DISCOVERING THE POOR IN THE MIDST OF THE RICH IN SOUTH AFRICA

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Abstract

Poverty is a persistent problem in South Africa. Poverty alleviation can only be effectively directed by awareness of spatial distribution. South Africa is in a prime position to reap the benefits of the demographic dividend however, unemployment, inflation, inequality and poverty are still on the rise. This study determines the spatial variation of poverty in South Africa for 2001 and 2011. The study will also specifically explore areas that are poor (HL areas), but surrounded by rich areas (LL areas). The data used was obtained from the South African Multidimensional Poverty Index (SAMPI). In 2001, there were 157 (3.68%) HL areas. This decreased to 118 (2.76%) in 2011. Whilst there is a national decrease of HL areas, there is an increase in four provinces. The largest increase in is in Gauteng. The policy implications of these findings present important associations for targeting poor areas that are close to rich areas.

Introduction:

There is a need for data at all geographic levels in South Africa. There is a need particularly for data below provincial and municipal level. Local government has the responsibility of delivering services to citizens therefore, politicians and policy makers need lower level data for planning, monitoring and evaluating. Poverty is a persistent problem in South Africa (National Treasury of South Africa, 2007; Phogole, 2010; Lechtenfeld & Zoch, 2014; SAHRC & UNICEF, 2014). South Africa is in a prime position to reap the benefits of the demographic dividend from a theoretical point of view however, unemployment; inflation, inequality and poverty are still on the rise (Gribble & Bremner, 2012).

South Africa is one of the most unequal countries in the world, with glaring disparities (Woolard, 2002). South Africa was deemed the fourth most unequal society in the world, the most unequal from the BRICS countries and the third most unequal in the SADC region. (Chitiga, Sekyere, & Tsoanamatsie, 2014). Poverty and inequality are inextricably linked through the relationship with economic growth (Naschold, 2002). Poverty and inequality is as a result of past discrimination based on apartheid policies, which directed opportunity, education, employment and essentially wealth toward the white population group. More than twenty years into democracy and the pervasion of apartheid still lingers. Hence, in South Africa, poverty is interrelated with population group. This does not mean that poverty is limited to previously disadvantaged population groups or that no individual in the white population lives in poverty. Apartheid left South Africa with divided cities and towns, fragmented communities and marginalised economic participation. Segregation and living arrangements of different population groups were legalised under apartheid. Both the Group Areas Act (1950) and the Black Communities Development Act (1984) stipulated where people of different race groups could and could not live (Wentzel & Tlabela 2006). These left spatial implications and consequences for South Africa.

Following the end of apartheid, policies like the Reconstruction and Development Programme in South Africa addressed development concerns and amongst them poor spatial planning which has left large communities marginalised in peripheral areas. Municipalities in South Africa have implemented the Spatial Development Framework though which spatial planning can be fortified. A spatial analysis of poverty is therefore essential to determine where the poor are located. It should be remembered that pockets of poverty exist in both rural and urban areas (Bigman & Fofack, 2000). The question of why do certain areas

become pockets of poverty, whilst surrounding areas thrive is essential to consider (Bigman & Fofack, 2000). This question is especially important when the areas and communities are located close to each other.

Poverty alleviation however can only be effectively directed by awareness of geospatial distribution and variation of poverty (Legg et. al., 2005). The President of South Africa has said, "Our task is to know our people, know where they live and how they live and address their needs" (Lehohla, 2011). The geography of poverty is an integral area to consider in targeting and alleviation of poverty. A conceptual framework for aligning geography and poverty is provided (Nolan, Whelan, & Williams, 1998):

- Is poverty concentrated in specific areas?
- To what extent is the concentration of poverty?
- Where are the concentrations of poverty?
- Why is there concentration of poverty?
- What are the characteristics of the concentration of poverty?

Spatial variation of poverty is of interest to government, policy makers and researchers as it can be used to indicate inequalities in living standards (Curtis, Voss, & Long, 2012).

