

UNIVERSITY OF THE WESTERN CAPE



**UNIVERSITY of the  
WESTERN CAPE**

DEPARTMENT OF STATISTICS AND POPULATION STUDIES  
FACULTY OF NATURAL SCIENCES

**Spatial Distribution of the Population in South Africa: a statistical  
approach**

By

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UNIVERSITY of the

A thesis submitted in fulfilment of the requirements for the degree of  
Master of Philosophy in Population Studies, Department of Statistics  
and Population Studies, Faculty of Natural Sciences, University of the  
Western Cape.

**Supervisor: Prof. G. Tati**

November 2017

## FACULTY OF NATURAL SCIENCE

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## DEDICATION

This dissertation is dedicated to my family.



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## TABLE OF CONTENTS

<b>GENERAL PLAGIARISM DECLARATION.....</b>	<b>i</b>
<b>DECLARATION .....</b>	<b>ii</b>
<b>ACKNOWLEDGEMENTS .....</b>	<b>ii</b>
<b>DEDICATION .....</b>	<b>iv</b>
<b>TABLE OF CONTENTS .....</b>	<b>v</b>
<b>LIST OF FIGURES .....</b>	<b>x</b>
<b>LIST OF TABLES .....</b>	<b>xii</b>
<b>LIST OF APPENDICES .....</b>	<b>xiv</b>
<b>ACRONYMS .....</b>	<b>xvi</b>
<b>ABSTRACT.....</b>	<b>xvii</b>
<b>CHAPTER ONE:INTRODUCTION.....</b>	<b>1</b>
1.1. Purpose of the Study Investigated .....	1
1.2. Background to the Study.....	1
1.3.Objectives .....	3
1.4.Delimitations .....	4
1.5.Research Problem.....	4
1.6.1.Research Questions. ....	4
1.6.2.Hypothesis .....	5
1.7. Professional background of study.....	6
1.8.Definitions.....	6
1.8. Thesis Outline .....	7
<b>CHAPTER TWO: LITERATURE REVIEW .....</b>	<b>9</b>
2.1. Introduction .....	9
2.2. Theories.....	10
2.3. Urbanisation.....	13
2.4. Polarisation Reversal.....	15
2.5. Migration.....	17
2.6. Cities.....	20
2.7. Policies.....	22
<b>CHAPTER THREE: RESEARCH DESIGN.....</b>	<b>25</b>
3.1.Introduction .....	25
3.2. Purpose .....	25
3.3. Context.....	25

3.4. Descriptive Variables .....	25
3.4.1. Usual Residence (UsualRes).....	26
3.4.2. Province of Usual Residence.....	26
3.4.3. Municipality/Magisterial District of Usual Residence.....	26
3.4.4. City/town of Usual Residence.....	26
3.5. Defining Urban and Rural Areas.....	27
3.5.1. Urban and Rural Definitions in South Africa.....	28
3.6. Sources of Data.....	30
3.6.1 Census 1996.....	31
3.6.1.1. Urban and Rural classification.....	31
3.6.2. Census 2001.....	32
3.6.2.1. Urban and Rural classification.....	32
3.6.3 Community Survey 2007.....	33
3.6.3.1. Urban and Rural classification.....	33
3.6.4. Census 2011.....	33
3.6.4.1. Urban and Rural classification.....	34
3.6.5. Community Survey 2016.....	35
3.6.5.1. Urban and Rural classification.....	36
3.7 Municipality.....	36
3.8 Statistical Methods of Data Analysis.....	37
3.8.1. Degree of Urbanization.....	38
3.8.2. Ratio of a Urban-Rural Population.....	38
3.8.3. Population growth in Metropolitan, Urban and Rural Areas.....	38
3.8.4. Population Projections.....	39
3.8.5. Primacy Index.....	39
3.8.6. Population Density(Persons/Km <sup>2</sup> ).....	39
3.8.7. Lorenz Curve and Gini Concentration Index.....	39
3.8.8. The Size of Locality of Residence of The Median Inhabitant.....	40
3.8.9. Polarization Reversal.....	41
<b>CHAPTER FOUR: DATA ANALYSIS.....</b>	<b>42</b>
4.1. Introduction.....	42
4.2. Western Cape.....	42
4.2.1. Degree of Urbanisation and Urban-Rural Ratio.....	45
4.2.2. Gini Concentration Index.....	46
4.2.3. Size of Locality of Residence of the Median Inhabitant.....	47

4.2.4. Population Density.....	48
4.2.5. Primacy Index.....	48
4.2.6. Polarisation Reversal.....	48
4.3. Eastern Cape.....	49
4.3.1. Degree of Urbanisation and Urban-Rural Ratio.....	51
4.3.2. Gini Concentration Index.....	53
4.3.3. Size of Locality of Residence of the Median Inhabitant.....	54
4.3.4. Population Density.....	55
4.3.5. Primacy Index.....	55
4.3.6. Polarisation Reversal.....	56
4.4. Kwazulu – Natal.....	57
4.4.1. Degree of Urbanisation and Urban-Rural Ratio.....	59
4.4.2. Gini Concentration Index.....	60
4.4.3. Size of Locality of Residence of the Median Inhabitant.....	62
4.4.4. Population Density.....	63
4.4.5. Primacy Index.....	63
4.4.6. Polarisation Reversal.....	63
4.5. Gauteng.....	65
4.5.1. Degree of Urbanisation and Urban-Rural Ratio.....	67
4.5.2. Gini Concentration Index.....	69
4.5.3. Size of Locality of Residence of the Median Inhabitant.....	70
4.5.4. Population Density.....	71
4.5.5. Primacy Index.....	71
4.5.6. Polarisation Reversal.....	71
4.6. Free State.....	72
4.6.1. Degree of Urbanisation and Urban-Rural Ratio.....	74
4.6.2. Gini Concentration Index.....	75
4.6.3. Size of Locality of Residence of the Median Inhabitant.....	76
4.6.4. Population Density.....	77
4.6.5. Primacy Index.....	77
4.6.6. Polarisation Reversal.....	77
4.7. Northern Cape.....	79
4.7.1. Degree of Urbanisation and Urban-Rural Ratio.....	81
4.7.2. Gini Concentration Index.....	82
4.7.3. Size of Locality of Residence of the Median Inhabitant.....	84

4.7.4. Population Density.....	84
4.7.5. Primacy Index.....	85
4.7.6. Polarisation Reversal.....	85
4.8. Mpumalanga.....	86
4.8.1. Degree of Urbanisation and Urban-Rural Ratio.....	88
4.8.2. Gini Concentration Index.....	89
4.8.3. Size of Locality of Residence of the Median Inhabitant.....	91
4.8.4. Population Density.....	92
4.8.5. Primacy Index.....	92
4.8.6. Polarisation Reversal.....	93
4.9. North West .....	94
4.9.1. Degree of Urbanisation and Urban-Rural Ratio.....	96
4.9.2. Gini Concentration Index.....	97
4.9.3. Size of Locality of Residence of the Median Inhabitant.....	99
4.9.4. Population Density.....	100
4.9.5. Primacy Index.....	100
4.9.6. Polarisation Reversal.....	100
4.10. Limpopo.....	102
4.10.1. Degree of Urbanisation and Urban-Rural Ratio.....	104
4.10.2. Gini Concentration Index.....	105
4.10.3. Size of Locality of Residence of the Median Inhabitant.....	106
4.10.4. Population Density.....	107
4.10.5. Primacy Index.....	107
4.10.6. Polarisation Reversal.....	107
4.11. South Africa.....	109
4.11.1. Degree of Urbanisation and Urban-Rural Ratio.....	111
4.11.2. Gini Concentration Index.....	113
4.11.3. Size of Locality of Residence of the Median Inhabitant.....	114
4.11.4. Population Density.....	116
4.11.5. Primacy Index.....	116
4.11.6. Polarisation Reversal.....	117
4.12. Temporal View of Structural Changes between 1996-2016 of each Statistical Indicator.....	126
4.12.1. Degree of Urbanisation and Urban-Rural Ratio.....	126
4.12.2. Gini Concentration Index.....	134
4.12.3. Size of Locality of Residence of the Median Inhabitant.....	136

4.12.4. Population Density.....	137
4.12.5. Population Projections.....	138
4.12.6. Primacy Index.....	138
<b>CHAPTER FIVE: DISCUSSION.....</b>	<b>140</b>
5.1. Introduction.....	140
5.2. Research Questions and Hypotheses.....	140
<b>CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>155</b>
6.1. Introduction.....	155
6.3. General Conclusion.....	155
6.2. Confirmation of Hypothesis.....	156
6.3 Areas of Future Research.....	159
6.3.1. Implication for Spatial Development.....	159
6.3.2 Future Research.....	162
<b>BIBLIOGRAPHY.....</b>	<b>164</b>
<b>APPENDICES.....</b>	<b>170</b>



UNIVERSITY *of the*  
WESTERN CAPE

## LIST OF FIGURES

Figure 1:Percentage Distribution of Municipal Categories(WC) .....	44
Figure 2: Population Growth Rate Per Municipal Categories(WC).....	44
Figure 3: Percentage Distribution of Municipal Categories(EC).....	50
Figure 4 : Population Growth Rate Per Municipal Categories(EC).....	51
Figure 5 Percentage Distribution of Municipal Categories(KZN).....	58
Figure 6 : Population Growth Rate Per Municipal Categories(KZN).....	59
Figure 7 Percentage Distribution of Municipal Categories(GT).....	66
Figure 8 : Population Growth Rate Per Municipal Categories(GT).....	67
Figure 9 Percentage Distribution of Municipal Categories(FS).....	73
Figure 10 : Population Growth Rate Per Municipal Categories(FS).....	74
Figure 11: Percentage Distribution of Municipal Categories(NC ).....	80
Figure 12 : Population Growth Rate Per Municipal Categories(NC).....	81
Figure 13: Percentage Distribution of Municipal Categories(MP ).....	87
Figure 14 : Population Growth Rate Per Municipal Categories(MP).....	88
Figure 15: Percentage Distribution of Municipal Categories(NW).....	95
Figure 16 : Population Growth Rate Per Municipal Categories(NW).....	96
Figure 17: Percentage Distribution of Municipal Categories(LP).....	103
Figure 18 : Population Growth Rate Per Municipal Categories(LP).....	103
Figure 19: Percentage Distribution of Municipal Categories(SA).....	110
Figure 20 : Population Growth Rate Per Municipal Categories(SA).....	111
Figure 21 : Total Population Growth Rates Per Province(1996-2001).....	118
Figure 22 : Total Population Growth Rates Per Province(2001-2007).....	118
Figure 23 : Total Population Growth Rates Per Province(2007-2011).....	118
Figure 24 : Total Population Growth Rates Per Province(2011-2016).....	119
Figure 25 : Total Population Growth Rates Per Province(1996-2016).....	119
Figure 26 : Urban Population Growth Rates Per Province(1996-2001).....	120
Figure 27 : Urban Population Growth Rates Per Province(2001-2007).....	120
Figure 28 : Urban Population Growth Rates Per Province(2007-2011).....	121
Figure 29 : Urban Population Growth Rates Per Province(2011-2016).....	121
Figure 30 : Urban Population Growth Rates Per Province(1996-2016).....	121
Figure 31 : Urban and Rural Percentage at the National Level (1996- 2016) .....	122
Figure 32:Map of Population Growth Rates Per Municipal Category(1996-2001).....	123

Figure 33: Map of Population Growth Rates Per Municipal Category(2001-2007).....123  
Figure 34:Map of Population Growth Rates Per Municipal Category(2007-2011).....124  
Figure 35: Map of Population Growth Rates Per Municipal Category(2011-2016).....124  
Figure 36: Map of Population Growth Rates Per Municipal Category(1996-2016).....125



## LIST OF TABLES

Table 1: Different typologies used in South Africa.....	28
Table 2:Population in Municipal categories(WC).....	43
Table 3:Urban and rural population by municipal categories(including projected populations) (WC).....	43
Table 4:Percentage Distribution of Municipal Categories(WC).....	44
Table 5:Population in Municipal categories(EC).....	51
Table 6:Urban and rural population by municipal categories(including projected populations) (EC).....	50
Table 7:Percentage Distribution of Municipal Categories(EC).....	50
Table 8:Population in Municipal categories(KZN).....	57
Table 9:Urban and rural population by municipal categories(including projected populations) (KZN).....	58
Table 10:Percentage Distribution of Municipal Categories(KZN).....	58
Table 11:Population in Municipal categories(GT).....	66
Table 12:Urban and rural population by municipal categories(including projected populations(GT).....	66
Table 13:Percentage Distribution of Municipal Categories(GT).....	66
Table 14:Population in Municipal categories(FS).....	72
Table 15:Urban and rural population by municipal categories(including projected populations) (FS).....	73
Table 16:Percentage Distribution of Municipal Categories(FS).....	73
Table 17:Population in Municipal categories(NC).....	79
Table 18:Urban and rural population by municipal categories(including projected populations) (NC).....	80
Table 19:Percentage Distribution of Municipal Categories(NC).....	80
Table 20:Population in Municipal categories(MP).....	86
Table 21:Urban and rural population by municipal categories(including projected populations) (MP).....	87
Table 22:Percentage Distribution of Municipal Categories(MP).....	87
Table 23:Population in Municipal categories(NW).....	94
Table 24:Urban and rural population by municipal categories(including projected populations) (NW).....	95

Table 25:Percentage Distribution of Municipal Categories(NW).....	95
Table 26:Population in Municipal categories(LP).....	102
Table 27:Urban and rural population by municipal categories(including projected populations) (LP).....	102
Table 28:Percentage Distribution of Municipal Categories(LP).....	103
Table 29:Population in Municipal categories(SA).....	109
Table 30:Urban and rural population by municipal categories(including projected populations) (SA).....	110
Table 31:Percentage Distribution of Municipal Categories(SA).....	110
Table 32. Total Population Growth Rates per Province(1996-2016).....	118
Table 33. Urban Population Growth Rates per Province(1996-2016).....	120
Table 34. Urban and Rural Percentage at the National Level(1996-2016).....	122



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WESTERN CAPE

## LIST OF APPENDICES

Appendix 1: Statistical indicators for the WC.....	171
Appendix 2: Statistical indicators for the EC.....	172
Appendix 3: Statistical indicators for KZN.....	173
Appendix 4: Statistical indicators for GT.....	174
Appendix 5: Statistical indicators for FS.....	175
Appendix 6: Statistical indicators for NC.....	176
Appendix 7: Statistical indicators for NW.....	177
Appendix 8: Statistical indicators for MP.....	178
Appendix 9: Statistical indicators for LP.....	179
Appendix 10: Statistical indicators for SA.....	180
Appendix 11: Gini concentration index NW(1996,2001,2007,2011,2016).....	181
Appendix 12: Gini concentration index MP(1996,2001,2007,2011,2016).....	183
Appendix 13: Gini concentration index WC(1996,2001,2007,2011,2016).....	185
Appendix 14: Gini concentration index EC(1996,2001,2007,2011,2016).....	187
Appendix 15: Gini concentration index FS(1996,2001,2007,2011,2016).....	189
Appendix 16: Gini concentration index GT(1996,2001,2007,2011,2016).....	191
Appendix 17: Gini concentration index KZN(1996,2001,2007,2011,2016).....	193
Appendix 18: Gini concentration index NC(1996,2001,2007,2011,2016).....	195
Appendix 19: Gini concentration index LP(1996,2001,2007,2011,2016).....	197
Appendix 20: Gini concentration index SA(1996,2001,2007,2011,2016).....	199
Appendix 21: Size of locality of the residence of median inhabitant FS (1996,2001,2007,2011,2016).....	201
Appendix 22: Size of locality of the residence of median inhabitant EC (1996,2001,2007,2011,2016).....	204
Appendix 23: Size of locality of the residence of median inhabitant NW (1996,2001,2007,2011,2016).....	207
Appendix 24: Size of locality of the residence of median inhabitant GT (1996,2001,2007,2011,2016).....	210
Appendix 25: Size of locality of the residence of median inhabitant MP (1996,2001,2007,2011,2016).....	213
Appendix 26: Size of locality of the residence of median inhabitant KZN (1996,2001,2007,2011,2016).....	216

Appendix 27: Size of locality of the residence of median inhabitant LP  
(1996,2001,2007,2011,2016).....219

Appendix 28: Size of locality of the residence of median inhabitant NC  
(1996,2001,2007,2011,2016).....222

Appendix 29: Size of locality of the residence of median inhabitant South Africa  
(1996,2001,2007,2011,2016).....225

Appendix 30: Urban, Rural, Total and Population Projections(2030 and 2050).....228



## ACRONYMS

**GDP** - Gross Domestic Product

**CS2016** – Community Survey 2016

**CS2007** - Community Survey 2007

**NDP** – National Development Plan

**UN** – United Nations

**UNPD** – United Nations Population Division

**WC** – Western Cape

**EC** – Eastern Cape

**KZN** – Kwazulu-Natal

**GT** – Gauteng

**FS** – Free State

**NC** – Northern Cape

**MP** – Mpumalanga

**NW** – North West

**LP**- Limpopo

**SA** – South Africa



## ABSTRACT

The purpose of the study was to examine the structural changes occurring in the patterns of spatial population distribution across South Africa over the period 1996-2016. The government in South Africa is perceived as being unsatisfied with the population distribution in the country. Therefore this research has given a better understanding of the settlement patterns in the country. The results can be utilized for regional and urban development planning to guide the government in achieving an even allocation of resources to strive towards a better balance of spatial patterns around the country. The polarisation reversal theory informed the study. In developing countries it is assumed that most of the population resides in rural areas and as time elapses we expect a more dispersed population with more of the population concentrated in urban areas as industrialization and urbanization evolves. The process usually starts with emergence of one or two major cities. The major cities then start to grow quicker than the other regions in the country. This results in unbalanced regional development across the country. This is then followed by the emergence of other smaller cities and towns. It is assumed that South Africa as a developing country will either move from a highly concentrated urban population with most of the population concentrated in one or two major cities to a more dispersed population where other smaller cities and towns are emerging, attracting more people through migration or South Africa could move from a more dispersed population to a highly concentrated urban population. To test this assumption data will be derived from previous census and community surveys. Specifically the census taken in 1996, 2001, 2011, the community survey of 2007 and 2016 respectively provided the data. Using the data sets, relevant statistical indicators of spatial population distribution were to quantify different trends over a period of time. These indicators include pattern of urbanization and patterns of population settlement over the national territoriality. The results from the data analysis showed that some provinces were urbanizing faster than provinces. Some cities within provinces were growing faster than other cities. The highest concentration of the population is situated in one or two major cities. Smaller cities and towns around the country were growing faster than some major cities and also there is a decline in the rural population over the time period. From a spatial development view point, the insight into the patterns of population distribution can serve as a basis to create policies of which the main targets should be achieving balanced regional development, environmental sustainability, the development of smaller cities, towns and rural areas to slow the migration from these areas.

**Key Words:** urbanisation, primacy index, migration, settlement patterns, developing country, regional development

# CHAPTER ONE

## INTRODUCTION

### 1.1.Purpose

The purpose of the study is to examine those structural changes occurring in patterns of spatial population distribution across South Africa, from 1996 to 2016. The study's main purpose is to highlight any trends or variations at provincial and national levels. The government of South Africa has expressed dissatisfaction with the population distribution in the country. However, little empirical evidence has been produced to quantitatively substantiate this issue. Therefore, research in this area will lead to a better understanding of the settlement patterns in the country, which can then be used for both regional and urban development planning.

This insight into the patterns of population distribution can also serve as a basis from which to create policies, the main targets of which should be as follows; even regional development, environmental sustainability and the aid of government in the even allocation of resources, all in an effort to strive towards a better balance of spatial patterns around the country.

### 1.2.Background of the study

The population distribution in South Africa has suffered a fractured past. The settlement patterns in the country were predominately influenced by historical colonial trade and mining, as some provinces are rich in mineral resources. The early stages of urbanisation in South Africa started in late 18<sup>th</sup> and early 19<sup>th</sup> century with the discovery of minerals. Gauteng was at the centre of the discovery with the City of Johannesburg taking centre stage(Mabin 1992). The highest concentration of the population is situated in urban agglomerations along the coast (Western Cape, Eastern Cape and KwaZulu-Natal) and in mining provinces (Gauteng, Free State and the North West).

During the apartheid years, the government put in place policies to restrict the movement of non-whites into major cities around the country and to force them to stay in the rural hinterland or on the peripheries of most urban centres. Majority of the black population were moved out to Bantustan or former homelands. Bantustan regions included KwaZulu-Natal, Mpumalanga, Eastern Cape, North West and Limpopo. It is estimated that the population in these areas reached approximately 10 000

000 million during the apartheid regime. As a result, Black Africans often live far from cities, away from economic opportunities, education, and services (World Bank, 2009). These policies not only influenced the movement of South Africans within the country, but also African migrants, especially those from neighbouring countries. South Africa has a long history of being a preferred destination for migrants from neighbouring countries. The policies also led to the creation of large townships on the urban periphery, such as Soweto and Tembisa. The townships of South Africa are often underdeveloped and rife with poverty, crime and unemployment. They also offer only basic services, but these are better than those available in the rural areas.

After the official end of the apartheid regime in 1994, South Africans of all races were free to settle in any part of the country. This led to a surge in population growth in metropolitan areas and secondary cities (Todes *et al.*, 2008). Internal and international migration was on the rise. Data from the first post-apartheid census in 1996, as well as data from Census 2001, showed that large numbers of migrants were moving into metropolitan areas and secondary cities and these areas were recording high net rates of in-migrations. Conversely, small towns and rural areas recorded high net out-migration rates (Todes *et al.*, 2008). South Africa, as a developing country, has a very good transport and communication infrastructure between settlement hierarchy, allowing for free and easy movement of people, goods and service (Todes *et al.*, 2008). This had a profound effect on the settlement patterns in the country. The post-apartheid government did not have the foresight to put policies in place to manage the post-apartheid movement between urban and rural areas (Turok, 2012). Therefore, the spatial legacy of apartheid is still evident today. The spatial legacy involves urban sprawl, low densities, long distances between work and home, and racial and class separations. These trends altered the population distribution in the country, resulting in some regions being more densely populated than others. A temporal view of these changes does not exist, hence the necessity to conduct research on the population distribution changes.

The high rates of urbanisation globally have sparked a debate about the weight of primate and secondary cities in an urban hierarchy, especially in developing countries. In any country, the population distribution of the country follows different stages of change over time. In developing countries, it is assumed that most of the population resides in rural areas and as time elapses we expect a more dispersed population, with more of the population concentrated in urban areas as industrialisation and urbanisation evolves. The process usually starts with the emergence of one or two major cities. The major cities then start to grow faster than the other regions in the country. This results in unbalanced regional development across the country, which is then followed by the

emergence of other smaller cities and towns. 'Polarisation reversal' is a phenomenon that has gained traction when investigating the population distribution in both developed and developing countries. Polarisation reversal refers to the turning point in an urban system when the spatial development starts to change course and urban de-concentration starts to develop (Keen & Townroe, 1981). In developed countries, polarisation reversal has occurred naturally as part of the economic development. Richardson(1977) argues that in developing countries they can either wait and let the polarisation reversal process play out naturally over time or they can choose to intervene. The problem is that the demographic, social and economic conditions experienced in developed countries are vastly different from those in developing countries. Very few developing countries have shown early signs of polarisation reversal to confirm a trend (Richardson, 1977). It is assumed that South Africa, as a developing country, will either move from a highly concentrated urban population with most of the population concentrated in one or two major cities to a more dispersed population where other smaller cities and towns are emerging, attracting more people through migration or, alternatively, it could move from a more dispersed population to a highly concentrated urban population.

### **1.3.Objectives**

- To demonstrate that secondary cities have, indeed, grown in population size.
- To demonstrate that major cities continue to grow, but not at the expense of secondary cities.
- To demonstrate that urbanisation is spreading spatially and that all provinces have been affected by it.
- To demonstrate that some provinces have been urbanising faster than others.
- To demonstrate that the rural population is declining.
- To analyse if polarisation reversal has occurred at a provincial or national level.
- To investigate whether South Africa, as a developing country, has a primate city.
- To demonstrate that the highest concentration of the population is situated in one or two major cities.

## **1.4.Delimitations**

Statistical indicators will be computed and analysed using data derived from previous censuses and community surveys, specifically; the censuses conducted by Statistics South Africa in 1996, 2001, 2011 and the community surveys conducted in 2007 and 2016. The data will be used to calculate statistical indicators of spatial population distribution to quantify different trends during the period from 1996 to 2016. The study concentrates on the structural changes materialising in the spatial distribution throughout the nine provinces in South Africa.

## **1.5.Research Problem**

It has been well documented that the population distribution after 1994 has seen some structural changes as apartheid was abolished. Previous studies on the population distribution in South Africa have focused on the aspects of urbanisation and migration to major cities after apartheid between 1996 and 2001. Very little empirical evidence exists after this period. Furthermore, there is very little evidence of the possible structural changes in the population distribution after this period. Since then, more data has become available. Statistics South Africa has conducted two community surveys and one census since 2001. They include CS 2007, Census 2011 and CS 2016. Therefore, more data has become available to quantify the structural changes that have occurred between 1996 and 2016. Hence, the study will produce a temporal view of changes in population distribution since 1996.

### **1.6.1.Research Questions**

The research questions below revolve around quantifying the structural changes in population distribution in South Africa between 1996 and 2016.

- Are some provinces in South Africa urbanising faster than others?
- To what extent has polarisation reversal occurred at national and provincial levels?
- In South Africa is majority of the population in South Africa concentrated in one or two major cities?
- Does a relationship exist between a province's economic development and the degree of its urbanisation?

- Do we have some provinces in South Africa that are more unequally spatially distributed than others ?
- Is the rural population in South Africa declining?
- In South Africa does a relationship exist between the size of locality of the residence of the median inhabitant and the degree of urbanisation?

### **1.6.2.Hypotheses**

The following hypotheses have been formulated in line with the research questions above.

- Provinces that were former Bantustan areas are urbanizing faster than non former Bantustan areas.
- Polarization reversal has occurred in provinces with a high level of economic development and has not occurred at the national level.
- Unlike many developing countries South Africa does not follow a primacy city distribution
- Provinces that are highly economically developed have a higher degree of urbanisation.
- Provinces with metropolitan municipalities have a higher gini concentration index.
- The rural population grew at slower rate than the urban population between 1996-2016
- Provinces with a bigger size of locality of the residence of the median inhabitant have a greater the degree urbanisation.

### **1.7. Professional background of study**

To assess whether the theories of polarisation reversal and primate cities can be justified in the case of South Africa, as well as assumptions that secondary cities are gaining influence across the country.

### **1.8. Definitions**

Defining *urban* and *rural* areas is a significant step towards identifying the population distribution of a country. Complications arise in the literature in terms of establishing a common definition for rural and urban areas. Globally, a common definition for urban and rural areas has not been established. Definitions vary from country to country and, in some instances, changes have occurred in the same country over time. The national differences in the features that differentiate urban areas from rural regions make it difficult to apply a single definition to all countries. Therefore, it is recommended that each country defines its own rural and urban regions within the context of its own needs (UN, 2015).

In South Africa, no collective definition for urban and rural areas exists. Many organisations and government departments in the country differ when defining these terms. The spatial legacy left by apartheid blurred the definitions of which areas constitute urban or rural areas. After the 1996 Census, in an attempt to improve urban and rural classifications, the Municipal Demarcation Board of South Africa redrew the municipal boundaries in 2000 to have more inclusive municipalities. This meant municipalities would now include a mixture of urban and rural areas in order to share infrastructure and economic resources to bridge the gap between the regional disparities. In the case of this study, urban and rural areas will be defined in terms of municipal categories. A municipality in South Africa is defined as a unit of government responsible for local government in a geographically demarcated area and consists of local, district and metropolitan municipalities. The Municipal Demarcation board passed the Municipal Structures Act in 1998 (Act 177 of 1998), which divides municipalities into three categories and one sub-area which surrounds the entire country including tribal and rural areas. The categories are as follows:

- metropolitan areas (Category A);
- local councils (Category B); and
- district councils (Category C).

Statistics South Africa utilised the Municipal Infrastructure Investment Framework (MIIF) developed by the Municipal Demarcation Board in 2010, which further classifies local municipalities into 5 sub-categories; A, B1, B2, B3, and B4 for the 2016 community survey. The sub-categories are defined as follows:

- A: the metropolitan municipalities;
- B1: comprises secondary cities and local municipalities with the largest budgets;
- B2: refers to local municipalities with a large town as their core;
- B3: defines local municipalities with small towns, with relatively small populations and significant proportions of urban population, but no large town as a core; and
- B4: made up of local municipalities which are mainly rural with communal tenure and with, at most, one or two small towns in their area.

The typology was thus far only implemented in the community survey 2016. The study will be guided by the *urban* and *rural* definitions utilized in the community survey in 2016 for the sake of comparison overtime and space. The definitions will be applied to censuses 1996,2001,2011 and community surveys 2007 and 2016.

**Urban:**  $A + B_1 + B_2$

**Rural:**  $B_3 + B_4$

**Degree of Urbanisation:** percentage of the population living in urban areas.

**Primate City:** A dominant city in an urban system that is disproportionately larger than the other cities.

**Polarisation Reversal:** refers to the turning point in an urban hierarchy when urban de-concentration starts to develop as population growth rates in secondary cities exceed metropolitan areas.

### 1.9. Thesis Outline

This study is divided into 6 chapters. Chapter 1 includes the purpose of the study, background to the study, objectives, delimitations, the research problem, research questions, hypothesis, background of the study and key definitions Chapter 2

outlines the literature review. The literature review highlights topics influencing spatial population distributions in the following order: common theories of spatial population distribution,

urbanisation, polarisation reversal, migration, cities and policies. policy and conceptual framework. Chapter 3 provides an account of statistical methods and data utilized in the study. Chapter 4 presents the results of data analysis and a temporal view of the structural changes that occurred during 1996-2016. Chapter 5 outlines the discussion of results. Chapter 6 provides the conclusions of the study and future recommendations.



## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1. Introduction

The purpose of this chapter is to evaluate the existing literature on the topic of spatial distribution. The main focus of the chapter is to highlight the different theories related to the spatial population distribution of a country. This chapter focuses on the common theories, factors and policies influencing the spatial population distribution of a country.

The population distribution in South Africa has suffered from a fractured past. Settlement patterns in South Africa are influenced predominately by historical colonial trade and mining, as some provinces are rich in mineral resources. The highest concentration of the population is situated in urban agglomerations along the coast (Western Cape, Eastern Cape, and KwaZulu-Natal) and mining provinces (Gauteng, Free State and the North West).

During the apartheid years, the government put into place policies to restrict the movement of non-whites into major cities around the country and force them to stay in the rural hinterland or on the periphery of most urban centres. Black Africans often live far from cities, away from economic opportunities, education, and services (World Bank, 2009). These policies not only influenced the movement of South Africans, but also African migrants, especially from the neighbouring countries. South Africa has a long history of being a preferred destination for migrants from neighbouring countries. The policies also led to the creation of large townships on the urban periphery, such as Soweto and Tembisa. Townships in South Africa are often underdeveloped and rife with poverty, crime and unemployment. They often offer only basic services, but these are usually better than those offered in rural areas. The spatial legacy left by the apartheid government involves urban sprawl, low densities, long distances between work and home and racial and class separations.

After the official end of the apartheid regime in 1994, South Africans of any race were free to settle in any part of the country. This led to a surge in population growth in metropolitan areas and secondary cities (Todes *et al.*, 2008). Internal and international migration was on the rise. Data from the first post-apartheid census in 1996 and census 2001 showed a large number of migrants

were moving into metropolitan areas and secondary cities. These areas recorded high net in-migration rates. Conversely, small towns and rural areas recorded high net out-migration rates (Todes *et al.*, 2008). The post-apartheid government did not have the foresight to put into place policies to manage the post-apartheid movement between urban and rural areas (Turok, 2012). This had a profound effect on the settlement patterns in the country, resulting in some regions being more populated than others. According to the NDP(2012) South Africa has a fairly even spatial structure. The economic activities are spread out among the four major metropolitans(Gauteng, Western Cape, Kwazulu-Natal and the Eastern Cape) municipalities, secondary cities and large towns in the country all connected by a strong transport and communication infrastructure linking all relevant regions. After apartheid Gauteng maintained its dominance grew rapidly and attracting a lot of migrants. The coastal regions did not grow as rapidly and mainly due to the declining manufacturing sector in the country. Secondary cities grew at different rates depending on the dominant economic sector. Growth among large towns and rural areas either slowed down or were stagnate. Some large towns and rural areas did experience some growth with the investment from government. This was mainly large towns and rural areas that had tourist sights has an important corridor or were situated along national borders where transport and trade are growing However, the population settlement patterns are unbalanced and dysfunctional. Many people still live in poverty traps around the country, especially in former Bantustan regions. A temporal view of the changes that occurred post-apartheid does not exist, hence the necessity to conduct research on the population distribution changes.



## 2.2. Theories

The literature on the population distribution in a country is dominated by many theories, such as the Rank-Size Rule, the Central Place Theory, the Core-Periphery Model and the Primate Cities Theory. In the earlier literature on population distribution and the hierarchy of cities, German geographer Walter Christaller(1933) introduced the Central Place Theory. The idea is that urban agglomeration can be arranged in order of the services, economic influence and size they have within a country. The categories identified include primate cities, secondary cities, smaller towns and villages and rural settlements.

In 1949, George Zipf devised his theory of rank-size rule to explain the size of cities in a country. The Rank-Size theory states that secondary, and subsequently, smaller cities should represent a proportion of the largest city. The settlements within a defined area are ranked in descending order according to the size of their population. The size of a particular area can be predicted by observing

its rank and the size of the largest city in the area. A perfect rank-size distribution will be log normally distributed, meaning a country will have a couple of big metropolitan municipalities, many small-intermediate cities or towns and a large number of smaller towns.

According to Mark Jefferson (1939), a primate city in a country is at least twice as large as the next largest city and more than twice as important. A primate city is a leading city in its country or region, disproportionately larger than any others in the urban hierarchy. A primate distribution has one very large city with many much smaller cities and towns and no intermediate-sized urban centres.

John Friedman (1966) developed the core-periphery theory to explain the development of the different stages in population distribution as a country maintains a constant stretch of economic growth. The core-periphery model states that at the first stage in a country's development, one or more core cities or regions in the country will emerge. This is as a result of advantages that certain core centres have over the other regions, such as superior economic opportunities and living conditions. Therefore, the core regions start attracting more people. The next stage is the emergence of secondary cities or towns on the periphery and these develop links between the core and the periphery. The secondary cities or towns then strengthen as a result of investment and infrastructure. In the final stage, both the core and periphery are fully developed with the equal flow of capital and people in both directions.

Brian Berry (1961) investigated the relationship between city size distribution and the economic development of 37 countries. The aim of the study was to test the relationship between city size distribution and economic development. He compared indices on urbanisation and primacy with the economic development of these countries. The results from his paper revealed that 13 countries observed a rank-size distribution, 15 countries observed a primate distribution and 9 observed an intermediate distribution. It was also revealed that there is no relationship between the degree of urbanisation and the type of city size distributions in a country, nor does a relationship exist between the economic development and the type of city-size distribution in a country. The study further found that countries with a colonial past normally follow a primate distribution with specialized economies (Asian dual economy), while it is more complex to determine the type of distribution followed by countries with a long history of urbanisation. The rank-size distribution has been observed in most developed countries, whereas the primate city distribution has been prominent in developing countries. Berry (1961) concluded there is no relationship between the

type of city size distribution and economic development, nor is there a relationship between the type of city size distribution and the degree of urbanisation of countries, although urbanisation and economic development are highly interrelated.

Harry Richardson (1977) reviews the common theories surrounding the urban size, structure, and functions in developing countries. According to his 1977 study (Richardson, 1977), the processes of economic development and urbanisation are highly interrelated. Richardson argues that the primate city theory is favourable in developing countries. The common theories reviewed in his paper were: the theory of optimal city size, whether a relationship between city size and function exists, whether the manufacturing industry is much more heavily concentrated in the primate city of developing countries than in developed countries, and whether industrial decentralization is likely to be an important component in any national spatial strategies. Richardson (1977) compared the per capita GNP to the percentage urban population of 19 developing countries and compared the primacy index of 14 developing and 13 developed countries. He found that the higher the GNP in a country, the higher the percentage of people living in urban areas, not all primate city size distributions are found in the developing world, nor are all developing countries primate. He concluded that city-size structure function and growth are very complex and that generalising results from only a few countries is naive. It was concluded that no relationship between the primate city and the percentage of the urban population exists, and in some countries the large primate city constitutes a large percentage of the population, while in others this is not the case. Lastly, Richardson concluded that many developing countries follow the theory of one or two dominant cities (primate cities), followed by smaller secondary cities around the country.

In his paper, Makoud (2003) argued that developing countries are not well equipped to deal with the age of rapid globalization. He argues that there has been a dramatic change in the concept of regionalism. Classic theories such as the Central Place Theory, Rank Size Distribution, Divergence / Convergence theory, and Growth Pole theories, are no longer applicable. Through the advances in globalization and technology (especially communication technology), we find the urban centres are closely connected. The need for an urban hierarchy with one or two huge urban centres is fading.

It is assumed that South Africa, as a developing country, will either move from a highly concentrated urban population with most of the population concentrated in one or two major cities to a more dispersed population where other smaller cities and towns are emerging, attracting more

people through migration or, alternatively, it could move from a more dispersed population to a highly concentrated urban population. Therefore the study will be guided by Friedman (1966) core-periphery model.

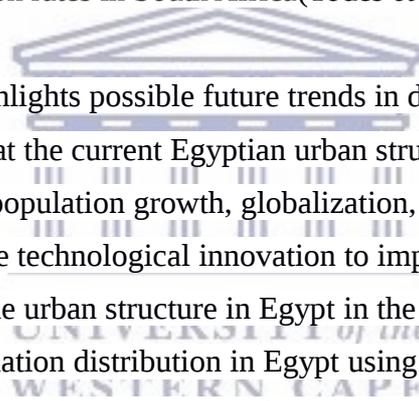
### **2.3. Urbanisation**

Urbanisation is a key component in influencing the spatial population distribution of any country because of its economic, social and demographic implications(UN, 2012) According to the United Nations, urbanisation refers to both a condition at a point in time and to a process occurring over time. The condition of urbanisation, referred to as the level of urbanisation, is indicated by the percentage of a population that is living in urban areas. In 2010, the urban population around the world (51.2%) exceeded the rural population for the first time(UN,2012). Most of the future growth is expected in developing countries.

It is well known that the urbanisation process in Africa has not been adequately researched. Literature on urbanisation (past and present) in Africa is often misinterpreted and seen in a negative light by Western scholars. Scholars have cited globalization and industrialisation as the major forces behind the rapid urbanisation and the growth of peripheral urbanisation in developing countries (Doan & Oduro, 2011). Urbanisation plays a massive role in economic development. Furthermore, globalization has put massive pressure on developing countries to improve economic and social development. According to Richardson (1977), the processes of economic development and urbanisation are highly interrelated; with the higher a country's GNP (Gross National Product), the higher the percentage of people living in its urban areas. The inverse relationship between dissatisfaction of the country's distribution and economic development is clear from the fact that developing countries have major concern, whereas developed countries are not as concerned (Fuchs & Demko, 1983).

According to Mabin(1992) the early stages of urbanisation in South Africa started in late 18<sup>th</sup> and early 19<sup>th</sup> century with the discovery of minerals. Gauteng was at the centre of the discovery with the City of Johannesburg taking centre stage. The discovery of minerals meant that cheap labour was required to mine these minerals around the country. This led to an influx of local and international migrants. Industrialization and urbanisation increased rapidly during the 1900s in South Africa. The government invested heavily on the transport and communication infrastructure to optimize the transport of goods and services to other parts of the country. The coastal region of

Cape Town and Durban were particularly important because of its access to the international markets from their ports. Along with the early stages of urbanisation, the settlement hierarchy in South Africa started developing as a by product of the rapid urbanisation. The rapid urbanisation lead to increase of black South Africans living on the periphery of the cities who were often exploited in the labour force . As a result the black population on the urban periphery increased and was seen as a threat to the apartheid government as they were becoming more involved in the political and economic affairs closer to the cities. This resulted in laws being passed that would have an impact on the settlement patterns in South Africa that can be seen today. The Native(Urban Areas) act of 1923, Native(Urban Areas) consolidation act of 1945 and the Bantu Authorities act 1951 were all restrictive policies to try and control black migration into urban centres around the country. Majority of the black population were eventually moved out to Bantustan or former homelands. It is estimated that the population in these areas were approximately 10 000 000 million in the later 19<sup>th</sup> century.(Mabin,1992). Therefore the urbanisation process(past and present) in South Africa is heavily influenced by the past apartheid policies. Urbanisation during apartheid was actually faster than the urbanisation rates in South Africa(Todes *et al.*, 2008).



In his paper, Maksoud (2003) highlights possible future trends in developing countries in the age of rapid globalization. He argues that the current Egyptian urban structure is not well equipped to deal with rapid globalization. Future population growth, globalization, industrialisation, development of the transport infrastructure and the technological innovation to improve communication are among the major trends that will affect the urban structure in Egypt in the future. In his research, Maksoud outlined the structure of the population distribution in Egypt using statistical indicators such as the rank-size distribution, primacy index and the degree of urbanisation. The results revealed the following: the urban population represents more than 40% of the total population; urbanisation grew from 26% in 1927 to 42.6% in 1996; Greater Cairo and Alexandria are Egypt's two major cities, with populations of over 1 million people; two main patterns of the spatial distribution of urban settlements could be identified, firstly, along the Nile Valley, the north-coast and along the Red Sea coast, and secondly, in the Nile Delta, Sinai and Western Desert; the urban system of Egypt shows major deviation from the standard rank size distribution; and the main feature of the Egyptian urban system is primacy. The high concentration of population in Greater Cairo is very high compared to other urban centres and also to Alexandria, Egypt's second largest city. Maksoud found that primacy is the main feature of the Egyptian urban system. The concentration of population in Greater Cairo is very high compared with that of other urban centres, including Alexandria, the city's second-largest city. Maksoud concluded that urban systems in developing

countries suffer from various problems such as rapid urbanisation and rural-urban migration, coupled with lack of infrastructure and failed development policies.

Giray Gozgor and Baris Kablamaci (2015) empirically examined the determinants of urban population and populations living in the largest cities for 79 low- and lower middle-income economies based on their level of economic development, globalization, economic, social, geographical and political factors. Globally, urbanisation is growing fast. The influence of globalization on urbanisation in developing countries is complex and requires careful research. Gozgor and Kablamaci (2015) argue that a relationship exists between large metropolises in developing countries and the international trade. To investigate whether this relationship exists, they first used a measure of globalization from the KOF Index of Globalization, which measures the three main dimensions of globalization: economic, social and political. Secondly, the authors used GMM (Generalised Method of Moments), panel data estimation, controlling for both internal and external social and economic factors. The study revealed the following: income, urban population and country size are positively related geographical characteristics and location does not have a massive impact on the population in the largest cities in poor emerging economies; a statistically significant and positive relationship exists between the effects of economic and political dimensions of globalization and the size of the population of the largest city; a statistically significant and negative relationship exists between the effects of the social dimensions of globalization and the size of the population of the largest city; there is no robust relationship between globalization and the national urban population; and trade openness is positively related to the population in the largest cities of poor emerging countries. The study concluded that international trade, political and economic factors all contribute to primacy in urban regions.

#### **2.4. Polarisation Reversal**

Polarisation reversal is another phenomenon that is critical to creating spatial strategies in developing countries. Polarisation reversal refers to the turning point in an urban system where the spatial development starts to change course and urban de-concentration starts to develop (Keen & Townroe, 1981). The literature on polarisation reversal does not offer a common definition for it. Richardson (1977) makes use of population concentration in the core region compared to the secondary cities, as well as the spatial concentration of industry. In his paper, Renaud (1977) utilised population growth and migration and also the gross regional product and regional per capita incomes as indicators. Linn (1979) used gross regional product, income and investment as

polarisation reversal indicators (Keen & Townroe, 1981). In this paper we will be utilising the methodology used by Richardson (1977).

The strength of small-intermediate cities and towns is critical if polarisation reversal is to take place in any country. Literature on spatial distribution has highlighted the importance of small-intermediate cities and towns providing a balanced distribution of the population. Scholars believe a more balanced population distribution will aid in reaching regional development goals in a country (Peyvab *et al.*, 2014). According to Richardson (1981), the strength of small-intermediate towns plays an important role in the structure of the urban hierarchy. In countries where the economic, social and transport infrastructure of small-intermediate towns are weak, the core regions and the secondary cities tend to grow and form their own urban hierarchy. This leaves the small-intermediate towns and rural areas to form their own sub-hierarchy. Therefore, strengthening the link between the two is critical for a more equal urban hierarchy.

According to Maksoud (2003), communication technology and transport infrastructure will be crucial to the development of small-medium cities. The connections between the dominant urban systems and the smaller-medium role players are becoming stronger and easier. These developments have simply closed the gaps between people in different regions, whether it be rural to urban distances, or distances between countries. It allows for more movement of the people in and around the country or countries (Franklin Obeng-Odoom, 2011). It allows those living on the urban fringe and, in some cases, rural areas, easier access to the major urban centres (Doan & Oduro, 2011). Therefore, the future for small-medium cities is bright during this age of technology and innovation.

In their paper, Peyvab *et al.* (2014) proposed the hypothesis that small-intermediate cities and towns have an effective role in balancing and optimising the distribution of the population in Kerman province. They calculated the Attractive Coefficient and Entropy model. The Attractive Coefficient is used to evaluate the attraction level of a town, while the Entropy Coefficient is used to evaluate the spatial location of the population and the number of towns in an urban system. The three cases evaluated were as follows:

- (1) including small towns;
- (2) excluding small towns; and
- (3) excluding Kerman City.

The coefficients were calculated over a 25-year period. Results from the study found changes in different towns over the time period from 1986 to 2011, and changes in attraction in the different towns in the Kerman province. The results show that only two towns grew into cities over the 25-year time period. Both were among the towns that had the highest attraction coefficients. The towns with the highest attraction coefficients were recipients of investment. The results from the entropy coefficient show that the case which includes the development of towns gives the best results for a balanced population distribution. They concluded that smaller towns and intermediate cities suffer as they are neglected by government investment in favour of major cities in developing countries. On average, urban residents have better access to education and health care as well as other basic services such as clean water, sanitation and transportation. A balanced population distribution will have a positive effect on a country's regional development goals (Peyvab *et al.*, 2014).

## 2.5. Migration

Migration is an important factor that influences the spatial population distribution in any country. Migration in developing countries is seen as the root cause of increased levels of poverty, unemployment and expansion in urban areas. However, the magnitude and patterns of internal migration remain poorly documented in many countries, particularly in the developing world, because the data required to estimate internal migration from population censuses is not collected, nor is it published with sufficient detail (Rodriguez, 2008). Jorge Rodriguez (2008) analysed the migration trends in Latin America and the Caribbean over the last 25 years. He investigated whether a correlation exists between these migration trends and the development processes at both national and sub-national levels by using statistical indicators such as the primacy index, degree of urbanisation and migration rates of the countries. The study also showed that in Latin American and the Caribbean, the flows from urban to rural areas are driven mainly by urban sprawl, that is, by short-distance mobility from cities to their outskirts. Rodriguez also found that large social and economic inequalities across regions remain, which is prominent in many developing countries, and that flows from urban to rural areas are driven mainly by urban sprawl, that is, by short-distance mobility from cities to their outskirts. Although primacy is falling in most of the countries, it still remains high, with the majority of the countries having primacy indices of 2 or more. The economic and social development process is not increasing internal migration at either the regional or national levels. Internal migration is commencing from less developed areas to more developed ones, but many cases are not statistically significant and the process of urbanisation is still ongoing, although at a decreasing speed, given the already high proportions of urban areas in the region.

Petra Doan and Charles Oduro(2011) study the patterns of population growth in Ghana. Specifically they focus on the peri-urban region of Accra, Ghana's capital city. The goal of their paper is to clarify some misconceptions about the peri-urban growth patterns in developing countries focussing on the Accra region in Ghana. The phenomenon of urban sprawl has received significant attention with regard to how it is described as well as its impacts . The main influence of peri-urban growth in developing countries is due to the high rates of rural-urban migration. Lack of understanding, planning, and funding by governments in developing countries to deal issues relating to urban sprawl have seen countries faced with issues such as pollution poor sanitation, environmental problems and the emergence of slum areas. In their paper the authors proposed a hypothesis that the urban expansion in the peripheral region of Accra, Ghana, is not unstructured and does indeed show some patterns of development. They test four hypotheses from from the existing literature on peri-urban development:the spreading pancake, development node, village magnet and ribbon hypotheses.

- The Spreading pancake: this hypotheses argues that the peri-urban zone that is closer to the central city will grow the fastest and have the highest population density.
- Development node hypothesis:this hypotheses argues that localities closer to global investments will have higher population growth and higher population density.
- Village magnet hypotheses: this hypotheses suggest that localities closer to existing villages that have been subject to rapid urbanization will experience higher population growth and higher population density.
- Ribbon hypotheses: this hypotheses suggest that localities around highways will experience the faster population growth and higher population density.

The authors test these hypotheses by combining statistical analysis(multivariate and bivariate regression models) and spatial modelling using ArcGIS. The Greater Accra Metropolitan Area includes the sub areas of the Accra Metropolis, Tema Municipality and Ga District. It has a population of 2 905 726 and although it is the smallest in land area in Ghana, it is the most urbanized the fastest growing region in Ghana. The sample is 105 localities in the region. The data available is from the years 1970,1984 and 2000. The result show that that localities in the peri-urban region experienced significant growth during the period being studied. The average locality grew by approximately by 1600 people during 1974 to 1984 and by 5600 between 1984 to 2000. Population density also increased. Between 1970 to 2000, approximately 99% of the inter-urban population lived 20km from the city. Looking at the the overall picture of the peri-urban growth patterns in Accra. Petra Doan and Charles Oduro(2011) concluded none of the four hypothesis tested adequately explains Accra's spatial growth and form. Rather the growth is attributed to a

combination of the four hypothesis. They suggest that Accra has a small land area and its struggling to absorb the increase in population growth. A major influence in the population growth in Accra is because of migration. Accra has the highest percentage of migrants in any city.

Post-colonial Africa has seen a surge in rural-urban migration, with most of the migrants settling in informal settlements on the urban fringe. One of the most important objectives for government in developing countries is to decrease the regional disparities in income and infrastructure which influence the rural-urban migration. The rise in rural-urban migration is in developing countries, mainly because of the wage differential between urban and rural regions. Cities offer advantages in terms of the labour market, transportation, infrastructure, industry and social relations (Gozgor & Kablamaci, 2015).

In South Africa, urban-rural disparities is the main driver of the high rates of urban-rural migration. (Turok, 2012). Kok and Collison (2006) outlined different forms of migration in the country, and looked at the relationship between urbanisation and migration by investigating the reasons and consequences of migration in the country. According to their 2006 study, the migration and urbanisation patterns must be looked at in their historical context. The legacy of apartheid in South Africa has had a significant influence on current trends in migration and urbanisation. So far, in the post-apartheid era, the government has not done enough to provide better opportunities in rural areas and, consequently, many people have decided to migrate to the cities. This has caused an unbalanced population distribution in the country. The results of a report by Kok and Collison (2006), using data and methodology from the Medical Research Council/Wits University Agincourt Unit in Rural Public Health and census data from 1980,1996 and 2001, show that there has been a 12% increase in migration in each five-year period investigated, namely, 1975–1980, 1992–1996 and 1996–2001. However, a large proportion of these moves were temporary migrations, with approximately 67% being either temporary or circular migrations. There is a steady increase in the proportion of urbanisation over time by race, with the black African population being the least urbanized sub-population, although this rate is shifting steadily upwards.

Kok, Collison and Gannene (2006) investigated the migration and settlement patterns in post-apartheid South Africa. They analysed data at the national, sub-provincial and household levels and addressed three questions in their report as follows:

- Which places are growing due to migration?
- Are rural areas depopulating due to migration?

- What is happening with labour migration?

The authors of the study note that one of the key drivers for migration is the influence of global markets. These markets influence the distribution of economic opportunities in the country.

Various measures show that urbanisation in metropolitan areas is as a result of high rates of internal migration and that as much as three quarters of internal migration occurs in metropolitan areas. Administrative and structural arrangements (past and present) also had a major influence on the migration and settlement patterns in the country. Therefore, when researching migration and settlement patterns in South Africa, the past apartheid policies must be taken into account.

To research how settlement distribution is changing within and between settlement types, Kok, Collison and Gannene (2006) used data from at least two points in time. The first step was to present the pattern of settlement at the national level, as recorded in the 2001 national census. The next step was to classify the settlement type of the previous place of residence. The authors then computed the probability of moving from one settlement type. To do this, they made use of a settlement-type transition matrix which was constructed on the national data, in order to show how patterns of settlement have changed over a five-year period. Settlement types represented in the analysis are as follows: metropolitan formal; other urban formal; urban informal; former homeland area and commercial agriculture. Results from the Kok, Collison and Gannene (2006) report show that metropolitan populations are increasing from migrations but that not all the growth is permanent. Other results include the existence of powerful links between city and rural dwellers and the finding that small-intermediate size towns are growing and attracting people who do not return to their rural villages. At the household level, the study found high levels of temporary migration among rural men and that this phenomenon is on the rise for women.

