
| | | Overall | 28,02 | 29,07 | 36,30 | 39,58 | 47,22 | 50,58 | 58,97 | 62,85 | 69,90 | 77,64 | 86,24 | 89,61 | NaN | NaN |
| | Number of Hh | Male-headed | 430370 | 412270 | 319100 | 276710 | 196080 | 158350 | 90729 | 65003 | 33593 | 14118 | 7744,7 | 1434 | 0 | 0 |
| | | Female-headed | 311060 | 297500 | 258440 | 222280 | 166360 | 131190 | 73060 | 52308 | 22484 | 9488,1 | 5828,6 | 403,4 | 0 | 0 |
| | | Overall | 741440 | 709770 | 577550 | 498990 | 362440 | 289550 | 163790 | 117310 | 56077 | 23607 | 13573 | 1837 | 0 | 0 |
| | H (%) | Male-headed | 78,13 | 74,85 | 57,93 | 50,24 | 35,60 | 28,75 | 16,47 | 11,80 | 6,10 | 2,56 | 1,41 | 0,26 | 0,00 | 0,00 |
| | | Female-headed | 92,32 | 88,30 | 76,70 | 65,97 | 49,37 | 38,94 | 21,68 | 15,52 | 6,67 | 2,82 | 1,73 | 0,12 | 0,00 | 0,00 |
| Mpumalanga | | Overall | 83,52 | 79,95 | 65,06 | 56,21 | 40,83 | 32,62 | 18,45 | 13,21 | 6,32 | 2,66 | 1,53 | 0,21 | 0,00 | 0,00 |
| | $M_0$ (%) | Male-headed | 28,64 | 28,30 | 25,37 | 23,47 | 18,76 | 16,07 | 10,38 | 7,86 | 4,42 | 2,03 | 1,17 | 0,23 | 0,00 | 0,00 |
| | | Female-headed | 36,05 | 35,63 | 33,58 | 30,92 | 25,60 | 21,51 | 13,51 | 10,20 | 4,84 | 2,21 | 1,41 | 0,11 | 0,00 | 0,00 |
| | | Overall | 31,45 | 31,08 | 28,49 | 26,30 | 21,35 | 18,14 | 11,57 | 8,75 | 4,58 | 2,10 | 1,26 | 0,19 | 0,00 | 0,00 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $A=M_0/H$ (%) | Male-headed | 36,66 | 37,81 | 43,79 | 46,71 | 52,69 | 55,91 | 63,02 | 66,61 | 72,56 | 79,06 | 83,12 | 89,61 | NaN | NaN |
| | | Female-headed | 39,05 | 40,36 | 43,78 | 46,87 | 51,84 | 55,23 | 62,32 | 65,72 | 72,50 | 78,64 | 81,50 | 89,61 | NaN | NaN |
| | | Overall | 37,66 | 38,88 | 43,79 | 46,79 | 52,30 | 55,61 | 62,71 | 66,22 | 72,53 | 78,89 | 82,42 | 89,61 | NaN | NaN |
| Limpopo | Number of Hh | Male-headed | 565640 | 547520 | 469110 | 416030 | 306290 | 254750 | 142140 | 102630 | 36538 | 14868 | 5821,6 | 0 | 0 | 0 |
| | | Female-headed | 632710 | 621720 | 579440 | 533250 | 413560 | 353540 | 203330 | 139120 | 57734 | 21183 | 7816,5 | 0 | 0 | 0 |
| | | Overall | 1199600 | 1170500 | 1049800 | 949280 | 719860 | 608290 | 345470 | 241750 | 94272 | 36051 | 13638 | 0 | 0 | 0 |
| | H (%) | Male-headed | 87,73 | 84,92 | 72,76 | 64,52 | 47,50 | 39,51 | 22,05 | 15,92 | 5,67 | 2,31 | 0,90 | 0,00 | 0,00 | 0,00 |