Poverty is multifaceted and goes beyond not having access to a prescribed amount of money. Poverty is related to hunger, unemployment, and exploitation. It influences an individual's access to basic services (such as clean water and access to adequate sanitation), healthcare, adequate housing and education (Woolard, 2002). Poverty is often defined in a one dimensional money metric manner (Townsend, 2006). This may either be by income or expenditure. Traditional methods of poverty reduction look at economic growth strategies. A one dimensional approach however cannot express the multidimensional facets that constitute the experience of poverty as poverty is multifaceted. Poverty is linked to more than not having sufficient money (Woolard, 2002). The South African Multidimensional Poverty index (SAMPI) was created from Census 2001 and 2011 data. A multidimensional approach is a robust instrument integral to informing programmes and policies in the fight against poverty. Combining the SAMPI with spatial analysis is a powerful tool in the study of poverty.

Objectives:

This study determines the spatial variation of poverty in South Africa for 2001 and 2011. In addition to this, the study will specifically explore areas that are poor, but surrounded by richer areas.

Data:

The data used for this study was obtained from the South African Multidimensional Poverty Index (SAMPI). The SAMPI uses data collected by Statistics South Africa (Stats SA) through Census 2001 and 2011. An advantage of using Census data is that the index can be mapped data at lower levels of geography. SAMPI is calculated from the poverty headcount, the intensity and multidimensional poverty index at different geographical levels. The SAMPI compliments traditional income/expenditure-based poverty measures. It looks at severe deprivations that households experience in ten areas (Statistics South Africa, 2014):

Health

1. Nutrition
2. Child mortality

Education

3. Years of schooling
4. School attendance

Living standards

5. Cooking fuel
6. Sanitation
7. Water
8. Electricity
9. Floor
10. Assets

Analysis is done at household level. If a household is deprived of a third or more indicators, the household is identified as õmultidimensional poverty index (MPI) poorö. The SAMPI creates a composite representation of who the poor are and where they live. This serves to identify and locate the most vulnerable in the country.

Methodology:

This paper uses spatial analysis to identify the areas that are multidimensional poverty index (MPI) poor and are surrounded by areas not identified as poor by the MPI. These are referred to as rich areas in this study. An analysis will be done comparing data from 2001 and 2011. The area in this study refers to ward level data. A ward is an area demarcated by the Municipal Demarcation Board to divide the areas in the country for purposes of voting in the elections. A ward can be considered as a voting area. Political parties nominate candidates to each ward. Politicians and parliamentarians are therefore interested in the wards that they are contesting in an election. Ward level estimates are essential for use by local government for planning, monitoring and evaluation and for providing information of small areas (Office for National Statistics, 2013).

In this analysis three software packages were used. SAS was used to perform the traditional descriptive statistics. ESRIØs ArcMap was used for spatial analysis and SuperCross was used to combine wards to local and district municipalities.

The SAMPI data was analysed in SAS to determine which households were MPI poor and richer. The results generated were used in ArcMap for the spatial analysis.

Spatial analysis:

Spatial analysis was conducted using three techniques:

1. MoranØs I autocorrelation:
2. Getis-Ord Gi* statistic (hotspot analysis)
3. Anselin local Moran's I cluster and outlier analysis

1. Moran's I autocorrelation:

MoranØs I autocorrelation was used to detect the global spatial patterns on MPI at ward level in South Africa. This tool measures spatial autocorrelation (feature similarity) based on both feature locations and feature values simultaneously. Given a set of features and an associated attribute, it evaluates whether the pattern expressed is clustered, dispersed, or random. The tool calculates the Moran's Index value and both a z-score and p-value evaluating the significance of that index. In general, a Moran's Index value near +1.0 indicates clustering while an index value near -1.0 indicates dispersion. The reason for performing this test was to assess whether there is clustering in the MPI values or not.

2. Getis-Ord Gi* statistic (hotspot analysis):

If results from the Moran's I autocorrelation suggests that there is clustering, then there should be an analysis that locates wards that are clustered. The Getis-Ord Gi* statistic (hotspot analysis) was then used to locate these wards. Hotspot analysis identifies statistically significant spatial clusters of high values (hot spots) and low values (cold spots). This is different to density, which will identify clusters in the data, but will not specify if they are statistically significant.