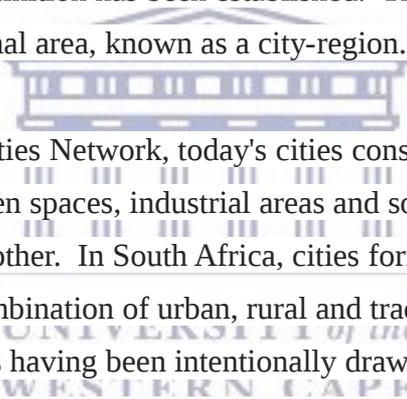
## 2.6. Cities

Cities are focal points of economic growth, innovation and employment and have an important influence on the spatial population distribution of any country. Cities provide the population with access to more economic opportunities, education, innovation and basic services such as water and sanitation. Taking into account that a high percentage of the world's urban growth is expected in developing countries, cities will be at the centre of this phenomenon.

The definition of a city has evolved over the past century. Friedmann and Wolff (1982) argue that "world cities" are global capital accumulators that drive the world economy. They are large cities with populations of easily over 1 million people. Cities have to undergo some of the rapid changes

involving the restructuring of political, economic, social and physical areas in the city to qualify as a “world city”. According to Franklin Obeng-Odoom (2011), cities in Africa are all unique in their own way. They each have different pre- and post-colonial histories which shaped them in a unique way. The integration of African cities onto the global stage is not a recent occurrence. African cities are following similar trends compared to advanced capitalist countries, as globalization becomes more prevalent. These developments are attracting the world’s attention to African cities and their role in the global economy.

Traditionally, a city was the centre of economic activities with a high population concentration. Today, defining a city becomes more complex. Economic activities and people are not only centred in the traditional Central Business District (CBD), but are more spread out around the country. Towns and small-intermediate size cities have become more interlinked with the development of transport infrastructure and innovative technology, and people and business have become more connected. The main ideas in literature point to defining a city either by its population size or its function. Thus far no common definition has been established. The United Nations defines a city by population of the city's functional area, known as a city-region.



According to the South African Cities Network, today's cities consist of a combination of towns, suburbs, informal settlements, green spaces, industrial areas and sometimes farms and traditional authority areas, all linked to each other. In South Africa, cities form part of metropolitan municipalities and consist of a combination of urban, rural and traditional authority areas. This is a result of administrative boundaries having been intentionally drawn post-apartheid to include and link areas that were segregated in the past. South African cities are characterized by different levels of densities around the city, long distance between the city and the periphery, low densities in the the inner city and high densities on the periphery. Poverty traps are common on the periphery. Many cities around South Africa has not developed to its potential thus which has lead to dangerous social, economic and environmental consequences around the country(Smith, 1992).

According to NDP(2012) a majority of the population in South Africa resides in cities and towns with approximately 85% of the economic activities occurring in these areas. The NDP(2012) projects that in 2030 7.8 million people will be living in South African cities and by 2014 it will rise to 14 million. The main metropolitan municipalities and secondary cities have been the main attraction for migrants.

Todes *et al* investigate the urbanisation and migration patterns in South Africa post-apartheid. The level of urbanisation and migration rate in metropolitan municipalities, secondary cities, large and small towns in South Africa using census data from 1996 and 2001. The study showed that large numbers of migrants were moving into metropolitan areas and secondary cities and these areas were recording high net rates of in-migrations. Small towns and rural areas recorded high net out-migration rates.

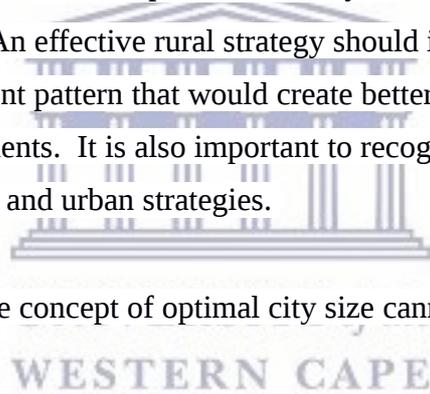
## 2.7. Policies

In most developing countries, there is a major issue of population distribution policies. Many population distribution strategies in developing countries are focused mainly on managing the growth of their largest urban centres, controlling rural-urban migration and promoting a more dispersed national population (Richardson, 1977). Many developing countries are burdened by spatial policies of the colonial past. Unbalanced urban systems are a result of these policies, the main focus of which was to favour investment in one or major two cities that are close to global markets. Moving forward, developing countries won't be prepared for the rapid changes taking place during the globalization phase. With proper planning and investment in small-intermediate towns, a balanced spatial distribution is possible (Peyvab *et al.*, 2014).

In their paper, Fuchs and Demko (1983) review the common population distribution policies utilised by governments of both developed and developing countries, and investigate their efficiency. Spatial population and internal migration has been an obstacle for governments of both developed and developing countries. Governments in developing countries in Latin America and Africa are dissatisfied with their population distribution. Fuchs and Demko (1983) highlight the major issues governments have with their population distribution. These include spatial disparities in employment opportunities, high rates of rural-urban migration, rapid growth in large metropolises contributing to an unbalanced urban system, and regional growth rate disparities. The most common population distribution policies implemented by developing countries were based on the results of a 1978 UN survey. They include policies to alter migration, to alter regional population distribution, to alter the growth of the primate city and to encourage growth in small and intermediate size cities. The study revealed that results from common programmes and policies to influence the population distribution vary from nation to nation and have generally had little effect. Part of the reason many population distribution goals fail is because of the unrealistic goals being set. When developing these goals, policy-makers must understand that there is no universal strategy.

In his 1977 paper, Richardson reviews the common theories surrounding urban size, structure and functions in developing countries (Richardson, 1977). He concluded with the following guidelines to better future population distribution policies:

- It is naive to use the experience of developed countries as guidance for spatial goals. There are a variety of differences such as: the urban settlement pattern has long been established; the distribution of income is more even; rates of demographic change are lower and the role of the government is concentrated on maintaining stability instead of generating growth. Therefore, modelling spatial policies in line with developed countries will result in indifferent results.
- A universal spatial strategy is not the solution. It is clear each country is unique in its size, topography, social structure, culture and politics.
- Many scholars argue that rural development is the key to solving national spatial distribution in developing countries. An effective rural strategy should increase agricultural efficiency, improve the rural settlement pattern that would create better living conditions and improve the quality of life for residents. It is also important to recognize the complementary relationship between rural and urban strategies.
- The size of the city and the concept of optimal city size cannot feature in the spatial policy conversation.
- In countries with a heavy primate city size distribution, the “counter magnets” proposal may be the relevant solution. Primate cities are normally the dominant force in the economy. Development of a counter magnet can upset this dominance.
- Neither the concept of optimal city size, nor that of an optimal urban hierarchy is helpful.
- In developed countries, polarisation reversal has occurred naturally as part of the economic development. Developing countries can either wait and let the polarisation reversal process play out naturally over time, or they can choose to intervene. The problem is that the demographic, social and economic conditions experienced in developed countries are vastly different from those in developing countries.



According to the NDP(2012), spatial population distribution policies in South Africa for 2050 should aim to eradicate poverty traps in rural areas and on the urban periphery, inner cities won't be ridden with poverty , crime and slum areas, better transport infrastructure so people do not spend a great deal of time and money on daily commuting long distance to work, inclusion of immigrant communities into the culture and economy of the country, improving infrastructure and economies in rural areas to be integrated as an important cog in the economy and actively promoting environmental sustainability



## CHAPTER THREE

### RESEARCH DESIGN

#### 3.1. Introduction

This chapter discusses the research methods and data sources used in the study. It also describes the source of data and how it was collected. Urban and rural definitions are important factors in this study. The difficulties surrounding urban and rural definitions in the literature will be highlighted in this chapter, as well as which typology will be used in the study.

#### 3.2. Purpose

The purpose of the study is to examine the structural changes occurring in the patterns of spatial population distribution across South Africa over the period from 1996 to 2016. The government of South Africa has expressed dissatisfaction with the population distribution in the country. However, little empirical evidence has been produced to quantitatively substantiate this issue. Therefore, research in this area will give a better understanding of the settlement patterns in the country. This can constantly be used for regional and urban development planning and aid government to evenly allocate resources to strive towards a better balance of spatial patterns around the country.

#### 3.3. Context

The study is quantitative as statistical indicators will be computed and analysed using data derived from previous Censuses and Community Surveys, specifically, the Censuses conducted by Statistics South Africa in 1996, 2001, 2011 as well as Community Surveys conducted in 2007 and 2016. The data will be used to calculate statistical indicators of spatial population distribution to quantify different trends between the period from 1996 to 2016. The study concentrates on the structural changes materializing in the spatial distribution throughout the nine provinces of South Africa. The aim is to compare the structural changes in population distribution at the national, provincial and municipal levels. Furthermore, the study will also investigate the structural changes occurring in the major cities and secondary cities in South Africa.

#### 3.4. Descriptive variables

The focus of the study is to investigate the structural changes in population distribution over time. Therefore, the demographic variables listed below are based on the usual place of residence variable

taken from Censuses and Community Surveys conducted by Statistics South Africa and will assist in answering the research questions and hypotheses in the study.

#### **3.4.1. Usual residence**

The question about usual residence in censuses and community surveys conducted by Statssa was: “Has (name) been part of this household for at least four nights a week and has done so for the last six months or intends to be part of this household for at least four nights a week for the next six months?” This variable is used to distinguish whether a person lived permanently at the place of residence or whether they are just visiting. As the de jure population is required for the study, this variable will provide that information.

#### **3.4.2. Province of usual residence**

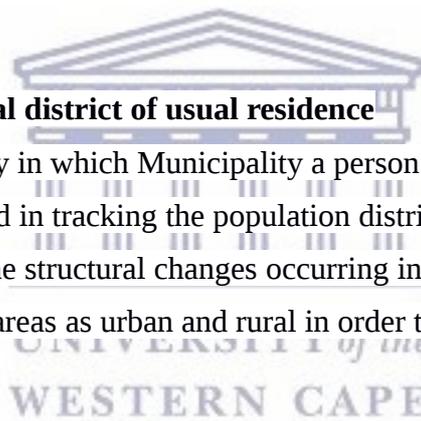
This variable is used to identify in which province a person usually resides. The variable will help track the pattern of the spatial population distribution indicators at the provincial level for all nine provinces.

#### **3.4.3. Municipality / magisterial district of usual residence**

This variable is utilized to identify in which Municipality a person lives. This is the most important variable in the study. This will aid in tracking the population distribution at the municipal level. It is especially critical to evaluate the structural changes occurring in each municipality around the country. It will aid in classifying areas as urban and rural in order to calculate the spatial population distribution indicators

#### **3.4.4. City / town of usual residence**

This variable is used to identify in which city or town a person resides. This will help track the structural changes in different cities and towns. Furthermore, it reveals which cities are growing faster than others, which cities have an more uneven population distribution than others, the primacy index at national and provincial level, which secondary cities have evolved into major cities and aids in tracking polarization reversal in the country.

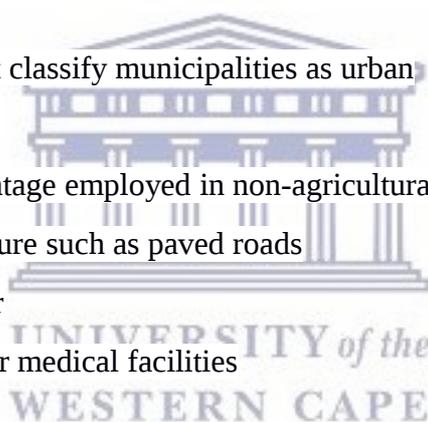


### 3.5. Defining urban and rural areas

Defining urban and rural areas is a significant step towards identifying the population distribution of a country. Complications arise in the literature when attempting to establish a common definition for urban and rural areas. Globally, a common definition for urban and rural areas has not been established. Definitions vary from country to country and in some instances, changes have occurred in the same country over time. According to the United Nations Statistics Division – Demographic and Social Statistics (2014), the national differences in features that differentiate urban and rural regions make it difficult to apply a single definition to all countries. Therefore, they recommend that each country defines its own rural and urban regions within the context of its own needs.

“The World Urbanization Prospects: The 2014 Revision, Highlights compiled by the United Nations, Department of Economic and Social Affairs, Population Division”, found that the basis for defining an urban area is formulated on one or more features, such as:

- population density
- administrative criteria that classify municipalities as urban
- a population threshold
- population density; percentage employed in non-agricultural sectors
- the presence of infrastructure such as paved roads
- electricity and piped water
- availability of education or medical facilities



Furthermore, the report investigated 233 countries for projections of the rural and urban populations in these countries. The results from the report found:

- 125 countries use administrative criteria to distinguish between urban and rural areas.
- 65 of these countries use administrative criteria only as the basis for the definition.
- 121 countries used population size or population density to define urban agglomerations.
- 49 countries used demographic characteristics only to define urban agglomerations.
- Urban agglomeration changes considerably from country to country, varying between 200 and 50,000 inhabitants.
- 32 countries used economic characteristics to define urban areas.

- 54 countries used infrastructure such as paved roads, piped water, electricity and sewerage as part of their definition of an urban area. Only 10 of these 54 countries used these characteristics as their only criteria.
- 7 countries reported no definition for an urban area and 8 countries considered the entire population of the country to be urban.

The results from the report show administrative criteria, population size and population density are the most commonly used variables by countries to define urban and rural areas.

### 3.5.1. Urban and rural definitions in South Africa

The population distribution in South Africa has a fractured history and has changed over the past twenty years since the end of apartheid. Apartheid policies often limited some population groups' access to where they worked or lived. Black Africans often live far from cities, away from economic opportunities, education, and services (World Bank, 2009). This had a profound effect on the settlement patterns in the country. South Africa's apartheid settlement policies have made it difficult to classify some areas as rural or urban. The resettlement process during apartheid saw predominantly black Africans being relocated into dense rural settlements (Todes, 2008). In South Africa, no collective definition for urban and rural areas exists. Many organizations and government departments in the country differ when defining these terms.

In the table below, Schmidt and Du Plessis (2013) summarize the different typologies used by different organizations (private and government departments):

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**Table 1: Different Typologies used in South Africa**

Department/Corporation/Research Facility	Typology	Variables used to formulate typology
Department of Health (2004)	0 - Urban 1 - Rural	Weighted rural road infrastructure index, social and service need index.
Department of Transport (2000)	0 – Metro urban core (Urban) 1 – Urban periphery (Rural) 2 – Traditional subsistence (Rural) 3 – Mining complexes (Rural) 4 – Game and nature reserves (Rural)	

	<p>5 – Displaced urban settlements (Rural)</p> <p>6 – Commercial farming high and medium intensity (Rural)</p> <p>7 – Arid and low-intensity commercial farming (Rural)</p>	
CSIR (The Council for Scientific and Industrial Research)	<p>1 – City regions - population greater than 1 000 000</p> <p>2 – City Areas - population 500 000 – 999 999</p> <p>3 – Regional service centres - 40 000 – 500 000</p> <p>4 – Service towns - population greater than 20 000</p> <p>5 – Local and niche settlements - Population varies</p>	Urban functional index, economic activity, availability of basic services, settlement size and density.
<b>Department/Corporation/Research Facility</b>	<b>Typology</b>	<b>Variables used to formulate typology</b>
Urban Development Framework	<p><b>Metropolitan Areas</b> - population is greater than 1,000,000 individuals. It has a strong, diverse economic centre.</p> <p><b>Secondary Cities</b> - population is between 250,000 and 1,000,000 individuals. It has a strong, diverse economic centre.</p> <p><b>Large Towns</b> - population between 25,000 and 250,000 individuals. The Economic base is focused on limited services/products.</p> <p><b>Small Towns</b> - a population is between 2,000 and 25,000. Economic base is focused on limited products/services</p> <p><b>Rural Villages</b> - varying population, clustered or dispersed, formal economic activities, mostly in former homeland areas.</p>	Population size and economic activities.
Department of Water Affairs (2000)	<p>A1 – Metropolitan area (urban)</p> <p>A2 – Urban formal town (urban)</p> <p>A3 – Former township (urban)</p> <p>A4 – Working towns – mines (urban)</p> <p>B1 – Urban fringe – informal settlements</p>	History of the area, density, economic activity and settlement size.

	B2 – Urban fringe – ex-homeland towns (formal towns) C – Rural – dense village > 5000 (rural) D – Rural – small village < 5000 (rural) E – Rural scattered (rural) F – Farming (other) O – Service centres (mines, prisons, etc.) (other)	
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The criteria defining urban, rural, metropolitan, secondary cities and towns varies between different departments. The number of categories in different settlement typologies varies between two and nine. The Department of Water Affairs has the most with nine categories and the Department of Health has the lowest, with only two. A variety of variables were utilized to formulate each typology. The most commonly used variables were settlement size and economic activity. Each department's criteria are influenced by different goals. Statistics South Africa is the only department that utilizes municipalities in their settlement typology. Metropolitan areas are defined by all except The Department of Health, which only makes use of two categories (urban and rural). Secondary cities are defined in half of the departments.

### 3.6. Sources of data

The Statistics Division of the United Nations' Department of Economic and Social Affairs defines a population Census as “the total process of collecting, compiling, evaluating, analysing and publishing or otherwise disseminating demographic, economic and social data pertaining, at a specified time, to all persons in a country or in a well-delimited part of a country”. Most countries carry out Censuses at regular intervals, usually every five or ten years. The characteristics of all individuals within a defined territory are recorded simultaneously. The data is used to inform government policy-making, planning and administration for demographic and social research and for research to inform business, industry, labour and the public. Census data also provides a sampling frame for intercensal surveys that provide further insights into demographic and socio-economic trends for the purposes of monitoring and evaluating the implementation of policies and programs.

Censuses and Community Surveys conducted by Statistics South Africa will be the only source of data for the study, specifically, Censuses 1996, 2001, 2011 and Community Surveys 2007 and 2016. The datasets were obtained by request from Statistics South Africa. The time frame between datasets (1996-2016) is critical to the study as it allows the population distribution in the country

enough time to evolve and provide a reasonable amount of data to track the progression. The definitions of which areas in the country constitute as urban, rural, metropolitan, secondary cities and towns are important as it is the cornerstone of the analysis of the statistical indicators of population distribution for the study. This section of the chapter will give an overview of each Census and Community Survey, how Statistics South Africa classified urban, metropolitan, secondary cities and towns in each Census or Community Survey, as well as the typology chosen to analyse the data available.

### 3.6.1 Census 1996

The Census in 1996 was the first Census held after apartheid ended and was therefore historical as it was the first Census in which all population groups in South Africa were enumerated. The target population was the entire population of South Africa. The Census was conducted by Statistics South Africa on the nights of 9<sup>th</sup> to 10<sup>th</sup> October 1996. Over 9 million households were visited, including those in rural and informal settlements which were previously ignored during the apartheid era. The De facto method was used to enumerate each individual - meaning enumeration of individuals where they are present at the time of the Census, regardless of where they normally live.

#### 3.6.1.1. Urban and rural classification

In the 1996 Census, Statistics South Africa defined urban and rural areas in terms of enumeration and settlement types. An enumeration type is the type of dwelling, i.e. house, squat, hospital, etc. Statistics South Africa defined enumeration types into fifteen classifications and four settlement types, namely, urban formal; urban informal; tribal authority areas and other non-urban areas. The demarcation of the settlement type was guided by two main ideas; the types of dwelling prominent and the geographical location of the enumeration area. The definitions used by Statistics South Africa to distinguish between urban and rural areas for the 1996 Census were as follows:

**Urban area:** An urban area is a settlement which has been legally proclaimed as being urban. Other areas are not regarded as urban, even if they are densely populated. In Census 1996, urban areas consisted of formal, informal and other urban areas.

**Urban areas, formal:** A city or town is a built-up area (including vacant space) within a proclaimed municipal or local authority boundary, with various structures such as houses, flats, hotels, boarding houses, old age homes, caravan parks, school and university hostels, built according to municipal by-laws.

**Urban areas, informal:** An informal urban area is found within a proclaimed urban area (city/town) but consists mainly of informal dwellings. These are the so-called squatter areas.

**Urban areas, other:** Other urban areas may include mines, factory and municipal hostels, hospitals, prisons and other institutions contained within a local authority boundary.

**Non-urban area:** Non-urban areas (also referred to as rural areas) fall outside of legally-proclaimed urban areas, and include commercial farms, small settlements, and rural villages.

Overall these EA-types fall into the into four settlement types:

urban, formal

urban, informal

tribal authority areas

other non-urban areas

The 1996 urban and rural classification was mainly based on the type of dwelling unit and the geographical location. Common variables to define urban and rural areas such as settlement size, population density or economic activity variables were not considered.

### 3.6.2.Census 2001

During the month of October 2001, South Africans were counted for the second time as citizens of a democracy. The night of the count was 9<sup>th</sup> to 10<sup>th</sup> October 2001. The target population was the entire population of South Africa. The Census 2001 methodology was altered from the 1996 Census. For the first time, Statistics South Africa used Geographic information system (GIS) technology in demarcation and map production.

#### 3.6.2.1.Urban and rural classification

The urban and rural classification in Census 2001 were again, as in Census 1996, categorized in terms of enumeration areas and settlement types. The enumeration area types were divided into ten categories and settlement types were split into four categories: urban formal; urban informal; rural formal and traditional areas. Each enumeration type would be classified into one of the four settlement type categories. During the 2001 Census, enumeration areas were demarcated as urban or rural, based on their status prior to re-demarcation, type of economic activity and land use.

**Urban area:** A classification based on dominant settlement type and land use. Cities, towns, townships, suburbs, etc are typical urban settlements. Areas comprising informal settlements, hostels, institutions, industrial and recreational areas, and smallholdings within or adjacent to any formal urban settlement are classified as urban.

**Rural area:** Any area that is not classified as urban. Rural areas are subdivided into tribal areas and commercial farms.

There are some differences between Census 2001 and Census 1996 regarding the classification of the country into urban and rural areas. Firstly, only ten enumeration area-types were used, instead of fifteen. In Census 2001 there were five main settlement type categories, namely urban, formal; urban, informal; commercial farms; tribal authority areas and other non-urban areas. The first four categories represent the settlement types in 2001. The areas in the other non-urban areas category were allocated a type according to their location within the other four groups (i.e. urban, formal; urban, informal; commercial farms; and tribal authority areas). The 1996 semi-urban category falls mostly within urban areas, depending on the type of land use. For example, if smallholdings were used for commercial farming they were classified as rural; if used for residential purposes, they were classified as urban. Small towns and mining towns were regarded as urban areas in 2001. In the previous Census in 1996, economic activity variable was not included in the criteria for defining urban and rural areas. Economic activity and land use were the variables used to define urban and rural areas during the 2001 Census.

### **3.6.3. Community Survey 2007**

The Community Survey 2007 was conducted during the intercensal period between the 2001 and 2011 Censuses. The survey was conducted by Statistics South Africa from 7<sup>th</sup> to 28<sup>th</sup> February 2007. The main objective of the Community Survey was to provide data on the demographic and socio-economic indicators during the intercensal period. These indicators include population size, population distribution, levels of poverty, access to basic services and facilities, and employment and unemployment rates in the country. The sample included all nine provinces in South Africa and approximately 280 000 households nationwide were enumerated.

#### **3.6.3.1 Urban and Rural classification**

The Community Survey 2007 included all four settlement types as defined during the 2001 Census, namely, urban-formal; urban-informal; rural-formal (commercial farms) and rural informal (tribal areas). The Census 2001 enumeration areas were used because they give a full geographic coverage of the country without any overlap.

### **3.6.4. Census 2011**

The Census conducted in 2011 was the third Census post-apartheid. The data collection process commenced on 9<sup>th</sup> October and ended the night of 31<sup>st</sup> October 2011. The target population for the Census was the whole population of South Africa. Approximately 15 million questionnaires were completed during the 2011 Census.

### 3.6.4.1. Urban and rural classification

As in previous Censuses, the urban and rural classification was based on enumeration area-types and settlement types. Enumeration area types in Census 2011 were divided into three broad settlement types:

- a) Urban
- b) Farm
- c) Traditional

A total of ten enumeration area-types were defined by Statistics South Africa for Census 2011 as follows:

- (1) **Formal residential:** Single house; townhouse; high-rise buildings
- (2) **Informal residential:** Unplanned squatting
- (3) **Traditional residential:** Homesteads
- (4) **Farms**
- (5) **Parks and recreation:** Forests; military training grounds; holiday resorts; nature reserves; national parks
- (6) **Collective living quarters:** School hostels; tertiary education hostels; workers' hostels; military barracks; prisons; hospitals; hotels; old-age homes; orphanages; monasteries
- (7) **Industrial:** Factories; large warehouses; mining; saw mills; railway stations and shunting areas
- (8) **Smallholdings:** Smallholdings/agricultural holdings
- (9) **Vacant:** Open spaces/stands
- (10) **Commercial:** Mixed shops; offices; office parks; shopping malls; CBD

The EA-types were allocated into the three settlement types as follows:

- a) Urban (10,7,6,5,8,1,2,0)
- b) Farm (4,6,7,5,8)
- c) Traditional (7,6,5,0,3)

Furthermore, Statistics South Africa define urban and rural areas as follows:

## **Urban area**

A continuously built-up area with characteristics such as the type of economic activity and land use. Cities, towns, townships, suburbs, etc. are typical urban areas. An urban area is one which was proclaimed as such (i.e. in an urban municipality under the old demarcation) or classified as such during Census demarcation by the Geography Department of Statistics South Africa, based on their observation of the aerial photographs or on other information.

## **Urban settlements (formal)**

Urban settlements (formal) occur on land that has been proclaimed as residential. A formal urban settlement is usually structured and organized. A local council or district council controls development in these areas. Services such as water, sewerage, electricity and refuse removal are provided; roads are formally planned and maintained by the council. This includes suburbs and townships.

## **Rural area/ traditional**

Any area that is not classified as urban. Rural areas may comprise of one or more of the following: tribal areas, commercial farms, and informal settlements.

Key changes from the 2001 Census are the geography-types and some administrative boundaries. The EA-types remained relatively the same. Census 2001 had four geography-types, namely, urban-formal; urban-informal; rural-formal and traditional, whereas Census 2011 had three geography-types, namely, urban; farm and traditional. The variables used to classify urban and rural were economic activity, land use, and infrastructure to provide access to services.

### **3.6.5. Community Survey 2016**

Community Survey 2016 (CS 2016) is the second intercensal survey in a democratic South Africa. This household-based survey is one of the few available data sources providing data at the municipal level. CS 2016 is the second large sample survey Statistics South Africa undertook after CS 2007. The target population for CS 2016 was the non-institutional population residing in private dwellings in the country. The enumeration area frame was based on the Census 2011 information. The sample size for CS 2016 was 1 370 809 dwelling units, which are approximately 1 000 000 more than CS 2007. Eligible persons for enumeration are all persons present in the household(s) of the sampled dwelling units on the reference night (midnight of 6<sup>th</sup> March 2016 to 7<sup>th</sup> March 2016), including visitors. Members of the household who were absent overnight but returned the next day should also have been counted.

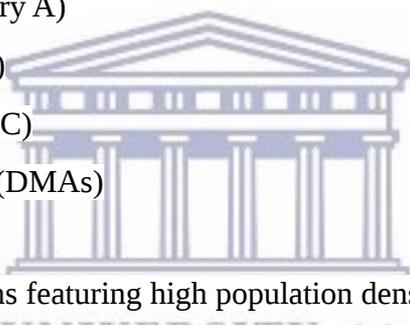
### 3.6.5.1 Urban and Rural Classification

For the first time, Statistics South Africa will make use of municipal categories to classify areas into urban and rural, moving away from the enumeration and settlement types used in previous Censuses and Community Surveys.

### 3.7. Municipality

A municipality in South Africa is defined by the Municipal Demarcation Board as follows: “a unit of government responsible for local government in a geographically demarcated area and consists of local, district and metropolitan municipalities”. The Municipal Demarcation Board passed the Municipal Structures Act, 1998 (Act 177 of 1998), which divides municipalities into three categories and one sub-area that surrounds the entire country, including tribal and rural areas. The categories are as follows:

- metropolitan areas (Category A)
- local councils (Category B)
- district councils (Category C)
- district management areas (DMAs)



Metropolitan areas are conurbations featuring high population density; intense movement of people, goods, and services; extensive development; and multiple districts and industrial areas. Other features of a metropolitan area include a complex and diverse economy, a single area where integrated development is desirable and strong interdependent social and economic linkages among its constituent units.

**Local municipality or Category B municipality:** Local municipality boundaries were determined according to settlement type, the rationalization of municipalities, manageable size, and functionality. Including the DMA, they make up the district councils.

**District council or Category C municipality:** District councils were created for the better management of local municipalities and the DMAs that constitute them.

DMAs are areas with both district and local municipality features where the establishment of a local municipality is not appropriate (does not meet a set of requirements). These are areas of special interest, e.g. deserts and semi-arid areas, state-protected and conservation areas and special

economic areas. In the Community Survey of 2016, the Municipal Infrastructure Investment Framework (MIIF) developed by the Municipal Demarcation Board in 2010, further classifies local municipalities into four sub-categories, B1, B2, B3, and B4. The categories are defined as follows:

- **B1 category:** comprises secondary cities and local municipalities with the largest budgets.
- **B2 category:** refers to local municipalities with a large town as core.
- **B3 category:** defines local municipalities with small towns, with relatively small populations and significant proportions of urban population but with no large town as a core.
- **B4 category:** is made up of local municipalities which are mainly rural with communal tenure and with, at most, one or two small towns in their area.

The MIIF classifies district municipalities into two categories:

- **C1** - which refers to district municipalities that are not water services authorities, and
- **C2** - which defines district municipalities that are water services authorities.

Urban and rural classification is defined by Statistics South Africa in all Censuses and Community Surveys in terms of enumeration area-types and settlement types, with the Community Survey of 2016 being the exception. The study will be guided by the urban and rural definitions utilized in the Community Survey 2016. The definitions will be applied to censuses 1996, 2001, 2011 and community surveys 2007 and 2016 for the sake of comparison overtime and space. The typology utilizes settlement size, demographic characteristics and economic activity as the main variables to define urban and rural areas. Therefore, urban and rural areas will be defined in terms of the category of municipality as follows:

$$\text{Urban} = A + B_1 + B_2 \text{ and;}$$

$$\text{Rural} = B_3 + B_4$$

### 3.8. Statistical Methods of Data Analysis

This section details the population distribution indicators to be calculated and analysed for the study. These indicators will be utilized to quantify the structural changes over time and space in the spatial population distribution during the period under study. Also to answer the research questions and hypotheses outlined in chapter 1. The structural changes in the country will be analysed at the national, provincial and municipal levels. All statistical indicators will be calculated using LibreOffice calc software.

**3.8.1. The degree of urbanization:** is the percentage of the population living in urban areas.

The degree of urbanization will be calculated at both national and provincial levels.

$$\text{Degree of urbanisation} = U/P * 100$$

$$\text{Where } U = \text{urban population} = A+B_1+B_2$$

$$P = \text{total population}$$

**3.8.2. The ratio of an urban-rural population:** is the measurement of the speed of urbanization.

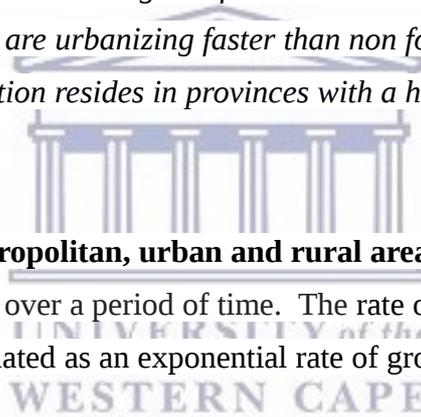
$$\text{Ratio of urban-rural population} = UR = U/R$$

$$\text{Where } UR = \text{urban-rural ratio}$$

$$U = \text{urban population} = A+B_1+B_2$$

$$R = \text{rural population} = B_4 + B_3$$

These statistical indicators will be used to answer the research questions ‘*Are some provinces in South Africa are urbanizing faster than others?*’ and ‘*Does there exist a relationship between a province’s economic development and the degree of urbanisation?*’, and the hypotheses ‘*Provinces that were former Bantustan areas are urbanizing faster than non former Bantustan areas*’, and ‘*A large concentration of the population resides in provinces with a high level of economic development*’.



**3.8.3. Population growth in metropolitan, urban and rural areas:** Population growth rate is the increase in a country's population over a period of time. The rate of population growth,  $r$ , between two-time points,  $t_1$  and  $t_2$ , is calculated as an exponential rate of growth:

$$r = 100 \ln (P_2 / P_1) / (t_2 - t_1)$$

where  $P_2$  and  $P_1$  are the populations at time  $t_2$  and  $t_1$  respectively. The time intervals  $t_2$  and  $t_1$  are expressed in years. The formula can be replicated for both urban and rural populations. In the above formula, to calculate the growth rates in an urban area,  $P_2$  and  $P_1$  would represent the population in urban areas.

The population growth rates will be used to answer the research question ‘*Is the rural population in South Africa declining?*’, and the hypothesis ‘*The rural population is declining and growing at a slower rate than the urban population*’.

**3.8.4. Population Projections using the Geometric Model:**  $P_t = P_0 e^{rt}$  where  $P_t$  is the project population at time  $t$ ,  $P_0$  is the baseline population,  $r$  is the population growth rate and  $t$  is time in years. In this study the baseline population will be the 2016 population taken from the Community Survey 2016, with the assumption that the growth rate, fertility rate, and mortality rate remain unchanged.

Population projections will shed light on the degree of urbanisation at national and provincial level in 2030 and 2050. Furthermore, on whether South Africa will have a primate metropolitan municipality by 2030 and 2050.

**3.8.5. Primacy index:** is the concentration of the population in the largest city compared to the smaller cities in the country. The larger the index, the greater the concentration of population in the biggest city.

Primacy Index = (Population of primate city)/ (Sum of the population of other cities in the country).

Normally the Primacy index is calculated with respect to four cities:

$$PI = P1 / (P1 + P2 + P3 + P4)$$

Where  $P1$  = population of primate city

$P2$  = second largest city

$P3$  = third largest city

$P4$  = fourth largest city

In the context of this study, a city will be defined as a metropolitan municipality.

The primacy index will be used to answer the research question ‘*In South Africa is majority of the population in South Africa concentrated in one or two major cities?*’, and the hypothesis ‘*Unlike many developing countries South Africa does not a primacy city distribution*’.

**3.8.6. Population Density (Persons/km<sup>2</sup>):** number of people/land area. In the study, the land area for each year will be based on the land area reported in Census 2011.

**3.8.7. Lorenz Curve and Gini Concentration index:** this measure involves the concentration of the population over land capacity. Regions (cities, municipalities, provinces etc) are arranged in order of population density. The cumulative percentage of area is plotted against the cumulative percentage of the population.

The Gini Concentration Index formula is defined as:

$$G_i = (\sum X_i Y_{i+1}) - (\sum X_{i+1} Y_i)$$

where  $X_i$  and  $Y_i$  are respective cumulative percentage distributions and

$n$  = number of class intervals.

The classification of the size of locality will be defined as follows:

1,000,000 or more, 500,000–999,999, 200,000–499,999, 100,000–199,999, 50,000–99,999,  
20,000–49,999, 10,000–19,999, 2000 – 9 999 and 2 000 or less.

A Gini ratio of 1.0 indicates complete inequality, with all population located in one locality of a country and no population in the remaining areas. A Gini ratio of 0.0 indicates a perfect distribution of population in the areas of the country.



The gini concentration index will be used to answer the research question ‘ *Do we have some provinces in South Africa that area more unequally spatially distributed than others ?*’, and the hypothesis ‘ *Provinces with metropolitan municipalities have a higher gini concentration index*’

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**3.8.8. The size of locality of residence of the median inhabitant:** This measure may be interpreted as meaning that the bigger the locality sizes of the median inhabitant, the greater the degree of urbanization.

$$MI = Q_1 + (Q_{1*1} - Q_1) * (50 - PP_1) / (PP_{1+1} - PP_1)$$

where MI = median inhabitant

$PP_1$  = cumulative % of the population for the locality size under 50%

$PP_{1+1}$  = cumulative% of the next locality size category

$Q_1$  = upper limit of the locality size I

$Q_{1*1}$  = upper limit of locality size I + 1.

The size of locality of residence of the median inhabitant will be used answer the research question ‘*In South Africa does there exist a relationship between the size of locality of the residence of the median inhabitant and the degree of urbanisation?*’, and the hypothesis ‘*Provinces with a bigger size of locality of the residence of the median inhabitant the have a greater the degree urbanisation.*’

### **3.8.9. Polarization Reversal**

Tracking the population growth rates of the metros (A) compared to the periphery (B<sub>1</sub> and B<sub>2</sub>) is how we are going to investigate whether polarization reversal is taking place at both national and provincial levels. If the growth rate of the periphery exceeds that of the core (metro), then polarization reversal has occurred.

Polarization reversal will be used to answer the research question ‘*To what extent has polarization reversal occurred at national and provincial level?*’, and the hypothesis ‘*Polarization reversal has occurred in provinces with a high level of economic development and has not occurred at the national level.*’



## CHAPTER FOUR

### DATA ANALYSIS

#### 4.1 Introduction

This chapter provides an analysis of the statistical indicators to be calculated using data from census 1996, 2001, 2011 and the community surveys of 2007 and 2016. The statistical indicators included population growth rates, degree of urbanisation, urban-rural ratio, size of locality of the residence of the median inhabitant, population density, the Gini concentration index and polarization reversal. The analysis will be at both national and provincial levels, which includes all nine provinces in South Africa. Statistical indicators will be evaluated for each of the nine provinces at the national level to see the specificities at both provincial and national level to answer the hypotheses and research questioned in Chapter One. All statistical indicators for all nine provinces and South Africa are calculated and listed in the appendices. The tables in this chapter will categorize the population into municipal categories which is critical to classify urban and rural areas and to calculate the above-mentioned statistical indicators. Therefore, urban municipalities will be classified as  $A+B_1+B_2$  and rural municipalities as  $B_3+B_4$ . The A category comprises of metropolitan municipalities,  $B_1$  category comprises secondary cities,  $B_2$  category refers to local municipalities with a large town as core;  $B_3$  category defines local municipalities with small towns with relatively small populations and  $B_4$  category is made up of local municipalities which are mainly rural with communal tenure and with, at most, one or two small towns in their area.

#### 4.2 Western Cape

The Western Cape is bordered by the Northern and Eastern Cape. It has a land area of 129 390km<sup>2</sup> which constitutes 10.6% of the land area in South Africa. Over the past twenty years, the Western Cape has contributed approximately 14% to the national GDP (Statistics South Africa, 2012). Its economy is dominated by Trade (wholesale, retail, motor), manufacturing, finance, real estate and business. Nationally, the Western Cape constituted 2.9% and 3% of the agricultural households in 2011 and 2016 respectively. (Statistics South Africa, 2016). The Western Cape had the fifth biggest population in South Africa between 1996 and 2007. In 2011 and 2016 it rose to the position of having the fourth biggest population in the country, surpassing Limpopo. The Western Cape has twenty-five local municipalities consisting of one A, three  $B_1$ , six  $B_2$ , fifteen  $B_3$  and no  $B_4$  municipalities. The City of Cape Town is the only metropolitan municipality, with Cape Town

being the major city in the Western Cape. In 2007, the City of Cape Town became the second largest metropolitan municipality in terms of population size, surpassing eThekweni in KwaZulu-Natal. Between 1996 and 2016, more than 60% of the population in the Western Cape resided in the City of Cape Town. Drakenstein (Paarl), Stellenbosch and George are the secondary cities (B<sub>1</sub>) in the province. Secondary cities consistently made up approximately 10% of the population in the province from 1996 to 2016. The Western Cape has the third-largest urban population. The rural population was ranked the second-lowest from 1996 to 2007 and from 2011 to 2016, it is ranked the third lowest after surpassing Northern Cape with a bigger rural population.

**Table 2. Population in Municipal Categories**

	1996	2001	2007	2011	2016
<b>Total Population</b>	3 956 876	4 524 334	5 278 576	5 822 734	6 279 730
<b>A</b>	2 562 277	2 892 243	3 497 097	3 740 026	4 004 793
<b>B<sub>1</sub></b>	410 478	462 562	565 634	600 667	661 851
<b>B<sub>2</sub></b>	405 796	479 881	550 289	600 472	646 696
<b>B<sub>3</sub></b>	578 325	689 648	665 556	881 570	966 390
<b>B<sub>4</sub></b>	0	0	0	0	0

**Table 3. Urban and Rural Population by Municipal Categories (including projected populations)**

	1996	2001	2007	2011	2016	2030	2050
<b>Urban (A+B<sub>1</sub> + B<sub>2</sub>)</b>	3 378 551	3 834 886	4 613 020	4 941 165	5 313 340	7 294 222	11 470 088
<b>Rural (B<sub>3</sub> + B<sub>4</sub>)</b>	578 325	689 648	665 556	881 570	966 390	1 384 335	2 313 265

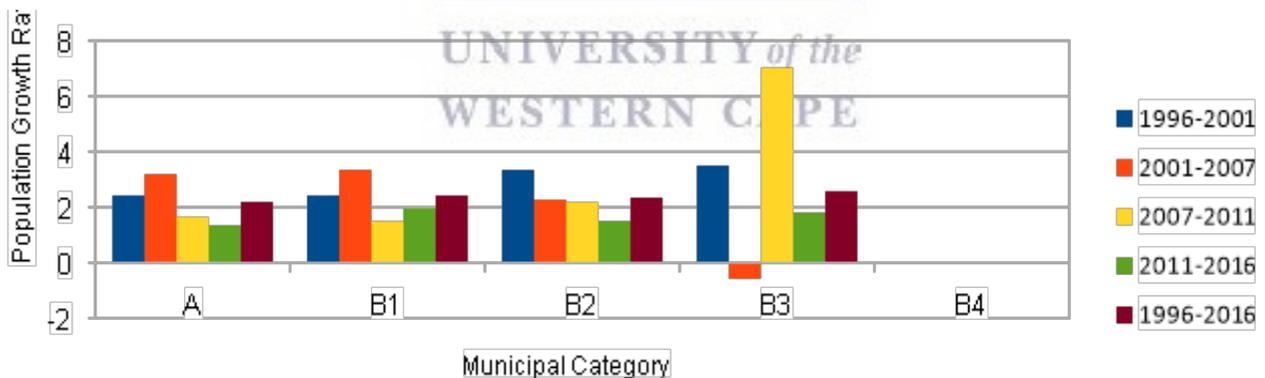
**Table 4. Percentage Distribution of Municipal Categories**

Municipal Category	Number of Local Municipalities	Percentage
A	1	4
B <sub>1</sub>	3	12
B <sub>2</sub>	6	24
B <sub>3</sub>	15	60
B <sub>4</sub>	0	0



**Figure 1: Percentage Distribution of Municipal Categories**

Figure 1 shows the large percentage of B<sub>3</sub> municipalities which constitutes 60% of the total municipalities. Metropolitan municipalities only constitute 4% of the total municipalities. The urban municipalities constitute 40% and the rural, 60%.



**Figure 2: Population Growth Rate per Municipal Category<sup>1</sup>**

<sup>1</sup> See Appendix 1

#### 4.2.1 Degree of urbanisation and Urban-Rural Ratio<sup>1</sup>

The Western Cape has one of the highest degrees of urbanisation and urban-rural ratios in South Africa. In 1996 the degree of urbanisation and urban-rural ratio was relatively high. During the period between 1996 and 2001, the degree of urbanisation and urban-rural ratio declined by 0.62% and 0.28% respectively. The total population growth rate was high at 2.68%. Furthermore, this was the highest population for any period. All municipal categories recorded population growth rates above 2%. The rural population growth rate was the highest at 3.52%. This led to an urban-rural differential of -0.98%, indicating counter urbanisation, hence the decline of the urban-rural ratio and degree of urbanisation during this period.

The urban-rural ratio and degree of urbanisation recorded its highest values in 2007. From 2001 to 2007, the urban municipalities recorded their highest population growth rate of any period, at 3.07%. The secondary cities recorded the highest municipal category population growth rate, followed by the metropolitan municipalities. Both municipal categories grew above 3% and recorded their highest population growth rates for any period. The City of Cape Town surpassed eThekweni (KwaZulu-Natal) as the second-biggest metropolitan municipality in the country. The rural municipalities recorded a negative population growth rate. Furthermore, it declined by 3.07% during the period between 1996 and 2001, and reached its lowest population growth rate for any period between 1996 and 2016. The urban-rural differential was 3.67%, indicating rapid urbanisation during this period, hence the Western Cape recorded its highest degree of urbanisation and urban-rural ratio.

Between 2007 and 2011, the degree of urbanisation and urban-rural ratio experienced its biggest decline. The degree of urbanisation declined by 2.53% and the urban-rural ratio by 0.65% from 2007 to 2011, all municipal categories recorded positive growth rates. The population growth among the urban municipalities slowed down significantly from 2001 to 2007. The City of Cape Town, B<sub>1</sub> and B<sub>2</sub> declined by 1.48%, 1.85% and 0.1% respectively. The decline among the B<sub>1</sub> municipalities was due to Stellenbosch recording a -6.3% population growth rate; whereas the rural municipalities experienced a substantial increase of 7.62% from 2001 to 2007. The two larger B<sub>3</sub> municipalities of Wittenberg and Swartland recorded the highest population growth rates of any municipality during 2007 and 2011 at 9.15% and 9.58% respectively. The urban-rural differential was -5.30%. Therefore, significant counter-urbanisation took place during this period, resulting in the decline of both the degree of urbanisation and urban-ratio in the Western Cape.

During the period from 2011 to 2016, the degree of urbanisation and urban-rural ratio decreased slightly. It declined for the second consecutive period. The degree of urbanisation declined by 0.24% and the urban-rural ratio by 0.10%. Furthermore, this was the lowest degree of urbanisation and urban-rural ratio recorded in the Western Cape between 1996 and 2016. The population growth rate among rural municipalities exceeded the urban for the second consecutive period. The urban municipalities recorded their lowest population growth rate at 1.45% for any period between 1996 and 2016. Furthermore, the City of Cape Town too recorded its lowest population growth at 1.36% for any period. The urban-rural differential was -0.38%, indicating another counter urbanisation during this period.

Table 3 shows the projected urban and rural populations, provided that the annual population growth rate between 1996 to 2016 remains constant to 2030 and 2050. The projected degree of urbanisation will be 84.04% and the urban-rural ratio will be 5.26 in 2030. The projected degree of urbanisation will be 83.21% and urban-rural ratio will be 4.958 in 2050.

#### 4.2.2 Gini Concentration Index<sup>1</sup>

Western Cape has the highest Gini concentration index in the country. In 1996, the top 90.51% of the cumulative population was concentrated in the top 48% of the cumulative localities from 50 000 to 99 999 and above consisting of 12 localities. In 2001, the Gini concentration index increased by 0.0238. This was the biggest increase between 1996 and 2016 in the Western Cape. In 2001, the top 93.38% of the cumulative population was concentrated in the top 60% of the cumulative localities from 50 000 to 99 999 and above, consisting of fifteen localities. The increase in both cumulative population and localities percentage is due to Knysna (B<sub>2</sub>), Overstrand (B<sub>2</sub>) and Matzikama (B<sub>3</sub>) growing from 20 000 to 49 999 to 50 000 to 99 999 category localities. Therefore, a higher percentage of the cumulative population is concentrated in the 50 000 to 99 999 category localities, leading to an increase of the Gini concentration index and a more uneven population distribution.

Between 2001 and 2007, the Gini concentration index declined slightly by 0.0088. In 2001 the top 93.38% of the cumulative population was concentrated in the top 60% of the cumulative localities from 50 000 - 99 999 and above, consisting of fifteen localities. In 2007, the top 94.56% of the cumulative population was concentrated in the top 60% of the cumulative localities from 50 000 to 99 999 and above, consisting of fifteen localities. The 1.18% increase in the cumulative population is attributed to the high population growth rates among the secondary cities(B<sub>1</sub>). The population growth rates among the B<sub>1</sub> municipalities exceed that of the City of Cape Town(A).

Stellenbosch(B<sub>1</sub>) had a population growth rate of 8.73% during 2001 to 2007. Furthermore, Drakenstein (B<sub>1</sub>) and Stellenbosch(B<sub>1</sub>) reached the 200 000 to 499 999 category for the first time, hence closing the gap slightly between the B<sub>1</sub> municipalities and the metropolitan region in terms of population size and decreasing the Gini concentration index. This was the lowest Gini concentration index recorded in the Western Cape between 1996 and 2016.

In 2011, the Gini concentration index declined by 0.0011 from 2007. In 2007, 66.25% of the cumulative population was concentrated in the top 4% of the cumulative localities consisting of the City of Cape Town. In 2011, the City of Cape Town constituted 64.21% of the cumulative population. The 2.02% decrease is attributed to the low population growth rate in the City of Cape Town relative to the other municipal categories. Smaller local municipalities (B<sub>2</sub> and B<sub>3</sub>) exceed that of the bigger local municipalities (A and B<sub>1</sub>). Furthermore, the B<sub>3</sub> municipalities had a population growth rate of 7.027%. The City of Cape Town and the B<sub>1</sub> municipalities had population growth rates of 1.6789% and 1.502% respectively. Therefore, the slowing down of the population growth rates in the City of Cape Town coupled with the high growth rate in the smaller local municipalities lead to a slight decrease of the Gini concentration index, as a lesser percentage of the population was concentrated in the metropolitan region in 2011.

In 2016, the Gini concentration index increased by 0.0203. This slight increase is attributed to the population growth rates in the bigger B<sub>1</sub> municipalities exceeding that of the B<sub>2</sub> and B<sub>3</sub> municipalities. In 2011, the top 68.54% of the cumulative population was concentrated in the top 8% of the cumulative localities, consisting of two localities, namely the City of Cape Town (A) and Drakenstein (B<sub>1</sub>). In 2011, the top 71.15% of the cumulative population was concentrated in the top 12% of the cumulative localities consisting of three localities, namely the City of Cape Town (A), Drakenstein (B<sub>1</sub>) and George (B<sub>1</sub>). Therefore, more of the population was concentrated in the top end of the locality categories, leading to an increase in the Gini concentration in 2016.

#### **4.2.3 Size of Locality of Residence of the Median Inhabitant<sup>1</sup>**

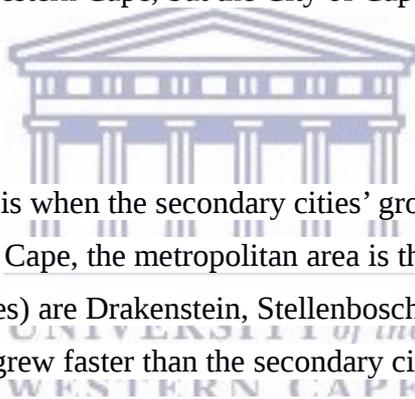
The size of locality of residence of the median inhabitant in the Western Cape could not be calculated as the PP<sub>1+1</sub> = cumulative% of the next locality size category constitutes 100% of the population. This is because the next locality was the City of Cape Town.

#### 4.2.4. Population Density<sup>1</sup>

The lowest population density was recorded in 1996 at 30.58 persons/km<sup>2</sup>. It increased by only 5.03 persons/km<sup>2</sup>. Between 1996 and 2016, the population density increased by 17.95 persons/km<sup>2</sup>. In 2016, it reached its highest at 48.53 persons/km<sup>2</sup>.

#### 4.2.5 Primacy Index<sup>1</sup>

The primacy index in the Western Cape was calculated with the City of Cape Town as the biggest city, followed by the secondary cities of Drakenstein, George and Stellenbosch. The primacy index in 1996 was 86.19, indicating that the City of Cape is a primacy city. Between 1996 and 2001, the primacy index increased slightly as a result of the City of Cape Town and the secondary cities recording similar population growth rates. In 2007, the primacy was 86.07, a slight decline from 2001. This was a result of the secondary cities having a higher population growth rate than the City of Cape Town. In 2011, it rose to 86.16 and in 2016 it declined to 85.81 as the secondary cities grew 0.6% faster than the City of Cape Town during the period between 2011 and 2016. This was the lowest primacy index in the Western Cape, but the City of Cape Town still remained the primate city.



#### 4.2.6. Polarization Reversal<sup>1</sup>

The onset of polarization reversal is when the secondary cities' growth rate exceeds that of the metropolitan area. In the Western Cape, the metropolitan area is the City of Cape Town and the Secondary Cities (B<sub>1</sub> municipalities) are Drakenstein, Stellenbosch and George. The only period when the City of Cape Town (A) grew faster than the secondary cities in the province was between 1996 and 2001. The growth rate of secondary cities in the Western Cape exceeded that of the City of Cape Town by 0.3592% during the period between 2001 and 2007, by 0.33% from 2007-2011 and by 0.57% from 2011 to 2016. The difference in growth rate is not that significant in that we can conclude with finality that polarization reversal has occurred. The evidence shows potential for it to occur in the future if this trend continues.

### 4.3. The Eastern Cape

The Eastern Cape shares borders with the Western Cape, KwaZulu-Natal, Northern Cape, Free State and the neighbouring country of Lesotho. It has a land area of 168 966km<sup>2</sup>, the second-largest land area in the country and constitutes 13.8% of the land area in South Africa (Statistics South Africa, 2012). The Eastern Cape contributed approximately 8% to the national GDP between 1996 and 2016, the fourth-highest contribution in the country. The provincial economy is dominated by general government services. It contributed 22% toward the provincial economy and 11.2% toward the national economy during this period. The Eastern Cape constituted 20.7% and 21.3% of agricultural households in 2011 and 2016 respectively. Furthermore, it is the province with the second-largest number of agricultural households (Statistics South Africa, 2016).