| | | Female-headed | 94,46 | 92,82 | 86,50 | 79,61 | 61,74 | 52,78 | 30,36 | 20,77 | 8,62 | 3,16 | 1,17 | 0,00 | 0,00 | 0,00 |
| | | Overall | 91,17 | 88,95 | 79,78 | 72,14 | 54,71 | 46,23 | 26,26 | 18,37 | 7,16 | 2,74 | 1,04 | 0,00 | 0,00 | 0,00 |
| | $M_0$ (%) | Male-headed | 34,77 | 34,47 | 32,32 | 30,29 | 24,81 | 21,67 | 13,58 | 10,26 | 4,04 | 1,76 | 0,72 | 0,00 | 0,00 | 0,00 |
| | | Female-headed | 41,48 | 41,31 | 40,17 | 38,46 | 32,72 | 29,18 | 18,70 | 13,51 | 6,14 | 2,42 | 0,95 | 0,00 | 0,00 | 0,00 |
| | | Overall | 38,18 | 37,95 | 36,31 | 34,42 | 28,81 | 25,47 | 16,17 | 11,91 | 5,10 | 2,10 | 0,83 | 0,00 | 0,00 | 0,00 |
| | $A=M_0/H$ (%) | Male-headed | 39,63 | 40,60 | 44,43 | 46,94 | 52,23 | 54,84 | 61,59 | 64,48 | 71,26 | 76,25 | 79,71 | NaN | NaN | NaN |
| | | Female-headed | 43,92 | 44,51 | 46,44 | 48,31 | 52,99 | 55,28 | 61,60 | 65,06 | 71,20 | 76,64 | 80,98 | NaN | NaN | NaN |
| | | Overall | 41,88 | 42,66 | 45,52 | 47,71 | 52,67 | 55,09 | 61,60 | 64,81 | 71,22 | 76,48 | 80,44 | NaN | NaN | NaN |
| South Africa in Total | Number of Hh | Male-headed | 5852700 | 5569600 | 4022800 | 3379000 | 2267700 | 1835400 | 1E+06 | 772880 | 424770 | 229420 | 137140 | 24928 | 6039 | 202,08 |
| | | Female-headed | 4164800 | 4019600 | 3219200 | 2799800 | 2061300 | 1702300 | 1E+06 | 836010 | 521110 | 294930 | 187270 | 50721 | 11499 | 824,72 |
| | | Overall | 1E+07 | 9590600 | 7243500 | 6179100 | 4329200 | 3537800 | 2E+06 | 2E+06 | 945940 | 524350 | 324410 | 75649 | 17538 | 1026,8 |
| | H (%) | Male-headed | 70,65 | 67,24 | 48,56 | 40,79 | 27,38 | 22,16 | 12,87 | 9,33 | 5,13 | 2,77 | 1,66 | 0,30 | 0,07 | 0,00 |
| | | Female-headed | 83,93 | 81,01 | 64,88 | 56,43 | 41,54 | 34,31 | 22,38 | 16,85 | 10,50 | 5,94 | 3,77 | 1,02 | 0,23 | 0,02 |
| | | Overall | 75,63 | 72,39 | 54,68 | 46,64 | 32,68 | 26,70 | 16,43 | 12,15 | 7,14 | 3,96 | 2,45 | 0,57 | 0,13 | 0,01 |
| | $M_0$ (%) | Male-headed | 24,35 | 24,00 | 20,79 | 18,87 | 14,59 | 12,54 | 8,25 | 6,34 | 3,80 | 2,20 | 1,37 | 0,27 | 0,07 | 0,00 |
| | | Female-headed | 33,09 | 32,78 | 29,94 | 27,85 | 23,07 | 20,23 | 14,69 | 11,71 | 7,86 | 4,78 | 3,17 | 0,93 | 0,22 | 0,02 |
| | | Overall | 27,62 | 27,29 | 24,21 | 22,23 | 17,77 | 15,42 | 10,66 | 8,35 | 5,32 | 3,17 | 2,05 | 0,52 | 0,13 | 0,01 |