3. Anselin local Moran's I cluster and outlier analysis:

Anselin local Moran's I cluster and outlier analysis identifies wards that are outliers (wards that have high MPI but are surrounded by wards with low MPI). These are the wards that this study is concentrating on. In this study these wards will be called the High-Low (HL) wards. Low MPI wards are referred to as Low-Low (LL) wards.

Descriptive analyses will be conducted on the HL wards. The areas will be aggregated into local municipality, district municipality and provinces to determine the areas with the most HL wards. This will outline the areas that government need to focus poverty interventions on. Results will also indicate changes between 2001 and 2011.

Results and Discussion:

Moran's I autocorrelation:

According to the Spatial autocorrelation report (figure 1), there is clustering of the MPI values across South Africa (Moran's Index is 0.246348). Results generated a p-value of 0.000000, as shown in figure 1. The p value is less than 0.01 so we can conclude that there is 0% likelihood that this clustered pattern could be the result of random chance.

*Figure 1: Spatial autocorrelation report*
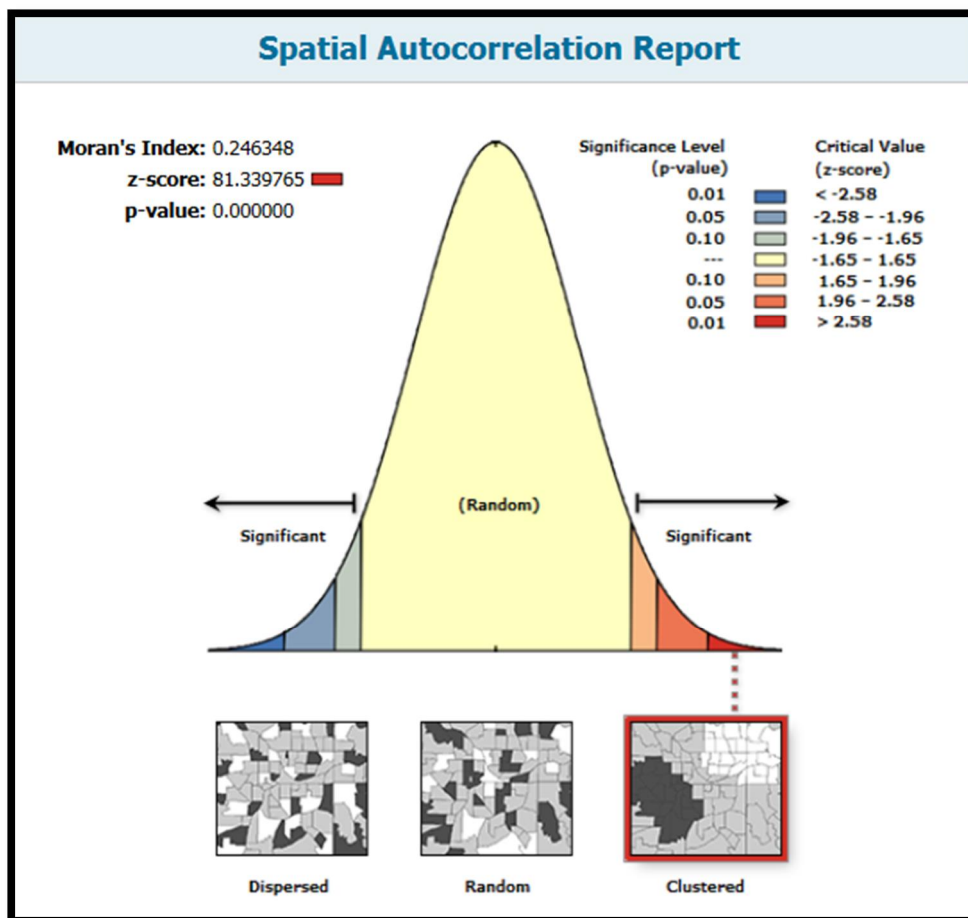
The purpose of the Moran's I autocorrelation is to determine if there is clustering. As the result indicates, there is clustering. Following this, the next step is to find out, where the clustering is. This is done by conducting a Getis-Ord Gi* statistic (Hotspot Analysis).