The Eastern Cape has the third-largest population in South Africa. It has thirty-nine local municipalities and is the second in the country after KwaZulu-Natal. The thirty-nine local municipalities consisted of one A, one B<sub>1</sub>, three B<sub>2</sub>, nineteen B<sub>3</sub> and fifteen B<sub>4</sub> municipalities between 1996 and 2007. In 2011, Buffalo City, a B<sub>1</sub> municipality, was upgraded to a metropolitan municipality, and hence the Eastern Cape consisted of thirty-nine local municipalities with two A, no B<sub>1</sub>, three B<sub>2</sub>, nineteen B<sub>3</sub> and fifteen B<sub>4</sub> municipalities between 2011 and 2016. Bhisho is the Eastern Cape's capital city as it is the government headquarters. The largest city is Port Elizabeth, followed by East London. Bhisho and East London are part of the Buffalo City municipality and Port Elizabeth falls under Nelson Mandela Bay municipality. The Eastern Cape has a majority rural population with a high concentration of the population residing in B<sub>3</sub> and B<sub>4</sub> municipalities. The rural population (B<sub>3</sub> and B<sub>4</sub> municipalities) constituted 62.49%, 62.02%, 61.72%, 59.19% and 59.26% in 1996, 2001, 2007, 2011 and 2016 respectively. Furthermore, the Eastern Cape has the e third-highest rural population and the fourth -largest urban population in the country. Nelson Mandela Bay and Buffalo City are ranked sixth and seventh out of the eight metropolitan municipalities in terms of population size in the country.

**Table 5. Population in Municipal Categories**

	1996	2001	2007	2011	2016
<b>Total Population</b>	6 147 248	6 278 651	6 527 747	6 562 053	6 996 979
<b>A</b>	969 518	1 005 779	1 050 930	1 907 315	2 073 579
<b>B<sub>1</sub></b>	685 727	702 281	724 312	0	0
<b>B<sub>2</sub></b>	650 334	676 192	722 970	722 823	776 378
<b>B<sub>3</sub></b>	1 078 349	1 080 406	1 054 959	1 149 357	1 221 480
<b>B<sub>4</sub></b>	2 763 320	2 805 651	2 969 202	2 782 859	2 925 542

**Table 6. Urban and Rural Population by Municipal Categories (including projected populations)**

	1996	2001	2007	2011	2016	2030	2050
<b>Urban (A+B<sub>1</sub>+ B<sub>2</sub>)</b>	2 305 579	2 384 252	2 498 212	2 630 138	2 849 957	3 305 791	4 086 283
<b>Rural (B<sub>3</sub>+ B<sub>4</sub>)</b>	3 841 669	3 886 057	4 024 161	3 932 216	4 147 022	4 375 087	4 722 821

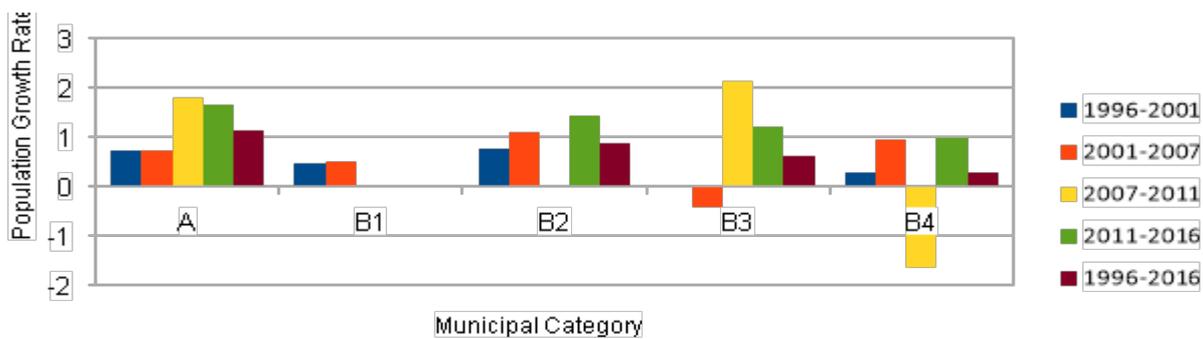
**Table 7. Percentage Distribution of Municipal Categories**

Municipal Category	Number of Local Municipalities	Percentage
A	2	5.1
B <sub>1</sub>	0	0
B <sub>2</sub>	3	7.7
B <sub>3</sub>	19	48.7
B <sub>4</sub>	15	38.5



**Figure 3: Percentage Distribution of Municipal Categories**

The above table and pie chart show the dominance of the rural population in the Eastern Cape. Rural municipalities constitute 87.2% of the total municipalities in the province, while the urban municipalities constitute only 12.8%.



**Figure 4: Population Growth Rate per Municipal Category<sup>2</sup>**

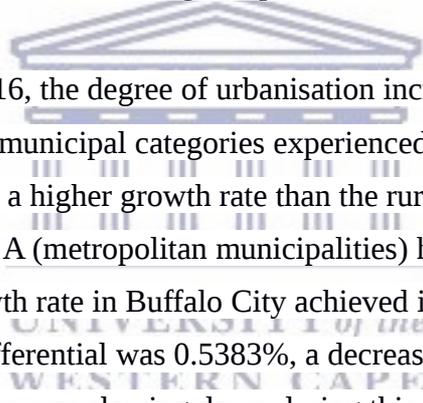
#### 4.3.1. Degree of Urbanisation and Urban-Rural Ratio<sup>2</sup>

The Eastern Cape has one of the lowest urban-rural ratios and degrees of urbanisation in the country. The Eastern Cape recorded its lowest degree of urbanisation and urban-rural ratio in 1996. In 2001, the urban-rural ratio increased by 0.013 and the degree of urbanisation increased by 0.46%. During the period from 1996 to 2001, all the municipal categories experienced positive population growth rates. The total population growth was less than 1%. Overall it was a very moderate increase. The urban population had the highest population growth rate, with the B<sub>2</sub> municipalities recording the highest population growth rate among the municipal categories. The rural population recorded the lowest population growth rate, with category B<sub>3</sub> municipalities experiencing the lowest. The urban-rural differential was 0.44%, indicating a slow rate of urbanisation during this period, hence the minor increase of the urban-rural ratio and degree of urbanisation.

Between 2001 and 2007, the degree of urbanisation and urban-rural ratio increased by 0.29675% and 0.0073 respectively. All municipal categories experienced positive growth rates during this period. For the second consecutive period, the total population growth rate was below 1%, the urban population grew faster than the rural population, the B<sub>2</sub> municipalities had the highest, while the B<sub>3</sub> municipalities had the lowest population growth rates. Nelson Mandela Bay (A) recorded its lowest population growth rate for any period between 1996 and 2016. The urban-rural differential was 0.1961%, indicating a slow tempo of urbanisation during this period. Furthermore, this was 0.2452% slower than 1996 to 2001. This was the lowest urban-rural differential of any period, hence the slim increase of the urban-rural ratio and degree of urbanisation. Moreover, this was the smallest increase in the urban-rural ratio and degree of urbanisation for any period.

<sup>2</sup> See Appendix 2

During the 2007 to 2011 period, the Eastern Cape experienced its biggest increase in both the degree of urbanisation and urban-rural ratio. The degree of urbanisation increased by 1.810% and the urban-rural ratio increased by 0.048. Every municipal category, with the exception of the rural population, recorded a positive growth rate. The total population growth rate for the time was above 1%. Nelson Mandela Bay (A) had the highest population growth rate among the municipal categories. It also achieved its highest population growth rate of any period between 1996 and 2016. For the third consecutive period, the urban population growth rate population outgrew the rural population. The highest population growth rate was experienced in the B<sub>3</sub> municipalities and the lowest in B<sub>4</sub> municipalities. Furthermore, it was the lowest rural population growth rate recorded during any period for the Eastern Cape. Both the B<sub>4</sub> and B<sub>2</sub> municipal categories experienced negative population growth rates. The metropolitan municipalities experienced their highest growth rate of any period, as a result of Buffalo City being upgraded to a metropolitan municipality in 2011. The urban-rural differential was 1.8643%, indicating rapid urbanisation during this period. It was a 1.6682% increase from 2001 to 2007. Therefore, the Eastern Cape experienced its fastest rate of urbanisation during this period.



During the years from 2011 to 2016, the degree of urbanisation increased by 0.6502% and the urban-rural ratio by 0.01884. All municipal categories experienced positive growth rates during this period. The urban population had a higher growth rate than the rural population for the fourth consecutive period. The category A (metropolitan municipalities) had the highest population growth rate. The population growth rate in Buffalo City achieved its highest population growth rate on any period. The urban-rural differential was 0.5383%, a decrease of 1.326% from 2007 to 2011. indicating the speed of urbanisation was slowing down during this period. Overall, during this period the Eastern Cape achieved its highest population growth rates in Buffalo City, for the urban-rural and total population growth rates for any period.

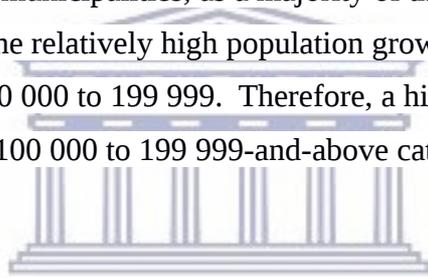
Table 6 shows the projected urban and rural populations, provided that the annual population growth rate between 1996 and 2016 remains constant from 2030 to 2050. Therefore, the projected degree of urbanisation will be 43.03% and the urban-rural ratio will be 0.755 in 2030. The projected degree of urbanisation will be 46.38% and the urban-rural ratio will be 0.865 in 2050, meaning the Eastern Cape will not become urbanized in 2030 nor 2050.

#### **4.3.2. The Gini Concentration index<sup>2</sup>**

The Gini concentration index values indicates an unequal population distribution in the province. It was at its lowest in 1996, at 0.4908. In 1996, the top 26.92% of the cumulative population was

concentrated in the top 5.128% of the cumulative localities, consisting of Buffalo City (B<sub>1</sub>) and Nelson Mandela Bay(A). In 2001, the top 27.20% of the cumulative population was concentrated in the top 5.128% of the cumulative localities. The 0.28% in the cumulative population led to the 0.0029 increase of the Gini concentration index in 2001 and a more uneven population distribution, as a bigger percentage of the population was concentrated in two main urban centres. The population growth rates in Nelson Mandela Bay and Buffalo City relative to the rural municipalities' growth rates led to the slight increase as a majority of the rural municipalities are concentrated in the smaller localities.

During the period between 2001 and 2007 the Gini concentration experienced its biggest increase. In 2001, the top 87.47% of the cumulative population was concentrated in the top 53.84% of the cumulative localities, consisting of twenty-one localities. In 2007, the top 89.09% of the cumulative population was concentrated in the top 53.84% of the cumulative localities consisting of twenty-one localities. The 1.62% increase in the cumulative population is attributed to the low population growth rate among B<sub>3</sub> municipalities, as a majority of these municipalities are 50 000 to 99 999 and below, coupled with the relatively high population growth rates among B<sub>4</sub> and B<sub>2</sub> municipalities as a majority of 100 000 to 199 999. Therefore, a higher percentage of the population is concentrated in the 100 000 to 199 999-and-above categories in 2007, leading to more unequal population distribution.



Between 2007 and 2011, the Gini concentration index declined by 0.0142. In 2007, the top 89.09% of the cumulative population was concentrated in the top 53.84% of the cumulative localities from 100 000 to 199 999 and above, consisting of twenty-one localities. In 2011, the top 87.07% of the cumulative population was concentrated in the top 53.84% of the cumulative localities from 100 000 to 199 999 and below, consisting of twenty-one localities. The 1.62% decrease in the cumulative population is attributed to the high population growth rate among B<sub>3</sub> municipalities, as a majority of these municipalities are 50 000 – 99 999 and below, coupled with the relatively low population growth rates among B<sub>4</sub> and B<sub>2</sub> municipalities as a majority of 100 000 to 199 999, which is a reversal of the population growth between 2001 and 2007. Therefore, a lesser percentage of the population is concentrated in localities of 100 000 to 199 999 and above, and more is spread out in the smaller localities.

During 2011 to 2016 the Gini concentration index experienced a minor increase of only 0.007. The metropolitan municipalities recorded the highest population growth rate of any municipal category.

This increased the cumulative population in the top two localities by 0.565%, creating a more uneven population distribution in the Eastern Cape in 2016.

#### **4.3.3 Size of Locality of Residence of the Median Inhabitant<sup>2</sup>**

In 1996, 39.20% of the cumulative population was concentrated in localities of size 100 000 to 199 999. This percentage consisted of twenty-nine of the thirty-nine local municipalities and 66.62% of the cumulative population was concentrated in localities of size 200 000 – 299 999 and below, consisting of thirty-six of thirty-nine localities. Between 1996 and 2001, the size of locality of residence of the median inhabitant declined by 5640.0018. In 2001, 41.84% of the cumulative population was concentrated in localities of size 100 000 to 199 999 and below and consisting of thirty local municipalities and 66.03% of the cumulative population was concentrated in localities of size 200 000 to 299 999 and below, consisting of thirty-five of thirty-nine localities. The 2.64% percentage increase in the cumulative population in localities of size 100 000 to 199 999 and below resulted in the decline of the size of locality of residence of the median inhabitant between 1996 and 2001. This is a result of B<sub>3</sub> municipality Matatiele experiencing a population growth rate of 0.631% and dropping from a locality of size 200 000 299 999 down to 100 000 – 199 999. Hence, a larger percentage of the population was concentrated in 100 000 – 199 999 and below.

Between 2001 and 2007, the size of locality of residence of the median inhabitant increased by 30 847.0589. In 2007, 29.78% of the cumulative population was concentrated in localities of size 100 000 – 199 999, consisting of twenty-seven localities and 61.14% of the cumulative population was concentrated in localities of size 200 000 – 299 999, consisting of thirty-five localities. Therefore, a 12.06% drop in percentage of the cumulative population concentrated in 100 000 – 199 999 and below, as well as a 4.94% decrease in the percentage of the population concentrated in 200 000 – 299 999, resulted in the increase of the size of locality of residence of the median inhabitant. This is a result of negative population growth rates among B<sub>3</sub> municipalities of which the majority are concentrated in 100 000 – 199 999 and below and resulting in a higher percentage of the population concentrated in the bigger localities.

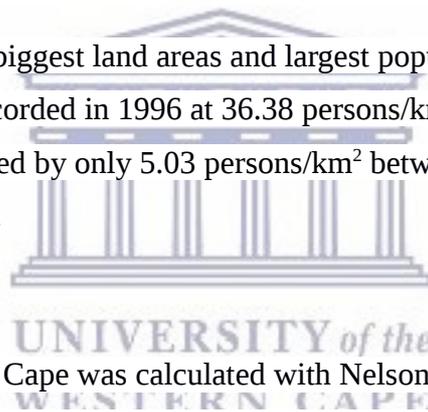
Between 2007 and 2011, the size of locality of residence of the median inhabitant decreased by 23 5888.262. In 2011, 40.24% of the population was concentrated in localities of size 100 000 – 199 999 and below consisting of thirty localities and 64.05% was concentrated in 200 000 - 299 999 and below consisting of thirty-six localities. The 10.44% increase in the population concentrated in localities of size 100 000 – 199 999 is a result of Lukanji (B<sub>2</sub>), Mhlontlo (B<sub>4</sub>) and Umzimvubu (B<sub>4</sub>) dropping from 200 000 – 299 999 to 100 000 – 199 999 size localities. Furthermore, the high

population growth rates in the B<sub>3</sub> municipalities led to a higher concentration of the population among the smaller localities in the province.

During the period between 2011 and 2016 the size of locality of residence of the median inhabitant experienced its highest increase. In 2016, 36.47% of the population was concentrated in localities of size 100 000 – 199 999 and below, a 3.77% decrease from 2011. Also, 50.02% of the population was concentrated in localities of 200 000 – 299 999 and below, a 14.03% decline from 2011. This is as a result of Ngquza Hills, Nyandeni and Mbizana (all B<sub>4</sub>) elevating from localities of size 200 000 – 299 999 to 300 000 – 399 999, hence increasing the size of locality of residence of the median inhabitant. The Eastern Cape has a predominantly rural population, with most of the urban population concentrated in the bigger size localities. Therefore, we see that all the changes occurring in the size of locality of residence of the median inhabitant are attributed to the growth rates of the rural population.

#### **4.3.4. Population Density<sup>2</sup>**

The Eastern Cape has one of the biggest land areas and largest populations in the country. The lowest population density was recorded in 1996 at 36.38 persons/km<sup>2</sup> and the highest came in 2016 at 414.41 persons/km<sup>2</sup>. It increased by only 5.03 persons/km<sup>2</sup> between 1996 and 2016 as a result of low total population growth rates.



#### **4.3.5. Primacy Index<sup>2</sup>**

The primacy index in the Eastern Cape was calculated with Nelson Mandela Bay as the biggest city, followed by Buffalo City. The primacy index in 1996 was 58.57, indicating that Nelson Mandela Bay is a primacy city in the Eastern Cape. Between 1996 and 2001, the primacy index increased slightly as a result of the Nelson Bay Mandela growing slightly faster than Buffalo City during 1996 to 2001. In 2007, the primacy index rose to 59.19, a slight increase from 2001. During 2007-2011, the primacy index recorded its biggest increase of period as a result of Nelson Mandela Bay growing 1.2541% faster than Buffalo City during 2007 to 2011. In 2016, the primacy index rose to its highest of any period at 60.98. Nelson Mandela Bay, as the primate city, had been increasing its dominance between 1996 and 2016 as it outgrew Buffalo City during every period.

#### **4.3.6. Polarization Reversal<sup>2</sup>**

Nelson Mandela Bay was the only metropolitan municipality in the Eastern Cape from 1996 to 2011. Furthermore, Buffalo City was the only B<sub>1</sub> municipality during this period. Buffalo City was upgraded to a metropolitan municipality in 2011. Therefore, the data allows us to examine

polarization reversal from 1996 to 2011 and exclude 2011 to 2016, as the Eastern Cape contains no secondary cities during this period. The growth rate of Nelson Mandela Bay was greater than Buffalo City during 1996 to 2011. Therefore, polarization reversal has not occurred during this period.



#### 4.4. KwaZulu Natal

KwaZulu-Natal is situated on the South-East coast of South Africa. It shares a border with the Free State, Mpumalanga, the Eastern Cape and the neighbouring countries of Lesotho and Swaziland. It has a land area 94 321km<sup>2m</sup> making it the third-smallest province in the country, and constitutes 7.7% of the land area in the country (Statistics South Africa,2012). KwaZulu-Natal contributed approximately 16% towards the national GDP between 1996 and 2016 and constituted the highest percentage of agricultural households in South Africa at 24.9% and 23.0% in 2011 and 2016 respectively (Statistics South Africa, 2016).

KwaZulu-Natal was the largest province in the country from 1996-2007. After the 2011 census, it was surpassed by Gauteng and became the second-largest province in the country. It has fifty-one local municipalities - the most in the country - consisting of one metropolitan municipality, three B<sub>1</sub>, six B<sub>2</sub>, twelve B<sub>3</sub> and twenty-nine B<sub>4</sub> municipalities. The majority of the population is concentrated in eThekweni (metropolitan municipality) and B<sub>4</sub> municipalities. eThekweni made up 32.06%, 32.24%, 33.80%, 33.52% and 33.09% of the total population in 1996, 2001, 2007, 2011 and 2016 respectively. eThekweni is the only metropolitan municipality in the region and is ranked as the third-largest metropolitan municipality in the country. eThekweni was ranked the second- largest in 1996 and 2001, before being surpassed by the City of Cape Town in 2007. Msunduzi, formerly known as Pietermaritzburg, is the capital and second-largest city in KwaZulu-Natal. It is the administrative and legislative capital of the province. Durban is the largest city in KwaZulu-Natal and is situated within the eThekweni municipality. The B<sub>4</sub> municipalities made up 39.15%, 38.45%, 36.54%, 34.200% and 33.42% of the population in 1996, 2001, 2007, 2011 and 2016 respectively. Furthermore, the B<sub>4</sub> municipalities contain the highest concentration of the population in the province. KwaZulu-Natal has the largest rural population and the second-largest urban population in the country.

**Table 8. Population in Municipal Categories**

	1996	2001	2007	2011	2016
<b>Total Population</b>	8 572 302	9 584 129	10 259 230	10 267 300	11 065 240
<b>A</b>	2 748 299	3 090 122	3 468 086	3 442 361	3 661 911
<b>B<sub>1</sub></b>	1 008 819	1 175 008	1 276 523	1 316 231	1 439 462
<b>B<sub>2</sub></b>	672 147	794 928	829 026	962 325	1 096 782
<b>B<sub>3</sub></b>	786 614	970 938	1 028 323	1 034 965	1 168 082
<b>B<sub>4</sub></b>	3 356 473	3 553 133	3 657 278	3 511 421	3 699 004

**Table 9. Urban and rural Population by Municipal Categories (including projected populations)**

	1996	2001	2007	2011	2016	2030	2050
<b>Urban (A+B<sub>1</sub>+ B<sub>2</sub>)</b>	4 429 265	5 060 058	5 573 635	5 720 917	6 198 155	7 841 778	10 973 526
<b>Rural (B<sub>3</sub>+ B<sub>4</sub>)</b>	4 143 087	4 524 071	4 685 601	4 546 386	4 867 086	5 447 939	6 399 996

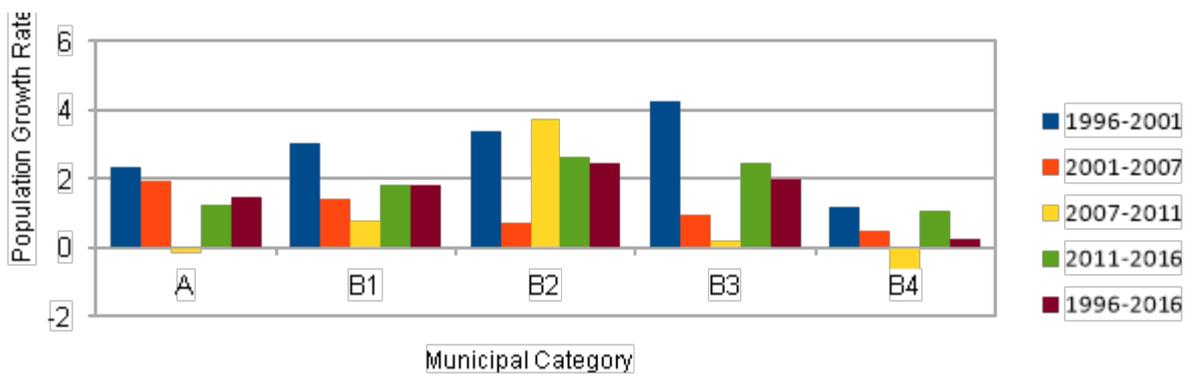
**Table 10. Percentage Distribution of Municipal Categories**

Municipal Category	Number of Local Municipalities	Percentage
A	1	1.96
B <sub>1</sub>	3	5.88
B <sub>2</sub>	6	11.76
B <sub>3</sub>	12	23.52
B <sub>4</sub>	29	56.86



**Figure 5: Percentage Distribution of Municipal Categories**

Figure 5 shows the dominance of B<sub>3</sub> and B<sub>4</sub> municipalities, collectively constituting 80.38% of the local municipalities. It is also the second-biggest municipal category (A). In terms of population size, it constitutes only 1.96% of the municipal categories. The urban municipalities constitute only 19.6% of the total municipalities, but contain a larger percentage of the population.



**Figure 6: Population Growth Rate per Municipal Category<sup>3</sup>**

#### 4.4.1 Degree of urbanisation and Urban-Rural Ratio<sup>3</sup>

KwaZulu-Natal has a moderate degree of urbanisation and urban-rural ratio and both have been increasing steadily between 1996 and 2016. Both the degree of urbanisation and urban-rural ratio were at their lowest between 1996 and 2016. During 1996 to 2001, the degree of urbanisation increased by 1.135% and the urban-rural ratio by 0.0514. KwaZulu-Natal experienced its highest growth rates in the A, B<sub>1</sub>, B<sub>3</sub> and B<sub>4</sub> municipalities for any period between 1996 and 2016. Both the urban and rural population growth rate were the highest of any period at 2.6628% and 1.7594%. Therefore, the total population growth rate was the highest of any period. The urban-rural differential was 0.9034%, indicating a slow tempo of urbanisation during this time, hence the minor increase in both the degree of urbanisation and the urban-rural ratio.

Between 2001 and 2007, the degree of urbanisation increased by 1.5318% and urban-rural ratio increased by 0.0722. This was the biggest increase in both. Both the urban and rural population growth rates declined from 1996 to 2001. The urban population growth had the highest population growth rate, with the eThekweni (A) and Msunduzi (B<sub>1</sub>) recording the highest population growth rates among the municipal categories. Both rural municipal categories recorded population growth rates of less than 1%. The urban-rural differential was 1.0265 %, indicating a moderate tempo of urbanisation. The increase in the degree of urbanisation and urban-rural ratio was attributed to the low rural population growth rates during this period.

During the years 2007 to 2011, KwaZulu-Natal recorded its lowest population growth rates in urban, rural and total population growth rates. eThekweni(A), Msunduzi (B<sub>1</sub>), B<sub>3</sub> and B<sub>4</sub> municipalities recorded their lowest population growth rate for any period between 1996 and 2016. The rural population recorded a negative population growth rate. The negative rural population

<sup>3</sup> See Appendix 3

growth rate is attributed to the B<sub>4</sub> municipalities having a -1.0174% population growth rate. During this period, seventeen out of twenty-nine B<sub>4</sub> municipalities had negative population growth rates, with Umzimkhulu and Nongoma experiencing the lowest population growth rates at -7.536% and -5.667% respectively. The urban-rural differential was 1.406%, indicating a moderate tempo of urbanisation during this period. This was the highest tempo of urbanisation recorded of any period. The degree of urbanisation and urban-rural ratio increased only slightly even with KwaZulu-Natal recording its highest urban-rural differential because both urban and rural recorded low population growth rates.

Between 2011 and 2016, the degree of urbanisation and urban-rural ratio increased by 0.2949 and 0.0151. The urban exceeded the rural for the fourth consecutive period. The B<sub>2</sub> municipalities recorded the highest population growth rate among the urban municipalities. Furthermore, it was the highest population among all municipal categories for this period. The B<sub>3</sub> municipalities recorded the highest population among the rural municipalities. The urban-rural differential was 0.2392%, indicating a slow tempo of urbanisation during this period. Therefore, both urban-rural ratio and degree of urbanisation experienced the smallest increase of any period.

Table 9 shows the projected urban and rural populations, provided that the annual population growth rate between 1996 and 2016 remains constant to 2030 and 2050. Therefore, the projected degree of urbanisation will be 59.00% and the urban-rural ratio will be 1.439 in 2030. The projected degree of urbanisation will be 63.16% and urban-rural ratio will be 1.714 in 2050.

#### 4.4.2 Gini Concentration Index<sup>3</sup>

KwaZulu-Natal has fifty-one localities, the most of any province. During the period from 1996 to 2001, the Gini concentration index decreased slightly by 0.0023. During this period, KwaZulu-Natal had only one rural municipality in the top locality categories (200 000 – 499 999 and above). uMlalazi (B<sub>4</sub>) fell into the 200 000 – 499 999 category between this period. Therefore, more than 90% of the rural population is concentrated in 100 000 – 199 999 and below. The rural population recorded its highest population growth rate of any period between 1996 and 2016, increasing the population in the 100 000 – 199 999 category. In 1996 the top 95.49% of the cumulative population was concentrated in the top 78.43% of the cumulative localities consisting of the forty localities. In 2001 the top 98.09% of the cumulative population was concentrated in the top 88.23% of the cumulative localities consisting of 45 localities. The 2.6% increase in the cumulative population and 9.8% increase in the cumulative localities is attributed the high rural population. Furthermore, the urban growth rate exceeded the rural, therefore the Gini concentration only increased slightly.

During the years from 2001 to 2007, the Gini concentration increased by 0.0292. This was the biggest increase for any period between 1996 and 2016. In 2001 the top 51.43% of the cumulative population was concentrated in the top 13.72% of the cumulative localities consisting of the seven localities. In 2007, the top 60.00 % of the fourth cumulative population was concentrated in the top 19.60% of the cumulative localities, consisting of forty-five localities.

The 8.49% increase in the cumulative population and 5.88% increase in the cumulative localities is attributed to a combination of factors. Firstly, the high metropolitan and B<sub>1</sub> municipalities population relative to the other municipal categories. All B<sub>1</sub> municipalities had populations concentrated in categories 200 000 – 499 999 and above. Therefore, a higher growth leads to more of the population concentrated in the top end localities. Another factor is the population growth rates in the rural municipalities of Abaqulusi (B<sub>3</sub>), Nongoma(B<sub>4</sub>), Jozini (B<sub>4</sub>) and Umzimkhulu (B<sub>4</sub>), recording population growth rates of 3.691%,3.4786%,1.9784%, and 5.550% respectively and elevated to 200 000 – 499 999 localities. Therefore, both factors increased the cumulative population in the 200 000 – 499 999 and above categories, leading to a more uneven population distribution.

During 2007 to 2011, the Gini concentration decreased by 0.0143. This slight decrease is due to negative population growth rates in eThekweni(A) and the B<sub>4</sub> municipalities, of which a large percentage is concentrated in the 100 000 – 199 999 locality category. Therefore, in 2007 the top 88.71% of the cumulative population was concentrated in the top 60.78% of the cumulative localities consisting of the thirty-one localities from 100 000 – 199 999 and above. In 2011, the top 87.65 % of the cumulative population was concentrated in the top 60.78% of the cumulative localities, consisting of thirty-one localities from 100 000 -199 999. The 1.06% decrease in the cumulative population is due to these population growth rates. Therefore, in 2011, less of the population was concentrated in the top thirty-one localities in KwaZulu-Natal, leading to slightly more even population distribution.

During 2011 to 2016, the Gini concentration increased by only 0.00082. This was due to the urban and rural population recording similar population growth rates. The B<sub>2</sub> municipalities had the highest population growth rates among the urban municipalities at 2.6154% and the B<sub>3</sub> municipalities among the rural municipalities. The urban-rural differential was the lowest of any period between 1996 to 2016 at 0.2392%. This led to the minor increase in the Gini concentration index in 2016.

#### 4.4.3. Size of Locality of Residence of the Median Inhabitant<sup>3</sup>

The size of locality of residence of the median inhabitant has been increasing steadily between 1996 and 2016. In 1996, 18.88% of the cumulative population was concentrated in localities of size 50 000 – 99 999 and below, consisting of twenty-six localities and 55.78% in 100 000 – 199 999 and below, consisting of forty-seven of the fifty-one localities. During 1996 and 2001, the size of locality of residence of the median inhabitant increased by 30 914.91. In 2001, 48.52% of the cumulative population was concentrated in localities of size 100 000 -199 999 and below, consisting of forty-four localities and 58.48% in 200 000 – 299 999 and below, consisting of forty-eight localities. The increase in the size of locality of residence of the median inhabitant is due to overall high population growth rates among all the municipal categories. The A, B<sub>1</sub>, B<sub>3</sub> and B<sub>4</sub> municipalities recorded their highest population for any period between 1996 and 2016. The 7.28% decline in the cumulative population concentrated in localities of 100 000 – 199 999 and below from 1996 to 2001 is attributed to Hibiscus Coast (B<sub>2</sub>), Emnambithi/Ladysmith (B<sub>2</sub>) and uMhlathuze (B<sub>1</sub>) elevating to 200 000 – 299 999 size localities in 2001, hence decreasing the cumulative population in the 100 000 – 199 999 and below categories.

Between 2001 and 2007, the size of residence of the median inhabitant recorded its highest increase. In 2007, it increased by 57 789.2955 from 2001. In 2007, 39.99% of the cumulative population was concentrated in localities of size 100 000 – 199 999 and below, consisting of forty-one localities and 53.61% in 200 000 – 299 999 and below, consisting of forty-seven localities. The 2.46% increase in the cumulative population is attributed to the high population growth rates in the urban municipalities, relative to the rural, between 2001 and 2007 as the urban municipalities are the much bigger size municipalities, specifically the population growth in eThekweni(A) and the secondary cities (B<sub>1</sub>).

During 2007 and 2011 the size of residence of the median inhabitant declined faintly 5654.9794. In 2011, 42.45% of the cumulative population was concentrated in localities of size 100 000 – 199 999 and below, consisting of forty-one localities and 53.65% in 200 000 – 299 999 and below, consisting of forty-seven localities. The decline in both the cumulative percentage of the population and localities is due to the high urban population growth rate relative to the rural, as a majority of the rural population concentrated in localities of size 100 000 – 199 999 and below, and also attributed to the negative population growth rates in eThekweni(A) and the B<sub>4</sub> municipalities.

Between 2011 and 2016 the size of residence of the median inhabitant increased slightly to

10 0012.3854. In 2011, 36.67% of the cumulative population was concentrated in localities of size 100 000 – 199 999 and below, consisting of thirty-nine localities and 53.89% in 200 000 – 299 999 and below, consisting of forty-seven localities. Therefore, a smaller cumulative population was concentrated in the localities of 100 000 - 199 999 and below, leading to an increase in the size of locality of residence of the median inhabitant. The decline in the percentage of the cumulative population in the localities of size 100 000 – 199 999 and below is due to an overall low total population growth rate between 2011 and 2016.

#### **4.4.4. Population Density<sup>3</sup>**

The population density is relatively high. It was at its lowest in 1996 at 90.88 persons/km<sup>2</sup> and at its highest in 2016 at 117.31 persons/km<sup>2</sup>. The population density is high as a result of KwaZulu-Natal having one of the largest populations in the country. It increased by 26.43 persons/km<sup>2</sup> between 1996 and 2016.

#### **4.4.5. Primacy Index<sup>3</sup>**

The primacy index in KwaZulu-Natal was calculated with eThekweni as the biggest city, followed by the secondary cities, Msunduzi, Newcastle and uMhlathuze. The primacy index in 1996 was 73.14, indicating that eThekweni is a primacy city in KwaZulu-Natal. During 1996 to 2001 the primacy index declined slightly as a result of the secondary cities growing 0.7% faster than eThekweni during 1996 to 2001. In 2007, the primacy index rose to 73.09 as a result of eThekweni growing 0.6% faster than the secondary cities between 2001 and 2007. During 2007 to 2011 the primacy index dropped to 72.33. This was the biggest decline of any period as a result of eThekweni recording a negative population growth rate between 2007-2011 and the secondary cities growing 0.95% faster than eThekweni. In 2016 the primacy index declined for the second consecutive period. It declined to its lowest of any period at 71.78. Over the 20-year period eThekweni remained a primate city in KwaZulu-Natal but, as the growth rate in the secondary cities exceeded that of the metropolitan municipalities, eThekweni is slowly losing its dominance.

#### **4.4.6 Polarization Reversal<sup>3</sup>**

eThekweni is the only metropolitan municipality and there are three Secondary Cities (B<sub>1</sub> municipalities) namely, The Msunduzi, uMhlathuze and Newcastle. The only period during which the growth rate of secondary cities did not exceed eThekweni is 2001 to 2007. The difference in growth during that time was 0.5422%. However, the growth rate of the secondary cities does exceed that of eThekweni from 1996-2001, 2007-2011, and 2011-2016 by 0.7052%, 0.9519% and 0.5539% respectively. Furthermore, the growth rate of B<sub>1</sub> municipalities exceeded eThekweni

between 1996 and 2016 by 0.3424% annually. Therefore, polarization reversal has occurred in KwaZulu-Natal, but at slow rate.



## 4.5 Gauteng

Gauteng is bordered by the Free State, North West, Limpopo and Mpumalanga. Gauteng has a land area of 16 936km<sup>2</sup> which is the smallest in the country. Furthermore, it makes up 1.4% of the total land area in South Africa. Gauteng is the economic and political capital of South Africa.

Over the past twenty years, Gauteng has contributed approximately 34% to the national GDP between 1996 and 2016, the highest percentage contribution of any province. Gauteng dominates the national economy. It contributes the highest percentage towards eight of the ten main industries in the country. It contributed only 9.7% and 10.4% to the agricultural households in South Africa in 2011 and 2016 respectively. Gauteng has consistently been the most populous province in the country. It is recognised as the business and political capital in South Africa.

During 1996 to 2001, Gauteng consisted of twelve local municipalities and three district municipalities. The twelve local municipalities consisted of three A, two B<sub>1</sub>, six B<sub>2</sub>, one B<sub>3</sub> and no B<sub>4</sub> municipalities. The local municipality of Merafong city (B<sub>2</sub> municipality) was part of the North West in 2007, hence a decrease in the B<sub>2</sub> population in that year. The B<sub>2</sub> municipalities of Nokeng tsa Taemane and Kungwini were absorbed by the City of Tshwane in 2011 and Merofong City formed part of Gauteng between 2011 and 2016. Therefore, Gauteng consisted of ten local municipalities between 2011 and 2016 which consisted of three A, two B<sub>1</sub>, four B<sub>2</sub>, one B<sub>3</sub> and no B<sub>4</sub> municipalities. It is the only province that contains three metropolitan municipalities, namely Ekurhuleni, City of Johannesburg and City of Tshwane. The City of Tshwane municipality is recognised as the capital of South Africa as it is the government stronghold in the country. Furthermore, Pretoria is the capital city of both Gauteng and South Africa, the country, and is situated in the City of Tshwane municipality. The City of Johannesburg is the largest municipality in the country and contains Johannesburg, the largest city in the country. The three metropolitan municipalities made up 82.43%, 83.61%, 85.71%, 85.84% and 86.59% of the population in 1996, 2001, 2007, 2011 and 2016 respectively.

Lesedi local municipality is the one and only rural municipality in the province. It is made up of less than 1% of the population from 1996 to 2016, making Gauteng the province with the lowest rural population in the country. Gauteng, therefore, has both the largest urban and the lowest rural populations in the country.

**Table 11. Population in municipal categories**

	1996	2001	2007	2011	2016
<b>Total Population</b>	7 834 125	9 388 854	10 451 713	12 272 263	13 399 724
<b>A</b>	6 345 026	7 687 879	8 958 317	10 534 785	11 603 603
<b>B<sub>1</sub></b>	823 731	953 454	970 508	1 084 085	1 117 309
<b>B<sub>2</sub></b>	599 163	675 663	453 462	553 874	566 342
<b>B<sub>3</sub></b>	66 206	71 868	66 507	99 520	112 472
<b>B<sub>4</sub></b>	0	0	0	0	0

**Table 12. Urban and rural population by municipal categories (including projected populations)**

	1996	2001	2007	2011	2016	2030	2050
<b>Urban (A+B<sub>1</sub>+B<sub>2</sub>)</b>	7 767 920	9 316 986	10 382 287	12 172 744	13 287 254	19 347 539	33 094 437
<b>Rural (B<sub>3</sub>+B<sub>4</sub>)</b>	66 206	71 868	66 507	99 520	112 472	164 059	281 335

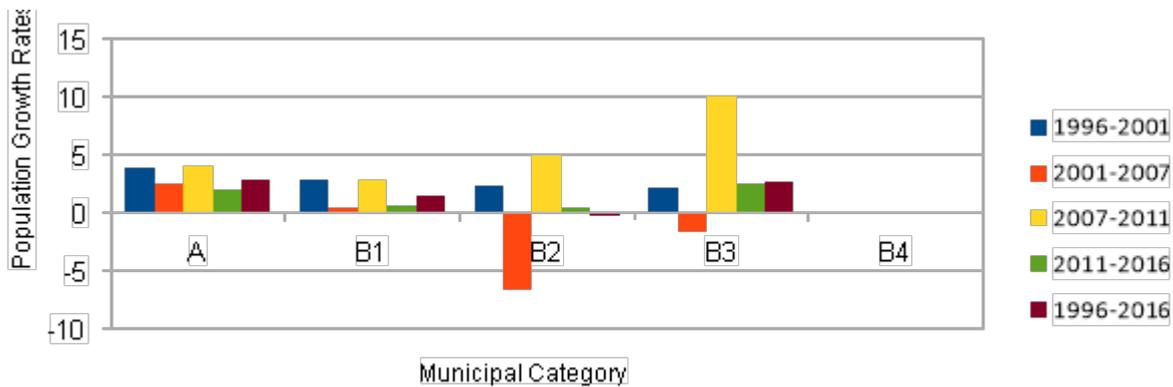
**Table 13: Percentage distribution of municipal categories**

Municipal Category	Number of Local Municipalities	Percentage
<b>A</b>	3	30
<b>B<sub>1</sub></b>	2	20
<b>B<sub>2</sub></b>	6	40
<b>B<sub>3</sub></b>	1	10
<b>B<sub>4</sub></b>	0	0



**Figure 7: Percentage Distribution of Municipal Categories**

The urban municipalities constituted 90% of the local municipalities. The metropolitan municipalities (A) constituted 30% and contained more than 80% of the population. The B<sub>2</sub> municipalities constituted 40% of the local municipalities but only contained approximately 5% of the total population. The one B<sub>3</sub> municipality contained less than 1% of the total population between 1996 and 2016.



**Figure 8: Population Growth Rate per Municipal Category<sup>4</sup>**

#### 4.5.1 Degree of Urbanisation and Urban-Rural Ratio<sup>4</sup>

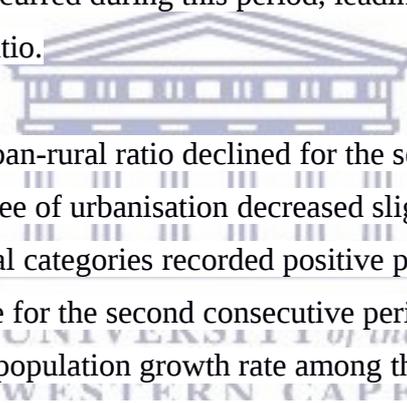
Gauteng has the highest degree of urbanisation and urban-rural ratio in the country. In 1996, the degree of urbanisation and urban-rural ratio was at its lowest. Between 1996 and 2001, the degree of urbanisation increased by only 0.0796% and the urban-rural ratio by 12.3107. Both urban and rural populations recorded high population growth rates. The metropolitan municipalities recorded the highest population growth rate of any municipal category, growing at 3.9048%. Ekurhuleni recorded the highest population growth rate among the metropolitan municipalities. The urban-rural differential was a moderate 1.0217%, indicating a moderate tempo of urbanisation, and led to a minor increase in both urban-rural ratio and the degree of urbanisation.

Between 2001 and 2007, both the degree of urbanisation and urban-rural ratio recorded their largest increase. The degree of urbanisation increased by 0.1225% and urban-rural ratio increased by 23.4678. The urban exceeded the rural population growth rate for the second consecutive period. The metropolitan municipality again recorded the highest population growth rate among urban municipalities. Moreover, it was the highest population growth among any municipal category between 2001 and 2007. The B<sub>2</sub> municipalities recorded a negative population growth rate as a result of Merafong City and the B<sub>1</sub> municipalities recorded a low population growth rate. The rural population recorded a negative population growth rate at -1.7092%, leading to a urban-rural

<sup>4</sup> See Appendix 4

differential of 3.9079% and rapid urbanisation during this period. This was the highest urban-rural differential recorded for any period between 1996 and 2016. Therefore, the degree of urbanisation and urban-rural ratio recorded its highest values for any period.

Between 2007 and 2011, the degree of urbanisation and urban-rural ratio declined for the first time. The degree of urbanisation declined by 0.168% and urban-rural ratio by 30.7935. This drop-off is due to the rural population exceeding the urban population for the first time. Both the urban and rural populations recorded their highest population growth rates for any period. Furthermore, the metropolitan, B<sub>2</sub> and B<sub>3</sub> municipalities recorded their highest population. The spike in the B<sub>2</sub> municipalities is attributed to Merafong City, as previously mentioned. The City of Tshwane recorded the highest metropolitan population growth rate of any metropolitan municipality, as a result of absorbing the B<sub>2</sub> municipalities of Nokeng tsa Taemane and Kungwini. The rural population recorded a population growth rate of 10.076%. This was the highest rural population growth rate for any a period and it led to the highest urban-rural differential recorded, of -6.0988%. Therefore, counter urbanisation occurred during this period, leading to a decline in both degree of urbanisation and the urban-rural ratio.



The degree of urbanisation and urban-rural ratio declined for the second consecutive period between 2011 and 2016. The degree of urbanisation decreased slightly by 0.0284% and urban-rural ratio by only 4.1757. All municipal categories recorded positive population growth rates. The rural exceeded the urban population rate for the second consecutive period. Furthermore, the B<sub>3</sub> municipality recorded the highest population growth rate among the municipal category. The urban population growth was the lowest for any period. The metropolitan municipalities recorded its lowest population growth for any period at 1.9326%, the first time it dropped below 2%. The urban-rural differential was -0.6948%, indicating the second consecutive period of counter urbanisation, and led to the minor decline in both the degree of urbanisation and urban-rural ratio.

Table 12 shows the projected urban and rural populations to 2030 and 2050, provided that the annual population growth rate between 1996 and 2016 remains constant. Therefore, the projected degree of urbanisation will be 99.15% and the urban-rural ratio will be 117.90 in 2030. The projected degree of urbanisation in 2050 will be 99.15% and urban-rural ratio will be 117.63.

#### 4.5.2 Gini Concentration Index<sup>4</sup>

Gauteng has the second-highest Gini concentration index in the country. The majority of the population is concentrated in the three metropolitan municipalities. Gauteng contains three localities of 1 000 000+ people and these metropolitan municipalities consistently make up 80% of the province. The rest of the population is situated in smaller size localities, but there is not a similar population size, hence the high Gini Concentration index.

Between 1996 and 2001, the Gini concentration index increased by only 0.0074. In 1996, the top 80.99% of the cumulative population was concentrated in the top 25% of the cumulative localities, consisting of the three metropolitan municipalities of Ekurhuleni, City of Johannesburg and City of Tshwane. In 2001, the top 81.86% of the cumulative population was concentrated in the top 25% of the cumulative localities. The 0.87% in the cumulative population is a result of a high metropolitan population growth rate between 1996 and 2001. Therefore, a bigger percentage of the population was concentrated in the three metropolitan municipalities, leading to a slightly more even population distribution in 2001.

Between 2001 and 2007, the Gini concentration index increased from 0.0047 to 0.6323. This was the highest Gini concentration index in Gauteng between 1996 and 2001. The increase of the Gini concentration index indicates that Gauteng has an unequal distribution. In 2007, the top 85.71% of the cumulative population was concentrated in the top 27.27% of the cumulative localities, consisting of the three metropolitan municipalities. The 3.95% increase in the cumulative population and the 2.27% increase in the cumulative localities is due to Merafong City being part of North West in 2007, the high metropolitan municipal growth rate and the negative rural population growth rate. Therefore, a higher concentration of the population was concentrated in the three metropolitan municipalities.

Between 2007 and 2011, the Gini concentration index experienced its first decline. It declined from 0.0348 to 0.5975. This was the lowest Gini concentration index recorded in Gauteng between 1996 and 2016. The rural population had the highest population growth rate of the municipal categories, and Merafong City forming part of Gauteng in 2007 increased the population in the non-metropolitan municipalities and resulted in a more even population dispersion in 2011.

Between 2011 and 2016, the Gini concentration increased slightly by 0.0026. In 2011, the top 85.84% of the cumulative population was concentrated in the top 30% of the cumulative localities, consisting of the three metropolitan municipalities. In 2016, the top 86.59% of the cumulative

population was concentrated in the top 30% of the cumulative localities, consisting of the three metropolitan municipalities. The 0.75% increase in the cumulative population is a result of low population among the non-metropolitan municipalities from 2011 to 2016. Gauteng has the second-highest Gini concentration in South Africa between 1996 and 2016.

#### **4.5.3 Size of Locality of Residence of the Median Inhabitant<sup>4</sup>**

Between 1996 and 2001 the size of locality of residence of the median inhabitant increased slightly. In 1996, 62.32% of the population was concentrated in localities of size 2 000 - 2 499 999 and below, whereas in 2001 this increased to 67.13%. Furthermore, in 1996, 40.44% of the population was concentrated in localities of size 1 499 999 – 1 999 999, whereas in 2001 it declined slightly to 40.17%. The increase in the population concentrated in localities of size 2 000 000 – 2 499 999 is due the high population growth rate in Ekurhuleni, therefore creating a decline in the overall size of locality of residence of the median inhabitant.

The size of locality of residence of the median inhabitant increased substantially between 2001 and 2007, when 36.71% of the population was concentrated in localities of size 2 000 000 – 2 499 999 and 62.78% concentrated in 2 500 000 – 2 999 999. The increase in the locality category is attributed to the City of Tshwane reaching the 2 000 000 – 2 499 999 mark and Ekurhuleni reaching the 2 500 000 – 2 999 999 mark. Furthermore, in 2007, Merafong City formed part of North West, hence declining the population in the smaller category localities. In 2011, the size of locality of residence of the median inhabitant reached the 3 000 000+ mark for the first time.

In 2011, 37.96% of the population was concentrated in localities of size 2 499 999 – 2 999 999 and 63.86% of the population was concentrated in localities of size 3 000 000 – 3 499 999. Again, this was attributed to the high population growth in the metropolitan municipalities. Specifically, the City of Tshwane (5.4855%) and Ekurhuleni (3.8553%) and elevating to the 2 500 000 – 2 999 999 and 3 000 000 – 3 499 999 category localities respectively.

In 2016 the size of locality of the median inhabitant increased by 255 424.729 and reached its highest level at 3 348 214.702. In 2016, 37.84% of the population was concentrated in localities of size 3 200 000 – 3 299 999 and 63.06% of the population was concentrated in 3 300 000 – 3 399 999. Again, this was attributed to the high population growth in the metropolitan municipalities

#### 4.5.4. Population Density<sup>4</sup>

The population density of Gauteng is the highest in the country. This is a result of Gauteng being the province with the smallest land area and having one of the biggest populations in the country. Its lowest population density was in 1996 at 462.57 persons/km<sup>2</sup> and the highest came in 2016 at 791.19 persons/km<sup>2</sup>. Between 1996 and 2016, the population density increased by 328.62 persons/km<sup>2</sup>.

#### 4.5.5. Primacy Index<sup>4</sup>

The primacy index in Gauteng was calculated with the City of Johannesburg as the biggest city, followed by the metropolitan municipalities of Ekurhuleni and City of Tshwane, and the secondary cities of Emfuleni and Mogale City. The primacy index in 1996 was 36.23, indicating that the City of Johannesburg is not a primacy city in Gauteng. Between 1996 and 2001, the primacy index increased slightly as a result of a high population growth rate in the City of Johannesburg. In 2007, the primacy index rose to 39.16 as a result of the City of Johannesburg being the only metropolitan municipality to record a population growth rate above 3%. Furthermore, this was the highest increase of the primacy index of any period. In 2011, the primacy index declined to 38.16. This was the first period in which the primacy index declined. This was a result of both Ekurhuleni and the City of Tshwane recording higher growth rates than the City of Johannesburg during the period from 2007 to 2011. In 2016, the primacy index rose to 38.90 as a result of the high population growth rates in the City of Johannesburg. Although the City of Johannesburg is the biggest metropolitan municipality in the country, the presence of another two metropolitan municipalities and two secondary cities brings down its primacy in Gauteng.

#### 4.5.6. Polarization Reversal<sup>4</sup>

Gauteng has three municipalities and three secondary Cities (B<sub>1</sub> municipalities), namely, Emfuleni and Mogale City. The secondary cities made up 10.51%, 10.15%, 9.28%, 8.83% and 8.33% in 1996, 2001, 2007, 2011 and 2016 respectively and, as previously mentioned, the metropolitan municipalities made up 82.43%, 83.61%, 85.71%, 85.84% and 86.59% of the population in 1996, 2001, 2007, 2011 and 2016 respectively. The growth rate of secondary cities in the Gauteng province did not exceed that of the metropolitan municipalities. Therefore, polarization reversal is not taking place and the size of the populations in the cities is increasing.

#### 4.6 The Free State

The Free State is bordered by Mpumalanga, North West, Northern Cape, KwaZulu-Natal, Gauteng and the Eastern Cape. The land area of the Free State is 129 825km<sup>2</sup>, the third largest in South Africa and constitutes 10.6% of the land area in the country (Statistics South Africa,2012). The Free State contributed approximately 5% towards the national GDP between 1996 and 2016. The agriculture sector contributes the most towards the national economy at 13.3%, followed by mining at 7.9% in 2011. The Free State contributed 9.7% and 10.4% to the agricultural households in South Africa in 2011 and 2016 respectively (Statistics South Africa, 2016). The Free State is the second-smallest province in South Africa. It has twenty local municipalities consisting of fifteen B<sub>3</sub>, three B<sub>2</sub>, two B<sub>1</sub> municipalities, and no B<sub>4</sub> or metropolitan municipalities. Between 1996 and 2007, the majority of the population was concentrated in B<sub>1</sub> and B<sub>3</sub> municipalities.

Bloemfontein is the capital city and judicial capital of South Africa. Manguang, a B<sub>1</sub> municipality from 1996 to 2007, was upgraded to a metropolitan municipality in 2011. Therefore, during the 2011 to 2016 period the majority of the population was concentrated in Manguang and B<sub>4</sub> municipalities. Manguang made up 22.91%, 23.84%, 27.15%, 27.22% and 26.79%. Since the Free State has no B<sub>4</sub> municipalities all, rural areas fall within the B<sub>3</sub> municipalities. The Free State had the fifth-largest urban population in 1996 and then declined to the sixth-largest from 2001 to 2016. The rural population was consistency ranked as the fourth-lowest in the country.