| | $A=M_0/H$ (%) | Male-headed | 34,46 | 35,69 | 42,81 | 46,26 | 53,30 | 56,60 | 64,11 | 67,98 | 74,08 | 79,46 | 82,98 | 90,91 | 94,98 | 100,00 |
| | | Female-headed | 39,42 | 40,47 | 46,15 | 49,36 | 55,54 | 58,96 | 65,64 | 69,50 | 74,88 | 80,42 | 83,97 | 90,87 | 95,18 | 100,00 |
| | | Overall | 36,52 | 37,69 | 44,29 | 47,66 | 54,36 | 57,74 | 64,89 | 68,77 | 74,52 | 80,00 | 83,55 | 90,89 | 95,11 | 100,00 |

| Table 4: Comparative Rankings | | Expenditure-based FGT PL=827 | | | HPI measures | | | Rankings H vs. Alkire-Foster | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | HC Ratio | Pov Gap | FGT P2 | simp ave | ave of sq | local var | | | |
| Region | Gender of HH-head | α=0 | (α=1) | (α=2) | α=1 | α=2 | α=3 | H | $M_0$ | A |
| Western Cape | Male-headed | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Female-headed | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Overall | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Eastern Cape | Male-headed | 8 | 8 | 8 | 9 | 8 | 8 | 8 | 9 | 9 |
| | Female-headed | 8 | 9 | 9 | 9 | 8 | 8 | 8 | 9 | 9 |
| | Overall | 8 | 8 | 8 | 9 | 8 | 8 | 8 | 9 | 9 |
| Northern Cape | Male-headed | 4 | 5 | 6 | 3 | 3 | 3 | 4 | 4 | 4 |
| | Female-headed | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 |
| | Overall | 3 | 4 | 6 | 3 | 3 | 3 | 3 | 4 | 4 |
| Free State | Male-headed | 5 | 7 | 7 | 4 | 4 | 5 | 3 | 3 | 3 |
| | Female-headed | 7 | 7 | 6 | 4 | 5 | 6 | 4 | 4 | 4 |
| | Overall | 5 | 7 | 7 | 4 | 4 | 5 | 4 | 3 | 3 |
| Kwazulu-Natal | Male-headed | 6 | 3 | 3 | 7 | 5 | 4 | 5 | 6 | 8 |
| | Female-headed | 5 | 4 | 2 | 8 | 6 | 5 | 6 | 7 | 8 |
| | Overall | 6 | 3 | 3 | 7 | 6 | 4 | 6 | 7 | 8 |
| North West | Male-headed | 3 | 4 | 5 | 5 | 7 | 7 | 6 | 5 | 6 |
| | Female-headed | 4 | 6 | 8 | 5 | 4 | 4 | 5 | 5 | 5 |
| | Overall | 4 | 5 | 5 | 5 | 5 | 6 | 5 | 5 | 5 |
| Gauteng | Male-headed | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | Female-headed | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| | Overall | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mpumalanga | Male-headed | 7 | 6 | 4 | 6 | 6 | 6 | 7 | 7 | 5 |
| | Female-headed | 6 | 5 | 5 | 6 | 7 | 7 | 7 | 6 | 6 |
| | Overall | 7 | 6 | 4 | 6 | 7 | 7 | 7 | 6 | 6 |
| Limpopo | Male-headed | 9 | 9 | 9 | 8 | 9 | 9 | 9 | 8 | 7 |
| | Female-headed | 9 | 8 | 7 | 7 | 9 | 9 | 9 | 8 | 7 |
| | Overall | 9 | 9 | 9 | 8 | 9 | 9 | 9 | 8 | 7 |