Getis-Ord Gi* statistic (Hotspot Analysis):

Results from the Getis-Ord Gi* statistic (Hotspot Analysis) (figure 2) suggest that there is clustering of high values in Kwazulu-Natal and the Northern part of Eastern Cape. The northern parts of both North West and Limpopo show clustering with high values. There is clustering of low values in Western Cape, Free State, Gauteng and the southern part of Mpumalanga.

*Figure 2: Getis-Ord Gi* statistic (Hotspot analysis)*
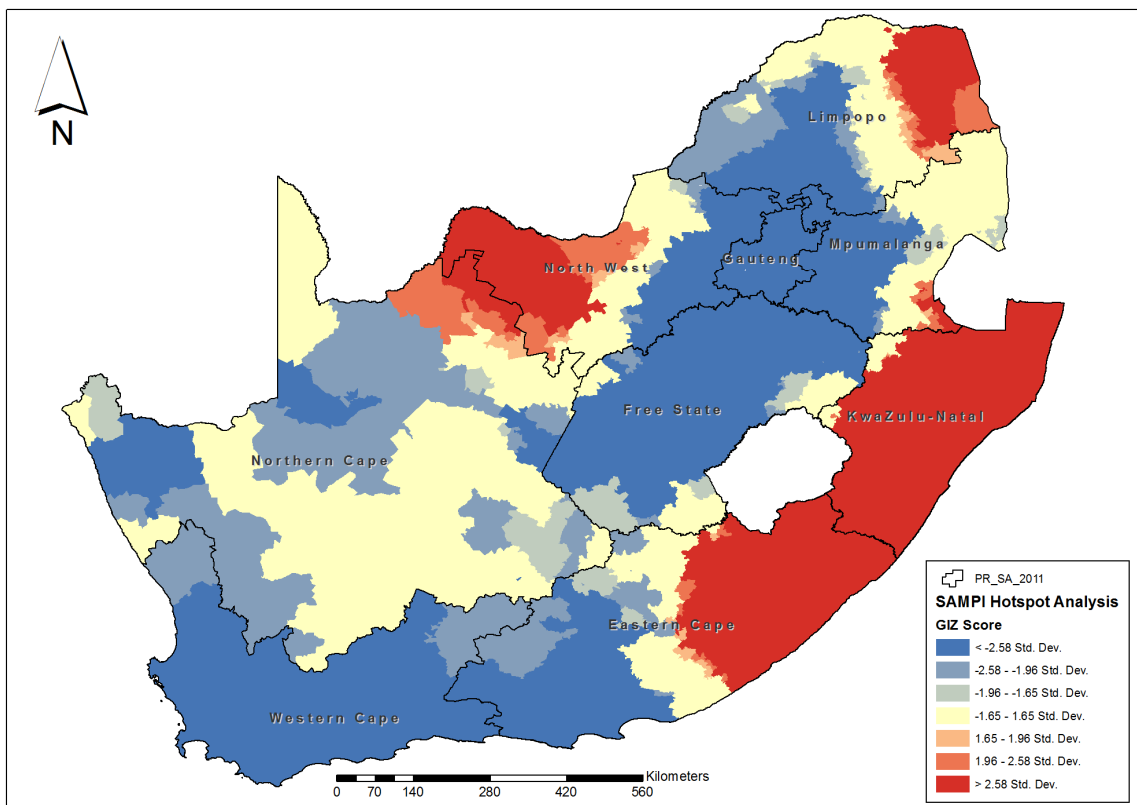
The purpose of this paper is to identify areas that have high MPI but are surrounded by areas with low MPI. To determine this, Anselin local Moran's I cluster and outlier analysis was conducted.