**Table 14: Population in municipal categories**

	1996	2001	2007	2011	2016
<b>Total Population</b>	2 633 504	2 706 775	2 773 059	2 745 590	2 834 714
<b>A</b>	0	0	0	747 431	759 693
<b>B<sub>1</sub></b>	1 080 291	1 053 610	1 157 937	406 461	428 843
<b>B<sub>2</sub></b>	384 150	412 776	433 629	438 344	458 340
<b>B<sub>3</sub></b>	1 169 063	1 240 217	1 181 321	1 153 353	1 187 839
<b>B<sub>4</sub></b>	0	0	0	0	0

**Table 15: Urban and Rural Population by Municipal Categories (including projected populations)**

	1996	2001	2007	2011	2016	2030	2050
<b>Urban (A+B<sub>1</sub> + B<sub>2</sub>)</b>	1 464 441	1 466 386	1 591 566	1 592 236	1 646 876	1 787 932	2 010 654
<b>Rural (B<sub>3</sub> + B<sub>4</sub>)</b>	1 169 063	1 240 217	1 181 321	1 153 353	1 187 839	1 200 982	1 220 010

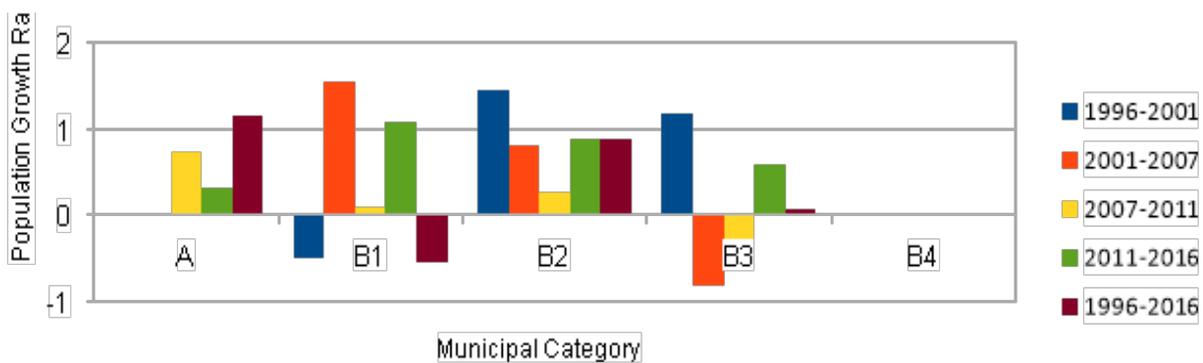
**Table 16. Percentage Distribution of Municipal Categories**

Municipal Category	Number of Local Municipalities	Percentage
<b>A</b>	1	5
<b>B<sub>1</sub></b>	1	5
<b>B<sub>2</sub></b>	3	15
<b>B<sub>3</sub></b>	15	75
<b>B<sub>4</sub></b>	0	0



**Figure 9: Percentage Distribution of Municipal Categories**

Manguang represents 5% of the municipal categories but constitutes almost one-third of the total population in the province. The B<sub>3</sub> municipalities represent 75% of the municipal categories but constitute approximately 40% of the total population.



**Figure 10: Population Growth Rate per Municipal Category<sup>5</sup>**

#### 4.6.1. Degree of Urbanisation and Urban-Rural Ratio<sup>5</sup>

The Free State has one of the smallest urban populations in the country but has the third-highest degree of urbanisation. Between 1996 and 2001 the degree of urbanisation declined by 1.4341%. This was due to the low urban population growth rate with the B<sub>1</sub> municipalities, which contain the biggest urban population, having a -0.5001% growth rate. Furthermore, the rural population experienced its highest growth rate of any period between 1996 and 2016, leading to an urban-rural differential of -1.1552%, the lowest of any period.

In 2007, the degree of urbanisation increased by 1.4341%, the biggest increase of any period between 1996 and 2016. The urban population experienced its highest population growth of any period. Furthermore, Manguang experienced its highest population growth rate of any period. The rural population had its lowest population growth rate of any period at -0.8108%. Hence, the urban-rural differential was 2.1789%, a significant increase of 3.341% in the speed of urbanisation from 1996 to 2001, when counter urbanisation occurred.

In 2011, the degree of urbanisation increased by only 0.5986% from 2007. Only the urban population experienced a positive growth rate during this period. Although the urban population growth rate was positive, it declined by 1.3546% to 0.0105% from 2001 to 2007, achieving its lowest urban growth rate for any period. The urban-rural differential was 0.6094%, down by 1.5695% from 2001 to 2007, indicating a slowing down in the tempo of urbanisation during this period. Manguang and the rural population experienced negative growth rates. Manguang decreased from 2.7492% to -0.1824%, from 2001-2007. Furthermore, the decrease in Manguang was its biggest drop and resulted in the lowest population growth in Manguang during any period. The total population growth rate was negative and declined by 0.652% to -0.2488 from 2001-

<sup>5</sup> See Appendix 5

2007. This period yielded the lowest total population growth for any period in the Free State and a consequence of the negative population growth rate in rural municipalities and Manguang.

The degree of urbanisation increased by only 0.10435% between 2011 and 2016. Both urban and rural population growth were similar during this period. The urban-rural differential was slim at 0.0856. Manguang had the lowest population growth. Therefore, the degree of urbanisation experienced a tiny increase between 2011 and 2016.

Table 15 shows the projected urban and rural populations, provided that the annual population growth rate between 1996 and 2016 remains constant to 2030 and 2050. Therefore, the projected degree of urbanisation will be 59.81% and the urban-rural ratio will be 1.488 in 2030. The projected degree of urbanisation will be 62.23% and the urban-rural ratio will be 1.648 in 2050.

#### 4.6.2 Gini Concentration Index<sup>5</sup>

The Gini concentration averages around 0.5, indicating an unequal population distribution in the Free State. Between 1996 and 2001, the Gini concentration declined to 0.018. In 1996, the top 54.43% of the cumulative population was concentrated in the top 15% of the cumulative localities consisting of three localities, namely, Matjhabeng (B1), Manguang (B1) and Maluti-A-Phofung (B3). In 2001, the top 52.25% of the cumulative population was concentrated in the top 15% of the cumulative localities consisting of the same localities as in 1996. The 2.18% decline of the cumulative population is a result of Matjhabeng recording a -2.88% population growth rate. This decline, coupled with the rural population exceeding the urban, led to a decrease of the Gini concentration. The majority of the rural municipalities are concentrated in localities of size 100 000 – 199 999 and below, therefore if the rural growth rate exceeded the urban, the 100 000 – 199 999 and below closes the gap on the bigger municipalities, leading to a more even population distribution.

In 2007, the Gini concentration increased by 0.0394 from 2001. This was the highest increase of any period between 1996 and 2016. In 2001, the top 52.25% of the cumulative population was concentrated in the top 15% of the cumulative localities consisting of three localities, as previously mentioned. In 2007, the top 55.65% of the cumulative population was concentrated in the top 15% of the cumulative localities consisting of the same localities as in 2001. The 3.4% increase of the cumulative population is a result of a high urban and low rural population growth rate during 2001-2007. Manguang recorded the highest urban population growth. This led to an increase of the

Gini concentration index in 2007 as a higher percentage of the population was concentrated in the top three localities in the country.

Between 2007 and 2011, the Gini concentration index decreased by 0.0089. In 2011, the top 54.25% of the cumulative population was concentrated in the top 15% of the cumulative localities consisting of three localities, as previously mentioned. The 1.405% decline of the cumulative population is due to two of the three localities recording a negative population growth rate. Manguang and Maluti-A-Phofung recorded growth rates of -0.1824% and -3.446% respectively. Therefore, a lesser percentage of the cumulative population was concentrated in the top three localities, leading to a slightly better population distribution in 2011.

In 2016, the Gini concentration index increased by a minor increase of 0.0014 and the top 54.39% of the cumulative population was concentrated in the top 15% of the cumulative localities. The 0.14% is attributed to the population growth rates in Maluti-A-Phofung and Matjhabeng.

#### **4.6.3 Size of Locality of Residence of the Median Inhabitant<sup>5</sup>**

In 1996, 45.50% of the cumulative population was concentrated in localities of size 100 000 – 199 999 and below, whereas in 2001 this increased to 47.73%. Furthermore, in 1996, 58.97% of the cumulative population was concentrated in localities of size 300 000 – 399 999, whereas in 2001 it increased to 61.60%. These changes are attributed to the low urban population with Matjhabeng (B<sub>1</sub>) experiencing a -3.1067 growth rate, leading to a decline in the size of locality of residence of the median inhabitant between 1996 and 2001.

Between 2001 and 2007 the size of locality of residence of the median inhabitant had its biggest increase of 47 530.3718. In 2007, 44.33% of the cumulative population was concentrated in localities of size 100 000 – 199 999 and below, a 3.4% decline from 2001, and 58.23% of the cumulative population was concentrated in localities of size 300 000 – 399 999, a 2.83% increase from 2001. The rural population had a negative population growth rate and the urban population had its highest population growth rate, leading to the highest urban-rural differential between 1996 and 2016.

In 2011, the size of locality of residence of the median inhabitant experienced a moderate decrease. Between 2007 and 2011, the urban population growth was the lowest of any period between 1996 and 2016, with the core region Manguang experiencing a negative population growth rate, hence a decline in the size of locality of residence of the median inhabitant.

In 2016 the size of locality of residence of the median inhabitant stayed relatively constant from 2011. Both rural and urban populations had similar growth rates, leading to a small urban-rural differential and a slight increase in the size of locality of the median inhabitant.

#### **4.6.4. Population Density<sup>5</sup>**

The population density is relatively low. Its lowest was in 1996 at 20.28 persons/km<sup>2</sup> and the highest came in 2016 at 21.83 persons/km<sup>2</sup>. The population density is low as a result of the small population of the province. It increased by 1.55 persons/km<sup>2</sup> between 1996 and 2016. A small population is a result of a low total population growth rate.

#### **4.6.5 Primacy Index<sup>5</sup>**

The primacy index in the Free State was calculated with Manguang as the biggest city, followed by Matjhabeng. The primacy index in 1996 was 55.71, indicating that Manguang is a primacy city in the Eastern Cape. Between 1996 and 2001, the primacy index increased by a large margin and was above 60 for the first time. This was a result of Matjhabeng recording a negative population growth rate. In 2007, the primacy index rose to 65.02, another large increase. This was a result of Matjhabeng recording a negative population growth rate for the second consecutive period. Between the years 2007 to 2011, the primacy index declined slightly to 64.77. In 2016, the primacy index declined to 63.91. This was a result of Matjhabeng growing 0.74% faster than Manguang. Over the twenty-year period, Manguang has reinforced its dominance as the primate city.

#### **4.6.6. Polarization Reversal<sup>5</sup>**

The Free State did not have any metropolitan municipalities but had two large B<sub>1</sub> municipalities. The highest concentration of the population was situated in the B<sub>1</sub> municipalities of Manguang and Matjhabeng. Manguang had established itself as the core region in the province and was changed from a B<sub>1</sub> municipality to a metropolitan municipality in 2011. Therefore, to investigate whether polarization reversal is taking place, the growth rates between Manguang (core region) and Matjhabeng (secondary city) will be evaluated. During the years between 1996 and 2001, and 2001 and 2007 respectively, the population growth rate in Manguang significantly exceeded that of Matjhabeng by 4.4497% and 2.6954% respectively. Between 2007 and 2011, the growth rate in Matjhabeng has exceeded the growth rate in Manguang from 2007 to 2016. Overall, between 1996 and 2016, the growth rate in Manguang exceeded Matjhabeng by 1.6802% annually, indicating that polarization reversal has not occurred in the Free State.



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#### 4.7.Northern Cape

The Northern Cape is bordered by North West, the Western Cape, the Eastern Cape, the Free State and the countries of Botswana and Namibia. The Northern Cape is the largest land area in South Africa at 362 599km<sup>2</sup>. It constitutes 30.5% of the land area in South Africa (Statistics South Africa, 2012). The province contributes approximately 2% to the national GDP between 1996 and 2016. The Northern Cape contributed 1.9% and 2.1% to the agricultural households in South Africa in 2011 and 2016 respectively, the lowest percentage in the country ( Statistics South Africa, 2016).

The Northern Cape has had the smallest population in South Africa since 1996. It has five district municipalities and twenty-seven local municipalities consisting of no metropolitan municipalities (A), one B<sub>1</sub>, one B<sub>2</sub>, twenty-four B<sub>3</sub> and one B<sub>4</sub> municipality. The Northern Cape has a predominantly rural population with the majority of the population concentrated in B<sub>3</sub> municipalities. The rural population constituted 71.73%, 72.06%, 67.49%, 70.19%, 70.21% in 1996, 2001, 2007, 2011 and 2016 respectively. Kimberley is the main urban centre situated in Sol Plaatje. Sol Plaatje made up 20.26%, 20.31%, 22.96%, 21.64%, 21.39% of the total population of the Northern Cape in 1996, 2001, 2007, 2011 and 2016 respectively. The Northern Cape had the smallest rural population between 1996 and 2007. Between the years 2011 to 2016, it was surpassed by the Western Cape and became the second-smallest rural population in the country. It also has the smallest urban population. The Northern Cape is the only province in South Africa with an urban and rural population less than 1 000 000. Furthermore, it is the only province with a core municipality that has a population less than 500 000. It has the most B<sub>3</sub> municipalities.

**Table 17. Population in municipal categories**

	1996	2001	2007	2011	2016
<b>Total Population</b>	1 011 864	991 919	1 058 060	1 145 861	1 193 780
<b>A</b>	0	0	0	0	0
<b>B<sub>1</sub></b>	205 103	202 246	243 018	248 041	255 351
<b>B<sub>2</sub></b>	80 823	80 216	100 920	93 494	100 282
<b>B<sub>3</sub></b>	613 503	611 512	638 513	714 795	753 948
<b>B<sub>4</sub></b>	112 435	97 945	75 609	89530	84 201

**Table 18. Urban and rural population by municipal categories (including projected populations)**

	1996	2001	2007	2011	2016	2030	2050
<b>Urban (A+B<sub>1</sub> + B<sub>2</sub>)</b>	285 926	282 462	343 938	341 535	355 633	414 308	515 311
<b>Rural (B<sub>3</sub> + B<sub>4</sub>)</b>	725 938	709 457	714 122	804 325	838 149	926 870	1 070 149

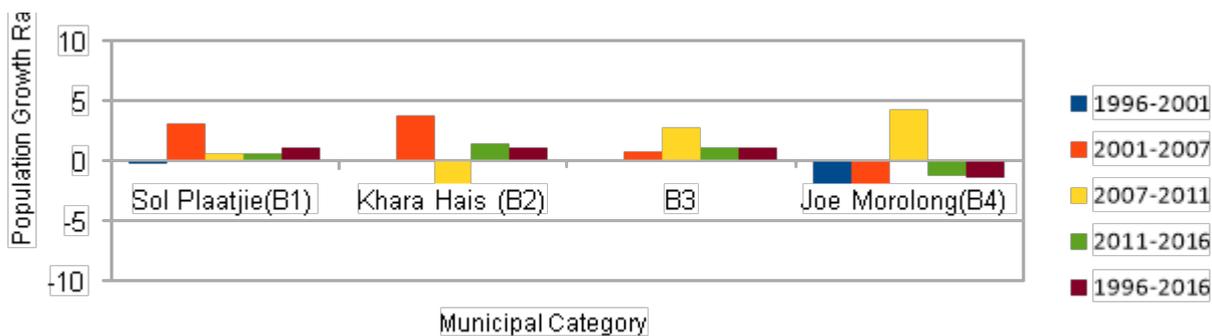
**Table 19. Percentage distribution of municipal categories**

Municipal Category	Number of Local Municipalities	Percentage
A	0	0
B <sub>1</sub>	1	3.703
B <sub>2</sub>	1	3.703
B <sub>3</sub>	24	88.888
B <sub>4</sub>	1	3.709



**Figure 11: Percentage Distribution of Municipal Categories**

The pie chart above shows the dominance of the number of B<sub>3</sub> municipalities in the Northern Cape, which constitutes 88.88% of all municipalities in the province. The two urban municipalities cumulatively constitute 7.406% of the total municipalities.



**Figure 12: Population Growth Rate per Municipal Category<sup>6</sup>**

#### 4.7.1 Degree of Urbanisation and Urban-Rural Ratio<sup>6</sup>

The Northern Cape has the second-lowest urban-rural ratio and degree of urbanisation in the country. In 1996, the Northern Cape recorded its lowest degree of urbanisation and urban-rural ratio between 1996 and 2016. Between 1996 and 2001, the degree of urbanisation increased slightly by 0.2135% and the urban-rural ratio increased by 0.0043. The Northern Cape recorded a negative total population growth rate during this period. Both urban and rural municipal categories recorded negative population growth rates, equating to a negative total population growth rate. Sol Plaatje (B<sub>1</sub>) recorded the lowest population growth rate among the urban municipalities. This was the lowest population growth rate for any period between 1996 and 2016. Joe Morolong (B<sub>4</sub>) recorded the lowest population growth rate among the rural municipalities. Furthermore, this was the lowest among any municipal category. The B<sub>3</sub> municipalities also recorded their lowest population growth rate for any period between 1996 and 2016. This was significant as a large majority of the population is concentrated in the B<sub>3</sub> municipalities. The urban-rural differential was 0.2155%, indicating a slow tempo of urbanisation during this period, hence the slight increase in both urban-rural ratio and degree of urbanisation.

Between 2001 and 2007, the urban-rural ratio and degree of urbanisation experienced its biggest increase of any period. The degree of urbanisation increased by 4.0303% and the urban-rural ratio increased by 0.0835. For the second consecutive period, the urban exceeded the rural population growth rate and the rural population recorded a negative population growth rate. The two urban municipalities recorded their highest population growth rates for any period, equating to the highest urban population growth for any period in the Northern Cape between 1996 and 2016. The Joe Morolong (B<sub>4</sub>) municipalities recorded their lowest population growth rate for any period. The urban-rural differential was 3.1727%, indicating rapid urbanisation during this period. Moreover, this was the highest urban-rural differential for any period between 1996 and 2016.

<sup>6</sup> Appendix 6

Between 2007 and 2011, the degree of urbanisation and urban-rural ratio significantly declined. The degree of urbanisation declined by 2.7005% and the urban-rural ratio by 0.0681. The total population growth rate was the highest of any period. The rural exceeded the urban population growth rate for the first time. Sol Plaatje (B<sub>1</sub>) recorded a low but positive population growth rate, whereas Khara Hais (B<sub>2</sub>) recorded a negative population growth rate at -1.9107%. This was the lowest population growth rate recorded for Khara Hais (B<sub>2</sub>) for any period. The rural municipalities recorded the highest population growth among all municipal categories. Both B<sub>3</sub> and B<sub>4</sub> municipalities recorded their highest population growth rates for any period. This is significant as the B<sub>3</sub> municipalities have by far the highest absolute population. The urban-rural differential was -3.1489%, leading to counter urbanisation during this period.

Between 2011 and 2016, the degree of urbanisation declined slightly by 0.0155% and the urban-rural ratio by 0.003. The total population growth was less than 1%. The rural exceeded the urban for the second consecutive period but both were below 1%. The urban-rural differential was -0.0149%, indicating another period of counter urbanisation. Counter urbanisation has been prevalent since 2007 in the Northern Cape.

Table 18 shows the projected urban and rural populations to 2030 and 2050, provided that the annual population growth rate between 1996 and 2016 remains constant. Therefore, the projected degree of urbanisation will be 30.89% and the urban-rural ratio will be 0.44 in 2030. The projected degree of urbanisation will be 32.50% and urban-rural ratio will be 0.48 in 2050.

#### 4.7.2. Gini Concentration Index<sup>6</sup>

The Northern Cape has one of the lowest Gini concentration indexes in the country. It has no disproportionately large core region (Sol Plaatje is the largest) and therefore the population is more equally spread out among the localities. The three largest municipalities in the Northern Cape are Sol Plaatje (B<sub>1</sub>), Joe Morolong (B<sub>4</sub>) and Khara Hais (B<sub>2</sub>). In the Northern Cape, the majority of the population resides in localities of size 50 000 – 99 999 and below and the majority are rural. The population growth rates among the rural population (specifically B<sub>3</sub>) will play a significant role in the fluctuation of the Gini concentration index. Between 1996 and 2001, the Gini concentration increased by only 0.0015. In 1996, the top 56.907% of the cumulative population was concentrated in the top 22.22% of the cumulative localities from 50 000 – 99 999 and above consisting of six localities. The six localities consist of the two urban and four rural municipalities. In 2001, 57.25% of the cumulative population was concentrated in the top 22.22% of the cumulative localities from

50 000 – 99 999 and above consisting of the same six localities as in 1996. Therefore, the 0.343% increase in the cumulative population in the top six localities resulted in an increase in the Gini concentration index. Even though every municipal category recorded negative population growth rates, the most negative population growth was among the B<sub>3</sub> municipalities. Twenty-one of the twenty-four B<sub>3</sub> municipalities are concentrated in 20 000 – 49 999 and below, therefore the low population growth rate in the B<sub>3</sub> municipalities lowered the population in the localities and slightly increased the population in the top six in terms of absolute terms.

Between 2001 and 2007, the Gini concentration index declined by only 0.0003. In 2001, the top 3.7% (Sol Plaatje) of the cumulative population was concentrated in the top 20.38% of the cumulative localities consisting of one locality (Sol Plaatje). In 2007, the top 3.7% of the cumulative population was concentrated in the top 22.96% of the cumulative localities. The 2.58% increase in the cumulative population is a result of a low population growth rate among rural municipalities and a high growth rate in Sol Plaatje between 2001 and 2007. In 2007, the Gini concentration was the lowest in the Northern Cape.

During the years 2007 to 2011, the Gini concentration increased by 0.0552. This was the biggest increase of any period. In 2007, the top 56.75 % of the cumulative population was concentrated in the top 22.22% of the six localities. In 2011, the top 57.03% of the cumulative population was concentrated in the top 22.2% of the cumulative localities, consisting of six localities. The 0.28% increase contributed to the overall increase, but the main factor was that Khara Hais (B<sub>2</sub>) recorded a -1.9107% population growth rate and dropped from a category 100 000 – 199 999 size locality to a 50 000 – 99 999 size locality, thereby creating a bigger gap between the biggest size locality (Sol Plaatje) and the next biggest (Khara Hais). This resulted in the highest recorded Gini concentration index in the Northern Cape for any period.

During the period from 2011 to 2016 the Gini concentration index decreased by 0.02974. In 2016, 56.40% of the cumulative population was concentrated in 22.22% of the cumulative localities. The 0.63% decrease in the cumulative population is a result of a combination of a low population growth rate in Sol Plaatje and high population growth rates in Khara Hais (B<sub>2</sub>) and Ga-Segonyana (B<sub>3</sub>) relative to Sol Plaatje. Khara Hais (B<sub>2</sub>) and Ga-Segonyana (B<sub>3</sub>) elevated from 50 000 – 99 999 size localities in 2011 to 100 000 – 199 999 size locality in 2016, hence closing the gap in terms of population size to Sol Plaatje and leading to a decrease in the Gini concentration index and a more equal population distribution.

### 4.7.3 Size of Locality of Residence of the Median Inhabitant<sup>6</sup>

The Northern Cape has the lowest size of locality of residence of the median inhabitant in the country. The majority of the rural population is concentrated in localities of size 50 000 – 99 999 and below. In 1996, 43.09% of the cumulative population was concentrated in localities of 20 000 – 49 999 and below and 68.61% in the 50 000 – 99 999. In 2001, 42.75% of the cumulative population was concentrated in localities of size 20 000 – 49 999 and 79.61% in 50 000 – 99 999. The 10.56% increase in the cumulative population was concentrated in category 50 000 – 99 999, leading to a slight decrease in the size of locality of residence of the median inhabitant in 2001. The decrease came as a result of every municipal category experiencing negative growth rates. The population growth rate of Joe Morolong is the only B<sub>2</sub> municipality which declined substantially. It went from the 50 000 – 99 999 category locality, to a 20 000 – 49 999 and had a significant impact. It increased again in 2007 to 64 735.4051.

In 2007, 66.99% of the cumulative population was concentrated in localities of size 50 000 – 99 999 and below, a 12.18% decline from 2011 as a result of high urban population growth rates in Sol Plaatje and Joe Morolong. Joe Morolong was elevated from a 20 000 – 49 999 category to a 50 000 – 99 999 with a 4.7988% population growth during 2001-2007. In 2011, the size of locality of residence of the median inhabitant decreased to its lowest value.

In 2011, 78.35% of the cumulative population was concentrated in localities of size 50 000 – 99 999 and below. This is a 11.36% increase from 2007. This came as a result of low population growth rates in urban municipalities and high population growth rates in rural municipalities. Joe Morolong, once again, experienced a negative population growth rate.

In 2016, the Northern Cape reached its highest size of locality of residence of the median inhabitant with 43.59% of the cumulative population concentrated in localities of size 20 000 – 49 999 and below and 61.46% in 50 000 – 99 999 and below. The high population growth rate in the B<sub>2</sub> municipality (Joe Morolong) and the negative growth rate in the B<sub>4</sub> municipalities led to a decline in the cumulative percentage concentrated in localities of size 50 000 – 99 999 and below, thereby increasing the size of the locality of the median inhabitant in 2016.

### 4.7.4 Population Density<sup>6</sup>

The population density in the Northern Cape is the lowest in the country. This is a result of the Northern Cape being the province with the biggest land area and the smallest population of the

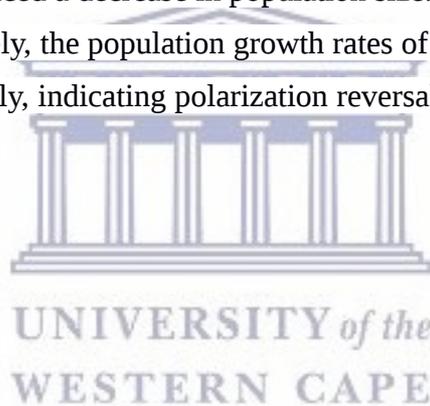
country. Its lowest population density was in 2001 at 2.73 and the highest came in 2016 at 3.29. It increased by only 0.5 between 1996 and 2016, as a result of low total population growth rates.

#### **4.7.5 Primacy Index<sup>6</sup>**

Sol Plaatje is the only city in the Northern Cape and therefore by default it is primate city in the province.

#### **4.7.6. Polarization Reversal<sup>6</sup>**

Sol Plaatje is the core region in the province and the only B<sub>1</sub> municipality. Therefore, to analyse if polarization reversal has occurred, the growth rates for Sol Plaatje and B<sub>2</sub> municipalities will be calculated and compared. During the 1996 to 2001 period, both Sol Plaatje and the B<sub>2</sub> municipalities experienced negative growth rates. Sol Plaatje decreased at a lower rate than the B<sub>2</sub> municipalities. Therefore, polarization reversal did not occur during this period. Between 2007 and 2011, no polarization reversal occurred as the Sol Plaatje growth rate was 2.4221% greater than the B<sub>2</sub> municipalities, which experienced a decrease in population size. In the years between 2001 to 2007 and 2011 to 2016 respectively, the population growth rates of B<sub>2</sub> exceeded Sol Plaatje by 1.6735% and 0.8208% respectively, indicating polarization reversal occurred during this period.



#### 4.8. Mpumalanga

Mpumalanga is situated in the north-eastern region of South Africa. It shares a border with Limpopo, Gauteng, Free State, KwaZulu-Natal and the with the neighbouring countries of Mozambique and Swaziland. Mpumalanga has a land area of 79 487km,<sup>2</sup> making it the second-smallest province in South Africa. Furthermore, it constitutes 6.3% of the land area in South Africa (Statistics South Africa,2012). Mbombela is the capital of Mpumalanga. The economy is dominated by mining and quarrying. Mpumalanga contributed approximately 8% towards the national GDP between 1996 and 2016. In 2011, it made the third highest percentage contribution towards mining and quarry in the national economy, at 20%. The number of agricultural households made up 9.1% and 9.7% of the total agricultural households in South Africa in 2011 and 2016 respectively (Statistics South Africa, 2016).

Mpumalanga is the sixth-biggest province in South Africa. It has eighteen local municipalities consisting of four B<sub>1</sub>, two B<sub>2</sub>, seven B<sub>3</sub>, five B<sub>4</sub> municipalities and no metropolitan municipalities. The majority of the population is concentrated in B<sub>1</sub> and B<sub>4</sub> municipalities. Mbombela is recognised as the core region and is the administrative and business centre of the province. Mbombela made up 13.63%, 14.175%, 14.47%, 14.57% and 14.34% of the population in 1996, 2001, 2007, 2011 and 2016 respectively. It was initially the second-largest municipality in the province in 1996 and 2001 after Bushbuckridge, a B<sub>4</sub> municipality. It surpassed Bushbuckridge in 2007 to be the largest local municipality in the province. Mpumalanga had the third-lowest urban population in the country between 1996 and 2001. It surpassed the Free State between 2007 and 2016 as the province with the sixth-largest urban population in the country. It also had the fourth-largest rural population between 1996 and 2016.

**Table 20. Population in Municipal Categories**

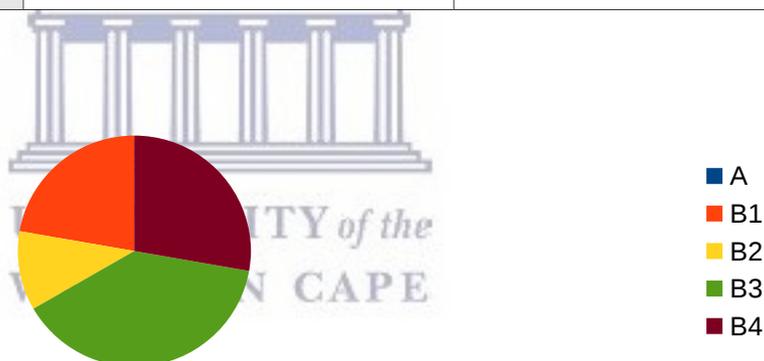
	1996	2001	2007	2011	2016
<b>Total Population</b>	3 123 870	3 363 229	3 643 435	4 039 939	4 335 966
<b>A</b>	0	0	0	0	0
<b>B<sub>1</sub></b>	1 007 091	1 117 525	1 413 877	1 508 629	1 696 226
<b>B<sub>2</sub></b>	142 372	167 819	159 108	196 593	212 757
<b>B<sub>3</sub></b>	467 352	557 145	499 868	645 264	700 339
<b>B<sub>4</sub></b>	1 507 056	1 520 740	1 567 634	1 680 451	1 726 644

**Table 21. Urban and Rural Population by Municipal Categories (including projected populations)**

	1996	2001	2007	2011	2016	2030	2050
<b>Urban (A+B<sub>1</sub> + B<sub>2</sub>)</b>	1 149 463	1 285 344	1 572 985	1 705 222	1 908 983	2 722 816	4 521 965
<b>Rural (B<sub>3</sub> + B<sub>4</sub>)</b>	1 974 408	2 077 885	2 067 232	2 334 715	2 426 983	2 804 190	4 521 965

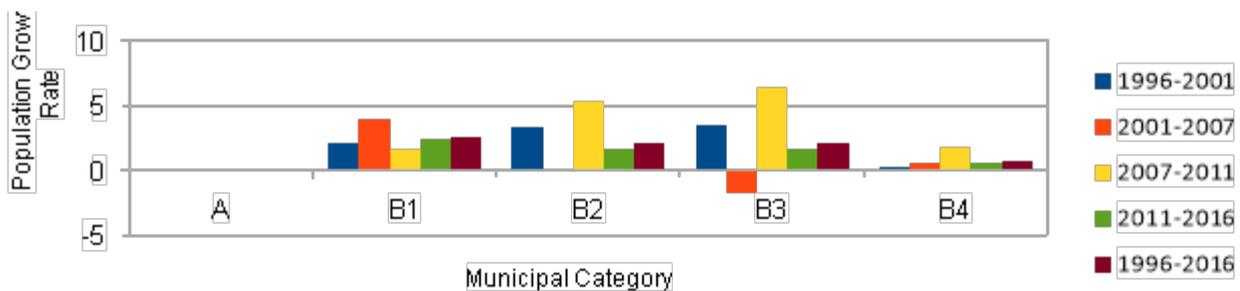
**Table 22. Percentage Distribution of Municipal Categories**

Municipal Category	Number of Local Municipalities	Percentage
<b>A</b>	0	0
<b>B<sub>1</sub></b>	4	22.22
<b>B<sub>2</sub></b>	2	11.11
<b>B<sub>3</sub></b>	7	38.88
<b>B<sub>4</sub></b>	5	27.77



**Figure 13: Percentage Distribution of Municipal Categories**

The localities in Mpumalanga are fairly equally distributed among the municipal categories. The B<sub>3</sub> municipalities had the highest percentage among the municipal categories but only constituted approximately 16% of the population between 1996 and 2016. The B<sub>4</sub> municipalities contained the highest percentage of the population and the second-highest percentage distribution of the municipal categories. The urban municipalities constituted 33.33% and the rural municipalities constituted 66.67% of the percentage distribution of municipal categories.



**Figure 14: Population Growth Rate per Municipal Category<sup>7</sup>**

#### 4.8.1. Degree of Urbanisation and Urban-Rural Ratio<sup>7</sup>

Mpumalanga has one of the lowest degrees of urbanisation and urban-rural ratios in the country. The lowest degree of urbanisation and urban-rural ratio was in 1996 at 36.17961% and 0.5821 respectively. The degree of urbanisation and urban-rural ratio increased by 1.4215% and 0.0364 respectively between 1996 and 2001. The total population growth was 3.0154%, which was the highest total population growth rate for any period. The B<sub>2</sub> municipalities have the highest urban municipal growth rate. The B<sub>3</sub> municipalities had the highest population growth rate and B<sub>4</sub> the lowest. The urban-rural differential was 1.213%, indicating a moderate tempo of urbanisation between 1996 and 2001.

Between 2001 and 2007, Mpumalanga experienced its biggest increase in both the degree of urbanisation and urban-rural ratio, increasing by 4.9905% and 0.1424. The urban population recorded its highest population growth rate during this period. The high urban population growth rate is partly attributed to the B<sub>1</sub> municipality of Emalahleni, which experienced a population growth rate of 7.5658% between 2001 and 2007. The negative rural population growth rate is partly attributed to the B<sub>3</sub> municipality of Mkhondo, which experienced a -4.9065% growth rate between 2001 and 2007. The urban-rural differential was its highest at 3.8798% as result of the highest urban population and lowest rural population growth rate experienced for any period in Mpumalanga.

Between 2007 and 2011, both the degree of urbanisation and urban-rural ratio declined by a slight margin. The degree of urbanisation decreased by 0.9989% and the urban rural ratio by 0.0306. During this period, the rural population growth rate exceeded the urban and total population growth rate for the first time. The rural growth rate was the highest for any period. The B<sub>3</sub> municipalities experienced a 6.382% population growth rate during this period. The urban growth rate declined by

<sup>7</sup> See Appendix 7

1.3478% from 2001 to 2007. The population growth rate in the B<sub>1</sub> municipalities declined by 2.299% from 2007 as a result of Emalahleni (B<sub>1</sub>) experiencing a -2.394% population growth rate. Mbombela (B<sub>1</sub>) recorded its highest population growth rate of any period. The urban-rural differential was -0.8954%, a 4.7086% decline from 2001 to 2007, indicating counter urbanization during this period. As a result, both the degree of urbanisation and urban-rural ratio declined in 2011. This increase is because of the significant increase in the rural population growth rate.

In 2016, both the degree of urbanisation and the urban-rural ratio increased by 1.8176% and 0.0562. The B<sub>1</sub> municipalities recorded the highest population growth rates and the B<sub>4</sub> municipalities the lowest. The core region of Mbombela (B<sub>1</sub>) recorded its lowest population growth rate of any period. The urban-rural differential was 1.4824%, indicating a moderate tempo of urbanization. It increased again after counter urbanisation between 2007 and 2011.

Table 21 shows the projected urban and rural populations provided that the annual population growth rate between 1996 and 2016 remains constant to 2030 and 2050. Therefore, the projected degree of urbanisation will be 49.26% and the urban-rural ratio will be 0.97 in 2030. The projected degree of urbanisation will be 56.74% and the urban-rural ratio will be 1.311 in 2050. Therefore, Mpumalanga will be urbanized after 2030.

#### 4.8.2. Gini Concentration Index<sup>7</sup>

Mpumalanga had a consistently low Gini concentration index from 1996 to 2016. The Gini concentration index above 0.3 indicates a more even population distribution in the province. In 1996, the top 70.30% of the cumulative population was concentrated in the top 38.88% of the cumulative localities from 200 000 – 499 999, consisting of seven localities (3 B<sub>1</sub> and 4 B<sub>4</sub>). In 2001, the top 68.611% of the cumulative population was concentrated in the top 38.88% of the cumulative localities consisting of the same seven localities (3 B<sub>1</sub> and 4 B<sub>4</sub>). The 1.689% decrease of the cumulative population came about as a result of a decrease of the population in Bushbuckridge (B<sub>4</sub>) and moving from a 500 000 – 999 999 to a 200 000 – 499 999 size locality. Therefore, the top 38.88% of the cumulative localities contained less of the total population, leading to a 0.0444 decrease of the Gini concentration index in 2001 and a more even population distribution in Mpumalanga. This was the lowest Gini concentration in Mpumalanga during any year and it was the third-lowest Gini concentration in the country.

During 2001 to 2007 the Gini concentration index increased by 0.0613. This was the highest increase during any period and coincided with the biggest increase in the degree of urbanisation and

urban-rural ratio. In 2007, 71.55% of the cumulative population was concentrated in the top 38.88% of cumulative localities from 200 000 – 499 999 and above consisting of seven localities (three B<sub>1</sub> and four B<sub>4</sub>). The cumulative population increased by 2.94% from 2001. The increase was due to high population growth rates in Emalahleni (B<sub>1</sub>) and Mbombela (B<sub>1</sub>). Furthermore, both Mbombela (B<sub>1</sub>) and Bushbuckridge (B<sub>4</sub>) elevated to the category of localities size 500 000 – 999 999, making them the only two of the size in the province. Therefore, a higher percentage of the population was concentrated in the top 38.88% of the localities leading to an increase in the Gini concentration index and a slightly more even distribution in the province in 2007. This was the highest Gini concentration index in Mpumalanga between 1996 and 2016 and was the fourth-lowest Gini concentration in the country in 2007.

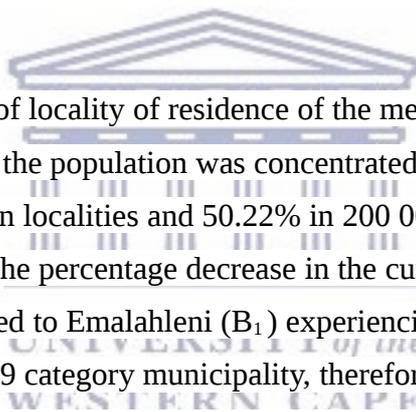
In 2011, the Gini concentration index declined by 0.0292. In 2011, 74.33% of the cumulative population was concentrated in the top 44.44% of the cumulative localities from 200 000 – 499 999 and above. The percentage of cumulative localities from 200 000 – 499 999 and above increased by 5.56% as a result of Steve Tshwete elevating from 100 000 – 199 999 to a 200 000 – 499 999 category locality. Furthermore, the two biggest localities, Mbombela (B<sub>1</sub>) and Bushbuckridge (B<sub>4</sub>), constituted of the top 11.11% of cumulative localities and 28.48% of the cumulative population. In 2011, the cumulative population declined by 0.509%. Therefore, the Gini concentration declined as a lesser percentage of the population was concentrated in the top 11.11% of the localities.

In 2016, the Gini concentration index decreased slightly by 0.0042. In 2011, 89.75% of the cumulative population was concentrated in the top 66.66% of the cumulative localities from 100 000 – 199 999 and above consisting of twelve localities. In 2016, 92.29% of the cumulative population was concentrated in the top 72.22% of the cumulative localities from 100 000 – 199 999 and above consisting of thirteen localities. The percentage of cumulative localities from 100 000 – 199 999 and above increased by 5.56% as a result of Thaba Chweu (B<sub>3</sub>) growing from a 50 000 – 99 999 to a 100 000 – 199 999 category locality. Furthermore, the 27.97% of the cumulative population was concentrated in the top 11.11% of the cumulative localities consisting of two localities, namely Mbombela (B<sub>1</sub>) and Bushbuckridge (B<sub>4</sub>), and in 2016, 27.00% of the cumulative population was concentrated in the 11.11% of the cumulative localities consisting of the same two localities. The decline in the percentage is attributed to the low population growth rate in Bushbuckridge. Therefore, a bigger percentage of the population is concentrated in the smaller localities, hence the decline in the Gini concentration index.

#### 4.8.3. Size of Locality of Residence of the Median Inhabitant<sup>7</sup>

The size of locality of residence of the median inhabitant in Mpumalanga has been steadily increasing between 1996 and 2016. In 1996, 37.48% of the cumulative population was concentrated in localities of size 100 000 – 199 999 and below consisting of eleven localities and 68.88% of the cumulative population was concentrated in localities of size 200 000 – 299 999 and below consisting of sixteen of the nineteen localities.

Between 1996 and 2001, the size of locality of residence of the median inhabitant increased by 10999.956. In 2001, 31.36% of the cumulative population was in localities of size 100 000 – 199 999 and below consisting of eleven localities and 61.03% in 200 000 – 299 999 and below consisting of fifteen of nineteen localities. The change in the size of locality of residence of the median inhabitant is as a result of Nkomazi (B<sub>4</sub>) experiencing a 3.72% population growth rate and elevating from a 200 000 – 299 999 to a 300 000 – 399 999 locality, thereby decreasing the cumulative population in the 200 000 – 299 999 and below categories and increasing the size of locality of the median inhabitant.



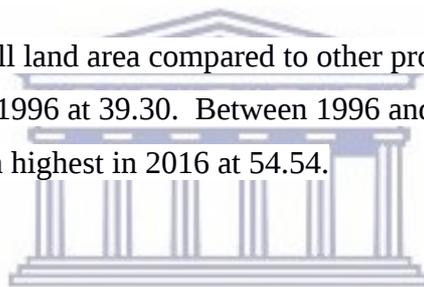
Between 2001 and 2007, the size of locality of residence of the median inhabitant increased by 36 166.4247. In 2007, 28.42% of the population was concentrated in localities of size 100 000 -199 999 and below consisting of eleven localities and 50.22% in 200 000 – 299 999 and below consisting of fourteen localities. The percentage decrease in the cumulative population in the 200 000 – 299 999 category is attributed to Emalahleni (B<sub>1</sub>) experiencing a 7.5% population growth rate and elevating to a 400 000-499 999 category municipality, therefore decreasing the cumulative population in the 200 000 – 299 999 and below category. This led to an increase in the size of locality of the median inhabitant as a higher cumulative percentage is concentrated in the 300 000 – 399 999 and above locality category.

In 2011 the size of locality of residence of the median inhabitant increased by 20 053.2918 and reached the 300 000+ mark for the first time. In 2011, 44.82% of the cumulative population was concentrated in localities of size 200 000 -299 999 and below consisting of thirteen localities and 72.02% in 300 000 – 399 999 and below consisting of sixteen localities. The increase is due to Mpumalanga experiencing a high total population growth rate population between 2007 and 2011. Thembisile (B<sub>4</sub>) had a population growth rate of 1.809% and elevated from a 200 000 – 299 999 to a 300 000 -399 999 category locality, therefore decreasing the cumulative population in the 200 000 – 299 999 and below. Furthermore, it was the first time the cumulative population in the localities 200 000 – 299 999 and below was below 50%.

In 2016, the size of locality of residence of the median inhabitant had its biggest increase of 61 315.3177 from 2011. In 2016, 37.48% of the cumulative population was concentrated in localities of size 200 000 – 299 999 and below consisting of twelve localities and 53.06% of the cumulative population in localities of size 300 000 – 399 999 and above consisting of fourteen localities. The cumulative population in the 200 000 – 299 999 and below category declined by 7.34% and the 300 000 – 399 999 and below category declined by 19.01%. During 2011 and 2016, every local municipality, with the exception of Dr JS Moroka (B<sub>4</sub>), experienced positive population growth rates, specifically the local municipalities at the top end of the locality size category. Govan Mbeki (B<sub>1</sub>), Emalahleni (B<sub>1</sub>), Mbombela (B<sub>1</sub>) and Nkomazi (B<sub>4</sub>) elevated to the next size locality category, therefore increasing the cumulative population in the top-level locality category and decreasing the cumulative population at the lower levels, leading to an increase in the size of locality of residence of the median inhabitant.

#### **4.8.4. Population Density<sup>7</sup>**

Mpumalanga has a relatively small land area compared to other provinces in the country. The lowest population density was in 1996 at 39.30. Between 1996 and 2016, the population density increased by 15.24 and reached its highest in 2016 at 54.54.



#### **4.8.5. Primacy Index<sup>7</sup>**

The primacy index in Mpumalanga was calculated with Mbombela as the biggest city, followed by the Emalahleni, Govan Mbeki and Steve Tshwete. The primacy index in 1996 was 43.30, indicating that Mbombela is not a primacy city in Mpumalanga. Between 1996 and 2001, the primacy index increased slightly to 42.66 as a result of Mbombela growing faster than the rest of the secondary cities during this period.

In 2007, the primacy index declined to 42.81 as a result of Emalahleni recording a higher population growth rate than Mbombela between 2001 and 2007. Between 2007 and 2011, the primacy index declined to 39.02 for the second consecutive period as a result of the high population growth rate in Steve Tshwete. In 2016, the primacy index further declined and reached its lowest at 36.67. This was due to the high population growth rates in Emalahleni, Govan Mbeki and Steve Tshwete relative to Mbombela. Therefore, even though Mbombela is the core region in Mpumalanga, it is not a primate city, as other secondary cities in the provinces are experiencing similar population growth rates.

#### 4.8.6. Polarization Reversal<sup>7</sup>

Mpumalanga has no metropolitan municipalities. Mbombela is the core region in Mpumalanga. It has the highest population of 2007 and is recognised as the business and administrative centre in the province. Furthermore, Mbombela is one of four B<sub>1</sub> municipalities in the province. Therefore, Mbombela will be used as the core region and the remaining B<sub>1</sub> municipalities will be considered as the secondary cities (Govan Mbeki, Emalahleni and Steve Tshwete). Between the years 2001 and 2007, and 2011 and 2016 respectively, the other B<sub>1</sub> municipalities grew by 3.7285% and 1.9982% faster than Mbombela respectively, indicating that polarization reversal occurred during this time. Between the years 1996 and 2001, and 2007 and 2011, Mbombela grew 0.3105% and 1.8495 faster than other B<sub>1</sub> municipalities respectively, meaning there was no polarization reversal during this period. In the twenty-year period, the other B<sub>1</sub> municipalities grew 0.6887% faster than Mbombela, indicating polarization reversal has taken place in Mpumalanga.



#### 4.9. North West

North West is bordered by Gauteng, the Free State and the country of Botswana. North West is the sixth-largest country in South Africa with a land area of 104 882km<sup>2</sup> and constitutes 8.4% of the land area in South Africa (Statistics South Africa, 2012). Mahikeng is North West's capital but Rustenburg (B<sub>3</sub>) is the main city in the province. The North West contributes approximately 7% towards the national GDP. The provincial economy is dominated by mining and quarrying. The number of agricultural households made up 7.4% and 7.2% of the total agricultural households in South Africa in 2011 and 2016 respectively (Statistics South Africa,2016).

North West has the third-smallest population in South Africa. It has nineteen local municipalities consisting of: no metropolitan municipalities, four B<sub>1</sub>, one B<sub>2</sub>, nine B<sub>3</sub> and five B<sub>4</sub> municipalities. The majority of the population resides in the B<sub>1</sub> municipalities. Mafikeng (a B<sub>2</sub> municipality) is the capital of the province even though it has a smaller population than the B<sub>1</sub> municipalities of Madibeng, Rustenburg and the City of Matlosana in term of population size. Moreover, Mafikeng was the only B<sub>2</sub> municipality between 1996-2007 and 2011-2016. In 2007, Merafong City (B<sub>2</sub> municipality) which shares a border between the North West and Gauteng, formed part of North West in 2007. Therefore, in 2007 the population in B<sub>2</sub> municipalities almost doubled. The urban and rural population was ranked fifth in the country.

**Table 23. Population in Municipal Categories**

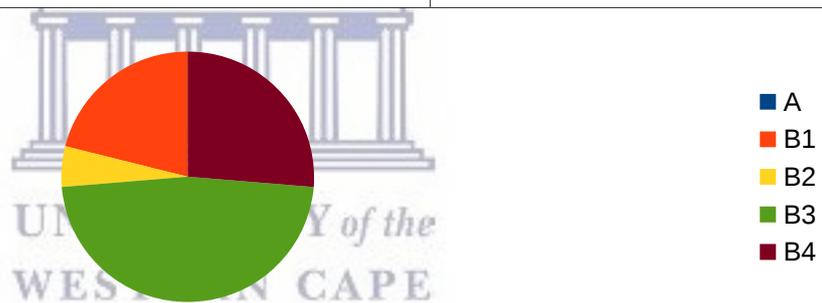
	1996	2001	2007	2011	2016
<b>Total Population</b>	2 727 226	2 984 098	3 271 948	3 509 953	3 748 436
<b>A</b>	0	0	0	0	0
<b>B<sub>1</sub></b>	1 090 920	1 221 326	1 331 106	1 588 394	1 760 924
<b>B<sub>2</sub></b>	242 146	259 478	506 094	291 527	314 394
<b>B<sub>3</sub></b>	610 533	708 914	706 041	809 762	862 932
<b>B<sub>4</sub></b>	783 627	793 476	728 707	820 271	810 187

**Table 24. Urban and Rural Population by Municipal Categories (including projected populations)**

	1996	2001	2007	2011	2016	2030	2050
<b>Urban (A+B<sub>1</sub>+B<sub>2</sub>)</b>	1 333 066	1 480 804	1 837 200	1 879 921	2 075 318	2 829 110	4 404 392
<b>Rural (B<sub>3</sub>+B<sub>4</sub>)</b>	1 394 160	1 502 390	1 434 748	1 630 033	1 673 119	1 903 083	2 287 490

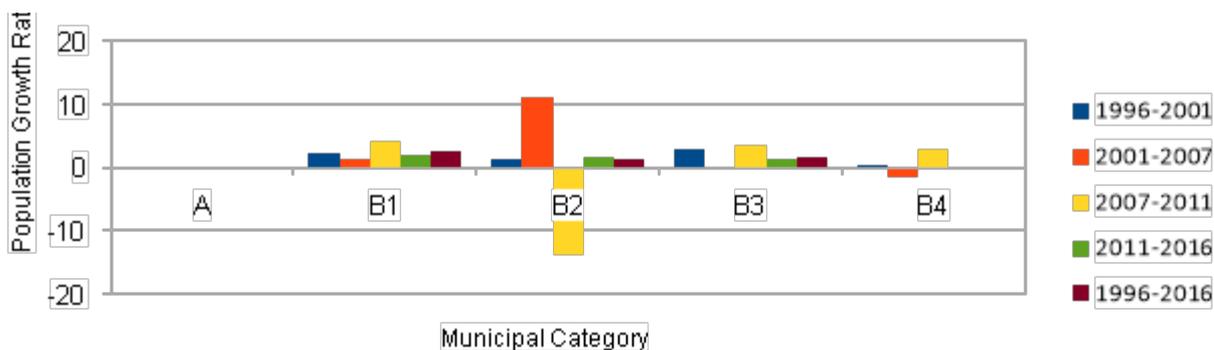
**Table 25. Percentage Distribution of Municipal Categories**

Municipal Category	Number of Local Municipalities	Percentage
A	0	0
B <sub>1</sub>	4	21.052
B <sub>2</sub>	1	5.263
B <sub>3</sub>	9	47.368
B <sub>4</sub>	5	26.315



**Figure 15: Percentage Distribution of Municipal Categories**

The majority of the population is concentrated in B<sub>1</sub> municipalities. The urban municipalities constitute 26.315% of the municipal categories. The rural municipalities constitute 73.683%, with the B<sub>3</sub> having the highest percentage of any other municipalities.



**Figure 16: Population Growth Rate per Municipal Category<sup>8</sup>**

#### 4.9.1 Degree of Urbanisation and Urban-Rural Ratio<sup>8</sup>

In 1996, the urban-rural ratio and degree of urbanisation was at its lowest. Between 1996 and 2001, the degree of urbanisation increased by only 0.75% and the urban-rural ratio increased slightly by 0.0295. The urban population growth rate was the highest of the period at 2.1021%, with the B<sub>1</sub> municipalities having the highest growth rate of the urban municipalities. The rural population had a moderate population growth rate, with the B<sub>3</sub> municipalities recording the highest rural municipalities population growth rate. Furthermore, it was the highest municipal growth rate of the period. The urban-rural differential was 0.6068%, indicating a slow tempo of urbanisation during this period, hence the moderate increase in both urban-rural ratio and degree of urbanisation. In 2001, this was the fifth-highest degree of urbanisation and the fourth -largest urban-rural ratio in the country.

Between 2001 and 2007, the degree of urbanisation and the urban-rural ratio experienced its biggest increase. The degree of urbanisation increased by 7.28% and the urban-rural ratio increased by 0.2949. The urban population recorded the highest population growth rate for the second consecutive period. Furthermore, it was the highest population growth rate recorded for any period between 1996 and 2016. The B<sub>2</sub> municipalities recorded a population growth rate of 11.1341%. The substantial increase of the urban population is as a result of the B<sub>2</sub> municipality Merafong City being part of North West in 2007. The rural population recorded a negative population growth rate and its lowest growth rate of any period. Both B<sub>3</sub> and B<sub>4</sub> experienced negative population growth rates. The urban and rural differential was 4.3621%, a significant increase of 3.7553% from 1996 to 2001. This was the highest urban-rural differential and fastest tempo of urbanisation of any period. Hence, the significant increase of the urban-rural ratio and the degree of urbanisation in the North West, which rose to the fourth-highest degree of urbanisation and remained the fourth -highest urban-rural ratio.