Table 5: Contribution of each dimension to overall poverty in each dimension (in % - not ranks)

| Provinces | Gender of hh-head | Dimensions 1. Housing | 2.Drinking Water | 3.Sanitation | 4.Electricity | 5.Cooking Fuel | 6.Rubb Removal | 7.Home/Cell phone | 8.Years of Edu | 9.Hunger | 10.Hh exp | 11.Harassment | 12. Assets | 13. Health Prox | 14. Emp Ratio | Total | $M_0$ | $M_0$ ranks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Western Cape | Male-headed | 0,62 | 0,13 | 3,59 | 2,43 | 0,89 | 4,43 | 7,54 | 20,37 | 3,56 | 32,17 | 1,47 | 7,09 | 9,86 | 5,86 | 100 | 7,01 | 1 |
| | Female-headed | 0,59 | 0,01 | 3,31 | 1,19 | 0,53 | 2,29 | 6,60 | 20,48 | 4,45 | 34,58 | 1,20 | 5,58 | 10,35 | 8,83 | 100 | 8,14 | 1 |
| | Overall | 0,61 | 0,09 | 3,49 | 1,99 | 0,77 | 3,69 | 7,21 | 20,41 | 3,87 | 33,01 | 1,38 | 6,56 | 10,03 | 6,89 | 100 | 7,37 | 1 |
| Eastern Cape | Male-headed | 4,49 | 2,93 | 4,13 | 4,34 | 3,49 | 7,93 | 4,75 | 14,81 | 2,24 | 25,26 | 0,72 | 4,76 | 14,59 | 5,56 | 100 | 31,4 | 9 |
| | Female-headed | 5,54 | 3,59 | 3,85 | 3,99 | 3,88 | 7,80 | 3,47 | 14,29 | 2,17 | 23,63 | 0,68 | 4,56 | 15,60 | 6,97 | 100 | 40,1 | 9 |
| | Overall | 5,03 | 3,27 | 3,99 | 4,16 | 3,69 | 7,86 | 4,10 | 14,54 | 2,20 | 24,43 | 0,70 | 4,66 | 15,11 | 6,28 | 100 | 35,3 | 9 |
| Northern Cape | Male-headed | 0,36 | 0,93 | 3,22 | 3,11 | 2,32 | 4,64 | 6,00 | 22,97 | 1,67 | 28,58 | 0,84 | 5,78 | 14,32 | 5,23 | 100 | 18,2 | 4 |
| | Female-headed | 0,76 | 0,31 | 2,50 | 1,99 | 1,12 | 2,79 | 5,76 | 21,92 | 2,74 | 31,51 | 1,51 | 4,98 | 13,77 | 8,35 | 100 | 19,4 | 3 |
| | Overall | 0,49 | 0,73 | 2,99 | 2,75 | 1,93 | 4,04 | 5,92 | 22,61 | 2,02 | 29,54 | 1,07 | 5,52 | 14,15 | 6,25 | 100 | 18,6 | 4 |
| Free State | Male-headed | 1,22 | 0,66 | 3,48 | 3,30 | 2,65 | 5,39 | 5,75 | 18,71 | 2,04 | 31,95 | 1,25 | 5,26 | 12,62 | 5,71 | 100 | 15,7 | 3 |
| | Female-headed | 0,86 | 0,18 | 4,02 | 2,69 | 2,34 | 3,69 | 4,72 | 19,57 | 2,42 | 32,43 | 1,40 | 4,07 | 12,39 | 9,20 | 100 | 21,9 | 4 |
| | Overall | 1,06 | 0,45 | 3,72 | 3,03 | 2,51 | 4,63 | 5,29 | 19,10 | 2,21 | 32,16 | 1,32 | 4,73 | 12,52 | 7,27 | 100 | 18 | 3 |
| Kwazulu-Natal | Male-headed | 4,51 | 2,51 | 1,77 | 3,95 | 3,43 | 7,33 | 5,00 | 14,61 | 1,51 | 25,81 | 0,67 | 5,40 | 17,66 | 5,84 | 100 | 22,9 | 6 |