Anselin local Moran's I cluster and outlier analysis:

Anselin local Moran's I cluster and outlier analysis identifies areas that are outliers (areas that have high MPI but are surrounded by areas with low MPI). Figure 3 shows HL outliers in Gauteng, North West, Northern Cape and Free State.

Figure 3: Anselin local Moran's I cluster and outlier analysis ahowing H-L outliers
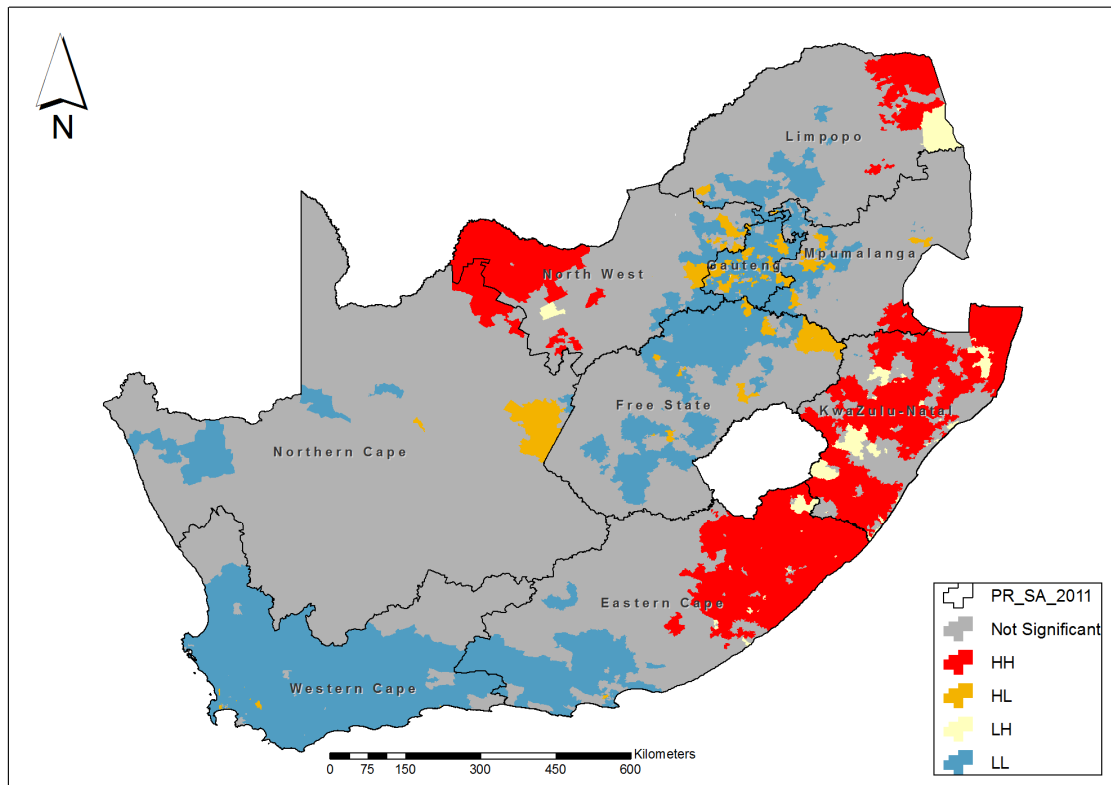
By zooming into the data at ward level, figure 4 provides a snapshot of an area in Gauteng which. Ward 52 is an HL area, which is surrounded by LL areas.