<sup>8</sup> See Appendix 8

Between 2007 and 2011, both declined. The rural population experienced the highest growth rate at 3.1902%, an increase of 3.958% from 2001 to 2007. This was the highest degree of urbanisation and urban-rural ratio recorded in North West between 1996 and 2016. Furthermore, the rural population growth rate exceeded the urban for the first time in this period. The urban population experienced its lowest population growth rate of any period between 1996 and 2016. Even though the B<sub>1</sub> municipalities had a high population growth, the B<sub>2</sub> municipalities recorded a population growth rate of -13.789% as a result of Merafong City being absorbed by Gauteng in 2011. The urban-rural differential was -2.6156%, an indication of counter urbanisation during this period. The counter urbanisation that occurred during this period must be put into context. Although the rural population experienced substantial growth, the reason the urban population growth rate was low was due to the absence of Merafong City during this time. In 2011, North West had the fifth-highest degree of urbanisation and, again, the fourth-highest urban-rural ratio in the country.

During the period from 2011 to 2016, both the urban-rural ratio and the degree of urbanisation increased moderately. The degree of urbanisation increased by 1.8058% and the urban-rural ratio by 0.087. The urban population growth rate was the highest during this period. The B<sub>1</sub> municipalities and the B<sub>4</sub> municipalities recorded the lowest population growth rate among the municipal categories. The urban-rural differential was 1.4559%, indicating a steady increase of the speed of urbanisation, which led to a moderate increase in both the urban-rural ratio and the degree of urbanisation. In 2016, the degree of urbanisation was ranked fifth-highest and the urban-rural ratio stayed fourth-highest in the country.

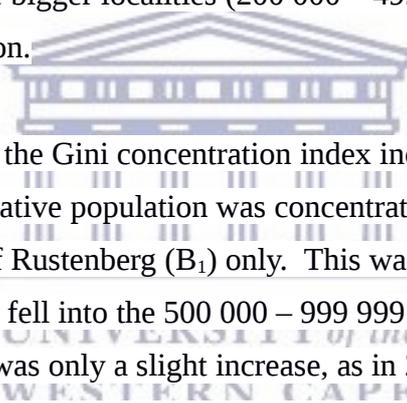
Table 24 shows the projected urban and rural populations provided that the annual population growth rate between 1996 and 2016 remains constant to 2030 and 2050. Therefore, the projected degree of urbanisation will be 59.78% and the urban-rural ratio will be 1.486 in 2030. The projected degree of urbanisation will be 65.81% and the urban-rural ratio will be 1.925 in 2050. Therefore, Mpumalanga will be urbanized after 2030.

#### **4.9.2. Gini Concentration Index<sup>8</sup>**

North West has the lowest Gini concentration index in South Africa. Between 1996 and 2001, the Gini concentration declined by 0.0108. In 1996, 79.96% of the cumulative population was concentrated in the top 52.63% of the locality category. In 2001, it increased and 90% of the cumulative population was concentrated in the top 68.42% of the cumulative localities. This increase occurred as Ratlou (B<sub>4</sub>), Tswaing (B<sub>3</sub>) and Kagisano (B<sub>4</sub>) elevated from 50 000 – 99 999 to

100 000 – 199 999 category localities. Therefore, a higher percentage of the population was concentrated in the smaller localities and this closed the gap in terms of population size between the bigger and smaller localities, resulting in a decline in the Gini concentration.

Between 2001 and 2007, the Gini concentration index increased by 0.0178. In 2001, 90% of the cumulative population was concentrated in the top 68% of the cumulative localities, consisting of thirteen localities. In 2007, it declined and 83% of the cumulative population was concentrated in the top 55% of the cumulative localities, consisting of eleven localities. The decline in the number of localities of category 100 000 – 199 999 resulted from a negative rural growth rate between 2001 and 2007, with Ratlou (B<sub>4</sub>), Tswaing (B<sub>3</sub>) and Kagisano (B<sub>4</sub>) dropping to the 50 000 – 99 999 category localities. The number of localities in the 200 000 - 499 999 category increased as a result of Ditsobotla (B<sub>3</sub>) experiencing a 5.075% population growth rate between 2001 and 2007, therefore elevating to 200 000 – 499 999 from a 100 000 – 199 999 size locality. Merafong City added to the cumulative population of the 200 000 – 499 999 category. Therefore, a higher percentage of the population was concentrated in the bigger localities (200 000 – 499 999 and above), resulting in a more uneven population distribution.



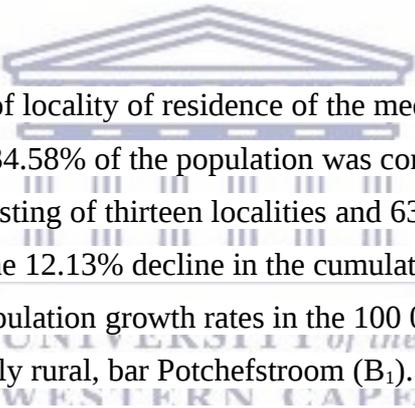
Between the years 2007 and 2011, the Gini concentration index increased slightly by 0.0053. In 2011, the top 15.65% of the cumulative population was concentrated in the top 5.26% of the cumulative localities, consisting of Rustenberg (B<sub>1</sub>) only. This was the first time that North West contained a local municipality that fell into the 500 000 – 999 999 category. Hence, the Gini concentration index increased. It was only a slight increase, as in 2007 Rustenberg constituted only 13.74% of the total population and in 2011 it constituted only 15.65%. The 1.91% increase led to the slight increase in the Gini concentration index.

Between 2011 and 2016, the Gini concentration index increased by 0.0176. In 2011, 15.65% of the cumulative population was concentrated in the top 5.26% of the cumulative localities consisting of Rustenberg (B<sub>1</sub>) only. In 2016, 31.05% of the cumulative population was concentrated in the top 10.52% of the cumulative localities, consisting of Rustenberg and Madibeng (B<sub>1</sub>) as Madibeng grew and joined Rustenberg as the only two 500 000 – 999 999 category localities in the province. Therefore, a higher percentage of the population was concentrated in the top two biggest localities in the province, resulting in a more unequal population distribution.

### 4.9.3 Size of Locality of Residence of the Median Inhabitant<sup>8</sup>

The size of locality of residence of the median inhabitant has been steadily increasing between 1996 and 2016, with a slight drop in 2007. In 1996, 47.27% of the cumulative population was concentrated in localities of size 100 000 – 199 999 and below, consisting of fourteen of the nineteen localities (one B<sub>1</sub>, nine B<sub>3</sub> and four B<sub>4</sub>) and 64.57% in 200 000 – 299 999 and below, consisting of sixteen of the nineteen localities.

During 1996 and 2001 the size of locality of residence of the median inhabitant increased very slightly by 4099.51. In 2001, 46.69% of the cumulative population was in localities of size 100 000 -199 999 and below, consisting of fourteen localities and 63.39% in 200 000 – 299 999 and below, consisting of sixteen localities. The % decrease in the cumulative population in the 200 000 – 299 999 and 100 000 – 199 999 size locality is attributed to the high population growth rate in Rustenburg (B<sub>1</sub>), leading to an increase in the cumulative population percentage in the 300 000 – 399 999 size locality and above. Rustenburg experienced a 4.3% growth rate between 1996 and 2001.



Between 2001 and 2007, the size of locality of residence of the median inhabitant had its biggest increase of 34 168.490. In 2007, 34.58% of the population was concentrated in localities of size 100 000 -199 999 and below consisting of thirteen localities and 63.11% in 200 000 – 299 999, consisting of sixteen localities. The 12.13% decline in the cumulative population in the 100 000 – 199 999 category is due to low population growth rates in the 100 000 – 199 999 category localities and below, which are predominantly rural, bar Potchefstroom (B<sub>1</sub>). Furthermore, Ditsobotla (B<sub>3</sub>) elevated to a 200 000 – 299 999 category locality from 100 000 – 199 999. It is also noted that Merafong City forms part of the North West 2007, adding to the cumulative population in the 200 000 -299 999 and above categories.

In 2011, the size of locality of residence of the median inhabitant decreased by 15 677.805. In 2011, 44.16% of the cumulative population was concentrated in localities of size 100 000 -199 999 and below consisting of fourteen localities and 59.38% in 200 000 – 299 999, consisting of sixteen localities. This was attributed to Merafong City not being part of North West in 2011. Therefore, the cumulative population in the 100 000 – 199 999 and below categories constituted more of the population than it did in 2007.

In 2016, the size of locality of residence of the median inhabitant increased by 68 542.42661. This was the biggest increase between any period. In 2016, 49.12% of the cumulative population was

concentrated in localities of size 200 000 – 299 999 and below, while 57.81% of the population was concentrated in localities of size 300 000 – 399 999 and above. This change came about as a result of overall population growth rates, specifically the population growth in Mafikeng (B<sub>2</sub>) and Rustenberg (B<sub>1</sub>). Mafikeng elevated from a 200 000 – 299 999 size locality in 2011 to a 300 000 – 399 999 size locality in 2016. As a result, the size of locality of residence of the median inhabitant reached 300 000+ for the first time.

#### **4.9.4. Population Density<sup>8</sup>**

North West is one of the smaller provinces in terms of land area. The lowest population density was in 1996 at 26.00 persons/km<sup>2</sup>. Between 1996 and 2016, the population density increased by 9.73 persons/km<sup>2</sup> and reached its highest in 2016 at 35.73 persons/km<sup>2</sup>.

#### **4.9.5. Primacy Index<sup>8</sup>**

The primacy index in North West was calculated with City of Matlosana as the biggest city, followed by Madibeng, Rustenburg and Tlokwe City Council between 1996 and 2001. Between 2001 and 2016, Rustenburg was the biggest city followed by City of Matlosana, Madibeng and Tlokwe City Council. The primacy index in 1996 was 30.64, indicating that the City of Matlosana is not a primacy city in North West. Between the years 1996 and 2001, the primacy index increased slightly to 31.67 as a result of Rustenburg growing faster than the rest of the secondary cities during this period. In 2007, the primacy index increased to 33.78 again as a result of Rustenburg recording a higher population growth rate than other secondary cities between 2001 and 2007. Between 2007 and 2011, the primacy index increased to 34.39 as a result of the high population growth rates in Rustenburg. Between 2011 and 2016, the primacy increased to 35.57 which was the highest primacy index for any period. The primacy index increased by 4.93 between 1996 and 2016. This was a steep increase and was mainly attributed to the high population growth rate in Rustenburg.

#### **4.8.6. Polarization Reversal<sup>8</sup>**

North West has no metropolitan municipalities; therefore, polarization reversal will be explored by comparing the population growth rates of B<sub>1</sub> and B<sub>2</sub> municipalities. As was previously mentioned, North West has four B<sub>1</sub> and one B<sub>2</sub> municipalities. The four B<sub>1</sub> municipalities are: Madibeng, Rustenburg, Tlokwe City Council and the City of Matlosana. Mafikeng was the only B<sub>2</sub> municipality, but in 2007, Merafong (B<sub>2</sub>) City was added to North West. The only period during which the population growth rate in B<sub>2</sub> municipalities exceeded the B<sub>1</sub> municipalities was during the period from 2001 to 2007. The substantial difference in the population growth rates was due to Merafong City being part of North West during 2007. During the other period, the population

growth rates of the  $B_1$  municipalities always exceeded those of the  $B_2$  municipalities. Between 1996 and 2016, the population growth rate differential was only 0.2845%. Therefore, polarization reversal has not occurred in the North West.



#### 4.10. Limpopo

Limpopo is bordered by Mpumalanga, Gauteng, North West and by the countries of Mozambique, Botswana and Zimbabwe. Limpopo has a land area of 125 754km<sup>2</sup>, making it the fifth largest in the country. It constitutes 10.3% of the land area in South Africa. In 1996, Limpopo contributed only 5.6% towards the national GDP. In 2016, it rose to 7.1% as a result of the mining boom between 2003 and 2011. The number of agriculture households in Limpopo as a percentage of the country was 16.3% and 16.6% in 2011 and 2016 respectively.

Limpopo is the fourth-largest province in South Africa. It has twenty-five local municipalities, consisting of one B<sub>1</sub>, one B<sub>2</sub>, seven B<sub>3</sub> and sixteen B<sub>4</sub> municipalities and no metropolitan municipalities. The majority of the population resides in B<sub>4</sub> municipalities. The B<sub>4</sub> municipalities consisted of 75.98%, 74.10%, 74.34%, 71.74% and 70.49% in 1996, 2001, 2007, 2011 and 2016 respectively. Limpopo has the highest concentration of population living in B<sub>4</sub> municipalities and the second-largest rural population in the country. Polokwane is its capital and is the only B<sub>1</sub> municipality in the province. Thulamela (B<sub>4</sub>) was the largest municipality from 1996 to 2007. Thulamela was replaced by Polokwane in 2011 as the largest municipality in the province. It also has the second-smallest urban population, after the Northern Cape.

**Table 26. Population in Municipal Categories**

	1996	2001	2007	2011	2016
<b>Total Population</b>	4 576 566	4 995 534	5 238 286	5 404 868	5 799 090
<b>A</b>	0	0	0	0	0
<b>B<sub>1</sub></b>	424 835	508 277	561 772	628 999	702 190
<b>B<sub>2</sub></b>	282 534	298 439	330 649	307 682	328 905
<b>B<sub>3</sub></b>	391 675	486 116	449 947	590 650	680 251
<b>B<sub>4</sub></b>	3 477 519	3 701 705	3 894 920	3 877 537	4 087 746

**Table 27. Urban and Rural Population by Municipal Categories (including projected populations)**

	1996	2001	2007	2011	2016	2030	2050
<b>Urban (A+B<sub>1</sub>+ B<sub>2</sub>)</b>	707369	806 716	892 421	936 681	1 031 095	1 342 314	1 956 613
<b>Rural (B<sub>3</sub>+ B<sub>4</sub>)</b>	3 869 194	4 187 821	4 344 867	4 468 187	4 767 997	5 518 699	6 800 677

**Table 28. Percentage distribution of municipal categories**

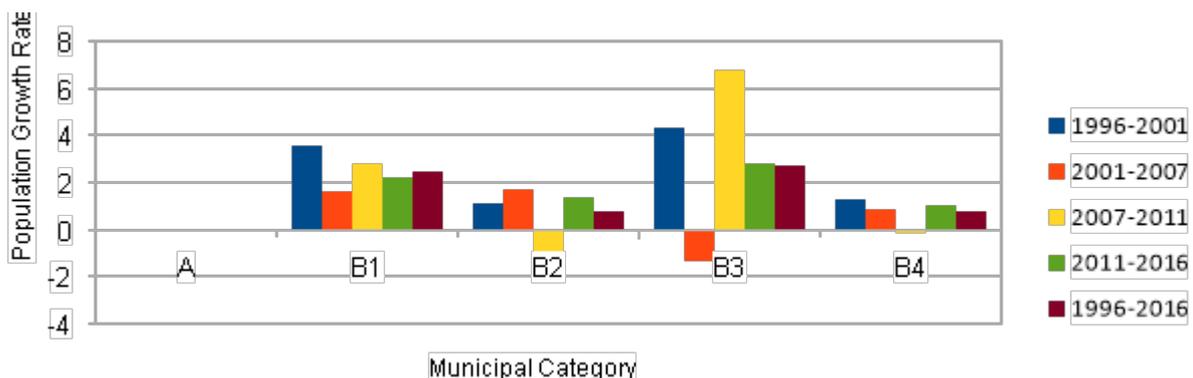
Municipal Category	Number of Local Municipalities	Percentage
A	0	0
B <sub>1</sub>	1	4
B <sub>2</sub>	1	4
B <sub>3</sub>	7	28
B <sub>4</sub>	16	64



**Figure 17: Percentage Distribution of Municipal Categories**

The pie chart above shows the dominance of the number of B<sub>4</sub> municipalities in Limpopo, which constitutes 64% of all municipalities in the province. The rural municipalities constitute 92% of the total municipalities. The two urban municipalities cumulatively constitute only 8% of the total municipalities.

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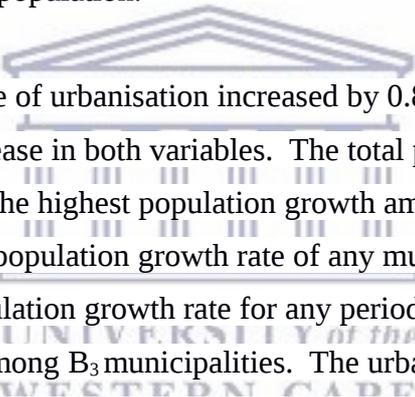


**Figure 18: Population Growth Rate per Municipal Category<sup>9</sup>**

<sup>9</sup> See Appendix 9

#### 4.10.1. Degree of Urbanisation and Urban-Rural Ratio<sup>9</sup>

Limpopo has the lowest degree of urbanisation and urban-rural ratio in the country. The lowest degree of urbanisation was in 1996 at 15.4563%. Between 1996 and 2001, the degree of urbanisation increased by only 0.6924% and the urban-rural ratio increased by 0.0098. These are very small increases. The total urban and rural populations recorded their highest population growth rates of any period. Polokwane (the only B<sub>1</sub> municipality) had the highest population growth rate among the urban municipalities at 3.5865%. Furthermore, this was its highest population growth rate of any period between 1996 and 2016. The rural population also recorded its highest population growth rate during this period at 1.5827%. The B<sub>3</sub> municipalities recorded the highest growth rate among the rural municipalities at 4.3202%. This was the highest population growth rate of any municipal category during this period. The urban-rural differential was 1.0457%, indicating a moderate tempo of urbanisation. The slight increase in both the degree of urbanisation and the urban-rural ratio was due to the largest absolute population of the rural population compared to the urban population.



Between 2001 and 2007 the degree of urbanisation increased by 0.8873% and the urban-rural ratio 0.0127. This was the biggest increase in both variables. The total population growth rate was less than 1%. Mogalakwena (B<sub>2</sub>) had the highest population growth among the urban municipalities. Furthermore, this was the highest population growth rate of any municipal category. The rural population recorded its lowest population growth rate for any period. This was attributed to the negative population growth rate among B<sub>3</sub> municipalities. The urban-rural differential was 1.0692%, indicating a moderate tempo of urbanisation. The increase in the degree of urbanisation and urban-rural ratio was more down to a low rural population growth rate than the urban population.

Between 2007 and 2011, the degree of urbanisation experienced another faint increase. The degree of urbanisation increased by 0.2943% and the urban-rural ratio by 0.0043. The total population growth was the lowest for any period. For the third consecutive period, the urban population growth rate was higher than the rural population, even though the urban population recorded its lowest growth rate for any period. The low urban population growth rate is attributed to Mogalakwena (B<sub>2</sub>) recording a negative population growth rate. The B<sub>3</sub> municipalities had the highest growth rate of any municipal category at 6.8023% but the B<sub>4</sub> municipalities recorded a negative population growth rate, resulting in a low rural population growth rate. The urban-rural

differential was 0.5105%, indicating a slow tempo of urbanisation and this was the lowest for any period.

Between 2011 and 2016, the degree of urbanisation increased by 0.45% and the urban-rural ratio by 0.0066. The urban population had a higher growth rate than the rural population for the fourth consecutive period. Polokwane (B<sub>1</sub>) recorded the highest urban municipality growth rate. The rural population growth rate was above 1% for the time since 1996 to 2001. The B<sub>3</sub> municipalities recorded the highest population growth rate among the rural municipalities. The urban-rural differential was 0.6219%, indicating a slow tempo of urbanisation.

Table 27 shows the projected urban and rural populations provided that the annual population growth rate between 1996 to 2016 remains constant to 2030 and 2050. Therefore, the projected degree of urbanisation will be 19.56% and the urban-rural ratio will be 0.243 in 2030. The projected degree of urbanisation will be 22.34% and the urban-rural ratio will be 0.2876 in 2050.

Therefore, Mpumalanga will be urbanized after 2030.

#### 4.10.2. Gini Concentration Index<sup>9</sup>

The Gini concentration index above 0.3 indicates a fairly even population distribution in province. In 1996, 11.66% of the cumulative population was concentrated in the top 4% locality category. Thulamela (B<sub>4</sub>) was the only municipality in the 500 000 – 999 999 category. In 2001, 21.18% of the cumulative population was concentrated in 8% of the cumulative localities. Between 1996 and 2001, Polokwane(B<sub>1</sub>) elevated from a 200 000 – 499 999 to a 500 000 – 999 999 size locality. Therefore, there was a slight increase in the Gini concentration index in 2001 as more of the population concentration was concentrated in the two larger localities, thereby creating a gap between them and the smaller localities.

Between 2001 and 2007, the Gini concentration index increased by only 0.007. In 2001, 87.50% of the cumulative population was concentrated in 64% of the cumulative localities from 100 000 – 199 999 and above, consisting of sixteen of twenty-five localities. In 2007, 91.99% of the cumulative population was concentrated in 72% of the cumulative localities from 100 000 – 199 999 and above, consisting of eighteen out of twenty-five localities. The increase in both the localities and population percentage is attributed to the two B<sub>4</sub> municipalities of Fetakgomo and Mutale growing from 50 000 – 99 999 to 100 000- 199 999 category municipalities. Therefore, more of the

population is concentrated in the bigger localities, resulting in a more unequal population distribution.

In 2011, the Gini concentration reached its highest at 0.3785, a 0058 increase from 2007. Furthermore, this was its highest increase for any period. In 2007, 22.23% of the cumulative population was concentrated in 8% of the cumulative localities from 500 000 – 999 999 and above, with Thulamela (B<sub>4</sub>) and Polokwane (B<sub>1</sub>) the only municipalities within the 500 000 – 999 999 category. In 2007, 32.80% of the cumulative population was concentrated in 12% of the cumulative localities from 500 000 – 999 999 and above. The increase in percentage in both the localities and population is due to Makhado (B<sub>4</sub>), elevating to a 500 000 – 999 999 locality category. Therefore, the 500 000 – 999 999 locality category contains three municipalities making up 12% of the entire population. The Gini concentration increased slightly in 2011 because a larger percentage of the population was concentrated in the three biggest localities, thereby creating a gap between them and the smaller localities.

Between 2011 and 2016, the Gini concentration index declined slightly by 0.0009. In 2011, 99.34% of the cumulative population was concentrated in 96% of the cumulative localities from 50 000 – 99 999 and above, consisting of twenty-four out of the twenty-five localities. In 2016, 99.36% of the cumulative population was concentrated in 96% of the cumulative localities from 50 000 – 99 999 and above, consisting of twenty-four out of the twenty-five localities. The 0.02% increase in the cumulative population resulted in a decline in the Gini concentration index as more of the population was concentrated in 96% of the localities.

#### **4.10.3. Size of Locality of Residence of the Median Inhabitant<sup>9</sup>**

The size of locality of residence of the median inhabitant has been steadily increasing between 1996 and 2016. In 1996, 25.36% of the cumulative population was concentrated in localities of size 100 000 – 199 999 and below and 61.61% in 200 000 – 299 999 and below.

Between 1996 and 2001, the size of locality of residence of the median inhabitant increased very slightly by 1125.8003. It increased in 2001 to 25.94% in the 100 000 -199 999 and below size category and decreased slightly to 60.76% in the 200 000 – 299 999 and below size category. The 0.86% decrease in the 200 000 – 299 999 size category is attributed to the high population growth rate in Polokwane, leading to an increase in the cumulative population in the 300 000 – 399 999 and above size category.

Between 2001 and 2007, the size of locality of residence of the median inhabitant had its biggest increase of 34 893.5922. In 2007, 49.22% of the population was concentrated in localities of size 200 000 -299 999 and below and 68.76% in size 300 000 – 399 999. Both increases in each category were as a result of Mogalakwena (B<sub>2</sub>) and Greater Tubatse (B<sub>4</sub>) growing from 200 000 - 299 999 size localities to 300 000 – 399 999 size localities.

Between 2007 and 2011, the size of locality of residence of the median inhabitant increased by 5213.2092. In 2011, 48.24% of the population was concentrated in localities of size 200 000 – 299 999 and below and 67.36% in size 300 000 – 399 999 and below. The increase is a result of Polokwane (B<sub>1</sub>) elevating from a 500 000- 599 999 size locality in 2007 to a 600 000 – 699 999 size locality in 2011 and, in the process, overtaking Thulamela (B<sub>4</sub>) to become the largest local municipality in Limpopo.

In 2016, the size of locality of residence of the median inhabitant reached its highest at 319 742.1787. It increased by 10 590.459 from 2011. All municipal categories experienced high population growth rates during this period. This slight increase is a result of Polokwane (B<sub>1</sub>) elevating to a 700 000 – 799 999 size locality.

#### **4.10.4. Population Density<sup>9</sup>**

Limpopo is one of the bigger provinces in terms of land area in the country. It is ranked fourth-highest overall. The lowest population density was in 1996 at 36.39 persons/km<sup>2</sup>. Between 1996 and 2016, the population density increased by 9.62 persons/km<sup>2</sup> and reached its highest in 2016 at 46.11persons/km<sup>2</sup>.

#### **4.10.5. Primacy Index<sup>9</sup>**

Polokwane is the only city in Limpopo and therefore it is the primate city of the province.

#### **4.10.6. Polarization Reversal<sup>9</sup>**

Polokwane is recognised as the core region in Limpopo. Polokwane is the only B<sub>1</sub> municipality in Limpopo and it has no metropolitan municipalities. A small town called Mogalakwena is the only B<sub>2</sub> municipality in the province. Calculating and comparing the growth rates of Polokwane and Mogalakwena will give an indication as to whether polarization reversal has occurred. The 2001 to 2007 period was the only time Mogalakwena grew at a faster rate than Polokwane. Overall, Polokwane is growing substantially faster than Mogalakwena. Therefore, polarization reversal has not occurred from 1996 to 2016. It must be noted that the onset of polarization reversal starts with a

highly developed metropolitan region. Polokwane is in its infant stages of development and has not yet evolved into a highly functioning metropolitan municipality. Therefore, it is premature to investigate if polarization reversal has occurred during this period.



#### 4.11. South Africa

South Africa has a land area of 1 220 000 km<sup>2</sup>. In South Africa, a majority of the population resides in metropolitan municipalities, followed by B<sub>4</sub> municipalities. The population metropolitan municipalities made up 31.38%, 32.74%, 34.99%, 39.35% and 39.71% of the total population in 1996, 2001, 2007, 2011 and 2016 respectively. The population in B<sub>4</sub> municipalities made up 29.56%, 28.11%, 26.76%, 24.65% and 23.95% of the total population in 1996, 2001, 2007, 2011 and 2016 respectively. Between 1996 and 2007, South Africa had 237 local municipalities consisting of six A, twenty-one B<sub>1</sub>, twenty-nine B<sub>2</sub>, one-hundred and ten B<sub>3</sub> and seventy-one B<sub>4</sub> municipalities.

During the period between 2011 and 2016, South Africa had 234 local municipalities, consisting of eight A, nineteen B<sub>1</sub>, twenty-seven B<sub>2</sub>, one-hundred and nine B<sub>3</sub> and seventy-one B<sub>4</sub> municipalities. The three local municipalities excluded are Molopo, Nokeng tsa Taemane and Kungwini. Both Nokeng tsa Taemane and Kungwini (both B<sub>2</sub> municipalities) were absorbed by the City of Tshwane in 2011. Molopo (a B<sub>3</sub> municipality) merged with Kagisano (a B<sub>4</sub> municipality) in 2011 and formed a B<sub>4</sub> municipality in North West province.

In 2011 and 2016 the number of metropolitan municipalities rose to eight with the addition of Manguang and Buffalo City being upgraded from B<sub>1</sub> municipalities to metropolitan municipalities. A large percentage of B<sub>4</sub> municipalities are situated in the provinces of the Eastern Cape, Limpopo, Mpumalanga and KwaZulu-Natal. The provinces with no metropolitan municipalities are the Northern Cape, North West, Mpumalanga, Limpopo and, from 1996 to 2007; the Free State. Gauteng province has the most metropolitan municipalities at a total of three. The Eastern Cape follows with a total of two.

**Table 29. Population in Municipal Categories**

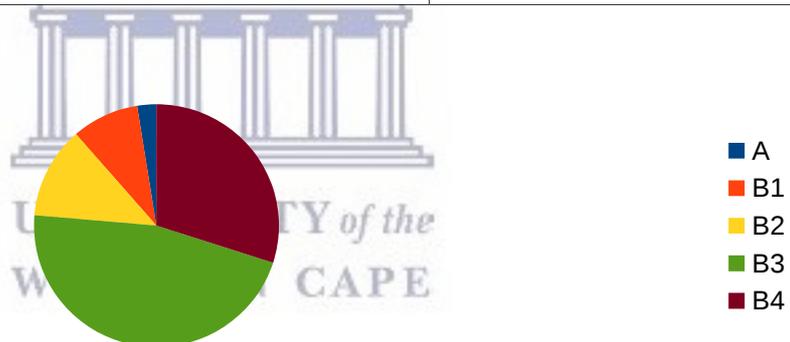
	1996	2001	2007	2011	2016
<b>Total Population</b>	40 583 573	44 819 778	48 502 063	51 770 560	55 653 654
<b>A</b>	12 737 900	14 674 319	16 974 430	20 371 918	22 103 579
<b>B<sub>1</sub></b>	6 737 313	7 376 282	8 233 208	7 381 507	8 062 156
<b>B<sub>2</sub></b>	3 346 685	3 840 328	4 086 147	4 167 134	4 500 876
<b>B<sub>3</sub></b>	5 761 620	6 244 889	6 158 267	7 088 236	7 653 733
<b>B<sub>4</sub></b>	12 000 430	12 601 807	12 979 432	12 762 069	13 333 324

**Table 30. Urban and Rural Population by Municipal Categories (including projected populations)**

	1996	2001	2007	2011	2016	2030	2050
<b>Urban (A+B<sub>1</sub>+ B<sub>2</sub>)</b>	22 821 898	25 890 929	29 293 785	31 920 559	34 666 611	46 451 325	70 558 701
<b>Rural (B<sub>3</sub>+ B<sub>4</sub>)</b>	17 762 050	18 846 696	19 137 699	19 850 305	20 987 057	23 586 957	27 869 528

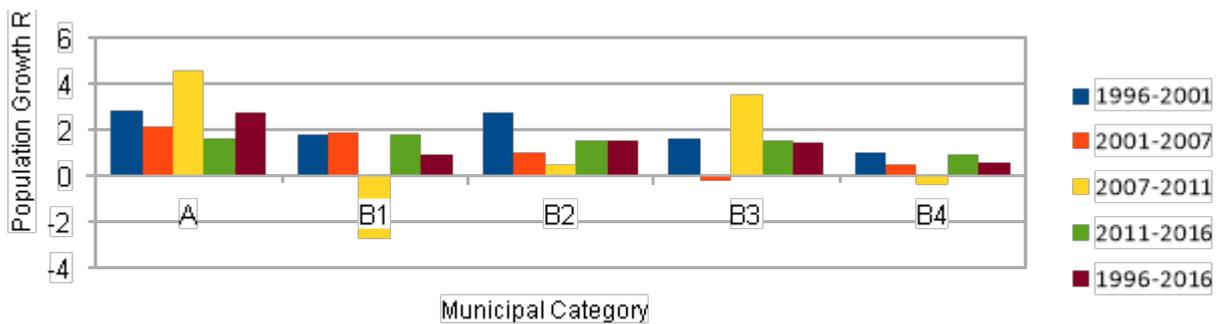
**Table 31. Percentage Distribution of Municipal Categories in South Africa (2011 and 2016)**

Municipal Category	Number of Local Municipalities	Percentage
<b>A</b>	6	3.4188
<b>B<sub>1</sub></b>	21	8.1191
<b>B<sub>2</sub></b>	29	11.5384
<b>B<sub>3</sub></b>	110	46.5811
<b>B<sub>4</sub></b>	71	30.3411



**Figure 19: Percentage Distribution of Municipal Categories**

Figure 19 (above) shows the dominance of the B<sub>3</sub> and B<sub>4</sub> municipalities. It also shows that even though the metropolitan municipalities contain the biggest population, they only constitute a small percentage of the local municipalities in the country.



**Figure 20: Population Growth Rate per Municipal Category<sup>10</sup>**

#### 4.11.1. Degree of Urbanization and Urban-Rural Ratio<sup>10</sup>

South Africa has a moderate degree of urbanisation. The lowest percentage was in 1996 at 56.2343%. The metropolitan municipalities constituted 55.81% of the urban population and 31.38% of the total population in the country in 1996. All categories experienced a positive growth rate during this period. The urban population growth rate exceeded the rural. Furthermore, this was the highest urban population growth rate between 1996 and 2016. Gauteng province contributed the highest urban population growth rate at 3.1641% and the highest metropolitan growth rate at 3.9045%. The metropolitan municipalities achieved their highest population growth rate among the urban category municipalities at 2.8303%, with Ekurhuleni having the highest growth rate at 4.0855%. The total population, urban and rural, recorded their highest population growth rates for any period between 1996 and 2016 at 1.9857%, 2.534% and 1.184% respectively. The urban-rural differential was 1.338%, indicating a moderate speed of urbanisation during this period. Therefore, there was a moderate increase in the degree of urbanisation and urban-rural ratio during this period.

Between 2001 and 2007, the degree of urbanisation increased by 2.6302% and the urban-rural ratio by 0.1569, the highest increase for both between 1996 and 2016. During this period, the urban population had a substantially higher growth rate than the rural population. The metropolitan municipalities recorded the highest population growth rate among the urban municipalities. The City of Cape Town had the highest metropolitan municipality growth rate at 3.1650%, the Northern Cape recorded the highest overall urban population growth rate at 3.5993% and the Eastern Cape the lowest at 0.7781%. The rural population growth rate experienced its lowest population growth rate for any period at 0.2253% between 1996 and 2016. This was due to five of the nine provinces having negative rural growth rates between 2001 and 2007. Furthermore, the B<sub>3</sub> municipalities had a population growth rate of -0.2327%. Hence, the urban-rural differential was the highest between 1996 and 2016, leading to the highest increase of the degree of urbanisation and urban-rural ratio.

<sup>10</sup> See Appendix 10

Between 2007 and 2011, the degree of urbanisation increased by 1.2608% and the urban-rural ratio increased by 0.1569. For the third consecutive period, the urban population had a higher growth rate than the rural population. Gauteng was the province with the highest urban population growth rate. The metropolitan municipalities again had the highest population growth rate among the municipal categories at 4.5612%, more than double the percentage of the previous period. This significant increase is due to the fact that Manguang and Buffalo City were upgraded to metropolitan municipalities in 2011. The three metropolitan municipalities in Gauteng recorded the highest population growth rates. City of Tshwane had the highest growth rate of any metropolitan municipality at 5.4855% as it absorbed the B<sub>2</sub> municipalities of Nokeng tsa Taemane and Kungwini in 2011. Furthermore, this was the highest metropolitan population growth rate for any period between 1996 and 2016. The rural municipalities had a low population growth rate as a result of the B<sub>4</sub> municipalities recording a negative population growth rate. The urban-rural differential was 1.2329%, indicating a fast tempo of urbanisation during this period.

In 2016, the degree of urbanisation was at its highest at 62.2899%, a 0.6322% increase from 2011. The urban-rural ratio increased by only 0.0438. Between 2011 and 2016, the urban growth rates dropped below 2% for the first time. Mpumalanga, Limpopo and the North West, three provinces with large rural populations, recorded the highest urban population growth rates of 2.2575%, 1.9207% and 1.9776% respectively. The decline in the urban population was attributed to the Western Cape and Gauteng which recorded urban population growth rates of less than 2% for the first time. The secondary cities (B<sub>1</sub>) recorded the highest urban population growth rates. Furthermore, it was the highest overall population growth among the municipal categories and the first period where the secondary cities (B<sub>1</sub>) grew faster than the metropolitan municipalities. The metropolitan municipalities recorded their lowest population growth rate of any period. This was the first time the metropolitan growth rate was below 2%. The rural municipalities recorded their second-highest population growth rate for any period at 1.137%. This was the first time since the period between 1996 and 2001 that the growth rate was above 1%. The two highly urbanised provinces of Western Cape and Gauteng experienced the highest rural population growth rates at 1.8372% and 2.4469% respectively. The B<sub>3</sub> municipalities recorded the highest population growth rate among the rural municipalities for the fourth consecutive period. The urban-rural differential was 0.5368%, indicating a slow tempo of urbanisation. This was mainly due to the drop in the urban population growth rate in Western Cape and Gauteng.

Table 30 shows the projected urban and rural populations provided that the annual population growth rate between 1996 and 2016 remains constant to 2030 and 2050. Therefore, the projected degree of urbanisation will be 66.32% and the urban-rural ratio will be 1.96 in 2030. The projected degree of urbanisation will be 71.68 % and urban-rural ratio will be 2.53 in 2050.

#### 4.11.2. Gini Concentration Index<sup>10</sup>

South Africa has a unequal population distribution. The lowest Gini concentration index was 0.57301, in 1996. In 1996, 39.98% of the cumulative population was concentrated in the top 5.065% of the cumulative localities consisting of twelve localities (five A, five B<sub>1</sub> and one B<sub>4</sub>). In 2001, 40.76% of the cumulative population was concentrated in the top 5.065% of the cumulative localities, consisting of the same twelve localities. The 0.78% increase in cumulative population led to a slight increase in the Gini concentration index. The metropolitan municipalities recorded the highest population growth rates of any municipal category during this period, while the B<sub>3</sub> and B<sub>4</sub> municipalities recorded the lowest population growth rates. Therefore, as the majority of the B<sub>3</sub> and B<sub>4</sub> municipalities are concentrated in the lower localities and the metropolitan municipalities are concentrated in the bigger size localities, with a huge difference in the population growth rates, more of the population will be concentrated in the metropolitan municipalities, making the population distribution in the country more uneven.

Between 2001 and 2007, the Gini concentration index experienced its highest increase of any period at 0.0181. In 2001, 40.76% of the cumulative population was concentrated in the top 50.42% of the cumulative localities consisting of twelve localities (five A, five B<sub>1</sub> and one B<sub>4</sub>). In 2007, 45.28% of the cumulative population was concentrated in the top 59.82% of the cumulative localities, consisting of fourteen localities (five A, six B<sub>1</sub> and two B<sub>4</sub>). The increase in both the cumulative population and cumulative localities is due to Bushbuckridge (B<sub>4</sub>) and Mbombela (B<sub>1</sub>) elevating from 200 000 – 499 999 to 500 000 – 999 999 category localities. Bushbuckridge (B<sub>4</sub>) is one of only two rural municipalities with a population in the 500 000 – 999 999 category locality. The metropolitan municipalities again recorded the highest population growth rate of any municipal category. All these factors led to a more uneven population distribution in the country in 2007 as more of the population is concentrated in the top three size localities in the country.

Between 2007 and 2011 the Gini concentration index increased by only 0.0122. In 2007, 35.04% of the cumulative population was concentrated in the top 2.531% of the cumulative localities consisting of six metropolitan municipalities. In 2011, 36.44% of the cumulative population was concentrated in the top 2.564% of the cumulative localities consisting of six metropolitan

municipalities. The 1.4% increase of the cumulative population is due to the high metropolitan municipalities' growth rate between 2007 and 2011. Also, the 0.033 % increase of the cumulative localities was due to City of Tshwane, as it absorbed the B<sub>2</sub> municipality of Nokeng tsa Taemane and Kungwini in 2011. Therefore, a bigger percentage of the cumulative population is concentrated among the top localities in country.

Between 2011 and 2016, the Gini concentration index declined slightly by 0.003. In 2016, 36.89% of the cumulative population was concentrated in the top 2.564% of the cumulative localities consisting of six metropolitan municipalities. This was only a 0.45% increase from 2011. Previous periods have recorded at least a 1% increase. Between 2011 and 2016, the metropolitan municipalities recorded their lowest population growth rate of any period. Furthermore, the population growth differential between the metropolitan municipalities and other municipal categories was not large. The B<sub>1</sub> municipalities recorded the biggest population growth and grew faster than the metropolitan municipalities for the first time between 1996 and 2016. The urban-rural differential was the lowest of any period, thereby slightly closing the gap in terms of population size between the smaller size localities and the bigger metropolitan municipalities, leading to a decline in the Gini concentration index.

#### **4.11.3. Size of Locality of Residence of the Median Inhabitant<sup>10</sup>**

The size of locality of residence of the median inhabitant has been steadily increasing between 1996 and 2016. In 1996, 35.27% of the cumulative population was concentrated in localities of size 100 000 – 199 999 and below consisting of 189 localities, and 50.54% of the cumulative population was concentrated in 200 000 – 299 999 and below consisting of 208 out of 234 localities.

Between 1996 and 2001, the size of locality of residence of the median inhabitant increased by 33 106.2383. In 2001, 48.35% of the cumulative population was concentrated in localities of size 200 000 -299 999 and below consisting of 212 localities and 53.96% in 300 000 – 399 999 and below, consisting of 219 localities. Therefore, in 2001 the cumulative population just above 50% is the 300 000 – 399 999 locality category. The 2.44 % decrease in the cumulative population in the 200 000 – 299 999 locality is attributed to the low rural population growth rate between 1996 and 2001 as a majority of the rural municipalities being concentrated in localities of size 200 000 – 299 999 and below.

Between 2001 and 2007 the size of locality of residence of the median inhabitant increased by

36 699.2727. In 2007, 48.35% of the cumulative population was concentrated in 213 localities of size 200 000 -299 999 and below, and 50.005% in 218 300 000 – 399 999 and below, consisting of 219 localities. Therefore, in 2007 the cumulative population was just above 50% in the 300 000 – 399 999 locality category. The increase in the size of locality of residence of the median inhabitant is a result of the low rural population during 2001 and 2007. This was the lowest rural population growth recorded in South Africa between 1996 and 2016. Furthermore, during this period the urban-rural differential was the highest of any period and, as the majority of the rural population were concentrated in localities of size 200 000 -299 999 and below and the majority of the urban population were concentrated in localities of size 300 000 – 399 999 and above, a high urban-rural differential would increase the size of locality of residence of the median inhabitant.

Between 2007 and 2011, the size of locality of residence of the median inhabitant increased by 106 211.455. In 2011, 48.13% of the cumulative population was concentrated in 209 localities of size 300 000 -399 999 and below consisting of localities and 50.71 % in localities of size 400 000 – 499 999 and below consisting of 212 localities. This was the first time the size of locality of residence of the median inhabitant reached the 400 000 – 499 999 category. Therefore, less of the population was concentrated in the smaller localities in 2011. This was attributed to a high metropolitan municipality population growth rate and the negative growth rate among the B<sub>4</sub> municipalities, leading to the urban-rural differential of 1.2329%. A high urban-rural differential will increase the size of locality of residence of the median inhabitant as the majority of the urban population is concentrated in bigger localities and the rural population in the smaller localities.

Between 2011 and 2016 the size of locality of residence of the median inhabitant increased by 24 759.2949. This was the smallest increase of any period between 1996 and 2016. In 2016, 45.42% of the cumulative population was concentrated in localities of size 300 000 -399 999 and below consisting of 211 localities and 50.13 % in 400 000 – 499 999 and below consisting of 217 localities. Therefore, in 2016, less of the population was concentrated in localities of size 300 000 – 399 999 and below and a higher percentage of the population was concentrated in localities of size 400 000 – 499 999 and above. The slight increase in the size of locality of residence of the median inhabitant was attributed to the urban population slightly outgrowing the rural population between 2011 and 2016.

#### 4.11.4. Population Density<sup>10</sup>

The lowest population density was in 1996 at 33.26 persons/km<sup>2</sup>. Between 1996 and 2016, the population density increased by 12.35 persons/km<sup>2</sup> and reached its highest level in 2016 at 45.61 persons/km<sup>2</sup>.

#### 4.11.5 Primacy Index<sup>10</sup>

The primacy index in South Africa was low between 1996 and 2016. The City of Johannesburg was the metropolitan municipality with the highest population between 1996 and 2016. The primacy index was at its lowest in 1996 at 21.08. It increased by 6.519 between 1996 and 2001 and this was the highest recorded increase of any period. During this period, the metropolitan municipality population growth rate was the second-highest of any period. The City of Johannesburg grew faster than four of the other five metropolitan municipalities and was the reason for the increase in the primacy index. It had the second-highest population growth rate at 4.0212% and growing at a rate of 0.4549%, 3.2806%, 1.5985% and 1.6766% faster than the City of Tshwane, Nelson Mandela Bay, City of Cape Town and eThekweni respectively. Ekurhuleni was the only metropolitan municipality with a higher population growth rate and grew 0.0273% faster than the City of Johannesburg. The index value is below 50, indicating that the City of Johannesburg is not a primate metropolitan municipality

In 2007 the primacy index experienced a moderate increase of 1.0768 from 2001. Between 2001 and 2007, the metropolitan growth rate was 2.085%, a 0.7408% decline from 1996 to 2001. The City of Cape Town had the highest population growth at 3.1650% and Nelson Mandela Bay had the lowest at 0.7318%. The City of Johannesburg had the second-highest population growth rate at 3.1152%, a 0.906% decline from 1996 to 2001. It again had a higher growth rate than four of the other five metropolitan municipalities. It exceeded the City of Tshwane, Ekurhuleni, Nelson Mandela Bay and eThekweni by 0.3082%, 1.5376%, 2.3834% and 1.192% respectively. The exceeding growth rates have declined from 1996 to 2001 and even though the City of Cape Town had a higher growth rate than the City of Johannesburg, the primacy index still increased between 2001 and 2007. The index value was below 50, indicating that the City of Johannesburg is not a primate city.

In 2011 the primacy index experienced a moderate increase of 1.34 from 2007. Between 2007 and 2011, the metropolitan growth rate was 4.561%. This was the highest recorded metropolitan growth rate of any period. Gauteng recorded the highest metropolitan municipal growth rate of any province, all the metropolitan municipalities in Gauteng grew above 3%. The City of Tshwane

recorded the highest metropolitan municipal province at 5.485% . The increase in the primacy index is due to the high population growth rate in the City of Johannesburg relative to the 2<sup>nd</sup> and 3<sup>rd</sup> biggest metropolitan municipalities(City of Cape Town and eThekweni respectively). The City of Cape Town and eThekweni grew at 1.6789% and -0.186% respectively.The index value was below 50, indicating that the City of Johannesburg is not a primate city.

In 2016 the primacy index experienced another moderate increase of 0.97 from 2011. Between 2011 and 2016 the metropolitan population growth rate was 1.631%. This was the lowest metropolitan growth rate recorded for any period. This was a result of metropolitan growth rates in Gauteng, Western Cape and Kwazulu-Natal being below 2%. The increase in the primacy index was again result of the population growth in the City of Johannesburg. It was one of only two metropolitan municipalities to record a population growth above 2%.The index value was below 50, indicating that the City of Johannesburg is not a primate city.

#### **4.11.6 Polarization Reversal<sup>10</sup>**

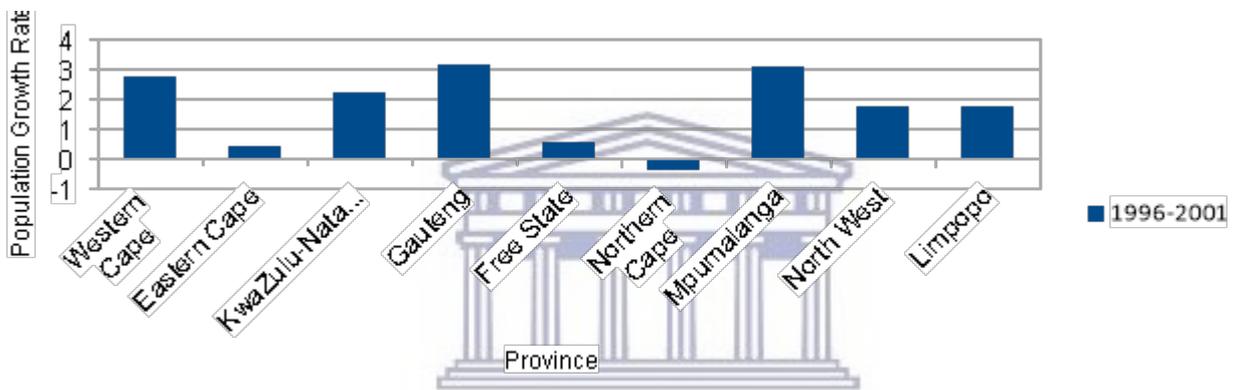
Between 2001 and 2007, South Africa had six metropolitan municipalities and twenty-one B<sub>1</sub> municipalities. The biggest metropolitan municipality was the City of Johannesburg and the biggest B<sub>1</sub> municipalities were Manguang and Buffalo City. In 2011, Manguang and Buffalo were upgraded to metropolitan municipalities. Hence, from 2011 to 2016, South Africa included eight metropolitan municipalities and nineteen B<sub>1</sub> municipalities. The population growth rates in the metropolitan municipalities were greater than the B<sub>1</sub> municipalities between 1996 and 2011.

From 2007 to 2011, B<sub>1</sub> municipalities experienced a negative population growth rate as a result of Manguang and Buffalo City being upgraded to metropolitan municipalities, therefore decreasing the population in B<sub>1</sub> municipalities and increasing in metro municipalities. The 2011 to 2016 period was the first time the B<sub>1</sub> municipalities had a higher growth rate than the metropolitan municipalities, which could indicate the onset of polarization reversal. Over the 20-year period, metropolitan municipalities grew 3.0704 times faster than B<sub>1</sub> municipalities.

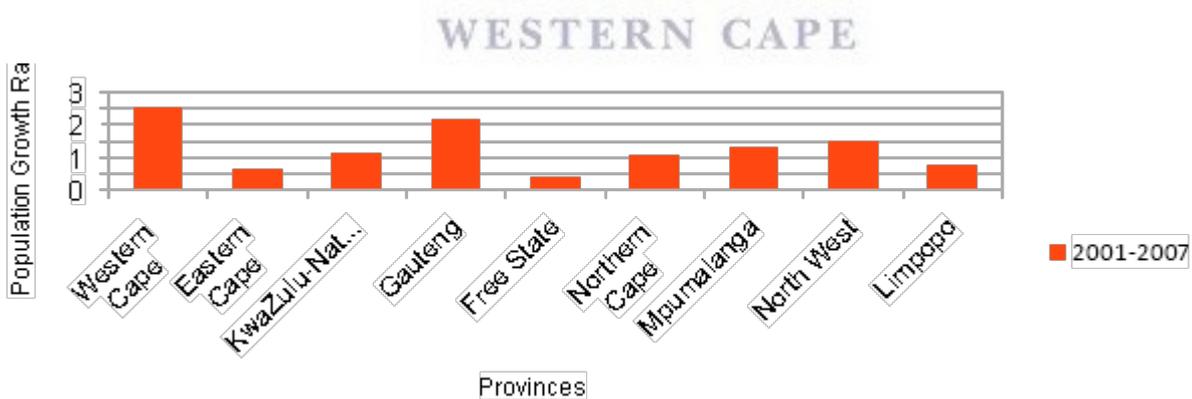
Below are graphs of the total and urban population growths rates between 1996-2001, 2001-2007, 2007-2011, 2011-2016 and 1996-2016. A graph of the urban and rural percentage at the national levels in 1996, 2001, 2007, 2011 and 2016 is also shown. The purpose of these graphs is to provide a picture of the population growths and the degree of urbanisation in South Africa at different periods between 1996 and 2016.