| | Female-headed | 4,91 | 3,22 | 2,08 | 4,55 | 4,52 | 7,76 | 3,68 | 13,96 | 1,83 | 24,24 | 0,66 | 4,50 | 16,88 | 7,19 | 100 | 33,2 | 7 |
| | Overall | 4,72 | 2,88 | 1,93 | 4,26 | 4,00 | 7,56 | 4,31 | 14,27 | 1,68 | 24,99 | 0,66 | 4,93 | 17,25 | 6,55 | 100 | 27,3 | 7 |
| North West | Male-headed | 0,80 | 1,70 | 2,44 | 3,46 | 2,82 | 8,19 | 3,87 | 18,03 | 2,03 | 27,14 | 0,85 | 5,97 | 17,18 | 5,50 | 100 | 22 | 5 |
| | Female-headed | 0,70 | 0,74 | 1,46 | 1,79 | 2,97 | 7,30 | 3,71 | 15,82 | 2,88 | 28,60 | 0,84 | 4,89 | 19,35 | 8,95 | 100 | 26,7 | 5 |
| | Overall | 0,76 | 1,30 | 2,03 | 2,75 | 2,89 | 7,81 | 3,80 | 17,09 | 2,39 | 27,76 | 0,84 | 5,52 | 18,10 | 6,97 | 100 | 23,8 | 5 |
| Gauteng | Male-headed | 0,28 | 0,44 | 1,52 | 6,84 | 0,99 | 4,85 | 5,66 | 15,64 | 1,80 | 33,14 | 1,03 | 7,64 | 15,68 | 4,49 | 100 | 11,8 | 2 |
| | Female-headed | 0,46 | 0,60 | 1,09 | 4,73 | 0,83 | 2,88 | 4,52 | 14,44 | 3,87 | 33,47 | 1,40 | 5,66 | 18,04 | 8,00 | 100 | 13,6 | 2 |
| | Overall | 0,33 | 0,49 | 1,39 | 6,22 | 0,94 | 4,27 | 5,33 | 15,28 | 2,41 | 33,24 | 1,14 | 7,06 | 16,37 | 5,52 | 100 | 12,2 | 2 |
| Mpumalanga | Male-headed | 1,82 | 1,81 | 2,32 | 3,02 | 4,60 | 8,48 | 3,50 | 18,12 | 1,99 | 27,47 | 0,77 | 5,70 | 15,36 | 5,04 | 100 | 23,5 | 7 |
| | Female-headed | 1,16 | 1,22 | 1,24 | 1,91 | 5,91 | 8,57 | 2,65 | 18,05 | 2,06 | 27,85 | 0,96 | 4,34 | 15,79 | 8,28 | 100 | 30,9 | 6 |
| | Overall | 1,52 | 1,55 | 1,84 | 2,53 | 5,19 | 8,52 | 3,12 | 18,09 | 2,02 | 27,64 | 0,86 | 5,10 | 15,55 | 6,48 | 100 | 26,3 | 6 |
| Limpopo | Male-headed | 1,27 | 1,50 | 1,63 | 2,23 | 6,97 | 10,56 | 4,04 | 14,75 | 0,96 | 27,28 | 0,20 | 4,18 | 16,90 | 7,54 | 100 | 30,3 | 8 |
| | Female-headed | 1,28 | 1,76 | 1,56 | 1,61 | 8,16 | 10,37 | 3,66 | 15,70 | 0,89 | 26,56 | 0,33 | 3,69 | 15,23 | 9,20 | 100 | 38,5 | 8 |
| | Overall | 1,28 | 1,64 | 1,59 | 1,87 | 7,65 | 10,45 | 3,82 | 15,29 | 0,92 | 26,87 | 0,27 | 3,90 | 15,95 | 8,49 | 100 | 34,4 | 8 |
| SA in Total | Male-headed | 2,37 | 1,73 | 2,48 | 4,09 | 3,32 | 7,28 | 4,90 | 16,09 | 1,84 | 28,12 | 0,78 | 5,67 | 15,69 | 5,64 | 100 | 18,9 | |
| | Female-headed | 3,06 | 2,22 | 2,34 | 3,28 | 4,48 | 7,47 | 3,78 | 15,39 | 2,10 | 26,65 | 0,76 | 4,49 | 16,03 | 7,94 | 100 | 27,8 | |
| | Overall | 2,70 | 1,96 | 2,42 | 3,71 | 3,86 | 7,37 | 4,37 | 15,76 | 1,96 | 27,43 | 0,77 | 5,11 | 15,85 | 6,72 | 100 | 22,2 | |