Figure 4: Spatial representation of HL area amidst LL areas
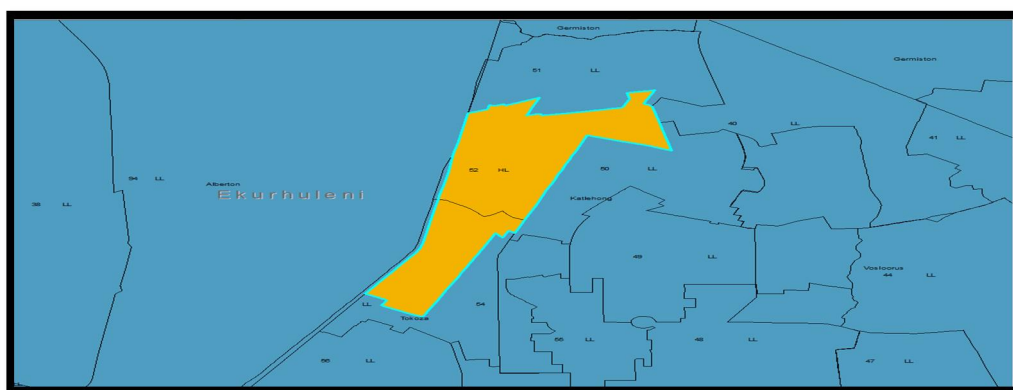
Ward level data for Census 2001 and 2011 has been harmonised, resulting in 4276 wards. In 2001, there 157 wards were identified as HL areas. This accounted for 3.68% of all wards in South Africa. This decreased to 118 in 2011, accounting for 2.76% of all wards in the country being classified as HL areas. Provincially however, the change differs. Table 1 indicates that whilst there is a national decrease of HL areas, there is an increase in four (out of nine) provinces in South Africa (Gauteng, Mpumalanga, Free State and Northern Cape). The highest increase in HL wards is in Gauteng. In 2011, KwaZulu-Natal reported no HL-wards in 2011.

Table 1: Provincial aggregation of HL wards, 2001 and 2011

Province	HL % 2001	HL % 2011
Gauteng	38.85	49.15
North West	21.02	11.86
Western Cape	14.01	11.86
Mpumalanga	10.19	11.02
Free State	5.1	9.32
Northern Cape	2.55	5.08
Eastern Cape	1.91	0.85
Limpopo	4.46	0.85
Kwa-Zulu Natal	1.91	0.00
	100	100
	N=157	N=118

Provincial breakdown

This section provides a provincial breakdown of the above results. HL wards are aggregated to local and district municipality or metropolitan levels.

Western Cape

There are 14 HL-wards in Western Cape. Table 2 shows that four out of five district municipalities contain HL-wards. The City of Cape Town has the most HL-wards (8 HL-wards), whilst Overburg district municipality has one HL-ward. Despite Cape Winelands DM containing three HL-wards, two HL-wards are in the same local municipality.

Table 2: Western Cape provincial breakdown of HL-wards

District Municipality	Local Municipality	Ward Number
1. Cape Winelands	Drakenstein	10203016
2. Cape Winelands	Stellenbosch	10204012
3. Cape Winelands	Stellenbosch	10204002
4. City of Cape Town Metro	City of Cape Town Metro	19100080
5. City of Cape Town Metro	City of Cape Town Metro	19100087
6. City of Cape Town Metro	City of Cape Town Metro	19100033
7. City of Cape Town Metro	City of Cape Town Metro	19100052
8. City of Cape Town Metro	City of Cape Town Metro	19100089
9. City of Cape Town Metro	City of Cape Town Metro	19100095
10. City of Cape Town Metro	City of Cape Town Metro	19100104
11. City of Cape Town Metro	City of Cape Town Metro	19100040
12. Eden	Bitou	10407003
13. Eden	Geoge	10404021
14. Overburg	Theewaterskloof	10301006

Eastern Cape

Eastern Cape has only one HL-ward (table 3). This is located in Nelson Mandela Bay metropolitan. Apart from KwaZulu-Natal which has no HL-wards, Eastern Cape (and Limpopo) has the lowest amount of HL-wards in South Africa.

Table 3: Eastern Cape provincial breakdown of HL-wards

District Municipality	Local Municipality	Ward Number
1. Nelson Mandela Bay Metro	Nelson Mandela Bay Metro	29300041

Northern Cape

Northern Cape has six HL-wards (table 4). These are found in three out of five DMs in Northern Cape. Four of the HL-wards are located in Frances Baard DM. Half of the HL-wards are located in Sol Plaatjie LM.