**Table 32. Total Population Growth Rates per Province**

	1996-2001	2001-2007	2007-2011	2011-2016	1996-2016
<b>Western Cape</b>	2.772	2.569	2.452	1.511	2.309
<b>Eastern Cape</b>	0.423	0.648	0.131	1.283	0.647
<b>KwaZulu-Natal</b>	2.231	1.134	0.019	1.496	1.276
<b>Gauteng</b>	3.168	2.174	4.014	1.757	2.683
<b>Free State</b>	0.548	0.403	-0.248	0.638	0.368
<b>Northern Cape</b>	-0.398	1.075	1.992	0.819	0.826
<b>Mpumalanga</b>	3.105	1.333	2.582	1.414	1.639
<b>North West</b>	1.800	1.534	1.755	1.314	1.590
<b>Limpopo</b>	1.751	0.790	0.782	1.408	1.187



**Figure 21: Total Population Growth Rates Per Province(1996-2001)**



**Figure 22: Total Population Growth Rates Per Province(2001-2007)**

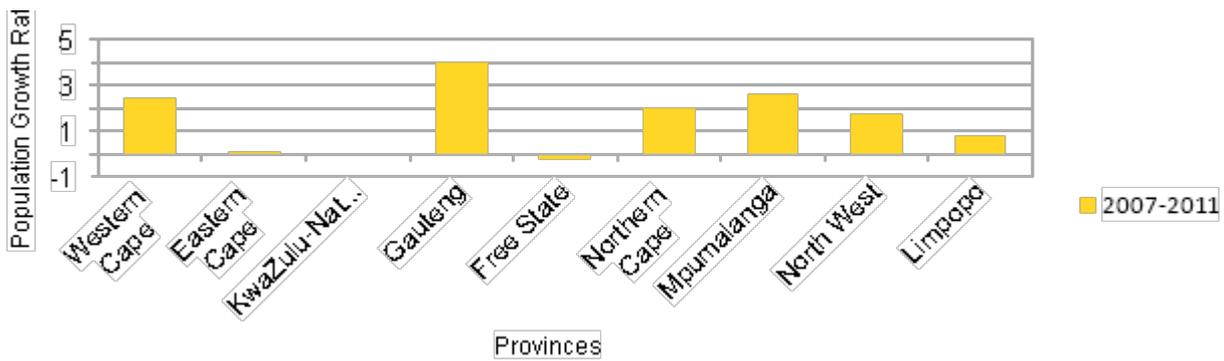


Figure 23: Total Population Growth Rates Per Province(2007-2011)

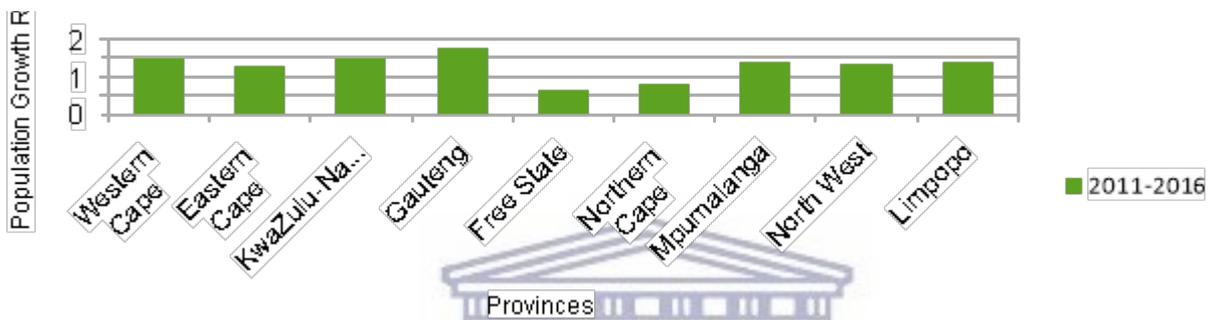


Figure 24: Total Population Growth Rates Per Province(2011-2016)

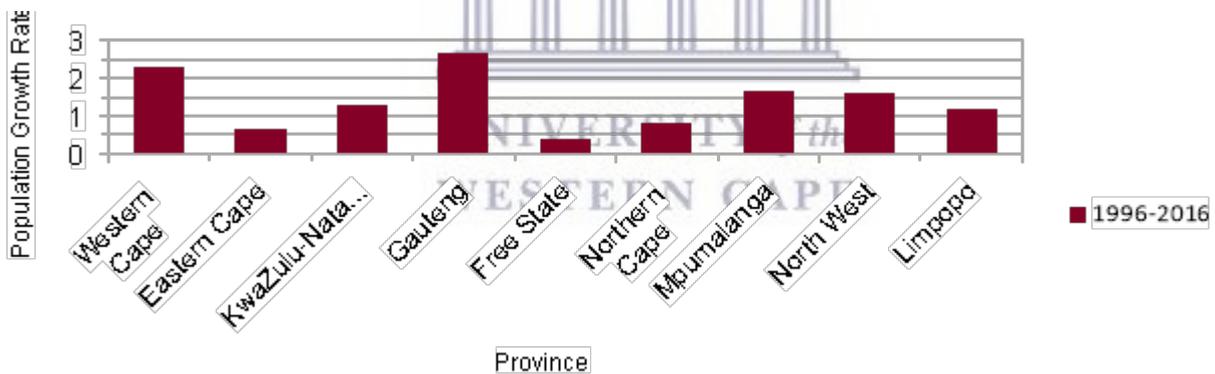
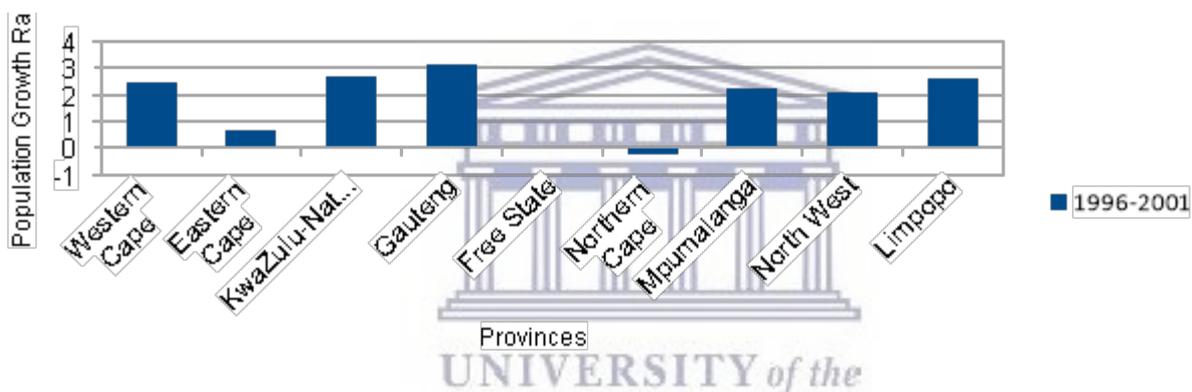


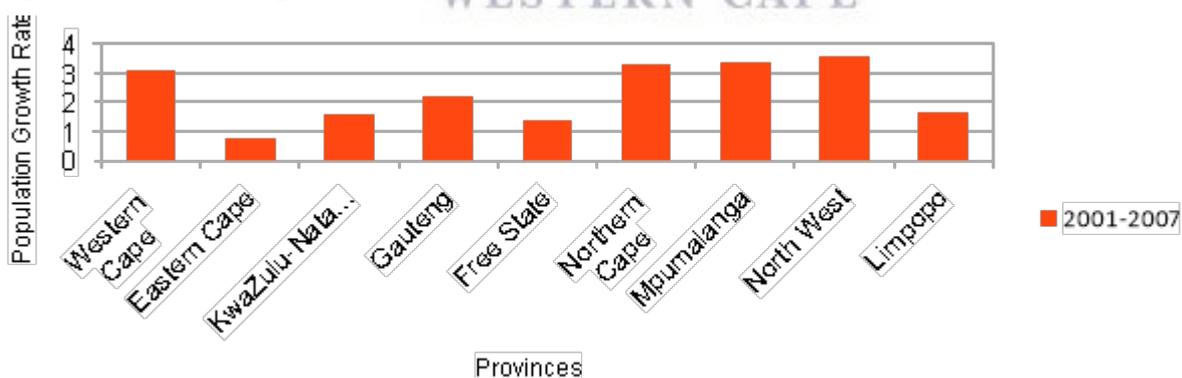
Figure 25: Total Population Growth Rates Per Province(1996-2016)

**Table 33. Urban Population Growth Rates**

	1996-2001	2001-2007	2007-2011	2011-2016	1996-2016
Western Cape	2.456	3.100	1.780	1.452	2.263
Eastern Cape	0.671	0.778	1.286	1.605	1.059
KwaZulu-Natal	2.662	1.611	0.652	1.602	1.680
Gauteng	3.164	2.198	3.977	1.752	2.684
Free State	0.026	1.365	0.010	0.674	0.587
Northern Cape	-0.243	3.281	-0.175	0.808	1.090
Mpumalanga	2.234	3.365	2.018	2.257	2.536
North West	2.101	3.594	0.574	1.977	2.213
Limpopo	2.628	1.682	1.120	1.920	1.884



**Figure 26: Urban Population Growth Rates Per Province(1996-2001)**



**Figure 27: Urban Population Growth Rates Per Province(2001-2007)**

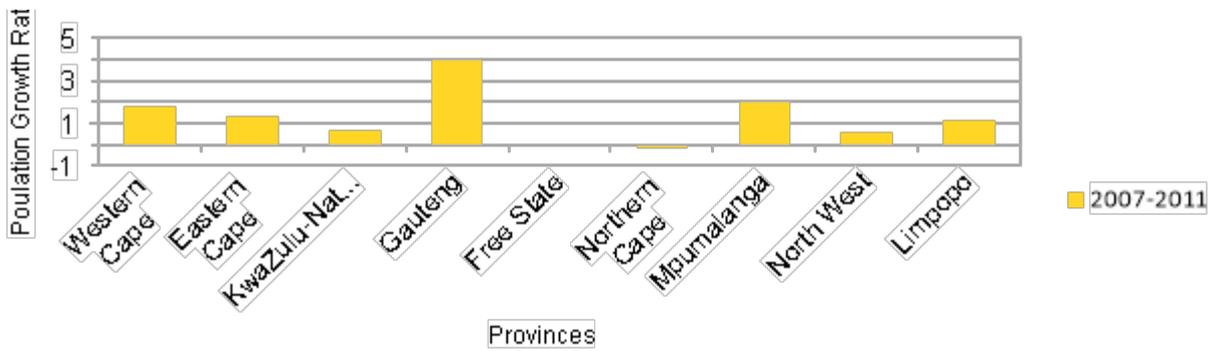


Figure 28: Urban Population Growth Rates Per Province(2007-2011)

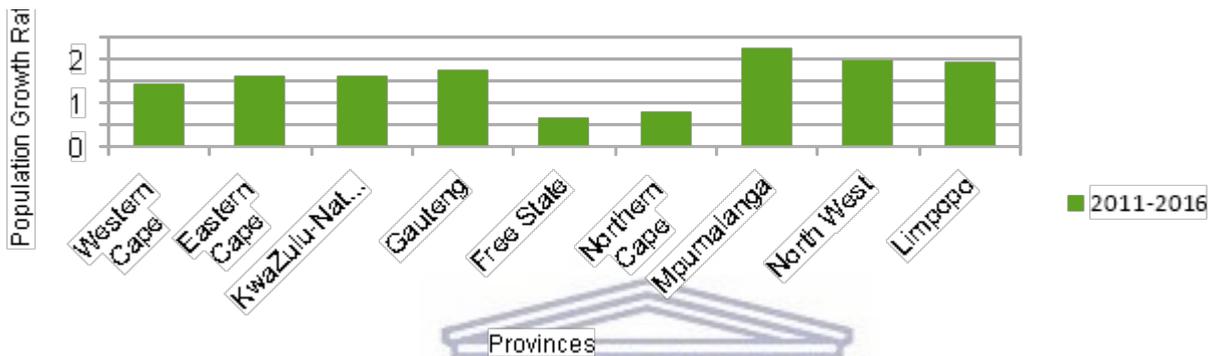


Figure 29: Urban Population Growth Rates Per Province(2011-2016)

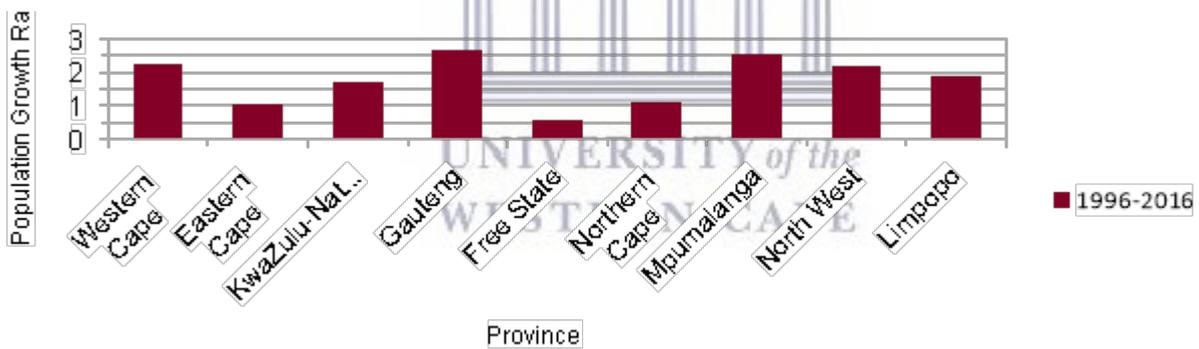
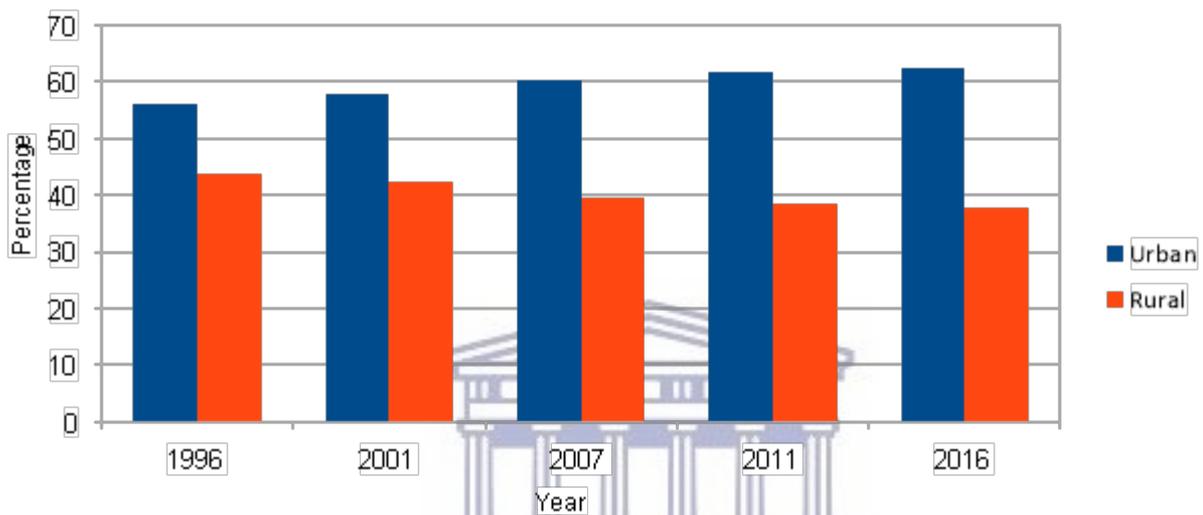


Figure 30: Urban Population Growth Rates Per Province(1996-2016)

**Table 34. Urban and Rural Percentage at the National Level**

	<b>Urban</b>	<b>Rural</b>
<b>1996</b>	56.2343	43.7657
<b>2001</b>	57.7667	42.2333
<b>2007</b>	60.3969	39.6031
<b>2011</b>	61.6577	38.3423
<b>2016</b>	62.2899	37.7101



**Figure 31: Urban and Rural Percentage at the National Level (1996-2016)**

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## Maps of Population Growth Rates per Municipal Category

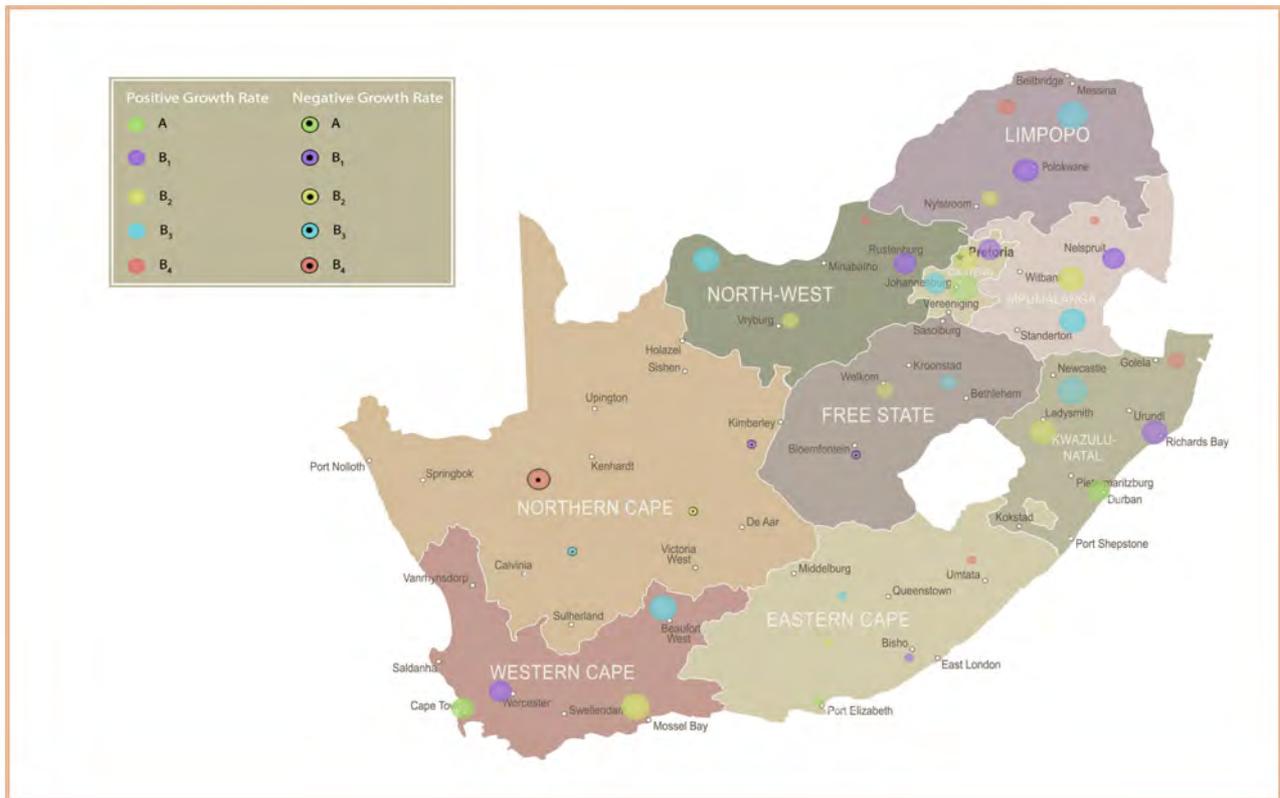
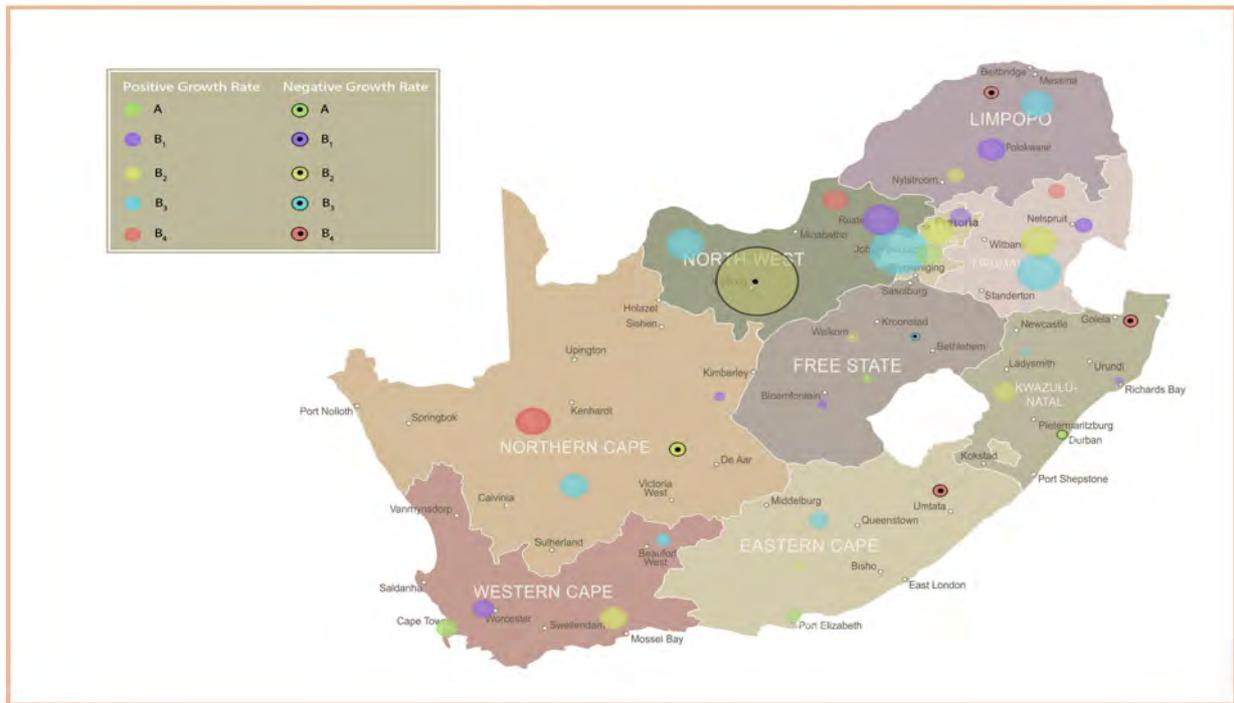


Figure 32: Population Growth Rates Per Municipal Category(1996-2001)



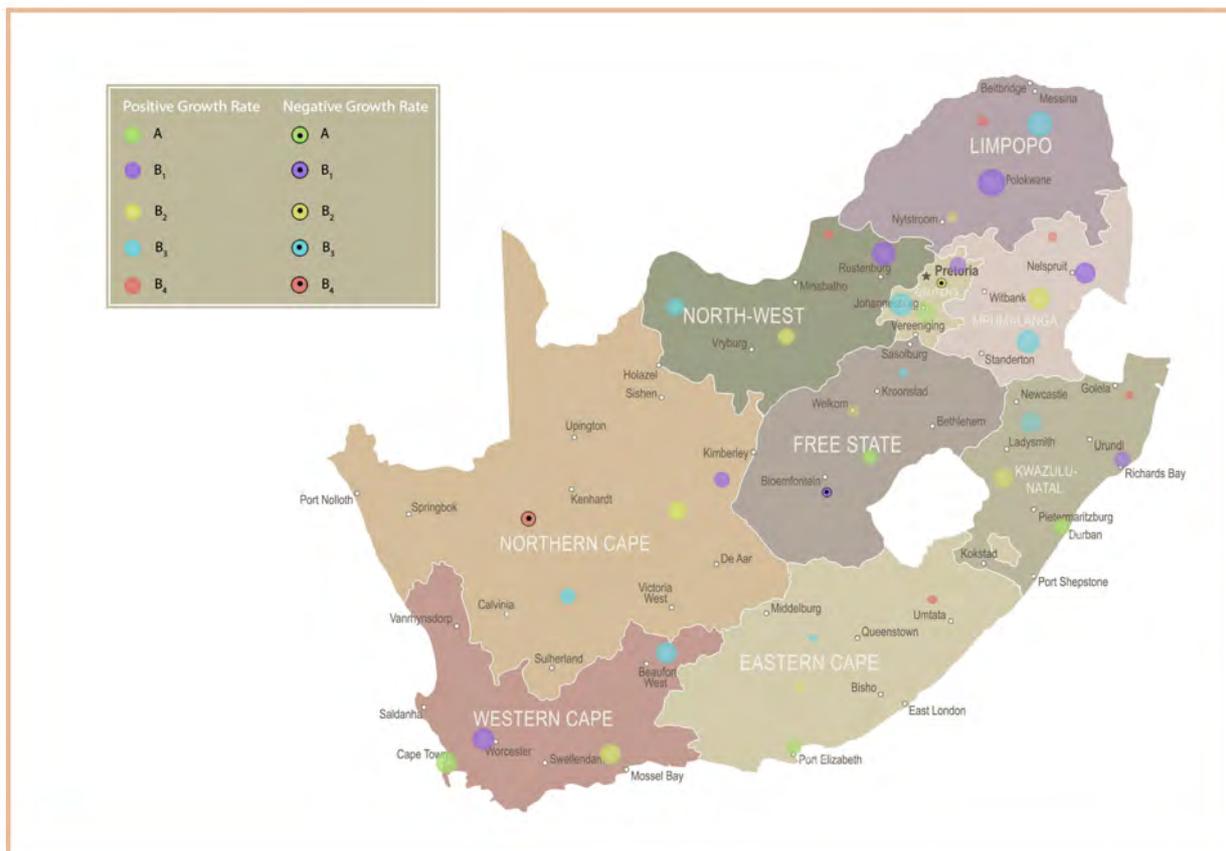
Figure 33: Population Growth Rates Per Municipal Category(2001-2007)



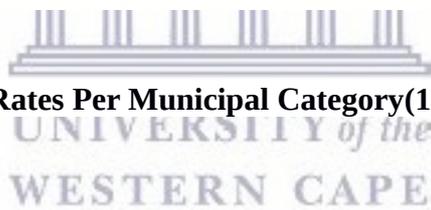
**Figure 34: Population Growth Rates Per Municipal Category(2007-2011)**



**Figure 35: Population Growth Rates Per Municipal Category(2011-2016)**



**Figure 36: Population Growth Rates Per Municipal Category(1996-2016)**



## **4.12. Temporal View of the structural changes between 1996 and 2016 of each statistical indicator**

### **4.12.1. Degree of Urbanisation and Urban-Rural**

The study showed that between 1996 and 2001, four of the nine provinces in South Africa were urbanized and between 2007 and 2016, five of the nine provinces were urbanized (North West became urbanized in 2007), meaning these provinces had a degree of urbanization of more than 50% and an urban-rural ratio of more than 1. The degree of urbanisation and urban-rural ratio varied significantly among these provinces, with the degree of urbanisation ranging between 50% and 99% and the urban-rural ratio between 117-1. The urbanized provinces consisted of Gauteng, KwaZulu-Natal, Free State, North West and the Western Cape. Gauteng had the highest degree of urbanisation and urban rural ratio, followed by the Western Cape, the Free State, KwaZulu-Natal and North West. Gauteng was only province with a degree of urbanisation above 90% and an urban-rural ratio above 100. The vast difference between the degree of urbanisation and urban-rural ratio in Gauteng compared to other provinces points to its dominance as a province in the country. Each province differed in the size of its total urban and rural population. KwaZulu-Natal had the largest total population in 1996, followed by Gauteng, the Western Cape, North West and the Free State, which were ranked fifth, seventh and eighth in the country respectively. In terms of the urban population, Gauteng had the largest urban population, followed by KwaZulu-Natal and the Western Cape. The Free State and the North West had the fifth and sixth largest urban populations. The structure of the urban population in these provinces is characterised by a number of secondary cities and large towns in addition to the presence of one or more metropolitan municipalities. Gauteng contains three metropolitan municipalities, two secondary cities and four large towns. Both the Western Cape and KwaZulu-Natal have one metropolitan municipality, three secondary cities and six large towns. Between 1996 and 2007, the Free State was the only province that was urbanized which had no metropolitan municipality as Manguang only became a metropolitan municipality in 2011. North West was the only urbanized province that did not contain a metropolitan municipality. We find the two provinces with the highest degree of urbanisation and urban-rural ratio (Gauteng and Western Cape) have the second-biggest (City of Johannesburg) and third-biggest (City of Cape Town) metropolitan municipalities. In terms of the rural population, Gauteng and Western Cape had the lowest in the country. The rural population in Gauteng was less than 100 000 and constituted less than 1% of the population in the province. The Western Cape had a rural population of 500 000+. KwaZulu-Natal, Free State and the North West, on the other hand, had a rural population above 1 000 000. In fact, KwaZulu-Natal has the largest rural population in the country. The structures of the rural population in the Western Cape, Gauteng and the Free State were similar

in that they consisted only of B<sub>3</sub> municipalities. KwaZulu-Natal and North West were the only urbanized provinces that contained B<sub>4</sub> municipalities. KwaZulu-Natal is the only province with a metropolitan municipality with a population of 1 000 000+ and a rural population over 1 000 000. We see that the size of the total population is not as much of a factor, but rather the size of the rural population is an important factor affecting the degree of urbanisation and urban-rural ratio in South Africa. The high degree of urbanisation and urban-rural ratio in Gauteng and the Western Cape is a product of its high urban population and its extremely low rural population. The province with the second-smallest total population (the Free State), which contained no metropolitan municipality and only the fifth-biggest urban population in the country, had a higher degree of urbanisation and urban-rural ratio than the province with the largest total population (KwaZulu-Natal), which has a metropolitan municipality and the second-largest urban population. The Western Cape also had a far higher degree of urbanisation and urban-rural ratio than KwaZulu-Natal, even though eThekweni the metropolitan municipality was bigger than the City of Cape Town and the urban population was bigger. KwaZulu-Natal has the largest rural population in the country and this heavily affects its urban-rural ratio and degree of urbanisation.

The study showed that four of the five provinces that were not urbanized include the Northern Cape, Mpumalanga, Eastern Cape and Limpopo. This meant that these provinces had a degree of urbanisation less than 50% and an urban-rural ratio less than 1. Limpopo had the lowest degree of urbanisation and urban rural ratio, followed by Northern Cape, Mpumalanga, and the Eastern Cape. The degree of urbanisation and urban-rural varied significantly among provinces with the degree of urbanisation ranging between 44%-16% and the urban-rural ratio between 0.58-0.18.

Each province differed in size of its total, urban and rural population. In terms of the total population size, the Eastern Cape and Limpopo were ranked among the biggest in the country, while Mpumalanga and the Northern Cape were ranked among the smallest. The structure of the urban population in these provinces is characterised by a few secondary cities and large towns and no metropolitan municipalities, with the exception of the Eastern Cape. The Eastern Cape is the only province in South Africa that is not urbanized but contains metropolitan municipalities. Furthermore, the Eastern Cape had the fourth-largest urban population in the country, with an urban population of 2 000 000+ and yet was not an urbanized province. The Eastern Cape is similar to KwaZulu-Natal as its large rural population is having a significant impact on its degree of urbanisation and urban-rural ratio, even though it has a large urban population. Limpopo and the Northern Cape had the smallest urban populations in the country and were the only provinces in South Africa with an urban population of less than 1 000 000. Both Northern Cape and Limpopo

had only two urban municipalities, a secondary city and a large town. Mpumalanga also had a relatively small urban population of just over 1 000 000. In terms of the rural population, the study revealed that these non-urbanized provinces had three of the five biggest rural populations in the country, with Limpopo having the second largest rural population after KwaZulu-Natal.

Between 1996 and 2016, the degree of urbanisation in Mpumalanga increased by 7.2306%. This was the biggest increase recorded by any province. The total population growth rate grew at a rate of 1.6394% annually and 0.0605% faster than the national level. This was also the third-highest total population growth rate in the country over the 20-year period. The urban population growth was 2.5364%, 0.4462% greater than the national level and it was the second-highest urban population growth rate recorded. The rural population also recorded a high growth rate at 1.0319%, 0.1977% greater than the national level and the fourth-largest of any of the provinces. The urban-rural differential was 1.5045%, 0.2389% greater than the national level. It was the highest urban-rural differential recorded for any province between 1996 and 2016. Therefore, even with the relatively high urban-rural differential compared to other provinces, we find that the degree of urbanisation increased by only 7.2306%. The percentage change of the urban population was 66.07% and the rural was 22.92%. The urban-rural ratio increased by 0.2044 over the 20-year period, which was the third biggest increase behind Gauteng and the North West.

In 2007, the North West became the fifth urbanized province in South Africa. Between 1996 and 2016, the degree of urbanisation increased by 6.4948% and the urban rural ratio 0.2842. This was the second-highest increase of these indicators of any province between 1996-2016. In North West, the urban population is almost evenly spread among the secondary cities in the province. Unlike the other urbanized provinces, it does not contain a dominant core region or metropolitan municipality. North West and the Free State are the only urbanized provinces with no single urban municipality with a population over 1 000 000. Between 1996 and 2016, the total population grew at 1.5902% annually and was 0.0133% faster than the national level. This was the fourth-highest total population growth rate of any province. The urban population grew at 2.2132% annually and grew 0.123% faster than the national level. This was the fourth-highest urban population of any province. It was one of four provinces to achieve an urban population growth rate above 2% between 1996 and 2016. This was a high population growth rate for a province without a metropolitan municipality. The rural population was low, at only 0.9119%, and was 0.077% faster than the national level. This was the fifth-highest rural population for any of the provinces. The urban-rural differential was 1.3013%, indicating a moderate tempo of urbanization relative to the other provinces between 1996 and 2016. Furthermore, the urban-rural differential was 0.0357%

faster than the national level and was the second-highest urban-rural differential recorded of any province. The difference in the growth of the urban population compared to the rural is evident by the percentage change. The percentage change of the urban population was 55.68%, whereas the rural was 20.09%. This is significant as in 1996 the urban rural ratio was 0.9561, indicating an only slightly larger rural population and the 35.59% differential in the percentage change gives us a better idea on how rapidly the population has evolved over the 20-year period.

The degree of urbanisation in KwaZulu-Natal increased by 4.63%. This was the third-largest increase of any province between the period from 1996 to 2016. Furthermore, it was the highest increase among the urbanized provinces. The total population growth rate grew at a rate of 1.2763% annually and was 0.3026% slower than the national level. This was the fifth-highest total population growth rate in the country between 1996 and 2016. The urban population growth rate was 1.6801%, 0.4101% slower than the national level and it was the sixth-highest urban population growth rate recorded. This was low for a province with a high level of economic development and the third-largest metropolitan municipality in the country. The population growth rate in eThekweni (A) was relatively slow compared to other major metropolitan municipalities. It grew at 1.4350% annually and was 1.3207% lower than the national level. The rural population also recorded a population growth rate of 0.8053%, 0.0289% greater than the national level and the sixth-largest of any of the provinces. The percentage change of the urban population was 39.93% and the rural was 17.47%. The urban-rural differential was 0.8748%, which is a slow tempo of urbanisation. It was 0.3908% slower than the national level. The urban-rural differential was the third-highest in the country. The increase in the degree of urbanisation and the urban-rural ratio was mainly attributed to the low rural population growth rate rather than the urban population growth rate in KwaZulu-Natal.

In the Eastern Cape, the degree of urbanisation increased by 3.2253% and the urban-rural ratio by 0.087. It was the fourth-biggest increase of the degree of urbanisation and the second-lowest urban-rural ratio increase for any province between 1996 and 2016. Between 1996 and 2016, the total population growth grew at 0.6473% and was 0.9316% lower than the national level. This was the second-lowest total population growth rate of any province. The urban population growth was 1.0598% and was 1.0304% lower than the national level. This was the second-lowest total population growth rate of any province. The urban population growth rate was low for a province with two metropolitan municipalities.

Between 1996 and 2007, the urban population grew less than 1%. After 2007, the urban population growth picked up as Buffalo City was converted into a metropolitan municipality which brought more opportunities and investment, especially from government. The rural population grew at 0.8360% annually and was 0.4518% lower than the national level. This was also the second-lowest of any province. The urban-rural differential was 0.6774%, indicating a slow tempo of urbanisation and was 0.5882% slower than the national level. The low increase in the degree of urbanisation and urban-rural ratio of the Eastern Cape was predominately down to its low urban population growth rate, especially in the population growth rate among the metropolitan municipalities.

Gauteng remained the province with the highest degree of urbanisation and urban-rural ratio in 2016. The degree of urbanisation only increased by 0.057% and was the second-lowest increase of any province. The urban-rural ratio increased by 0.8013 between 1996 and 2016 and was the biggest increase of any province. The total population growth rate during this period was 2.6837% annually. This was 1.1049% higher than the national level. The urban population grew at 2.6840% annually. This was 0.5938% higher than the national level. The rural population grew at 2.6496% annually. This was 1.8154% higher than the national level. The urban-rural differential was 0.0344%, which is a very slow tempo of urbanisation. It was 1.2312% below the national level as a result of the high rural population growth rate. Gauteng recorded the highest total, urban and rural population growth rate of any province. The reason the increase in the degree of urbanisation was so low is because Gauteng has such a large absolute urban population and a small absolute rural population, therefore any variations of the population growth rates will have little effect on the degree of urbanisation.

The Western Cape still remained the province with the second-highest degree of urbanisation even though it declined by -0.7731% between 1996-2016. It was the only province to experience a decline in its degree of urbanisation and urban-rural ratio between 1996 and 2016. The total population growth rate was 2.2329%, which was 0.654% faster than the national level. This was the second-highest total population growth rate in the country. The urban population growth rate was 2.2633% with all the urban municipal categories growing at over 2%. The urban population grew at 0.7131% above the national level. This was the third- highest population growth rate of any province. The percentage change was 57.26%. The rural population growth exceeded the urban population growth rate between 1996 and 2016. The rural population grew at 2.567% annually. This was 1.723% greater than the national level and the second-highest rural population growth rate of any province. The urban-rural differential was -0.3039%, and was the lowest urban-rural differential in the country, indicating counter urbanisation between 1996 and 2016. Like Gauteng,

the Western Cape has a large absolute urban population and small absolute rural population. Therefore, even though the rural population grew faster than the urban over the 20-year period, the changes in the degree of urbanisation and urban-rural ratio were very minimal. In addition, even though the urban-rural ratio was negative, the urban population still grew at a relatively fast rate. Therefore, even though the degree of urbanisation and urban-rural ratio declined, the increase in the rural population is not at the expense of the urban population in the province. The rural population in the Western Cape constitutes only B<sub>3</sub> municipalities and grew rapidly.

Between 1996 and 2016, the degree of urbanisation and the urban-rural ratio in the Free State increased by 2.488% and 0.1338 respectively. It was the fifth-largest increase in the degree of urbanisation and the urban-rural ratio was the sixth-largest among the provinces. The total population growth rate during this period was 0.3681% annually and was 1.2108% higher than the national level. This was the lowest total population growth of any province. The urban population grew at 0.5870% annually. This was 1.5032% higher than the national level and also the lowest of any province. The rural population grew at 0.0756% annually. This was 0.7586% lower than the national level and the lowest of any province. The urban-rural differential was 0.5074%, indicating a slow tempo of urbanisation. This was 0.7582% below the national level. The Free State was the only province to record a total urban and rural population growth rate below the national level. The evidence points to a stagnant population growth rate in the Free State.

In 2016, Limpopo remained the province with the lowest degree of urbanisation in South Africa. In 2016, the urban population in Limpopo had reached over 1 000 000. Between 1996 and 2016, the degree of urbanisation increased by 2.3239% and the urban-rural ratio only increased by 0.0334. Both recorded the sixth-highest increases of any province between 1996 and 2016. Limpopo was one of only two provinces in the country that had only two urban municipalities. The total population growth rate was 1.1837% and 0.3952% lower than the national level. It was also the sixth-highest total population growth rate among any of the provinces. The urban population growth rate was 1.8841%, which was 0.2061% lower than the national level. This was the fifth-highest urban population growth rate. A high percentage of the urban population growth was mainly attributed to Polokwane. The study showed that Polokwane was one of the fastest growing secondary cities in the country. The rural population grew at 1.0444% and was 0.2012% faster than the national level. This was the third-highest rural population growth rate between 1996 and 2016. Limpopo was one of three provinces to record an annual rural population growth rate over 1%, over the 20-year period. The urban-rural differential was 0.8397%, indicating a moderate tempo of urbanisation. It was the third-fastest tempo of urbanisation of any province between 1996 and 2016

and was 0.4259% lower than the national level. The degree of urbanisation increased only slightly because the rural population was a lot bigger than the urban population. The rural population growth rate had a significant impact on the level of urbanisation between 1996 and 2016, specifically the population growth among the B<sub>3</sub> municipalities.

The Northern Cape still had the second lowest degree of urbanisation in South Africa. Only Limpopo had a lower degree of urbanisation. Over the 20-year period, the degree of urbanisation increased by only 1.5278% and the urban-rural ratio by 0.0315. This was the third- lowest increase of any province for both degree of urbanisation and urban-rural ratio. The total population grew at 0.8267%. This was 0.7522% below the national level. The urban population grew at 1.0908% annually with the secondary city (Sol Plaatje) recording the highest urban and overall municipal categories. This was 0.9994% lower than the national level. The rural population grew at 0.7187% annually. The low rural population growth is down to the population growth of the only B<sub>4</sub> municipality (Joe Morolong) recording a significant negative population growth rate at -1.4458%. The rural population growth rate was 0.1164% lower than the national level. The urban-rural differential was 0.3721%, indicating the slow tempo of urbanisation in the 20-year period. This was 0.8935% lower than the national level. Overall, the population growth was low in the Northern Cape, leading to a slight increase in the degree of urbanisation over the 20-year period. The percentage change in the urban population was 24.37% and the rural was 15.45%. This is extremely low for any province, especially a province with such small urban and rural populations. The population growth rates indicate a stagnant population.

The study revealed that South Africa is an urbanized country, meaning it has a degree of urbanisation above 50% and an urban-rural ratio above 1. A majority of the urban population was concentrated in the metropolitan municipalities. The degree of urbanisation was 56.23%, 57.76%, 60.39%, 61.65% and 62.28% in 1996, 2001, 2007, 2011 and 2016 respectively, making South Africa one of the most urbanized countries in Africa. According to the world bank, only Tunisia, Algeria, Congo Republic, Djibouti, Gabon and Libya have a higher degree of urbanisation in Africa. This is in line with the World Banks figures of the level of urbanisation in South Africa. The World Bank had the degree of urbanisation at 54.97%, 57.32%, 60.62%, 62.75% and 65.30% in 1996, 2001, 2007, 2011 and 2016 respectively. The under or over value might be from the definition the World Bank used to classify an area as urban or rural, or the methodology used to calculate the degree of urbanisation. Between 1996 and 2016, at the national level, the degree of urbanisation and the urban-rural ratio increased by 6.0556% and 0.367 respectively indicating slow tempo of urbanisation over the 20 year period. All municipal categories experienced positive growth rates

during 1996 to 2016. The urban population grew at 2.092% annually with the metropolitan municipalities recording the highest population growth rate and was the only municipal category to experience a population growth rate above 2%. The rural population grew at 0.8342% annually. The B<sub>4</sub> municipalities recorded the lowest population of any municipal category. The high population growth rate among the metropolitan municipalities were as a result of the high population growth rates among the three metropolitan municipalities in Gauteng and also the City of Cape Town.

We see that the degree of urbanisation and urban-rural ratio in South Africa is heavily linked to the spatial legacy left by apartheid policies. The settlement patterns are influenced by the history of colonial trade and mining (World Bank, 2009). The highest concentration of the population is along the coast (Western Cape, Eastern Cape, and KwaZulu-Natal) and mining provinces (Gauteng, Free State and the North West). The provinces with the biggest urban populations are situated along the coast (KwaZulu-Natal, Western Cape and Eastern Cape) and the mining provinces of Gauteng and the Free State. The Bantustan areas created by the apartheid government to restrict the movement of black people into urban centres around the country also had a significant influence on the degree of urbanisation and the urban-rural ratio. We see former Bantustan provinces having low degrees of urbanisation and urban-rural ratios as a result of large rural populations of 1 000 000+ (Mpumalanga, Limpopo, Eastern Cape and KwaZulu-Natal). KwaZulu-Natal had the biggest total population and the second-biggest urban population in 1996, but only had a degree of urbanisation just above 50% and an urban-rural ratio just above 1. The Eastern Cape, Limpopo, Mpumalanga and North West had low degrees of urbanisation and urban-rural ratios as a result of traditionally being Bantustan areas. The low degree of urbanisation and urban-rural ratio in the Northern Cape is a result of a relatively small urban population of less than 500 000.

Furthermore, the addition of Manguang and Buffalo as metropolitan municipalities in 2011 further increased the population among metropolitan municipalities. The urban-rural differential was 1.2656%, indicating a moderate tempo of urbanisation over the 20-year period. Overall, South Africa has not experienced rapid urbanisation between 1996 and 2016. While Gauteng has been growing rapidly and continues to dominate the national economy, other provinces have not kept up, especially the coastal provinces of the Western Cape and KwaZulu-Natal where the economic development seems to be slowing down. In other provinces around the country, mining and quarrying remained the dominant economic sectors. The mining and quarrying has been slowing down in South Africa since 1996, affecting the economic development in many of these provinces and leading to low population growth rates.

#### 4.12.2. Gini Concentration Index

In 1996, four of the nine provinces in South Africa have a Gini concentration index above 0.5. These provinces include the Western Cape, Gauteng, KwaZulu-Natal and the Free State. In 2016 it rose to 5 as the Eastern Cape recorded a Gini concentration index above 0.5 between 2007 and 2016. The Western Cape is the most unequally distributed province in South Africa. The reason the Gini concentration in the province is so high is because the City of Cape Town was disproportionately larger than the rest of the localities in the province. The City of Cape Town consistently constituted more two-thirds of the total population. In addition to the large metropolitan municipality, the secondary cities in the Western Cape were of the smallest in the country. In 1996 the City of Cape Town was in the 1 000 000+ locality category and the next population concentration was in locality of size 100 000 – 199 999, which is a substantial gap and led to a highly unequal population distribution. Gauteng is the second-most unequally distributed province in the country. It has three large metropolitan municipalities which is a major factor affecting the population distribution. The only reason the Gini concentration index is not higher than that of the Western Cape is because of the number of localities and that the gap between the largest and the second-largest locality is not as substantial. The three metropolitan municipalities in Gauteng constituted more than 90% of the total population in the province. The imbalance is the size of the metropolitan municipalities relative to the rest of the seven localities. KwaZulu-Natal was the third unequally distributed province. KwaZulu-Natal is different from the Western Cape and Gauteng as it has a significantly large rural population. In KwaZulu-Natal, the population is more spread out as the province has 51 municipalities. It is similar in that it has a large urban population with a large metropolitan municipality. The study showed more than 40% of the cumulative population was concentrated in only four localities, leading to an unequal population distribution in the province. The four localities were eThekweni (A), The Msunduzi (B<sub>1</sub>), Newcastle (B<sub>1</sub>) and uMlalazi (B<sub>4</sub>). The Free State was another province with a Gini concentration index above 0.5. The Free State has a smaller population and has no metropolitan municipality compared to the Western Cape, Gauteng and KwaZulu-Natal. The unequal distribution in 1996 was attributed to the three municipalities, Matjhabeng (B<sub>1</sub>), Maluti-a-Phofung (B<sub>3</sub>) and Manguang (B<sub>1</sub>) which constituted more than 50% of the total population in the province. The Eastern Cape is the only non-urbanized province that has a Gini concentration index above 0.5. The unequal distribution is mainly attributed to Nelson Mandela Bay and Buffalo City, that constituted approximately 30% of its total population.

The provinces with a Gini concentration index lower than 0.5 were Mpumalanga, North West, Limpopo and the Northern Cape. North West had the lowest Gini concentration index of any province in 1996. North West contains no metropolitan municipalities and had no dominant region. The City of Matlosana (secondary city) was the biggest local municipality and was concentrated in the 200 000 – 499 999 locality. The next three biggest localities were in the same category. All the biggest localities were concentrated in the 200 000 – 499 999 category and therefore the gap between the biggest and second biggest was not as substantial as in the more unequal provinces (i.e. the Western Cape). The entire population is concentrated between the 200 000 - 499 999 and 20 000 – 49 999 size localities, therefore the gap between the biggest and smallest is not that substantial. Limpopo has the second lowest Gini concentration index in the country. Limpopo also has no metropolitan municipal. The study showed that approximately 15% in biggest locality was the secondary city Polokwane. Therefore, no significant gap exists between the biggest and the rest of the localities. The Northern Cape has the third-lowest Gini concentration index in the country. The Northern Cape is the smallest country in South Africa and the population distribution is characterized by a majority of the population concentrated in localities of size 50 000 – 99 999 and below. Sol Plaatje is the biggest local municipality, followed by Joe Morolong. Sol Plaatje was in the 200 000 – 499 999 category and Joe Morolong in the 100 000 – 199 999 category. Therefore, Sol Plaatje and Joe Morolong were not significantly larger than the rest of the localities in the province which contribute to a more even population distribution. Mpumalanga had the fourth-lowest Gini concentration. Bushbuckridge (B<sub>4</sub>) and Mbombela (B<sub>1</sub>) are the main factors contributing to the slightly unequal population distribution in the province. Both local municipalities were concentrated in 500 000 – 999 999 size localities. Therefore, a low Gini concentration index is the result of a province with no metropolitan municipalities and the largest localities is not that much bigger than the rest of the localities in the province.

Between 1996 and 2016, seven of the nine provinces in South Africa recorded an increase in their Gini concentrations. The Gini concentration in Gauteng and Western Cape declined slightly. This was a result of higher growth rates among the smaller localities in these provinces, hence closing the gap between the smaller localities and the metropolitan municipalities. The two provinces that recorded the biggest increase of their Gini concentration index were Mpumalanga and North West. This was a result of the high urban population growth rates in the core region (both secondary cities) in each province. The Gini concentration in other provinces increased only slightly. All the increases were a result of a high urban population growth rates relative to the rural population growth rates in each province.

At the national level, South Africa had an unequal population distribution. The Gini concentration index was just above 0.5 between 1996 and 2007 and increases above 0.6 between 2011 and 2016. The Gini concentration index increased by 0.033. The unevenness of the population at the national level was the result of a high concentration of the population residing in metropolitan municipalities. Between 1996 and 2016, approximately 30%-39% of the population was concentrated in the metropolitan municipalities, more than any other municipal category. The population growth rates in the metropolitan municipalities was the main reason for the increase of the Gini concentration index.

#### **4.12.3. Size of Locality of Residence of the Median Inhabitant**

Between 1996 and 2016, Gauteng had the largest size of locality of residence of the median inhabitant. In 2016, the three provinces with the highest size of locality of residence of the median inhabitant were Gauteng, Mpumalanga and Limpopo. In 1996, Gauteng was the only province in the country with a size of locality of residence of the median inhabitant above 1 000 000, four provinces were between 200 000 – 299 999 (Mpumalanga, Limpopo, North West and Eastern Cape), one between 100 000 – 199 999 (KwaZulu-Natal) and one less than 100 000 (the Northern Cape). In 2016, Gauteng was still the only province in the country with a size of locality of residence of the median inhabitant above 1 000 000+, three provinces were between 300 000 – 399 999 (Mpumalanga, Limpopo and North West), three between 200 000 – 299 999 (Eastern Cape, KwaZulu-Natal and the Free State) and one less than 100 000 (the Northern Cape). Only Gauteng and the North West were provinces that had a size of locality of residence of the median inhabitant above 300 000 and was urbanized. We see the influence of the rural population on the size of locality of residence of the median inhabitant. With the exception of Gauteng, we see that KwaZulu-Natal has a low size of locality of residence of the median inhabitant even though it has one of the biggest urban populations in the country and a large metropolitan municipality. This is because the rural population in KwaZulu-Natal is mostly concentrated among the smaller localities and these rural municipalities constitute approximately 90% of the total localities, therefore dropping the size of locality of residence of the median inhabitant. Similarly, the majority of the localities in the Northern Cape are concentrated among the smaller localities and are all rural, in addition to Limpopo and Mpumalanga in which the size of locality of residence of the median inhabitant is among the highest in country. We see that both these provinces have relatively average size urban municipalities, but they have rural municipalities concentrated in 500 000 and above localities. The provinces that recorded the biggest increases of size of locality of residence of the median inhabitant were those that recorded the highest urban population growth rates. Gauteng,

Mpumalanga and North West all recorded urban population growth rates above 2% and were among the highest in the country.

In 1996, at the national level, South Africa had a moderate size of locality of residence of the median inhabitant which was just below 300 000. The size of the biggest locality was between 2 000 000 – 2 999 999, which indicates a very dispersed population in South Africa. During this time, the urban population was only slightly bigger than the rural population. The degree of urbanisation was just above 50% and the urban-rural ratio was just above 1. This is significant as South Africa has a large rural population and a majority of its rural population is concentrated among the smaller localities and therefore brings down the size of locality of residence of the median inhabitant. Between 1996 and 2016, the size of locality of residence of the median inhabitant experienced a moderate increase just above 200 000. The increase was due to the high urban population growth rates relative to the rural, specifically, the population growth rate among metropolitan municipalities and the low population growth rates among B<sub>4</sub> municipalities. In 2016, the size of locality of residence of the median inhabitant was just below 500 000 and the size of the biggest locality was just below 5 000 000, indicating a dispersed population.

#### **4.12.4. Population Density**

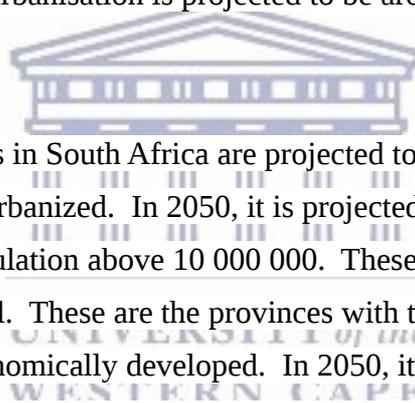
In 1996, Gauteng had the highest population density of any province. The population density was just below 500 persons/km<sup>2</sup>. It was the province with a population density above 100 persons/km<sup>2</sup>. This is a result of having the smallest land area in the country and one of the largest populations. KwaZulu-Natal was the province with the next highest population density, which was just below 100 persons/km<sup>2</sup>. This points to the dominance of Gauteng as its population density is approximately four times larger than the next biggest province's population density. KwaZulu-Natal had the largest population in 1996 and is one of the smallest provinces in the country in terms of land area. The provinces with the lowest population density were the Northern Cape and the Free State. Both provinces had a small population and a large land area, especially the Northern Cape which is the province with a land area above 300 000km<sup>2</sup>.

In 2016, the population density increased in all the provinces of South Africa. Gauteng and KwaZulu-Natal still had the highest population density. Gauteng and KwaZulu-Natal were the only provinces with a population density above 100 persons/km<sup>2</sup>. Gauteng was the only province with a population density over 500 persons/km<sup>2</sup>. Therefore, it was the only province in the country that was densely populated as per the UN definition of a densely populated region. Overall, only Gauteng was a densely populated province in South Africa, with seven of the nine provinces having

a population density of less than 100 persons/km<sup>2</sup>. At the national level South Africa is not a densely populated country. The population density was below 50 persons/km<sup>2</sup> between 1996 and 2016. It increased by only 12.35 persons/km<sup>2</sup> between 1996 and 2016. This moderate increase can be attributed to the slow tempo of urbanisation between 1996 and 2016.

#### 4.12.5. Population Projections

The projected figures showed that five of the nine provinces will be urbanized in 2030. These were the same provinces that were urbanized in 2016, namely Gauteng, Western Cape, KwaZulu-Natal, Free State and North West. Gauteng still had the highest degree of urbanisation and urban-rural ratio and was the only province with an urban population above 10 000 000+. The rural population remained high with six of the nine provinces projected to have rural populations above 1 000 000+. Only the Northern Cape and Gauteng will have rural populations below 1 000 000. It is projected that Limpopo will overtake KwaZulu-Natal and become the province with the largest rural population in the country. The projected total population of South Africa in 2030 will be just above 70 000 000. Its degree of urbanisation is projected to be around 66% and the urban-rural ratio 1.9.



By 2050, six of the nine provinces in South Africa are projected to be urbanized. Mpumalanga will become the sixth province to be urbanized. In 2050, it is projected that three of the six urbanized provinces will have an urban population above 10 000 000. These three provinces are Gauteng, the Western Cape and KwaZulu-Natal. These are the provinces with the biggest metropolitan municipalities and are highly economically developed. In 2050, it is projected that the rural population will remain high around the country with eight of the nine provinces having a rural population above 1 000 000. Only Gauteng had a rural population below 1 000 000. The projected total population of South Africa in 2050 will be just below 100 000 000. Its degree of urbanisation is projected to be around 71% and the urban-rural ratio 2.5.

#### 4.12.6. Primacy Index

Between 1996 and 2016, six of the nine provinces had a primate metropolitan municipality (A) or primate secondary city (B<sub>1</sub>). It must be noted that Limpopo and Northern Cape are considered to have primate cities by default as they only contain one city in their respective provinces. The other four provinces that had a primate city were Western Cape, Eastern Cape, KwaZulu-Natal and Free State. All these provinces contain at least one metropolitan municipality. The Western Cape has the highest primacy index, as the City of Cape Town is disproportionately larger than the rest of the localities, as is evident by its Gini concentration index. The provinces that do not have a primate

city were Gauteng, Mpumalanga and North West. Gauteng is the only province that contains metropolitan municipalities but does not have a primate metropolitan municipality, even though the City of Johannesburg is the biggest metropolitan municipality in the country. This is because the City of Johannesburg is not disproportionately larger than the rest of the metropolitan municipalities in the province. Mpumalanga and North West did not contain metropolitan municipalities and their urban populations were spread across a number of secondary cities. None of these secondary cities were disproportionately larger than the rest, hence the low primacy index. Between 1996 and 2016, the Western Cape, KwaZulu-Natal and Mpumalanga experienced a decline of primacy index. The reason for the decline in the Western Cape and KwaZulu-Natal was due to the population growth rates among its secondary cities. In Mpumalanga all the secondary cities are rapidly growing and matching and during some periods surpassing the population growth rate of Mbombela (the core region). The primacy index increased in Eastern Cape, Free State, Gauteng and North West. The Free State experienced the biggest increase. This was a result of a moderate growth rate in Manguang (A) relative to Matjhabeng (B<sub>1</sub>), which recorded one of the lowest population growth rates for a secondary city between 1996 and 2016. Similarly, the primacy index in the Eastern Cape increased as a result of low population growth rates among the smaller cities rather than the high population growth rate in Nelson Mandela Bay (A). The increase of the primacy index in Gauteng and North West was due to high population growth rates among its respective core regions. At the national level, South Africa does not have a primate city. Between 1996 and 2016 the primacy index increased by 9.8. This was mainly due to the high population growth rate in the City of Johannesburg. It was one of only two metropolitan municipalities to record a metropolitan municipality population growth rate above 3%.

## CHAPTER FIVE

### DISCUSSION

#### 5.1. Introduction

The purpose of this study is to examine the structural changes occurring in the patterns of spatial population distribution across South Africa between 1996 and 2016.

The population of interest in this study is the entire population of South Africa. The 1996, 2001 and 2011 population census and 2007 and 2016 community surveys were utilised to provide a temporal view of the population distribution between 1996 and 2016. The census data and community surveys provided the figures for the population at municipal, provincial and national levels. The statistical indicators, namely, the degree of urbanisation; urban-rural ratio; Gini concentration index; size of locality of residence of the median inhabitant; population density; population growth rates and polarization reversal were calculated using LibreOffice Calc. The statistical indicators were calculated for every province and the national for the years 1996, 2001, 2007, 2011 and 2016. This chapter aims to analyse and discuss the structural changes that occurred in the statistical indicators as outlined in Chapter 3, and to address the research questions and hypotheses that were outlined in Chapter 1.

#### 5.2. Research Questions and Hypotheses

**Research Question:** *Is there a relationship between a province's economic development and the degree of urbanisation in South Africa?*

**Hypothesis:** *Provinces that are highly economically developed have a higher degree of urbanisation.*

Gauteng, Western Cape and Kwazulu-Natal contributed the highest percentage towards the national between 1996 and 2016. Together, these three provinces constituted approximately two-thirds of the national Gross Domestic Product (GDP). Gauteng dominates the national economy, contributing one-third towards the national GDP. Kwazulu-Natal and the Western Cape are the second- and third-highest contributors, at approximately half of that of Gauteng. The economy in these provinces was dominated by five main economic sectors, namely, finance; real estate and business services; government services; trade and manufacturing. Furthermore, Gauteng and the

Western Cape are the political capitals and home to the main universities in the country, which also influences their economies. All factors contribute to the high level of economic development in these provinces.

Gauteng and the Western Cape had the two highest degrees of urbanisation in the country. Kwazulu-Natal had the fourth-highest degree of urbanisation after the Free State.

The two provinces with the lowest degree of urbanisation were the Northern Cape and Limpopo. They also contributed the lowest percentage towards the national GDP. Limpopo had a lower degree of urbanisation than the Northern Cape, but contributed a higher percentage towards the national GDP. Both economies are dominated by mining and quarrying. Three of the four provinces with the lowest degree of urbanisation have mining and quarrying as their dominant economic sector.

The results from the study showed that the hypothesis is rejected. The hypothesis only holds true for Gauteng, as it is the province with the highest degree of urbanisation and the highest economic development. The hypothesis fails for the rest of the eight provinces in the country. This is due to the fact that although Kwazulu-Natal had a lower degree of urbanisation than the Western Cape and the Free State, it contributed more towards the national GDP. Kwazulu-Natal's contribution towards the national GDP was only slightly larger than that of the Western Cape, but there was about a 30% gap between the degree of urbanisation between the two provinces. Although Kwazulu-Natal contributed three times more towards the national GDP than the Free State did, it still has a slightly lower degree of urbanisation.

Kwazulu-Natal is unique in that it has a large rural population in conjunction with its large urban population. The province's large urban population is due to the fact that it is a coastal province, similar to the Western Cape, and plays an important role for imports and exports in the country. Its close proximity to Gauteng makes the transport of goods and services between the provinces easier, and critical to the national economy. The province also has a large rural population, because the province is a former Bantustan region. This is also the main reason for the province's low degree of urbanisation, despite its high rate of economic development.

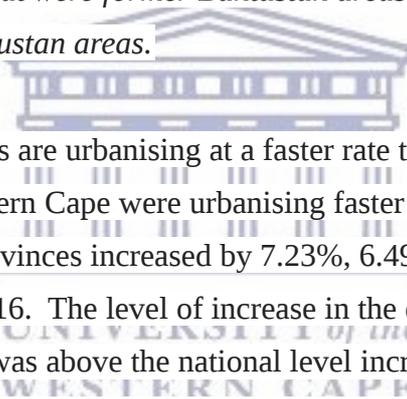
The Free State has a higher degree of urbanisation than the Eastern Cape, Mpumalanga and North West, but contributes less towards the national GDP. The reason for this might be that before 1996,

the Free State was one of the fastest growing economies as a result of gold mining in the province, which possibly led to rapid urbanisation during this time. After 1996, the gold mining industry slowed down and so did the province's economy. Therefore, between 1996 and 2016, the degree of urbanisation remained high, but the percentage contribution to the national GDP was low and declining. All the provinces with the lowest degrees of urbanisation (with the exception of the Northern Cape), were former Bantustan regions. This was evident by the fact that they contained B<sub>4</sub> municipalities. Furthermore, provinces with the highest degrees of urbanisation were not known as Bantustan regions. This was evident from the fact that their rural populations consisted of only B<sub>3</sub> municipalities.

Therefore, the hypothesis is rejected because in South Africa the degree of urbanisation and urban-rural ratio is still heavily influenced by the former Bantustan regions.

**Research Question:** *Are some provinces in South Africa urbanising faster than others?*

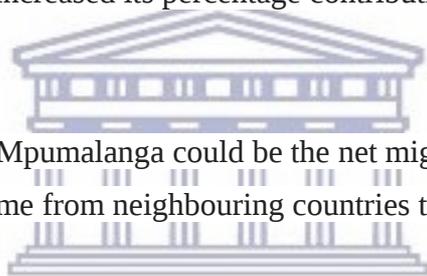
**Hypothesis:** *Provinces that were former Bantustan areas are urbanising faster than non-former Bantustan areas.*



Indeed, we see that some provinces are urbanising at a faster rate than others. Mpumalanga, North West, Kwazulu-Natal and the Eastern Cape were urbanising faster than the rest of the country. The degree of urbanisation in these provinces increased by 7.23%, 6.49%, 4.63% and 3.25% respectively between 1996 and 2016. The level of increase in the degree of urbanisation in both Mpumalanga and the North West was above the national level increase. The total, urban and rural population growth rates in Mpumalanga and the North West were greater than at the national level. The urban-rural differential in these provinces was greater than the national level and the highest of any province in the country. Both provinces recorded urban population growth rates above 2%. Only four provinces recorded an urban population growth rate above 2% between 1996 and 2016. Gauteng and the Western Cape were the other two. The rural population in Mpumalanga grew above 1%, which was relatively high, and the rural population growth rate in the North West was just below 1%. Only the Western Cape and Gauteng had a higher rural population growth rate. Mpumalanga and North West recorded the first- and second-highest urban-rural differentials, respectively. They were the only provinces to record an urban-rural differential above 1% between 1996 and 2016. Mpumalanga and North West contained no metropolitan municipalities and a large concentration of their population is concentrated among the secondary cities in the provinces. In fact, both provinces have four secondary cities with no dominant core. They also have a small concentration of the population residing in large towns (B<sub>2</sub> municipalities).

The main reason for the increase in the degree of urbanisation in these provinces is the emergence of a core region in each province, namely, Mbombela (B<sub>1</sub>) in Mpumalanga and Rustenburg (B<sub>1</sub>) in the North West. Mbombela and Rustenburg were two of the fastest growing secondary cities in the country. This might be the first stage of Friedmann's (1966) core periphery model, as Mbombela and Rustenburg are developing into the core regions of each province.

The increase in the degree of urbanisation might be due to the mining and quarrying sector in both provinces. Mpumalanga is rich in coal reserves and produces approximately 80% of South Africa's Coal supply. The majority of the coal production is concentrated in the secondary cities. The secondary cities recorded the highest population growth rates among the municipal categories. Since 1996, Mbombela has established itself as the core region in Mpumalanga as a result of government investment and has recorded the highest population growth rate among the secondary cities in Mpumalanga at 1.8927%. Investment in Mbombela helps to diversify the economic sectors in a province dominated by mining and quarrying and allows for more population growth in the province. In 2016, Mpumalanga increased its percentage contribution towards the national GDP since 1996.



Another reason for the growth in Mpumalanga could be the net migration rates. A high percentage of immigrants in Mpumalanga come from neighbouring countries to work at the mines.

Rustenburg is dominated by platinum mining. It is the fastest growing secondary city in the country. Between 1996 and 2016, it grew at 3.489% annually, with a percentage change of 100.94%. The City of Matlosana (B<sub>1</sub>) is home to one of the biggest cities in the North West, Klerksdorp, which is one of the gold mining hubs of South Africa. Madibeng(B<sub>1</sub>) is another secondary city that is dominated by platinum mining and shares a border with Gauteng and Limpopo and, hence, is strategically located for economic reasons. North West recorded positive net migration rates over the twenty-year period as migrants flocked to work on the mines in North West. The low rural population growth rate also influenced the tempo of urbanisation. North West has small pockets of former Bantustan regions and large out-migration from these areas drops the rural population significantly, as people look for better opportunities. All these factors played a role in increasing the degree of urbanisation and urban-rural ratio over the twenty-year period.

Unlike North West and Mpumalanga, the degree of urbanisation in Kwazulu-Natal and the Eastern Cape increased as a result of a low rural population growth, rather than a high urban population growth rate. Both provinces recorded urban population growth rates above 1%, which was low for

provinces with metropolitan municipalities. Both rural populations grew at less than 1%, which is significant as both provinces have among the largest rural populations in the country.

All the provinces mentioned recorded rural population growth rates below the national level. The four above-mentioned provinces were followed by the Free State where, like the Eastern Cape and Kwazulu-Natal, the degree of urbanisation increase was because of the low rural population growth rate. Limpopo followed the Free State but only slightly. The urban population growth rate in Limpopo was three times bigger than it was in the Free State, but in Limpopo, the rural population growth rate grew above 1%. As Limpopo has one of the largest rural populations in the country, this had a significant effect on its degree of urbanisation. Limpopo was followed by the Northern Cape, Gauteng and the Western Cape. All three were the only provinces to record an increase in their degree of urbanisation of less than 2%. The reason for the low increase in the Northern Cape was its overall low population growth rate.

The two provinces with the highest degree of urbanisation (Gauteng and Western Cape) experienced the lowest changes in their degree of urbanisation. The urban-rural ratios in these provinces are so large that population growth rates in both urban and rural municipalities will not have a significant effect on the degree of urbanisation. Gauteng and Western Cape might be in the latter stages of the core-periphery model, where all regions in each province have strong infrastructure and economic development.

In conclusion, the four provinces that recorded the highest increases in their degrees of urbanisation were former Bantustan regions, and the three provinces that recorded the lowest increases in their degrees of urbanisation were not former Bantustan regions. However, the Free State, which was not a former Bantustan region, recorded a higher increase of its degree of urbanisation than Limpopo, which was a former Bantustan region. Therefore, the hypothesis is rejected.

**Research Question:** *Do we have some provinces in South Africa that are more unequally spatially distributed than others?*

**Hypothesis:** *Provinces with metropolitan municipalities have a higher gini concentration index than those without metropolitan municipalities.*

The study showed that the provinces with metropolitan municipalities have a higher gini concentration index than those with no metropolitan municipalities. Between 1996 and 2016, the five provinces with the highest gini concentration indexes were the Western Cape, Gauteng,

Kwazulu-Natal, the Free State and the Eastern Cape. All these provinces had a gini concentration above 0.5. In addition, all these provinces contained one or more metropolitan municipalities. Between 1996 and 2016, the metropolitan municipalities in each of these provinces constituted at least 20% of their total population. Western Cape had the highest gini concentration index because the City of Cape Town constituted at least 60% of the total population between 1996 and 2016. The total population size of these provinces varied significantly. Gauteng, Kwazulu-Natal and the Eastern Cape are the three biggest provinces, whereas the Western Cape and Free State are ranked fifth and eighth respectively. Therefore, the size of the population does not have much of an influence on the gini concentration of a population. The urban population of each of these provinces is at least 1 000 000, which was mainly due to the presence of one or more metropolitan municipalities. In fact, these provinces had the five biggest urban populations in the country, although the Eastern Cape was the only province that was not urbanised.

The rural population of each province also varies significantly. The majority of the rural population in South Africa is situated among the smaller localities, which contributes to the unevenness of the population distribution, as large gaps exist between the rural and urban populations, especially in provinces that have metropolitan municipalities. We see this in the two provinces with the highest gini concentration index; the Western Cape and Gauteng. Both had rural populations of less than 1 000 000 and were constituted of only B<sub>3</sub> municipalities, the majority of which are concentrated in the 100 000-below category, thereby creating a large gap between the metropolitan municipalities and the smaller rural municipalities in each province. These two provinces were the only ones with a gini concentration above 0.6. Kwazulu-Natal, the Eastern Cape and the Free State have rural populations of more than 1 000 000. Kwazulu-Natal and the Eastern Cape have a few large rural municipalities (200 000 to 499 999 and above), therefore, the gini concentration is slightly lower in these provinces compared to Gauteng and the Western Cape. In fact, Kwazulu-Natal had a bigger metropolitan municipality (eThekweni) than the Western Cape between 1996 and 2007, but had a lower gini concentration index. The Free State never had large metropolitan municipalities relative to other provinces, but the unevenness of its population distribution was a result of the gap between the metropolitan municipality and the small rural municipalities because, in the Free State, the rural population is constituted of only B<sub>3</sub> municipalities which were concentrated in the 50 000-and-below locality categories.

The provinces with the lowest gini concentration indexes were North West, Mpumalanga, Northern Cape and Limpopo. All had a gini concentration index below 0.5. The gini concentration index in these provinces ranges between 0.30 and 0.39, indicating a slightly uneven population distribution.

In terms of total population size, Mpumalanga, North West and the Northern Cape are among the smallest in the country, whereas Limpopo was ranked the fourth-highest. All these provinces were ranked among the smallest in terms of urban populations. This was mainly because none of these provinces had any metropolitan municipalities. The core region in each of the provinces was a secondary city, with a population of 1 000 000+. The core region in Mpumalanga, North West and Limpopo constituted less than 20% of the total population. Limpopo, Mpumalanga and North West all had rural populations above 1 000 000 and were among the highest in the country. The Northern Cape was the only exception and had one of the lowest rural populations in the country. The rural municipalities of Limpopo, Mpumalanga and North West contained B<sub>4</sub> municipalities, of which the majority are concentrated in 200 000 – 499 999-and-above categories.

Therefore, in each of these provinces, the largest locality is not disproportionately larger than the other localities because of the combination of having a secondary city as a core and a rural population concentrated among the bigger localities.

Results from the study also showed that none of these provinces were urbanised. Although North West did become urbanized in 2007, it had a low gini concentration relative to other urbanised provinces. The reason for this is that North West does not contain a metropolitan municipality and a majority of the urban population are spread out almost evenly among its secondary cities, resulting in a better population distribution as no locality is disproportionately larger than the rest. The gini concentration index in the Northern Cape was low as a result of having a small core region (Sol Plaatjie), the smallest core region in the country, which had a population of between 200 000 and 299 999 between the years 1996 and 2016. Therefore, the core region was not disproportionately larger than the rest of the localities in the province. The majority of the localities in the Northern Cape are concentrated in localities with population sizes of 50 000 and below.

The hypothesis that provinces in South Africa which contain metropolitan municipalities do indeed have a higher gini concentration index is therefore confirmed.

**Research Question:** *Is the majority of the population in South Africa concentrated in one or two major cities?*

**Hypothesis:** *Unlike many developing countries, South Africa does not follow a primacy city distribution.*

The study showed that in 1996, South Africa had six metropolitan municipalities spread out among Gauteng, Western Cape, Kwazulu-Natal and Nelson Mandela Bay. Gauteng was the only province containing three metropolitan municipalities, with the rest of the provinces each containing one. The six metropolitan municipalities, from largest to smallest, are as follows: the eThekweni (Kwazulu-Natal); City of Johannesburg (Gauteng); City of Cape Town (Cape Town); City of Tshwane (Gauteng); Ekurhuleni (Gauteng) and Nelson Mandela Bay (Eastern Cape). We see the influence of the apartheid policies as most of the metropolitan municipalities situated along the coast and in Gauteng which was a mining province. Five metropolitan municipalities had a population over 1 000 000. Nelson Mandela Bay was the only province with a population below 1 000 000. Collectively, these metropolitan municipalities constituted approximately one-third of the total population between 1996 and 2016. In 1996, the study shows the primacy index at the national level was 21.57, indicating that South Africa does not have a primate city or municipality in this case. The primacy index must be above 50 for a city in the country to be recognised as a primate city. The three biggest metropolitan municipalities in 1996 all have populations of between 2 000 000 – 2 999 999. Therefore, no metropolitan municipality in South Africa is disproportionately larger than the rest of the metropolitan municipalities and hence the low primacy.

Between 1996 and 2016, the primacy index at the national level increased by 9.377. In 2016, the primacy index was 30.9477, the highest for any year in South Africa. In 2016, the number of metropolitan municipalities rose to eight. Mangaung in the Free State and Buffalo City become metropolitan municipalities in 2011. Both these municipalities were relatively small and never had a population above 1 000 000. Collectively, the metropolitan municipalities constituted 39.71% of the total population, an 8.32% increase from 1996. This was a result of the metropolitan municipalities recording the highest population growth rate among any municipal category between 1996 and 2016. Also the increase was due to Mangaung and Buffalo City becoming metropolitan municipalities in 2011. The metropolitan municipalities was the only municipal category to record a population growth rate above 2%. The increase in the primacy index was attributed to the high population growth rate in the City of Johannesburg relative to the other metropolitan municipalities. The City of Johannesburg overtook eThekweni as the largest metropolitan municipality in 2001. The City of Johannesburg and the City of Tshwane(both situated in Gauteng) were the only

metropolitan municipalities to record population growth rates above 3% over the 20-year period. Therefore Gauteng recorded the highest metropolitan municipality growth rate. Gauteng is the economic hub in the country. The high metropolitan municipal growth rate in the province was down to the natural population growth and high in-migration rate as Gauteng is by far the province with the highest in migration rate in the country.

The next biggest metropolitan municipality was the City of Cape Town, which only grew above 2%. The third-biggest metropolitan municipality was eThekweni, which grew just above 1%. The high population growth rates in the City of Johannesburg might have increased the primacy index but it was still not the primate city or primate metropolitan municipality. Furthermore, the population projections show that in 2030 and 2050, the City of Johannesburg will still not be a primate city or primate metropolitan municipality, even though it will have the biggest metropolitan municipality population and will be the only metropolitan municipality with a population above 10 000 000+.

The study has shown that, as a developing country, South Africa does follow a primate distribution as is the case with most developing countries in Africa. Most of these countries have one or two dominant cities or regions that are disproportionately larger than other regions in the country. The reason that South Africa does not follow a primate distribution is because the economic activities are spread out around four provinces in the country. While Gauteng is the dominant province, the second and third biggest metropolitan municipalities are in the Western Cape and Kwazulu-Natal. Coastal economies play an important role in any country and are bound to attract a large population. Furthermore, the influence of the mining provinces in South Africa, such as the Free State, creates more dispersion among the population in the country.

The hypothesis is therefore accepted and goes against the common hypothesis in the literature that most developing countries, or countries with a colonial past, will follow a primate distribution (Richardson, 1977; Berry, 1961).

**Research Question:** *Is the rural population in South Africa declining?*

**Hypothesis:** *The rural population grew at a slower rate than the urban population between 1996 and 2016.*

In the study, the rural population was defined as B<sub>3</sub> and B<sub>4</sub> municipalities. At the national level, B<sub>4</sub> municipalities constitute a high percentage of the rural and the total population. In fact, between 1996 and 2016, only the metropolitan municipalities (A) had a constituted higher concentration of

the population. The B<sub>4</sub> municipalities constituted approximately one-quarter of the total population and two-thirds of the rural population between 1996 and 2016. The provinces with the biggest rural populations were Kwazulu-Natal, Limpopo and the Eastern Cape. All these provinces were known as former Bantustan homelands during the apartheid years and all have a large concentration of their population concentrated in B<sub>4</sub> municipalities.

The study also revealed that the provinces that contain no B<sub>4</sub> municipalities (Gauteng, Western Cape and the Free State) were not Bantustan homelands under the apartheid government as they were the main urban centres at the time. The study showed that at the national level, the rural population grew at 0.8342% annually between 1996 and 2016. Five of the nine provinces recorded a rural population growth rate of less than 1%. Gauteng and the Western Cape recorded the highest rural population growth rates of any province. This did not have much impact on the overall rural population growth rate as these provinces have a very small absolute rural population. The lowest rural population growth rate was in the Free State. More importantly, two of three provinces with the largest rural populations (Kwazulu-Natal and the Eastern Cape) grew at less than 1%. The Eastern Cape and Kwazulu-Natal recorded the second- and fourth-lowest rural population growth rate of any provinces between 1996 and 2016.

Furthermore, all the provinces that contained B<sub>4</sub> municipalities recorded a population growth rate of less than 1% among the B<sub>4</sub> municipalities. This led to the B<sub>4</sub> municipalities recording the second lowest municipal category population growth rate behind the B<sub>1</sub> municipalities (secondary cities). The B<sub>4</sub> and B<sub>1</sub> municipalities were the only two municipal categories to record population growth rates of less than 1% between 1996 and 2016. However, the population growth rate among the secondary cities between 1996 and 2016 is misleading because of Mangaung and Buffalo City, which became metropolitan municipalities in 2011, hence subtracting from the population concentrated in the secondary cities between 1996 and 2016. Therefore, one could argue that the B<sub>4</sub> municipalities were the only municipal category to record a population growth rate below 1%, and the lowest population growth rate of any municipal category. When comparing the urban and rural population growth rates, we see that the urban-rural differential was 1.2656% annually between 1996 and 2016. This essentially means that the urban population grew at a rate which was 1.2656% faster than that of the rural population, for twenty years. The percentage change of the urban population was 51.90% compared to 18.15% of the rural population. Both indicators show that the urban population grew significantly faster than the rural population.

The reason for the low rural population growth rate compared to that of the urban population might be the regional disparities that exist between urban and rural areas in a majority of developing countries. Urban areas offer better economic opportunities, education, healthcare and basic services such as water and electricity. As a result, we see provinces with a large rural population record the largest out-net migration rate (Kwazulu-Natal and Eastern Cape).

Overall, we see that the rural population in South Africa is growing but at a slower rate than the urban population, and has been declining since 1996.

**Research Question:** *To what extent has polarization reversal occurred at the national and provincial levels?*

**Hypothesis:** *Polarization reversal has occurred in provinces with a high level of economic development and has not occurred at the national level.*

At a provincial level, polarization reversal has occurred in only two provinces in South Africa, namely the Western Cape and Kwazulu-Natal. Both provinces were urbanised, but to varying degrees and were highly economically developed. The settlement hierarchy was similar in that both provinces contain one metropolitan municipality, three secondary cities and six large towns. The metropolitan municipalities in both provinces have similar population sizes. The secondary cities and large towns in Kwazulu-Natal were twice as large as those in the Western Cape. The presence of three secondary cities and six large towns is bound to affect the population growth rate in the metropolitan municipalities as the economic opportunities and basic services are available to a certain extent in these municipalities. A stark contrast exists between the respective rural populations. Kwazulu-Natal had the the largest rural population in the country whereas the Western Cape had one of the smallest. Both provinces also had a similar level of economic development. Gauteng was the only province contributing more towards the national GDP.

The study showed that the urban population in the Western Cape grew above 2% annually between 1996 and 2016. The population growth rate in the City of Cape Town was 2.391% annually between 1996 and 2016 and 0.5228% lower than the national level. This was the fourth-highest population growth rate recorded by metropolitan municipalities between 1996 and 2016. The secondary cities grew at 2.388% annually, 1.4413% faster than the national level. Only four provinces recorded a secondary city population growth rate above 2%. It was the highest secondary city growth rate among provinces that contain one or more metropolitan municipalities. The percentage change of the population in the City of Cape Town was 56.76%, whereas in the secondary cities, it was

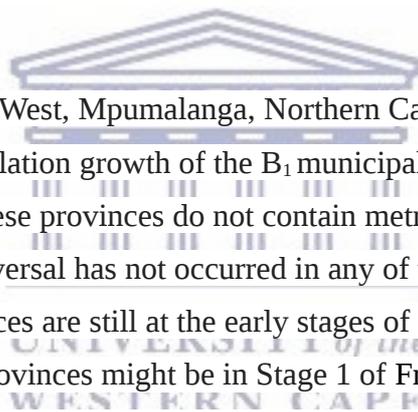
61.23%. The population growth rate among the secondary cities of Stellenbosch, Drakenstein, and George was 2.556%, 2.039%, and 2.749% respectively. We notice the City of Cape Town was still growing rapidly even though the secondary cities were growing faster. Therefore, the population growth rate in the secondary cities was not at the expense of the City of Cape Town. Some of the possible reasons for the high secondary city growth rate were the fact that Stellenbosch is home to Stellenbosch University and also, in recent years, offers various financial services, manufacturing and agriculture (specifically wine farming). Drakenstein is home to Paarl and Wellington which are large urban centres in the Western Cape and, like Stellenbosch, have large manufacturing and financial services and agricultural sectors. George, the hub of the Garden Route in the Western Cape, shares a border with the Eastern Cape and is an important transport route between the provinces. Another reason the secondary cities are growing rapidly is because the Western Cape has one of the best transport and communication infrastructures in the country, making for easy access to the City of Cape Town and any surrounding areas from secondary cities and large towns.

The study showed that the urban population growth rate in Kwazulu-Natal grew at just above 1.5% between 1996-2016. eThekweni in Kwazulu-Natal grew at a rate of 1.4350% annually between 1996 and 2016. This was 1.3207% below the national level and the fifth highest population growth rate among the metropolitan municipalities between 1996 and 2016. Furthermore, from the three dominant provinces (Gauteng, Western Cape and Kwazulu-Natal), eThekweni was the only metropolitan municipality to record a population growth rate of less than 2%. The secondary cities grew at 1.774% annually and were 0.8799% above the national level. The percentage change of eThekweni was 33.24% compared to the 42.68% of the secondary cities.

Kwazulu-Natal and Gauteng are the only provinces in South Africa that have a metropolitan municipality or municipalities with a population of 1 000 000+ and secondary cities with a population of 1 000 000+. The population growth rate in eThekweni has been slowing down since 2007. The study showed that the population growth rate was 2.3446% between 1996 and 2001 and 1.9232% between 2001 and 2007. Between 2007 and 2016, it slowed down and even recorded a negative population growth rate between 2007 and 2011.

Because of the low population growth rates in eThekweni, an argument can be made that the population growth in the secondary cities has been having a negative effect on the growth rates in eThekweni.

The secondary cities in Kwazulu-Natal are the most influential in the country. Kwazulu-Natal contains three secondary cities, namely Newcastle; Msunduzi and uMhlathuze. Msunduzi is home to Pietermaritzburg which is the second largest city in Kwazulu-Natal, with all the main institutes for higher learning being situated in Pietermaritzburg. uMhlathuze is home to Richards Bay which contains the largest port and one of the largest coal mines in South Africa and is critical to both the provincial and national economy. Newcastle has one of the largest manufacturing sectors in the country. Therefore, the secondary cities in Kwazulu-Natal carry massive economic weight in the province and the country. Furthermore, like the Western Cape, Kwazulu-Natal has a good transport and communication infrastructure which leads to better access between municipalities in the province. Communication technology and transport infrastructure will be crucial to the development of small-medium cities (Maksoud, 2003). Therefore, both Kwazulu-Natal and the Western Cape are at the later stages of Friedman's (1966) core-periphery model, in which the secondary cities or towns rapidly develop as strong links develop between the core and the periphery, leading to better economic activities, infrastructure and basic services and attracting more people.



Polarization reversal in the North West, Mpumalanga, Northern Cape, Free State and Limpopo was calculated by comparing the population growth of the B<sub>1</sub> municipalities (secondary cities) and B<sub>2</sub> municipalities (large towns) as these provinces do not contain metropolitan municipalities. The study showed that polarization reversal has not occurred in any of these provinces. The reason for this might be that all these provinces are still at the early stages of development and do not have a dominant core region. These provinces might be in Stage 1 of Friedman's (1966) core-periphery model, where one or two regions in the province are developing faster than the rest as the core is being established. The study revealed that this is indeed the case with Sol Plaatjie in the Northern Cape, Mbombela in Mpumalanga, Rustenburg in the North West, Polokwane in Limpopo and Mangaung, which became a metropolitan municipality in 2011. All these regions recorded the highest population growth rate among any local municipality in their respective provinces.

The Eastern Cape was a rare case in that Buffalo City was its only secondary city and became a metropolitan municipality in 2011. Therefore, polarization reversal was calculated by comparing the population growth rates in Nelson Mandela Bay (A) and Buffalo City between 1996 and 2007 and comparing the metropolitan municipalities (Nelson Mandela Bay and Buffalo City) to the B<sub>2</sub> municipalities between 2011 and 2016. The study showed that polarization reversal did not occur in the Eastern Cape. The possible reason for this is that Nelson Mandela Bay and Buffalo City are still a very small metropolitan municipalities and therefore still developing. Also, the main

economic sector in Buffalo city is government and community services and therefore will not attract much growth, as the majority of the economic opportunities in these sections are in Gauteng or the Western Cape. In addition, large towns in the Eastern Cape are not as dynamic economically as the Western Cape or Kwazulu-Natal. The main economic sector in the large towns was community services, which is not very fruitful economically.

Of the three provinces that contributed the highest percentage toward the national GDP, only Gauteng never experienced polarization reversal. The reason for this is the dominance of its three metropolitan municipalities. If a province contains three metropolitan municipalities, it is more likely that population growth will occur in these three metropolitan municipalities rather than in the secondary cities.

Polarization Reversal did not occur at the national level. The metropolitan municipalities grew at 2.755% annually between 1996 and 2016. This was the highest population for any municipal category. The secondary cities grew at only 0.897% annually between 1996 and 2016.. The high metropolitan municipal growth was due the high metropolitan municipal growth rate in Gauteng (especially the City Of Johannesburg) and also the addition of Mangaung and Buffalo City as metropolitan municipalities in 2011. This also decreased the overall population growth rate in the secondary cities between 1996 and 2016 and resulting its low population growth rate.

**Research Question:** *In South Africa, does a relationship exist between the size locality of the residence of the median inhabitant and the degree of urbanisation?*

**Hypothesis:** *Provinces with a larger size of locality of the residence of the median inhabitants have a greater degree of urbanisation.*

Gauteng had the highest size of locality of residence of the median inhabitant in South Africa. It is the only province that has a size of locality of residence of the median inhabitant larger than 1 000 000, and it had the highest degree of urbanisation. The main reason the size of locality of residence of the median inhabitant was so high is that Gauteng has three metropolitan municipalities with populations over 1 000 000. The size of locality of residence of the median inhabitant for the Western Cape (with the second-highest degree of urbanisation) could not be calculated as twenty-four of the twenty-five localities constituted less than 50% of the cumulative population and therefore the next locality constituted 100% of the cumulative population. This is a result of the

dominance of the City of Cape Town constituting more than 60% of the total population between 1996 and 2016.

The study showed that only two of the provinces with a size of locality of residence of the median inhabitant above 200 000 are urbanized (the Free State and Gauteng). In fact, they were the only provinces with a size of locality of residence of the median inhabitant above 200 000, with an urban population above 1 000 000. The next largest size of locality of residence of the median inhabitant after Gauteng was Limpopo, which was between 200 000 and 299 999. Limpopo has the lowest degree of urbanisation in the country. Kwazulu-Natal and the Northern Cape had the lowest size of locality of residence of the median inhabitant. Kwazulu-Natal was unique in that it had one of the highest degrees of urbanisation in the country with a large metropolitan municipality. In fact, eThekweni is one of the largest metropolitan municipalities in the country, and Kwazulu-Natal had the second-largest urban population in the country. The reason the size of locality of residence of the median inhabitant was so low is because of the size of its rural population. In Kwazulu-Natal, more than 50% of the cumulative population was concentrated in the 100 000 – 199 999 size localities and consisted of 47 of the 51 localities. Furthermore, 41 of the 47 localities were rural.

During 1996 and 2016 the top three provinces that recorded the biggest increase in its size of locality of residence of the median inhabitant was Gauteng, Limpopo and Mpumalanga. All these provinces recorded the highest urban population growth rates between 1996 and 2016. The top four provinces with the highest size of locality of residence of the median inhabitant between 1996 and 2016 was Gauteng, Limpopo, Mpumalanga and the Free State. The hypothesis is partially accepted as Gauteng has the highest degree of urbanisation and the biggest size of locality of residence of the median inhabitant. The hypothesis fails because between 1996 and 2016, among the top three provinces with the highest size of locality of residence of the median inhabitant were the provinces with the lowest degrees of urbanisation (Limpopo and Mpumalanga), and among the bottom four provinces with the lowest size of locality of residence of the median inhabitant had some of the highest degrees of urbanisation (Kwazulu-Natal and the Free State) in the country. The reason for this is that the large rural populations in Limpopo, Mpumalanga and Kwazulu-Natal (all former Bantustan) heavily influenced the respective size of locality of residence of the median inhabitant. Limpopo and Mpumalanga have pockets of the rural population living in large localities (100 000 – 199 999 and above), leading to a large size of locality of residence of the median inhabitant, whereas the rural population in Kwazulu-Natal is spread out among smaller localities, leading to a smaller size of locality of residence of the median inhabitant.

## CHAPTER SIX

### CONCLUSION AND RECOMMENDATIONS

#### Introduction

The purpose of the study is to examine the structural changes occurring in the patterns of spatial population distribution across South Africa over the period 1996-2016. This chapter summarises the main findings related to the study and if the research questions and hypotheses in chapter 1 are accepted or rejected.

#### 6.1. General Conclusion

South Africa is an urbanised country with the degree of urbanization just above 60% and urban-rural ratio just above 1 in 2016. As a developing country in Africa, South Africa has a relatively high degree of urbanization. South Africa also has a low population density compared to other urbanised countries. The population density was below 50 persons/km<sup>2</sup>. Gauteng is the only province in the country that is densely populated with a population density over 500 persons/km<sup>2</sup>.

At the provincial level, there are varying degrees of urbanization and urban-rural ratios. The province with the highest degree of urbanization and urban-rural ratio was Gauteng at approximately 99% and an urban-rural ratio above 100. Gauteng was the only province with a degree of urbanization above 90% and an urban-rural ratio above 100. Limpopo was the province with the lowest degree of urbanization which below 20% and an urban-rural ratio below 1. These massive disparities of levels of urbanizations and urban-rural ratios between provinces are common in developing countries. At the national level, the degree of urbanization and urban-rural ratio increased by 6.3% and 0.3 indicating a slow tempo of urbanisation was slow over the 20 year period. This was slow compared to other African countries. The increase in the degree of urbanization and the urban-rural ratio was mainly due to the urban population growth rate relative to the rural. The urban population growth rate was just above 2% and the rural population growth rate was just below 1%. Gauteng recorded the highest urban population growth rate as a result of the presence of three metropolitan municipalities and was followed by Mpumalanga, Western Cape, and North West.

South Africa has an uneven population distribution. the metropolitan municipalities the main reason for the unequal population distribution in the country. The unequal population distribution is attributed to the fact that South Africa has large metropolitan municipalities in conjunction with the large rural population which is mostly concentrated among the smaller localities. This creates a gap in terms of population size between the smaller rural municipalities and the metropolitan municipalities.

## 6.2. Confirmation of Hypotheses

The hypothesis “*provinces that were former Bantustan areas are urbanizing faster than non Bantustan*” areas was confirmed. Between 1996 and 2016 some provinces did urbanise faster than others. The provinces that recorded the biggest increase in its degree of urbanization were Mpumalanga, North West and Kwazulu-Natal . All these provinces had rural populations of 1 000 000+ as a result of being former Bantustan regions during apartheid. Mpumalanga and the North West recorded some of the highest urban population growth rates and were only two of four provinces to record urban population growth rates over 2%. Furthermore Mpumalanga, North West, and KwaZulu-Natal recorded the highest urban-rural differentials, with Mpumalanga and the North West the only provinces recording urban-rural differentials above 1%.

The hypothesis “*the rural population grew at a slower rate than the urban population between 1996-2016*” was confirmed. The rural population in South Africa did have positive a population growth rate but was slow compared to the urban population growth rate at both provincial and national level. Between 1996 and 2016 the urban population growth rate exceeded the rural population growth rate in 8 of the 9 provinces. The Western Cape was the only province in which rural population exceeded the urban population growth rate. Gauteng and the Western Cape, the provinces with smallest rural populations in the country recorded the highest rural population growth rates. These are two of the provinces with the highest degree of urbanization and urban-rural ratio. These were the only provinces that recorded rural populations above 2%.The rural populations in these provinces constituted of only B<sub>3</sub> municipalities were highly involved the agricultural sector and might be a reason for the high population growth rates. Furthermore both provinces have a small absolute rural population and therefore any increase will result in a relatively high population growth rate. At the provincial level, 5 of the 9 provinces had a rural population growth rate less than 1%. Furthermore, 4 of the 5 provinces were former Bantustan regions. All former Bantustan regions recorded rural population growth rates below 1% including Kwazulu-Natal, Limpopo and the Eastern Cape who has the largest rural populations in the country( all above 2 000 000+). At the national rural population grew at less than 1% between 1996-2016

with the B<sub>4</sub> municipalities recording the 2<sup>nd</sup> lowest population growth rate of any local municipality. This was significant as a majority of the rural population in South Africa is concentrated among B<sub>4</sub> municipalities. The urban population grew more than 1% faster than the rural population over the period under study. This might be the result of the urban - rural disparities that exist in many developing countries which leads high rates of rural-urban migration and consequently low rural population growth rates. Another reason might be that after apartheid people were allowed free movement across the country and many black South Africans migrated from Bantustan regions towards the urban centres across the country.

The hypothesis “*polarization reversal has occurred in provinces with a high level of economic development*” was not confirmed. Polarization reversal occurred in some provinces in South Africa. It only occurred in the Western Cape and Kwazulu-Natal. Both provinces are highly economically developed and had influential secondary cities. Furthermore both provinces has a really good transport and communication infrastructure connecting various local municipalities in the province and connecting to other provinces. It never occurred in Gauteng which was the most economically developed province. The hypothesis failed because Gauteng has three metropolitan municipalities. It has more metropolitan municipalities than it has secondary cities. All three metropolitan municipalities are highly economically developed. The presence of three metropolitan municipalities in a single province increases the probability of an individual to be located or move to a metropolitan municipality than a secondary city.

The hypothesis “*polarization reversal did not occur at the national level*” was accepted. Polarisation reversal did not occur at the national level. Many provinces are still in its early stages of development, meaning they are not highly economical developed, do not contain metropolitan municipalities, still establishing a core region and have low levels of urbanization. Polarization reversal usually occurs when a region is highly urbanized and economically developed.

The hypothesis “*provinces with metropolitan municipalities have a higher Gini concentration index*” was confirmed. Provinces with the highest Gini concentration index were the Western Cape and Gauteng, Both provinces were highly urbanized, economically developed and had one or more metropolitan municipalities which were the main reasons for its high Gini concentration index. These were the only provinces with a Gini concentration index above 0.6. Provinces with the lowest Gini concentration index were Mpumalanga and North West. These provinces had no metropolitan municipalities, moderate degrees of urbanization and were not as economically developed. All the provinces with the lowest Gini concentration index had secondary cities as its core region.

Therefore no local municipality in these provinces is not disproportionately larger than the rest of the localities in the province as secondary cities in South Africa do not have a population over 1 000 000+.

The hypothesis “*unlike many developing countries South Africa does not follow a primacy city distribution*” was confirmed. South Africa as a developing country does not follow a primacy distribution. The City of Johannesburg is the dominant metropolitan municipality in the country but was not a primate city or municipality in this case. The reason South Africa does not follow a primate distribution is because the population is spread out across metropolitan municipalities around the country. The presence of 8 metropolitan municipalities around the country does not allow one metropolitan municipality to dominate as the economic activities are more spread out allowing the population more option for various reasons such as employment and basic services.

The hypothesis “*provinces that highly economically developed provinces have a higher degree of urbanization*” was rejected. Gauteng, Western Cape, and KwaZulu-Natal contributed the highest percentage towards the national between 1996 and 2016. Together these three provinces constituted approximately 2/3 of national GDP. The hypothesis was partially accepted as Gauteng was the province with the highest degree of urbanization and had the highest economic development. The hypothesis fails for the rest of the 8 provinces in the country. The hypothesis failed because Kwazulu-Natal had a lower degree of urbanization than the Western Cape and the Free State but contributed more towards the national Kwazulu-Natal contribution towards the national GDP was only slightly bigger than the Western Cape but there was about a 30% gap between the degree of urbanization between the two provinces. KwaZulu-Natal also contributed three times more towards the national GDP than the Free State but still has a slightly lower degree of urbanization. KwaZulu-Natal is unique in that it has such a large rural population in conjunction with its large urban population. The large urban population is because of the province because it is a coastal province similar to the Western Cape and plays an important role in the national and provincial economy, also it's in close proximity to Gauteng, the economic hub in the country. The large rural population is because it is a former Bantustan region. This is also the main reason for its low degree of urbanization despite its high economic development. The Free State also has a higher degree of urbanization than the Eastern Cape, Mpumalanga, and the North West but contributes less towards the national GDP. This was mainly attributed to the large rural population in the Eastern Cape, Mpumalanga and the North West because of being former Bantustan homelands.

The hypothesis *provinces with a bigger size of locality of the residence of the median inhabitant the have a greater the degree urbanization* was not confirmed. The hypothesis was partially confirmed as Gauteng had the highest degree of urbanisation and the biggest size of locality of residence of the median inhabitant. The hypothesis failed because the study showed that provinces with the lowest degrees of urbanisation in the country (Limpopo and Mpumalanga) had some of the highest sizes of locality of residence of the median inhabitant. The two provinces with the lowest size of locality of residence of the median inhabitant (Kwazulu-Natal and the Free State) had some of the highest degrees of urbanisation in the country. The reason for is that the large rural population in Limpopo, Mpumalanga, and KwaZulu-Natal (all former Bantustan regions) are heavily influenced their respective size of locality of residence of the median inhabitant. Limpopo and Mpumalanga have pockets of the rural population living in large localities (100 000 – 199 999 and above) leading to a big size of locality of residence of the median inhabitant whereas the rural population in Kwazulu-Natal are spread out among smaller localities leading to a smaller size of locality of residence of the median inhabitant.

### **6.3. Policy and Future Research**

#### **6.3.1. Implication for Spatial Development Policy**

In South Africa, a spatial disconnection exists between where people live and the majority of economic activities. After apartheid one of the major challenges for the new government was to close the gap between the regional disparities that exist between urban and rural areas. The National Development Plan (Department of the Presidency, 2012) was created to address the spatial inequality moving forward. One of the main objectives of the national development plan is to reconstruct the apartheid geography. According to the national development plan (2012), spatial population distribution policies in South Africa for 2030 should aim to eradicate poverty traps in rural areas and in the urban periphery, inner cities will not be ridden with poverty, crime and slum areas, better transport infrastructure so people do not spend a great deal of time and money on daily commuting long distance to work, inclusion of immigrant communities into the culture and economy of the country, improving infrastructure and economies in rural areas to be integrated as an important cog in the economy and actively promoting environmental sustainability and decentralisation of the metropolitan regions for a more balanced population distribution. A key element for reaching these aforementioned objectives is the importance of an integrated and inclusive rural economy which is highlighted in the NDP (Department of the Presidency, 2012).

The results of the study reiterate the point outlined in the NDP (Department of the Presidency, 2012) that clear disparity between those living in urban areas compared to those living in rural areas. This

is evident in the total urban and rural population growth rates between 1996-2016. The urban-rural differential between 1996-2016 was 1.256%. The rural population growth rate was less than 1% over the 20 year period. Furthermore, the urban-rural ratio between 1996-2016 was constantly above 1 and increased over the 20 year period. It is projected that in 2030 the urban-rural will increase further and might be slightly below 2. This indicates clearly that people still prefer moving and living in urban areas. Lack of infrastructure and economic activities are mostly the cause of this preference.

The study showed that the 4 provinces( Western Cape, Gauteng, Mpumalanga, and Limpopo) with a highest rural growth rates were those who achieved high growth rates in their core regions. It must be noted that the municipalities in the B<sub>3</sub> category were largely responsible for the high rural growth rates. All grew above 2%. The municipalities in the B<sub>3</sub> category in these provinces all have healthy economies involved in various sectors such as mining and agriculture. The Western Cape and Gauteng are highly developed provinces with dominant metropolitan municipalities and secondary cities. Therefore rural areas in the Western Cape and Gauteng benefit from being situated close to transportation corridors and highly developed metropolitan areas and secondary cities. These two provinces are examples of regions in the latter stages of Friedman's(1966) core-periphery model where other regions in the lower levels of the population distribution hierarchy start to develop over time. Limpopo and Mpumalanga do not contain any metropolitan municipalities and are not as highly developed. Both provinces are not urbanized. Both provinces have secondary cities as their core region. However, they did have the fastest growing secondary cities in the country. Although in theory Mpumalanga and Limpopo are in the early stages of Friedmann's(1966) core-periphery model, the smaller regions in the provinces are growing at a similar rate to the core. The high rural growth rate among the municipalities in the B<sub>3</sub> category might be a result of many people migrating from the more remote municipalities in the B<sub>4</sub> category. Therefore from the study, we see the reasons for the high rural growth rates in Gauteng and the Western Cape are different from those in Mpumalanga and Limpopo.

The provinces with the lowest rural population growth rates(Eastern Cape, Northern Cape, and the Free State) had the lowest urban growth rates of any provinces. All three provinces recorded the lowest population growth rates among metropolitan municipalities and secondary cities. Again this points to evidence that a relationship exist between urban and rural population growth rates in each province. It should be noted that these provinces have the worst economies in the country. Policy makers should take into account the state economy in each individual provinces. Overall the study showed that the population growth rate among the metropolitan municipalities and secondary cities

is only fuelling growth in municipalities in the B<sub>3</sub> category , the municipalities in the B<sub>4</sub> category remain isolated and excluded from goods and services. This is evident from the population growth rates among municipalities in the B<sub>4</sub> category around the country. Among provinces that did municipalities in the B<sub>4</sub> category contain , none recorded a population growth rate more than 1% among the municipalities in the B<sub>4</sub> category .

Polarization reversal has an important role to play in achieving a more balanced population distribution around the country. The growth of smaller and intermediate cities provide means for rural populations to be close to markets, in addition for them providing the much needed infrastructure in various domains of development. Those cities may also serve as counter-magnets to bigger cities as they become more migrant attractive places. Hence, provincial development initiatives should favour the smaller and intermediate cities, especially those with a huge potential to growth. The study showed that only the Western Cape and KwaZulu-Natal experienced polarization reversal between 1996-2016. Both provinces have highly developed metropolitan municipalities and secondary cities. Both provinces have a highly developed transport and communication infrastructure. This will allow for easy movement of goods and services to and from the rural areas to other parts of the population distribution hierarchy allowing these areas to evolve. This is evident in the high population growth rate among the smaller municipalities in the B<sub>2</sub> and B<sub>3</sub> categories . However, in KwaZulu-Natal, the population growth rate among municipalities in the B<sub>4</sub> category were less than 1%. The low population growth among municipalities in the B<sub>4</sub> category is problematic because according to the study, approximately  $\frac{1}{4}$  of the population in South Africa resides in these areas.

The Gini concentration index is another indicator that shed light if the unequal population distribution in South Africa. The Gini concentration index in 7 of the 9 provinces increased between 1996-2016. Furthermore, the Gini concentration index increased at the national level. The increase in the Gini concentration index in the 7 provinces was due to a the high urban growth rates relative to the rural. Gauteng and Mpumalanga were the only two provinces that experienced a decline of its Gini concentration index. The Gini concentration index decline in Gauteng was due to the high growth rates among the smaller municipalities(urban and rural). The decline in the Gini concentration index in Mpumalanga was due to the low population growth rate among the B<sub>4</sub> municipalities relative to the secondary city(Mbombela). We see that the two provinces that achieve an equal population distribution, did so under different circumstances. One was due to a high urban population growth rate and the other was due high rural growth rates.

In conclusion to achieve the vision set out in NDP (Department of the Presidency, 2012) policy makers should take the following points into consideration:

- Provinces South Africa are at different stages of development and policy should not be developed to fit a one province fits all solution.
- Policy makers should take into account that different provinces have different regional economic potential.
- Rural growth should not be exclusively favoured over urban growth. The study has shown urban growth can stimulate rural growth in many provinces.
- Attention should be placed on secondary cities as provinces like the Western Cape and KwaZulu-Natal has shown that growth in secondary cities will fuel growth in smaller towns and rural areas, especially if a strong transport and communication infrastructure is established. This will not only establish a strong link between secondary cities, smaller towns, and rural areas but a link to the metropolitan municipalities which is likely to improve the economies and livelihoods of those living in the more remote hierarchies in the population distribution.
- Lastly, the study showed very low population growth rate among the B<sub>4</sub> municipalities around the country. This indicates people are migrating to other regions and a reason might be a lack of economic opportunities and basic infrastructure(health, education, and housing services. Development of the B<sub>4</sub> municipalities is critical for an even population distribution as the study has shown approximately ¼ of the population resides in these regions. Therefore a lot of investment is still required for a more inclusive and integrated rural economy with a strong emphasis in B<sub>4</sub> municipalities. This will hopefully to close the gap between the regional disparities that exist among the urban and rural areas, easing the pressure place on metropolitan municipalities around the country.

### **6.3.2. Future Research**

Future research on the spatial population distribution should focus on:

- the migration dimension in each province and how it affected the spatial population distribution in South Africa post-apartheid.
- how the reclassification of local and provincial boundaries overtime in the country affected the classification of urban and rural areas, also how it affected the level of urbanization.
- comparing the urbanization process in South Africa to other developing countries in Africa and across the world
- comparison of the urbanization level by different races in South Africa post-apartheid.

- investigate the absorptive capacity of each metropolitan municipalities and secondary cities.  
Will these regions be able to handle the large volumes of people concentrated in metropolitan municipalities or secondary cities in the future?