Table 4: Northern Cape provincial breakdown of HL-wards

District Municipality	Local Municipality	Ward Number
1. Pixley Ka Seme	Siyancuma	30708002
2. Frances Baard	Sol Plaatjie	30901027
3. Frances Baard	Sol Plaatjie	30901016
4. Frances Baard	Sol Plaatjie	30901030
5. Frances Baard	Dikgatlong	30902003
6. Siyanda	!Kheis	30804004

Free State

There are 11 HL-wards in Free State. Table 5 shows that four out of five district municipalities contain HL-wards. Lejweleputswa, Thabo Mofutsanyana and Fezile Dabi have 3 HL-wards each, whilst Mangaung Metropolitan has two HL-wards.

Table 5: Free State provincial breakdown of HL-wards

District Municipality	Local Municipality	Ward Number
1. Lejweleputswa	Matjhabeng	41804023
2. Lejweleputswa	Matjhabeng	41804013
3. Lejweleputswa	Nala	41805004
4. Thabo Mofutsanyana	Dihlabeng	41902005
5. Thabo Mofutsanyana	Dihlabeng	41902015
6. Thabo Mofutsanyana	Phumelela	41905008
7. Mangaung Metro	Mangaung Metro	49400045
8. Mangaung Metro	Mangaung Metro	49400027
9. Fezile Dabi	Metsimaholo	42004019
10. Fezile Dabi	Metsimaholo	42004020

North West

There are 14 HL-wards in North West. Table 6 shows that three out of four district municipalities contain HL-wards. Bojanala has the most HL-wards in North West (12 HL-wards). Six of the HL-wards are located in the Madibeng local municipality.

Table 6: North West provincial breakdown of HL-wards

District Municipality	Local Municipality	Ward Number
1. Ngaka Modiri Molema	Ditsobotla	63804015
2. Bojanala	Moretele	63701023
3. Bojanala	Rustenburg	63703034
4. Bojanala	Rustenburg	63703022
5. Bojanala	Rustenburg	63703038
6. Bojanala	Moses Kotane	63705007
7. Bojanala	Madibeng	63702014
8. Bojanala	Madibeng	63702029
9. Bojanala	Madibeng	63702035
10. Bojanala	Madibeng	63702010
11. Bojanala	Madibeng	63702024
12. Bojanala	Madibeng	63702027
13. Bojanala	Rustenburg	63703031
14. Dr Kenneth Kaunda	Ventersdorp	64001005

Gauteng

Table 7 shows that Gauteng has the most HL-wards in South Africa (58 HL-wards). All five district municipalities/ metropolitans contain HL-wards. The majority of HL-wards are located in Ekurhuleni (20 HL-wards). West Rand contains the second highest (18 HL-wards). Sedibeng contains the fewest (four HL-wards).

Table 7: Gauteng provincial breakdown of HL-wards

District Municipality	Local Municipality	Ward Number
1. City of Johannesburg	City of Johannesburg	79800008
2. City of Johannesburg	City of Johannesburg	79800010
3. City of Johannesburg	City of Johannesburg	79800006
4. City of Johannesburg	City of Johannesburg	79800019
5. City of Johannesburg	City of Johannesburg	79800024
6. City of Johannesburg	City of Johannesburg	79800127
7. City of Johannesburg	City of Johannesburg	79800096
8. City of Johannesburg	City of Johannesburg	79800095
9. City of Tshwane	City of Tshwane	79900061

10. City of Tshwane	City of Tshwane	79900010
11. City of Tshwane	City of Tshwane	79900102
12. City of Tshwane	City of Tshwane	79900024
13. City of Tshwane	City of Tshwane	79900040
14. City of Tshwane	City of Tshwane	79900100
15. City of Tshwane	City of Tshwane	79900048
16. City of Tshwane	City of Tshwane	79900051
17. Ekurhuleni	Ekurhuleni	79700068
18. Ekurhuleni	Ekurhuleni	79700072
19. Ekurhuleni	Ekurhuleni	79700033
20. Ekurhuleni	Ekurhuleni	79700001
21. Ekurhuleni	Ekurhuleni	79700045
22. Ekurhuleni	Ekurhuleni	79700086
23. Ekurhuleni	Ekurhuleni	79700090
24. Ekurhuleni	Ekurhuleni	79700093
25. Ekurhuleni	Ekurhuleni	79700096
26. Ekurhuleni	Ekurhuleni	79700021
27. Ekurhuleni	Ekurhuleni	79700099
28. Ekurhuleni	Ekurhuleni	79700101
29. Ekurhuleni	Ekurhuleni	79700025
30. Ekurhuleni	Ekurhuleni	79700026
31. Ekurhuleni	Ekurhuleni	79700034
32. Ekurhuleni	Ekurhuleni	79700008
33. Ekurhuleni	Ekurhuleni	79700065
34. Ekurhuleni	Ekurhuleni	79700071
35. Ekurhuleni	Ekurhuleni	79700052
36. Ekurhuleni	Ekurhuleni	79700061
37. Sedibeng	Midvaal	74202008
38. Sedibeng	Midvaal	74202012
39. Sedibeng	Emfuleni	74201036
40. Sedibeng	Lesedi	74203012
41. West Rand	Merafong City	74804004
42. West Rand	Merafong City	74804001
43. West Rand	Merafong City	74804005
44. West Rand	Merafong City	74804009
45. West Rand	Merafong City	74804010
46. West Rand	Merafong City	74804011
47. West Rand	Merafong City	74804021
48. West Rand	Mogale City	74801016
49. West Rand	Mogale City	74801023
50. West Rand	Mogale City	74801025
51. West Rand	Mogale City	74801030
52. West Rand	Randfontein	74802001
53. West Rand	Randfontein	74802012
54. West Rand	Westonaria	74803010
55. West Rand	Westonaria	74803012

	District Municipality	Local Municipality	Ward Number
56.	West Rand	Westonaria	74803001
57.	West Rand	Westonaria	74803015
58.	West Rand	Westonaria	74803016

Mpumalanga

Mpumalanga has thirteen HL-wards (table 8). The majority of HL-wards are located in the Nkangala district municipality. Gert Sibande has two HL-wards whilst Ehlanzeni has only one HL-ward. Emalahleni is the local municipality with the most HL-wards (five).

Table 8: Mpumalanga provincial breakdown of HL-wards

	District Municipality	Local Municipality	Ward Number
1.	Nkangala	Steve Tshwete	83103004
2.	Nkangala	Victor Khanye	83101002
3.	Nkangala	Emalahleni	83102014
4.	Nkangala	Emalahleni	83102015
5.	Nkangala	Emalahleni	83102029
6.	Nkangala	Emalahleni	83102030
7.	Nkangala	Emalahleni	83102032
8.	Nkangala	Steve Tshwete	83103029
9.	Nkangala	Dr JS Moroka	83106030
10.	Nkangala	Steve Tshwete	83103027
11.	Ehlanzeni	Umjindi	83203001
12.	Gert Sibande	Dipaleseng	83006004
13.	Gert Sibande	Dipaleseng	83006006

Limpopo

Similar to Eastern Cape, Limpopo has only one HL-ward (table 9). This is located in Waterberg district municipality, in the local municipality of Thabazimbi.

Table 9: Limpopo provincial breakdown of HL-wards

	District Municipality	Local Municipality	Ward Number
1.	Waterberg	Thabazimbi	93601003

Conclusion:

The policy implications of these findings present important connotations for targeting poor areas that are close to richer areas. As the SAMPI is largely based on access to basic services, schools and healthcare, the question arises that if richer areas have access to the above mentioned living conditions, why an area (HL) so close to the richer areas (LL) is not able to access these services. Particular mention should be of Gauteng, where HL areas have grown the most. These areas should be researched in conjunction with migration (internal and international) to determine if there is an association or impact. Investigations are required to determine why these wards are performing poorly when all the neighbouring wards are better off. Further study on geographical typology of each ward should be undertaken. It is recommended that a household profile be created for each HL-ward to enhance understanding of the households residing there and determine the socio-demographic and economic factors.

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