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## APPENDICES

### Appendix 1: Statistical indicators for the Western Cape

#### Annual population growth rate in urban, rural and metropolitan areas( in percentage)

	1996-2001	2001-2007	2007-2011	2011-2016	1996-2016
<b>A</b>	2.422	3.165	1.6789	1.367	2.2329
<b>B<sub>1</sub></b>	2.389	3.353	1.502	1.946	2.388
<b>B<sub>2</sub></b>	3.353	2.281	2.181	1.483	2.330
<b>B<sub>3</sub></b>	3.521	-0.593	7.027	1.837	2.567
<b>B<sub>4</sub></b>	0	0	0	0	0
<b>Total population</b>	2.772	2.569	2.452	1.511	2.309
<b>Urban</b>	2.456	3.100	1.780	1.452	2.263
<b>Rural</b>	3.008	-0.063	7.724	1.837	2.567
<b>Urban-Rural Differential</b>	-0.552	3.163	-6.045	-0.384	-0.303

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

#### Degree of urbanization,urban-rural ratio,gini concentration index,primacy index and population density

	1996	2001	2007	2011	2016
<b>Degree of Urbanization</b>	85.384%	84.756%	87.391%	84.859%	84.610%
<b>Urban-Rural ratio</b>	5.841	5.560	6.254	5.604	5.495
<b>Gini Concentration index</b>	0.649	0.673	0.664	0.653	0.673
<b>Population Density(Persons/Km<sup>2</sup>)</b>	30.58	34.96	40.79	45.00	48.53
<b>Primacy Index</b>	86.19	86.21	86.07	86.16	85.81

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data

**Appendix 2: Statistical indicators for the Eastern Cape**  
**Annual population growth rates in urban, rural and metropolitan areas(in percent)**

	1996-2001	2001-2007	2007-2011	2011-2016	1996-2016
<b>A</b>	0.740	0.731	1.793	1.671	1.126
<b>B<sub>1</sub></b>	0.477	0.518	0	0	0
<b>B<sub>2</sub></b>	0.779	1.114	-0.005	1.42	0.885
<b>B<sub>3</sub></b>	0.038	-0.397	2.142	1.217	0.623
<b>B<sub>4</sub></b>	0.304	0.944	-1.620	1.000	0.284
<b>Total Population</b>	0.423	0.648	0.131	1.283	0.647
<b>Urban</b>	0.671	0.778	1.286	1.605	1.059
<b>Rural</b>	0.229	0.582	-0.577	1.063	0.382
<b>Urban-Rural Differential</b>	0.441	0.196	1.864	0.538	0.677
<b>Nelson Mandela Bay</b>	0.740	0.731	2.298	1.838	1.322
<b>Buffalo City</b>	0.477	0.514	1.044	1.414	0.836

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

**Degree of urbanization, urban-rural ratio, size of locality of residence of the median inhabitant,gini concentration index, primacy index and population density**

	1996	2001	2007	2011	2016
<b>Degree of Urbanization</b>	37.505%	37.973%	38.2706%	40.081%	40.731%
<b>Urban-Rural ratio</b>	0.600	0.613	0.620	0.668	0.687
<b>Gini Concentration index</b>	0.490	0.493	0.516	0.502	0.509
<b>Size of locality of residence of the median inhabitant</b>	239371.949	233 731.947	264 579.006	240 990.180	299 851. 289
<b>Population Density(Person s/Km<sup>2</sup>)</b>	36.38	37.15	38.63	38.83	41.41
<b>Primacy Index</b>	58.571	58.795	59.198	60.404	60.985

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

**Appendix 3: Statistical indicators for Kwazulu-Natal**

**Annual population growth rates in municipal categories, urban, rural and metropolitan areas(in percent)**

	1996-2001	2001-2007	2007-2011	2011-2016	1996-2016
<b>A</b>	2.344	1.923	-0.186	1.236	1.435
<b>B<sub>1</sub></b>	3.049	1.381	0.765	1.789	1.777
<b>B<sub>2</sub></b>	3.342	0.692	3.727	2.615	2.448
<b>B<sub>3</sub></b>	4.210	0.957	0.160	2.419	1.976
<b>B<sub>4</sub></b>	1.138	0.481	-1.074	1.040	0.260
<b>Total population</b>	2.231	1.134	0.019	1.496	1.276
<b>Urban</b>	2.662	1.611	0.652	1.602	1.680
<b>Rural</b>	1.759	0.584	-0.754	1.363	0.805
<b>eThekweni(A)</b>	2.344	1.923	-0.186	1.236	1.435
<b>Urban-Rural differential</b>	0.903	1.026	1.406	0.239	0.874

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

**Degree of urbanization,urban-rural ratio, size of locality of residence of the median inhabitant,gini concentration index, primacy index and population density**

	1996	2001	2007	2011	2016
<b>Degree of Urbanization</b>	51.661%	52.796%	54.328%	55.719%	56.014%
<b>Urban-Rural ratio</b>	1.069	1.120	1.192	1.258	1.273
<b>Gini Concentration index</b>	0.510	0.508	0.537	0.523	0.524
<b>size of locality of residence of the median inhabitant</b>	184 360.471	215 275.381	273 064.677	267 409.714	277 422.099
<b>Population Density(Person s/Km<sup>2</sup> )</b>	90.88	101.61	108.76	108.85	117.31
<b>Primacy Index</b>	73.14	72.45	73.09	72.33	71.78

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

**Appendix 4: Statistical indicators for Gauteng**

**Annual population growth rates in municipal categories, urban, rural and metropolitan areas**

	1996-2001	2001-2007	2007-2011	2011-2016	1996-2016
<b>A</b>	3.904	2.552	4.052	1.932	2.930
<b>B<sub>1</sub></b>	2.924	0.386	2.766	0.603	1.52
<b>B<sub>2</sub></b>	2.403	-6.6463	5.000	0.445	-0.2816
<b>B<sub>3</sub></b>	2.142	-1.709	10.076	2.446	2.649
<b>B<sub>4</sub></b>	0	0	0	0	0
<b>Total population</b>	3.168	2.174	4.01	1.757	2.683
<b>Urban</b>	3.164	2.198	3.977	1.752	2.684
<b>Rural</b>	2.142	-1.709	10.076	2.446	2.696
<b>Ekurhuleni</b>	4.048	1.574	3.855	1.224	2.555
<b>City of Tshwane</b>	3.567	2.807	5.485	2.254	3.014
<b>City of Johannesburg</b>	4.021	3.115	3.288	2.195	3.145
<b>Metropolitan municipalities (A)</b>	3.904	3.839	4.052	1.932	2.930
<b>Urban-Rural Differential</b>	1.021	3.907	-6.098	-0.694	-0.012

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

**Degree of urbanization, urban-rural ratio, size of locality of residence of the median inhabitant, gini concentration index, primacy index and population density**

	1996	2001	2007	2011	2016
<b>Degree of Urbanization</b>	99.154%	99.234%	99.35%	99.189%	99.160%
<b>Urban-Rural ratio</b>	117.329	129.640	153.108	122.314	118.138
<b>Gini Concentration index</b>	0.620	0.627	0.632	0.597	0.600
<b>size of locality of residence of the median inhabitant.</b>	1 910 818.165	2 246 333.521	2 529 392.707	3 092 971.973	3 348 214.702
<b>Population Density(Persons/Km<sup>2</sup>)</b>	462.57	550.12	617.12	724.62	791.19
<b>Primacy Index</b>	36.23	36.64	39.16	38.16	38.90

**Appendix 5: Statistical indicators for Free State**

**Annual population growth rates in municipal categories, urban, rural and metropolitan areas(in percent)**

	1996-2001	2001-2007	2007-2011	2011-2016	1996-2016
<b>A</b>	0	0	0.730	0.325	1.151
<b>B<sub>1</sub></b>	-0.500	1.536	0.088	1.072	-0.530
<b>B<sub>2</sub></b>	1.437	0.821	0.270	0.892	0.882
<b>B<sub>3</sub></b>	1.181	-0.810	-0.598	0.589	0.079
<b>B<sub>4</sub></b>	0	0	0	0	0
<b>Total population</b>	0.548	0.403	-0.248	0.638	0.368
<b>Urban</b>	0.026	1.365	0.010	0.674	0.587
<b>Rural</b>	1.181	-0.810	-0.598	0.589	0.079
<b>Mangaung</b>	1.343	2.566	-0.182	0.325	1.150
<b>Urban-Rural differential</b>	-1.155	2.175	0.609	0.085	0.507

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

**Degree of urbanization,urban-rural ratio, size of locality of residence of the median inhabitant, population density, primacy index and gini concentration index**

	1996	2001	2007	2011	2016
<b>Degree of Urbanization</b>	55.608%	54.174%	57.393%	57.992%	58.096%
<b>Urban-Rural ratio</b>	1.252	1.182	1.347	1.380	1.386
<b>Gini Concentration index</b>	0.502	0.484	0.524	0.515	0.516
<b>size of locality of residence of the median inhabitant.</b>	266 218.239	233907.477	281437.848	269663.75	270568.366
<b>Population Density(Persons /Km<sup>2</sup>)</b>	20.28	20.84	21.35	21.14	21.83

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

**Appendix 6: Statistical indicators for Northern Cape**  
**Annual population growth rates in municipal categories, urban, rural and metropolitan areas(in percent)**

	1996-2001	2001-2007	2007-2011	2011-2016	1996-2016
<b>Sol Plaatjie(B<sub>1</sub>)</b>	-0.280	3.060	0.511	0.580	1.095
<b>Khara Hais (B<sub>2</sub>)</b>	-0.150	3.826	-1.910	1.401	1.078
<b>B<sub>3</sub></b>	-0.065	0.720	2.821	1.066	1.030
<b>Joe Morolong(B<sub>4</sub>)</b>	-2.759	-4.318	4.224	-1.227	-1.445
<b>Total population</b>	-0.398	1.075	1.992	0.819	0.826
<b>Urban</b>	-0.243	3.281	-0.175	0.808	1.090
<b>Rural</b>	-0.459	0.109	2.973	0.823	0.718
<b>Sol Plaatjie</b>	-0.280	3.060	0.511	0.580	1.095
<b>Urban-Rural Differential</b>	0.215	3.172	-3.148	-0.014	0.372

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

**Degree of urbanization,urban-rural ratio, size of locality of residence of the median inhabitant, population density and gini concentration index**

	1996	2001	2007	2011	2016
<b>Degree of Urbanization</b>	28.262%	28.476%	32.506%	29.805%	29.790%
<b>Urban-Rural ratio</b>	0.393	0.398	0.481	0.424	0.424
<b>Gini Concentration index</b>	0.368	0.369	0.366	0.422	0.399
<b>size of locality of residence of the median inhabitant.</b>	63 537.401	59 833.508	64 107.910	59 945.312	67 934.086
<b>Population Density(Persons /Km<sup>2</sup>)</b>	2.79	2.73	2.91	3.16	3.29

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

**Appendix 7: Statistical indicators for Mpumalanga**  
**Annual population growth rates in municipal categories, urban, rural and metropolitan areas(in percent)**

	1996-2001	2001-2007	2007-2011	2011-2016	1996-2016
<b>A</b>	0	0	0	0	0
<b>B<sub>1</sub></b>	2.081	3.920	1.621	2.344	2.606
<b>B<sub>2</sub></b>	3.288	-0.088	5.288	1.580	2.008
<b>B<sub>3</sub></b>	3.514	-1.808	6.382	1.638	2.022
<b>B<sub>4</sub></b>	0.180	0.506	1.737	0.542	0.680
<b>Total population</b>	3.015	1.333	2.582	1.414	1.639
<b>Urban</b>	2.234	3.365	2.018	2.257	2.536
<b>Rural</b>	1.021	-0.514	2.913	0.775	1.031
<b>Mbombela</b>	2.240	1.682	2.766	1.102	1.892
<b>Urban-Rural differential</b>	1.213	3.879	-0.895	1.482	1.504

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

**Degree of urbanization, urban-rural ratio, size of locality of residence of the median inhabitant, population density and Gini concentration index**

	1996	2001	2007	2011	2016
<b>Degree of Urbanization</b>	36.791%	38.214%	43.202%	42.207%	44.023%
<b>Urban-Rural ratio</b>	0.583	0.615	0.762	0.731	0.785
<b>Gini Concentration index</b>	0.382	0.341	0.403	0.374	0.367
<b>size of locality of residence of the median inhabitant.</b>	251 823.440	262 823.404	298 989.827	319 043.114	380 358.431
<b>Population Density(Persons /Km<sup>2</sup> )</b>	39.30	42.31	45.83	50.82	54.54
<b>Primacy Index</b>	42.30	42.66	42.81	39.02	36.67

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

**Appendix 8: Statistical indicators for North West**

**Annual population growth rates in municipal categories, urban, rural and metropolitan areas(in percent)**

	1996-2001	2001-2007	2007-2011	2011-2016	1996-2016
<b>A</b>	0	0	0	0	0
<b>B<sub>1</sub></b>	2.258	1.434	4.178	2.062	2.394
<b>B<sub>2</sub></b>	1.382	11.134	-13.789	1.510	1.305
<b>B<sub>3</sub></b>	2.988	-0.067	3.426	1.271	1.730
<b>B<sub>4</sub></b>	0.249	-1.419	2.959	-0.247	0.166
<b>Total population</b>	1.800	1.534	1.755	1.314	1.590
<b>Urban</b>	2.102	3.594	0.574	1.977	2.213
<b>Rural</b>	1.495	-0.767	3.190	0.521	0.911
<b>Mafikeng</b>	1.386	1.866	0.111	1.510	1.305
<b>Urban-Rural differential</b>	0.606	4.362	-2.615	1.455	1.301

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

**Degree of urbanization,urban-rural ratio, size of locality of residence of the median inhabitant, population density and gini concentration index**

	1996	2001	2007	2011	2016
<b>Degree of Urbanization</b>	48.872	49.621	56.150	53.559	55.364
<b>Urban-Rural ratio</b>	0.956	0.985	1.280	1.153	1.240
<b>Gini Concentration index</b>	0.357	0.346	0.364	0.369	0.387
<b>size of locality of residence of the median inhabitant.</b>	215 779.369	219 878.879	254 047.370	238 369.565	306 911.991
<b>Population Density (Persons/Km<sup>2</sup>)</b>	26.00	28.45	31.18	33.46	35.73
<b>Primacy Index</b>	30.64	31.67	33.78	34.39	35.57

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

**Appendix 9: Statistical indicators for Limpopo**  
**Annual population growth rates in municipal categories, urban, rural and metropolitan areas(in percent)**

	1996-2001	2001-2007	2007-2011	2011-2016	1996-2016
<b>A</b>	0	0	0	0	0
<b>B<sub>1</sub></b>	3.5865	1.6678	2.8258	2.2015	2.5125
<b>B<sub>2</sub></b>	1.0953	1.7081	-1.7997	1.3340	0.7598
<b>B<sub>3</sub></b>	4.3202	-1.2886	6.8023	2.847	2.7601
<b>B<sub>4</sub></b>	1.2494	0.8479	-0.1118	1.0558	0.8083
<b>Total population</b>	1.7519	0.7908	0.7826	1.4080	1.1837
<b>Urban</b>	2.6284	1.6827	1.2101	1.9207	1.8841
<b>Rural</b>	1.5827	0.6135	0.6996	1.2988	1.0444
<b>Urban-Rural Differential</b>	1.0457	1.0692	0.5105	0.6219	0.8397
<b>Polokwane</b>	3.5865	1.6678	2.8258	2.2015	2.5125

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

**Degree of urbanization,urban-rural ratio, size of locality of residence of the median inhabitant, population density and gini concentration index**

	1996	2001	2007	2011	2016
<b>Degree of Urbanization</b>	15.456%	16.148%	17.036%	17.330%	17.780%
<b>Urban-Rural ratio</b>	0.182	0.192	0.205	0.209	0.216
<b>Gini Concentration index</b>	0.361	0.364	0.372	0.378	0.377
<b>size of locality of residence of the median inhabitant.</b>	267 971.413	269 097.214	303 990.811	309151.719	319 742.178
<b>Population Density (Persons/Km<sup>2</sup>)</b>	36.39	39.72	41.65	42.97	46.11

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

**Appendix 10: Statistical indicators for South Africa**  
**Annual population growth rates in municipal categories, urban, rural and metropolitan areas(in percent)**

	1996-2001	2001-2007	2007-2011	2011-2016	1996-2016
<b>A</b>	2.830	2.089	4.561	1.631	2.755
<b>B<sub>1</sub></b>	1.812	1.831	-2.72	1.764	0.897
<b>B<sub>2</sub></b>	2.751	1.034	0.490	1.540	1.481
<b>B<sub>3</sub></b>	1.610	-0.232	3.516	1.535	1.419
<b>B<sub>4</sub></b>	0.977	0.492	-0.421	0.8757	0.526
<b>Total population</b>	1.985	1.315	1.630	1.446	1.578
<b>Urban</b>	2.523	2.058	2.146	1.650	2.090
<b>Rural</b>	1.185	0.255	0.913	1.113	0.834
<b>A(Metro)</b>	2.830	2.089	4.561	1.631	2.755
<b>Urban-Rural Differential</b>	1.331	1.802	1.232	0.536	1.265

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

**Degree of urbanization,urban-rural ratio, size of locality of residence of the median inhabitant, population density and gini concentration index**

	1996	2001	2007	2011	2016
<b>Degree of Urbanization</b>	56.234%	57.766%	60.396%	61.657%	62.289%
<b>Urban-Rural ratio</b>	1.284	1.373	1.530	1.608	1.651
<b>Gini Concentration index</b>	0.573	0.579	0.597	0.609	0.606
<b>size of locality of residence of the median inhabitant.</b>	296 462.654	329 568.892	366 268.165	472 479.620	497 238.915
<b>Population Density. (Persons/Km<sup>2</sup>)</b>	33.26	36.73	39.75	42.43	45.61
<b>Primacy index</b>	21.08	27.5990	28.63	29.97	30.94

Source: Own computation using Censuses 1996,2001,2011, CS2007 and CS2016 data.

## Appendix 11: Gini Concentration Index North West

### Gini Concentration Index

1996

	Localities	Population	Proportion		Localities	Population	X <sup>2</sup> Y <sub>i</sub> +1	Y <sub>i</sub> X <sup>2</sup> +1
			Localities	Population				
All localities	19	2727235	1	1				
1 1 000 000+	0	0	0	0	0	0	0	0
2 500-999	0	0	0	0	0	0	0	0
3 200-499	5	1437875	0.2631578947	0.5272281267	0.2631578947	0.5272281267	0.2774884877	0.2103644013
4 100-199	5	742235	0.2631578947	0.2721565982	0.5263157895	0.7993847248	0.6310932038	0.4984666849
5 50-99	5	402818	0.2631578947	0.1477019765	0.7894736842	0.9470867014	0.9470867014	0.7894736842
6 20-49	4	144307	0.2105263158	0.0529132986	1	1	1	1
7 10-19999	0	0	0	0	1	1	0	0
8 2000-9999	0	0	0	0	1	1		

2.8556683929 2.4983047704 0.3573636225

2001

	Localities	Population	Proportion		Localities	Population	X <sup>2</sup> Y <sub>i</sub> +1	Y <sub>i</sub> X <sup>2</sup> +1
			Localities	Population				
All localities	19	2983184	1	1				
1 1 000 000+	0	0	0	0	0	0	0	0
2 500-999	0	0	0	0	0	0	0	0
3 200-499	5	1589626	0.2631578947	0.5328622036	0.2631578947	0.5328622036	0.3645899288	0.2368676343
4 100-199	8	1095529	0.4210526316	0.3672348068	0.6842105263	0.9000970104	0.710602903	0.6450163739
5 50-99	2	127141	0.1052631579	0.0426192283	0.7894736842	0.9427162388	0.9427162388	0.7894736842
6 20-49	4	170888	0.2105263158	0.0572837612	1	1	1	1
7 10-19999	0	0	0	0	1	1	0	0
8 2000-9999	0	0	0	0	1	1		

3.0179090705 2.6713576924 0.3465513781

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2007

	Localities	Population	Proportion		Localities	Population	X <sup>2</sup> Y <sub>i</sub> +1	Y <sub>i</sub> X <sup>2</sup> +1
			Localities	Population				
All localities	20	3271948	1	1				
1 1 000 000+	0	0	0	0	0	0	0	0
2 500-999	0	0	0	0	0	0	0	0
3 200-499	7	2140416	0.35	0.6541717656	0.35	0.6541717656	0.3597944711	0.2910974441
4 100-199	4	580886	0.2	0.1775352176	0.55	0.8317069831	0.6653655865	0.5258486993
5 50-99	5	406970	0.25	0.1243815611	0.8	0.9560885442	0.9560885442	0.8
6 20-49	4	143676	0.2	0.0439114558	1	1	1	1
7 10-19999	0	0	0	0	1	1	0	0
8 2000-9999	0	0	0	0	1	1		

2.9812486018 2.6169461434 0.3643024584

2011

	2011		Proportion		2011		XiYi+1	YiXi+1
	Localities	Population	Localities	Population	Localities	Population		
All localities	19	3509954	1	1	1	1		
1 000 000+	0	0	0	0	0	0	0	0
500-999	1	549575	0.0526315789	0.1565761261	0.0526315789	0.1565761261	0.0412042437	0.0293857952
200-499	4	1410138	0.2105263158	0.4017539831	0.2631578947	0.5583301092	0.3820153379	0.2357224625
100-199	8	1184312	0.4210526316	0.3374152482	0.6842105263	0.8957453573	0.8957453573	0.6842105263
50-99	6	365929	0.3157894737	0.1042546427		1	1	1
20-49	0	0	0	0		1	1	1
10-19999	0	0	0	0		1	1	0
2000-9999	0	0	0	0		1	1	0

3.3189649389 2.949318784 0.3696461549

2016

	2016		Proportion		2016		XiYi+1	YiXi+1
	Localities	Population	Localities	Population	Localities	Population		
All localities	19	3748437	1	1	1	1		
1 000 000+	0	0	0	0	0	0	0	0
500-999	2	1164038	0.1052631579	0.3105395662	0.1052631579	0.3105395662	0.0817209385	0.060077335
200-499	3	975325	0.1578947368	0.260195116	0.2631578947	0.5707346822	0.3905026773	0.2354744264
100-199	8	1214749	0.4210526316	0.3240681383	0.6842105263	0.8948028205	0.8948028205	0.6842105263
50-99	6	394325	0.3157894737	0.1051971795		1	1	1
20-49	0	0	0	0		1	1	1
10-19999	0	0	0	0		1	1	0
2000-9999	0	0	0	0		1	1	0

3.3670264363 2.9797622877 0.3872641485

## Appendix 12: Gini Concentration Index Mpumalanga.

1996

	1996		Proportion		1996		X <sub>i</sub> Y <sub>i</sub> +1	Y <sub>i</sub> X <sub>i</sub> +1	Gini index
	Localities	Population	Localities	Population	Localities	Population			
All localities	18	3123870	1	1					
1 000 000+	1	0	0.0555555556	0	0.0555555556	0	0	0.0097068167	
500-999 999	1	545811	0.0555555556	0.1747226997	0.1111111111	0.1747226997	0.0776545332	0.0781115518	
200-499 999	6	1650282	0.3333333333	0.5282812665	0.4444444444	0.7030039662	0.4686693108	0.3869705774	
100 -199 999	4	523810	0.2222222222	0.167679833	0.6666666667	0.8706837993	0.7739411549	0.6400774253	
50-99 999	4	279375	0.2222222222	0.0894323387	0.8888888889	0.960116138	1.0134559234	0.8888891734	
20-49 999	3	124593	0.1666666667	0.0398841821	1.0555555556	1.0000003201	1.0555558935	1.0555558935	
10-19999	0	0	0	0	1.0555555556	1.0000003201	0	0	
2000-9999	0	0	0	0	1.0555555556	1.0000003201			
							3.3892768158	3.0593114381	0.3299653777

2001

	2001		Proportion		2001		X <sub>i</sub> Y <sub>i</sub> +1	Y <sub>i</sub> X <sub>i</sub> +1	Gini index
	Localities	Population	Localities	Population	Localities	Population			
All localities	18	3363229	1	1					
11 000 000+	0	0	0	0	0	0	0	0	0
2 500-999	0	0	0	0	0	0	0	0	0
3 200-499	7	2307557	0.3888888889	0.6861135534	0.3888888889	0.6861135534	0.4574090356	0.3479565818	
4 100-199	5	701677	0.2777777778	0.2086319427	0.6666666667	0.8947454961	0.7953293298	0.6504867792	
5 50-99	4	272370	0.2222222222	0.0809846728	0.8888888889	0.9757301688	0.9757301688	0.8888888889	
6 20-49	2	81625	0.1111111111	0.0242698312	1	1	1	1	1
7 10-19999	0	0	0	0	1	1	0	0	0
8 2000-9999	0	0	0	0	1	1			
							3.2284685343	2.8873322499	0.3411362843

2007

	2007		Proportion		2007		X <sub>i</sub> Y <sub>i</sub> +1	Y <sub>i</sub> X <sub>i</sub> +1	Gini index
	Localities	Population	Localities	Population	Localities	Population			
All localities	18	3640487	1	1					
1 000 000+	0	0	0	0	0	0	0	0	0
500-999	2	1037173	0.1111111111	0.2848995203	0.1111111111	0.2848995203	0.1107942579	0.0795047781	
200-499	5	1567752	0.2777777778	0.4306434826	0.3888888889	0.7155430029	0.4372762796	0.34335481	
100-199	4	609306	0.2222222222	0.1673693657	0.6111111111	0.8829123686	0.7848109943	0.5992408586	
50-99	5	355543	0.2777777778	0.0976635818	0.8888888889	0.9805759504	0.9805759504	0.8888888889	
20-49	2	70713	0.1111111111	0.0194240496	1	1	1	1	1
10-19999	0	0	0	0	1	1	0	0	0
2000-9999	0	0	0	0	1	1			
							3.3134574822	2.9109893356	0.4024681466

2011

	Localities	Population	Proportion		Localities	Population	$\bar{X}Y_i+1$	$Y_i\bar{X}+1$	
			Localities	Population					
All localities	18	4039939	1	1					
1 1 000 000+	0	0	0	0	0	0	0	0	0
2 500-999	2	1130042	0.1111111111	0.2797175898	0.1111111111	0.2797175898	0.1243189288	0.0825939314	
3 200-499	6	1873028	0.3333333333	0.4636277924	0.4444444444	0.7433453822	0.4955635881	0.3989170244	
4 100-199	4	623031	0.2222222222	0.1542179226	0.6666666667	0.8975633048	0.7978340487	0.6518796447	
5 50-99	4	324230	0.2222222222	0.0802561623	0.8888888889	0.9778194671	0.9778194671	0.8888888889	
6 20-49	2	89608	0.1111111111	0.0221805329		1	1	1	1
7 10-19999	0	0	0	0	1	1	0	0	
8 2000-9999	0	0	0	0	1	1			
							3.3955360327	3.0222794893	0.3732565434

2016

	Localities	Population	Proportion		Localities	Population	$\bar{X}Y_i+1$	$Y_i\bar{X}+1$	Gini index
			Localities	Population					
All localities	18	4335966	1	1					
1 1 000 000+	0	0	0	0	0	0	0	0	0
2 500-999	2	1170918	0.1111111111	0.2700477817	0.1111111111	0.2700477817	0.1200212363	0.082955755	
3 200-499	6	2066322	0.3333333333	0.4765540136	0.4444444444	0.7466017953	0.5392124077	0.410399692	
4 100 000-199 9	5	766588	0.2777777778	0.1767975118	0.7222222222	0.9233993071	0.8207993841	0.7070013028	
5 50-99	3	240757	0.1666666667	0.0555255738	0.8888888889	0.9789248809	0.9789248809	0.8892988962	
6 20-49	2	93381	0.1111111111	0.0215363774		1	1.0004612582	1.0004612582	1.0004612582
7 10-19999	0	0	0	0	1	1.0004612582	0	0	
8 2000-9999	0	0	0	0	1	1.0004612582			
							3.4594191672	3.0901169044	0.3693022629



### Appendix 13: Gini Concentration Index Western Cape.

1996

	1996		Proportion		Localities	Population	X <sup>i</sup> Y <sup>i</sup> +1	Y <sup>i</sup> X <sup>i</sup> +1
	Localities	Population	Localities	Population				
All localities	25	3956876	1	1				
1 1 000 000+	1	2562277	0.04	0.6475504919	0.04	0.6475504919	0.0259020197	0.0259020197
2 500-999	0	0	0	0	0.04	0.6475504919	0.0259020197	0.0259020197
3 200-499	0	0	0	0	0.04	0.6475504919	0.1295100984	0.0313655419
4 100-199	4	540462	0.16	0.1365880558	0.2	0.7841385477	0.3763865029	0.1810326126
5 50-99	7	478879	0.28	0.1210245153	0.48	0.905163063	0.7965434954	0.4758939729
6 20-49	10	341410	0.4	0.0862827139	0.88	0.9914457769	0.9121301148	0.8765704055
7 10-19999	1	18427	0.04	0.0046569566	0.92	0.9961027336	0	0
8 2000-9999	2	15421	0.08	0.0038972664	1	1		

2.2663742508 1.6166665723 0.6497076785

2001

	2001		Proportion		Localities	Population	X <sup>i</sup> Y <sup>i</sup> +1	Y <sup>i</sup> X <sup>i</sup> +1
	Localities	Population	Localities	Population				
All localities	25	4524333	1	1				
1 1 000 000+	1	2892243	0.04	0.6392639534	0.04	0.6392639534	0.0255705581	0.0255705581
2 500-999	0	0	0	0	0.04	0.6392639534	0.0255705581	0.0255705581
3 200-499	0	0	0	0	0.04	0.6392639534	0.1278527907	0.0309543263
4 100-199	4	608949	0.16	0.1345942043	0.2	0.7738581577	0.4643148946	0.1867699393
5 50-99	10	723855	0.4	0.1599915391	0.6	0.9338496967	0.859141721	0.5977200617
6 20-49	8	282094	0.32	0.0623504061	0.92	0.9962001029	0.9563520988	0.9186416561
7 10-19999	1	10512	0.04	0.0023234364	0.96	0.9985235393	0	0
8 2000-9999	1	6680	0.04	0.0014764607	1	1		

2.4588026213 1.7852270998 0.6735755215



2007

	2007		Proportion		Localities	Population	X <sup>i</sup> Y <sup>i</sup> +1	Y <sup>i</sup> X <sup>i</sup> +1
	Localities	Population	Localities	Population				
All localities	25	5278576	1	1				
1 000 000+	1	3497097	0.04	0.6625076536	0.04	0.6625076536	0.0265003061	0.0265003061
500-999	0	0	0	0	0.04	0.6625076536	0.0795009184	0.0296648945
200-499	2	417613	0.08	0.0791147082	0.12	0.7416223618	0.1779893668	0.0980910003
100-199	3	400130	0.12	0.0758026407	0.24	0.8174250025	0.4904550015	0.226951981
50-99	9	676757	0.36	0.1282082516	0.6	0.9456332541	0.8699825938	0.5984620852
20-49	8	273449	0.32	0.0518035546	0.92	0.9974368087	0.917641864	0.917641864
10-19999	0	0	0	0	0.92	0.9974368087	0	0
2000-9999	2	13530	0.08	0.0025631913	1	1		

2.5620700507 1.8973121312 0.6647579196

2011

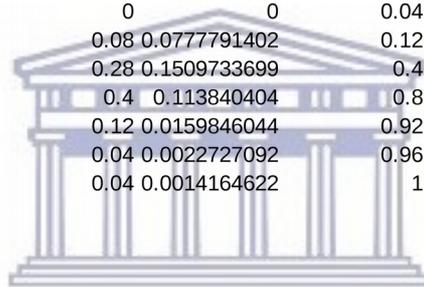
	Localities		Proportion		Localities		Population		$\bar{X}Y_i+1$	$Y_i\bar{X}+1$
	Localities	Population	Localities	Population	Localities	Population	$\bar{X}Y_i+1$	$Y_i\bar{X}+1$		
All localities	25	5822734	1	1						
1 1 000 000+	1	3740026	0.04	0.6423144179	0.04	0.6423144179	0.0256925767	0.0256925767		
2 500-999	0	0	0	0	0.04	0.6423144179	0.0513851534	0.0274186456		
3 200-499	1	251261	0.04	0.0431517222	0.08	0.6854661401	0.1919305192	0.0665806132		
4 100-199	5	854728	0.2	0.1467915244	0.28	0.8322576645	0.5659352119	0.2697143988		
5 50-99	10	762825	0.4	0.1310080454	0.68	0.9632657099	0.8476738247	0.6774979108		
6 20-49	5	192469	0.2	0.0330547471	0.88	0.996320457	0.9166148205	0.8787472689		
7 10-19999	1	13136	0.04	0.0022559849	0.92	0.9985764419	0	0		
8 2000-9999	1	8289	0.04	0.0014235581	0.96	1				

2.5992321064 1.9456514139 0.6535806925

2016

	Localities		Proportion		Localities		Population		$\bar{X}Y_i+1$	$Y_i\bar{X}+1$
	Localities	Population	Localities	Population	Localities	Population	$\bar{X}Y_i+1$	$Y_i\bar{X}+1$		
All localities	25	6279730	1	1						
1 000 000+	1	4004793	0.04	0.6377333102	0.04	0.6377333102	0.0255093324	0.0255093324		
500-999	0	0	0	0	0.04	0.6377333102	0.0765279972	0.028620498		
200-499	2	488432	0.08	0.0777791402	0.12	0.7155124504	0.2862049802	0.1039782984		
100-199	7	948072	0.28	0.1509733699	0.4	0.8664858203	0.6931886562	0.3921304897		
50-99	10	714887	0.4	0.113840404	0.8	0.9803262242	0.9019001263	0.7970486629		
20-49	3	100379	0.12	0.0159846044	0.92	0.9963108287	0.9564583955	0.9186968548		
10-19999	1	14272	0.04	0.0022727092	0.96	0.9985835378	0	0		
2000-9999	1	8895	0.04	0.0014164622	1	1				

2.9397894878 2.2659841363 0.6738053515



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## Appendix 14: Gini concentration Index Eastern Cape.

1996

	1996		Proportion		1996		$\bar{X}\bar{Y}_i+1$	$\bar{Y}_i\bar{X}_i+1$	
	Localities	Population	Localities	Population	Localities	Population			
All localities	39	6147248	1	1					
1 1 000 000+	0	0	0	0	0	0	0	0	
2 500-999	2	1655245	0.0512820513	0.2692660195	0.0512820513	0.2692660195	0.0690425691	0.0311746671	
3 200-499	8	2081704	0.2051282051	0.3386399898	0.2564102564	0.6079060093	0.327334005	0.2243827499	
4 100-199	11	1642463	0.2820512821	0.2671867151	0.5384615385	0.8750927244	0.5833951496	0.5025022204	
5 50-99	5	357313	0.1282051282	0.0581256849	0.6666666667	0.9332184093	0.8614323778	0.661565956	
6 20-49	10	363490	0.2564102564	0.0591305247	0.9230769231	0.992348934	0.992348934	0.9230769231	
7 10-19999	3	47033	0.0769230769	0.007651066		1	1	0	
8 2000-9999	0	0	0	0	0	1	1	0	
							2.8335530356	2.3427025165	0.4908505191

2001

	2001		Proportion		2001		$\bar{X}\bar{Y}_i+1$	$\bar{Y}_i\bar{X}_i+1$	
	Localities	Population	Localities	Population	Localities	Population			
All localities	39	6278651	1	1					
1 1 000 000+	1	1005779	0.0256410256	0.160190302	0.0256410256	0.160190302	0.0082148873	0.0069754491	
2 500-999	1	702281	0.0256410256	0.1118522116	0.0512820513	0.2720425136	0.0627790416	0.029757029	
3 200-499	7	1935203	0.1794871795	0.3082195523	0.2307692308	0.5802620658	0.3124488047	0.201867481	
4 100-199	12	1849044	0.3076923077	0.2944970185	0.5384615385	0.8747590844	0.605602443	0.5060229805	
5 50-99	6	408099	0.1538461538	0.0649978793	0.6923076923	0.9397569637	0.8915642989	0.689473693	
6 20-49	10	352543	0.2564102564	0.0561494818	0.9487179487	0.9959064455	0.9959064455	0.9487179487	
7 10-19999	2	25702	0.0512820513	0.0040935545		1	1	0	
8 2000-9999	0	0	0	0	0	1	1	0	
							2.876515921	2.3828145813	0.4937013397

2007

	2007		Proportion		2007		$\bar{X}\bar{Y}_i+1$	$\bar{Y}_i\bar{X}_i+1$	
	Localities	Population	Localities	Population	Localities	Population			
All localities	39	6527747	1	1					
1 1 000 000+	1	1050930	0.0256410256	0.160994291	0.0256410256	0.160994291	0.0082561175	0.0069731602	
2 500-999	1	724312	0.0256410256	0.1109589572	0.0512820513	0.2719532482	0.0836779225	0.0359660589	
3 200-499	10	2802916	0.2564102564	0.4293849011	0.3076923077	0.7013381493	0.3776436188	0.27413685	
4 100-199	9	1237704	0.2307692308	0.1896066131	0.5384615385	0.8909447624	0.5711184374	0.5032704593	
5 50-99	4	285265	0.1025641026	0.0437003763	0.641025641	0.9346451387	0.8627493588	0.6371215964	
6 20-49	11	386864	0.2820512821	0.0592645518	0.9230769231	0.9939096904	0.9939096904	0.9230769231	
7 10-19999	3	39756	0.0769230769	0.0060903096		1	1	0	
8 2000-9999	0	0	0	0	0	1	1	0	
							2.8973551455	2.3805450479	0.5168100976

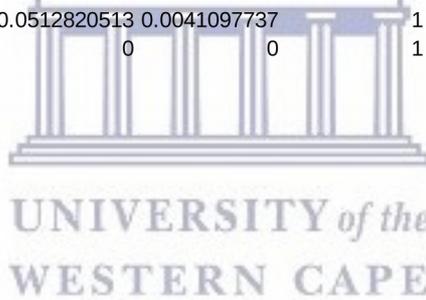
2011

	Localities	Population	Proportion		Localities	Population	$\sum Y_i^{i+1}$	$Y_i X_i^{i+1}$	
			Localities	Population					Localities
All localities	39	6562053	1	1					
1 1 000 000+	1	1152115	0.0256410256	0.1755723399	0.0256410256	0.1755723399	0.0090037097	0.0074527763	
2 500-999	1	755200	0.0256410256	0.1150859342	0.0512820513	0.2906582742	0.0670749863	0.0306419348	
3 200-499	7	2013628	0.1794871795	0.3068594539	0.2307692308	0.5975177281	0.3217403151	0.200950936	
4 100-199	12	1793210	0.3076923077	0.2732696612	0.5384615385	0.8707873893	0.692164335	0.5200576593	
5 50-99	10	623618	0.2564102564	0.0950339779	0.7948717949	0.9658213672	0.9162920663	0.7914440136	
6 20-49	6	195984	0.1538461538	0.0298662629	0.9487179487	0.9956876301	0.9956876301	0.9487179487	
7 10-19999	2	28298	0.0512820513	0.0043123699	1	1	0	0	
8 2000-9999	0	0	0	0	0	1	1		
							3.0019630426	2.4992652686	0.502697774

Gini Concentration Index

2016

	Localities	Population	Proportion		Localities	Population	$\sum Y_i^{i+1}$	$Y_i X_i^{i+1}$	
			Localities	Population					Localities
All localities	39	6996979	1	1					
1 1 000 000+	1	1263051	0.0256410256	0.1805137617	0.0256410256	0.1805137617	0.009257116	0.0075988069	
2 500-999	1	810528	0.0256410256	0.1158397074	0.0512820513	0.2963534691	0.075988069	0.0325743805	
3 200-499	8	2370905	0.2051282051	0.3388469509	0.2564102564	0.6352004201	0.3583181857	0.2276903159	
4 100-199	12	1768779	0.3076923077	0.252791812	0.5641025641	0.8879922321	0.6830709478	0.5424092605	
5 50-99	8	514638	0.2051282051	0.073551457	0.7692307692	0.9615436891	0.9122337563	0.7660694049	
6 20-49	7	240322	0.1794871795	0.0343465373	0.9487179487	0.9958902263	0.9958902263	0.9487179487	
7 10-19999	2	28756	0.0512820513	0.0041097737	1	1	0	0	
8 2000-9999	0	0	0	0	0	1	1		
							3.0347583011	2.5250601174	0.5096981836



## Appendix 15: Gini Concentration Index Free State.

1996

	Localities		Proportion		Localities		Localities	
	Population	Localities	Population	Localities	Population	Localities	$\sum Y_i X_i + 1$	$Y_i X_i + 1$
All localities	20	2633504	1	1				
1 1 000 000+	0	0	0	0	0	0	0	0
2 500-999	1	603528	0.05	0.2291729954	0.05	0.2291729954	0.0343759493	0.0272171411
3 200-499	2	830001	0.1	0.315169827	0.15	0.5443428223	0.2177371289	0.1166195685
4 100-199	5	613925	0.25	0.2331209673	0.4	0.7774637897	0.5830978423	0.3741753952
5 50-99	7	416027	0.35	0.1579746983	0.75	0.935438488	0.935438488	0.75
6 20-49	5	170023	0.25	0.064561512	1	1	1	1
7 10-19999	0	0	0	0	1	1	0	0
8 2000-9999	0	0	0	0	1	1		

2.7706494085 2.2680121048 0.5026373038

2001

	Localities		Proportion		Localities		Localities	
	Population	Localities	Population	Localities	Population	Localities	$\sum Y_i X_i + 1$	$Y_i X_i + 1$
All localities	20	2706755	1	1				
1 1 000 000+	0	0	0	0	0	0	0	0
2 500-999	1	645440	0.05	0.2384552721	0.05	0.2384552721	0.0357682908	0.0261271707
3 200-499	2	768957	0.1	0.2840881424	0.15	0.5225434145	0.2090173658	0.1146673969
4 100-199	5	654780	0.25	0.2419058984	0.4	0.7644493129	0.6115594503	0.3794013126
5 50-99	8	498189	0.4	0.1840539687	0.8	0.9485032816	0.9485032816	0.8
6 20-49	4	139389	0.2	0.0514967184	1	1	1	1
7 10-19999	0	0	0	0	1	1	0	0
8 2000-9999	0	0	0	0	1	1		

2.8048483886 2.3201958803 0.4846525083

2007

	Localities		Proportion		Localities		Localities	
	Population	Localities	Population	Localities	Population	Localities	$\sum Y_i X_i + 1$	$Y_i X_i + 1$
All localities	20	2773059	1	1				
1 1 000 000+	0	0	0	0	0	0	0	0
2 500-999	1	752906	0.05	0.2715073859	0.05	0.2715073859	0.0407261079	0.0278275724
3 200-499	2	790444	0.1	0.2850440614	0.15	0.5565514473	0.1947930066	0.1125005815
4 100-199	4	536455	0.2	0.1934524292	0.35	0.7500038766	0.4875025198	0.3184123201
5 50-99	6	442984	0.3	0.1597456095	0.65	0.909749486	0.909749486	0.65
6 20-49	7	250270	0.35	0.090250514	1	1	1	1
7 10-19999	0	0	0	0	1	1	0	0
8 2000-9999	0	0	0	0	1	1		

2.6327711203 2.108740474 0.5240306463

2011

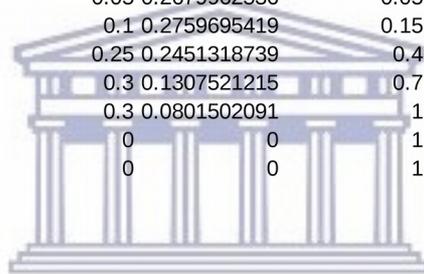
	2011		Proportion		2016		X̄Yi+1		YiX̄+1	
	Localities	Population	Localities	Population	Localities	Population	X̄Yi+1	YiX̄+1		
All localities	20	2745589	1	1						
1 1 000 000+	0	0	0	0	0	0	0	0	0	0
2 500-999	1	747431	0.05	0.2722297474	0.05	0.2722297474	0.0408344621	0.0271285323		
3 200-499	2	742245	0.1	0.2703408995	0.15	0.542570647	0.2170282588	0.1180695836		
4 100-199	5	671461	0.25	0.2445599105	0.4	0.7871305574	0.5116348623	0.3605706462		
5 50-99	5	313810	0.25	0.1142960582	0.65	0.9014266156	0.9014266156		0.65	
6 20-49	7	270642	0.35	0.0985733844	1	1	1	1	1	1
7 10-19999	0	0	0	0	1	1	1	0	0	0
8 2000-9999	0	0	0	0	1	1	1			

2.6709241988 2.1557687622 0.5151554366

2016

	2016		Proportion		2011		X̄Yi+1		YiX̄+1	
	Localities	Population	Localities	Population	Localities	Population	X̄Yi+1	YiX̄+1		
All localities	20	2834715	1	1						
1 1 000 000+	0	0	0	0	0	0	0	0	0	0
2 500-999	1	759693	0.05	0.2679962536	0.05	0.2679962536	0.040199438	0.0271982898		
3 200-499	2	782295	0.1	0.2759695419	0.15	0.5439657955	0.2175863182	0.1183646504		
4 100-199	5	694879	0.25	0.2451318739	0.4	0.7890976694	0.5523683686	0.3679399164		
5 50-99	6	370645	0.3	0.1307521215	0.7	0.9198497909	0.9198497909		0.7	
6 20-49	6	227203	0.3	0.0801502091	1	1	1	1	1	1
7 10-19999	0	0	0	0	1	1	1	0	0	0
8 2000-9999	0	0	0	0	1	1	1			

2.7300039157 2.2135028565 0.5165010592



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## Appendix 16: Gini Concentration Index Gauteng.

1996

	1996		Proportion		1996		$\sum Y_i$	$\sum Y_i^2$	
	Localities	Population	Localities	Population	Localities	Population			
All localities	12	7834125	1	1					
1 1 000 000+	3	6345026	0.25	0.8099214654	0.25	0.8099214654	0.2699738218	0.2215407273	
2 500-999	1	597285	0.0833333333	0.0762414437	0.3333333333	0.8861629091	0.4430814545	0.3139463139	
3 200-499	2	436173	0.1666666667	0.0556760327	0.5	0.9418389418	0.7063792064	0.4851714135	
4 100-199	3	223303	0.25	0.0285038852	0.75	0.9703428271	0.8894809248	0.746011201	
5 50-99	2	190673	0.1666666667	0.0243387743	0.9166666667	0.9946816013	0.9946816013	0.9166666667	
6 20-49	1	41665	0.0833333333	0.0053183987	1	1	1	1	
7 10-19999	0	0	0	0	1	1	0	0	
8 2000-9999	0	0	0	0	1	1			
							4.3035970088	3.6833363224	0.6202606864

2001

	2001		Proportion		2001		$\sum Y_i$	$\sum Y_i^2$	
	Localities	Population	Localities	Population	Localities	Population			
All localities	12	9388854	1	1					
1 000 000+	3	7686175	0.25	0.8186489001	0.25	0.8186489001	0.2728829667	0.2221941837	
500-999	1	658420	0.0833333333	0.0701278346	0.3333333333	0.8887767346	0.4443883673	0.3142091321	
200-499	2	505596	0.1666666667	0.0538506616	0.5	0.9426273963	0.7069705472	0.4897996603	
100-199	3	347124	0.25	0.0369719244	0.75	0.9795993206	0.9795993206	0.75	
50-99	3	191539	0.25	0.0204006794	1	1	1	1	
20-49	0	0	0	0	1	1	1	1	
10-19999	0	0	0	0	1	1	0	0	
2000-9999	0	0	0	0	1	1			
							4.4038412018	3.7762029761	0.6276382258

2007

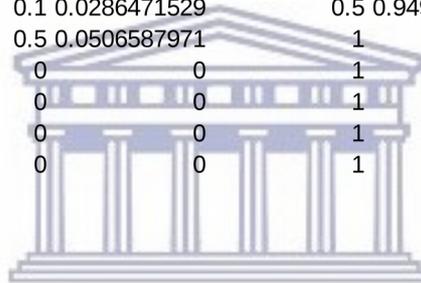
	2007		Proportion		2007		$\sum Y_i$	$\sum Y_i^2$	
	Localities	Population	Localities	Population	Localities	Population			
All localities	11	10451712	1	1					
1 1 000 000+	3	8958317	0.2727272727	0.8571147961	0.2727272727	0.8571147961	0.3116781077	0.2507423229	
2 500-999	1	650867	0.0909090909	0.0622737213	0.3636363636	0.9193885174	0.4179038715	0.3455455823	
3 200-499	1	322559	0.0909090909	0.0308618339	0.4545454545	0.9502503513	0.604704769	0.4415611094	
4 100-199	2	221410	0.1818181818	0.0211840893	0.6363636364	0.9714344406	0.8831222187	0.6333565344	
5 50-99	3	249170	0.2727272727	0.0238401135	0.9090909091	0.9952745541	0.9952745541	0.9090909091	
6 20-49	1	49389	0.0909090909	0.0047254459	1	1	1	1	
7 10-19999	0	0	0	0	1	1	0	0	
8 2000-9999	0	0	0	0	1	1			
							4.212683521	3.5802964581	0.632387063

2011

	2011		Proportion		2016		Proportion	
	Localities	Population	Localities	Population	Localities	Population	$X_i Y_i + 1$	$Y_i X_i + 1$
All localities	10	12272264	1	1	10	13399726	1	1
1 000 000+	3	10534785	0.3	0.8584222927	3	11603603	0.3	0.8659582293
500-999	1	721663	0.1	0.0588043901	1	733445	0.1	0.0547358207
200-499	1	362422	0.1	0.0295317963	1	383864	0.1	0.0286471529
100-199	3	458573	0.3	0.0373666179	5	678814	0.5	0.0506587971
50-99	2	194821	0.2	0.015874903	0	0	0	0
20-49	0	0	0	0	0	0	0	0
10-19999	0	0	0	0	0	0	0	0
2000-9999	0	0	0	0	0	0	0	0
							4.5435141389	3.945933945
							0.5975801938	

2016

	2011		Proportion		2016		Proportion	
	Localities	Population	Localities	Population	Localities	Population	$X_i Y_i + 1$	$Y_i X_i + 1$
All localities	10	12272264	1	1	10	13399726	1	1
1 000 000+	3	10534785	0.3	0.8584222927	3	11603603	0.3	0.8659582293
500-999	1	721663	0.1	0.0588043901	1	733445	0.1	0.0547358207
200-499	1	362422	0.1	0.0295317963	1	383864	0.1	0.0286471529
100-199	3	458573	0.3	0.0373666179	5	678814	0.5	0.0506587971
50-99	2	194821	0.2	0.015874903	0	0	0	0
20-49	0	0	0	0	0	0	0	0
10-19999	0	0	0	0	0	0	0	0
2000-9999	0	0	0	0	0	0	0	0
							4.7560715197	4.1559446962
							0.6001268235	



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## Appendix 17: Gini concentration index Kwazulu-Natal.

### Gini Concentration Index

1996

Localities	Population	Proportion		Localities	Population	$\sum Y_i+1$	$Y_i X_i+1$	
		Localities	Population					
All localities	51	8572292	1	1				
1 1 000 000+	1	2748299	0.0196078431	0.320602588	0.0196078431	0.320602588	0.0125726505	0.0074855058
2 500-999	1	524266	0.0196078431	0.061158206	0.0392156863	0.381760794	0.0299420231	0.0173400853
3 200-499	2	517864	0.0392156863	0.0604113812	0.0784313725	0.4421721752	0.2167510663	0.0636635647
4 100-199	21	3167790	0.4117647059	0.3695382752	0.4901960784	0.8117104504	0.6366356473	0.4680891142
5 50-99	15	1227478	0.2941176471	0.1431913425	0.7843137255	0.9549017929	0.9361782283	0.7832222015
6 20-49	10	374665	0.1960784314	0.043706514	0.9803921569	0.9986083069	0.9986083069	0.9803921569
7 10-19999	1	11930	0.0196078431	0.0013916931	1	1	0	0
8 2000-9999	0	0	0	0	1	1		

2.8306879224 2.3201926283 0.5104952941

2001

Localities	Population	Proportion		Localities	Population	$\sum Y_i+1$	$Y_i X_i+1$	Gini index
		Localities	Population					
All localities	51	9584129	1	1				
1 1 000 000+	1	3090122	0.0196078431	0.3224207437	0.0196078431	0.3224207437	0.0126439507	0.0073916298
2 500-999 999	1	522837	0.0196078431	0.0545523751	0.0392156863	0.3769731188	0.0517414085	0.0200488193
3 200-499 999	5	1286878	0.0980392157	0.1342717737	0.137254902	0.5112448925	0.3107566993	0.1202662848
4 100 -199 999	24	3498024	0.4705882353	0.3649808971	0.6078431373	0.8762257895	0.7731404025	0.5938426383
5 50-99 999	14	965516	0.2745098039	0.1007411315	0.8823529412	0.976966921	0.9578107069	0.8774567032
6 20-49 999	5	167569	0.0980392157	0.0174840092	0.9803921569	0.9944509303	0.9944509303	0.9765179005
7 10-19999	1	15309	0.0196078431	0.0015973282	1	0.9960482585	0	0
8 2000-9999	0	0	0	0	1	0.9960482585		

3.1005440983 2.5955239759 0.5050201223

2007

Localities	Population	Proportion		Localities	Population	$\sum Y_i+1$	$Y_i X_i+1$	
		Localities	Population					
All localities	51	10246934	1	1				
1 1 000 000+	1	3468086	0.0196078431	0.3384510918	0.0196078431	0.3384510918	0.0132725918	0.0078164289
2 500-999	1	616730	0.0196078431	0.0601867837	0.0392156863	0.3986378755	0.0781642893	0.0235297891
3 200-499	8	2063443	0.1568627451	0.2013717469	0.1960784314	0.6000096224	0.3647117313	0.1739457469
4 100-199	21	2942035	0.4117647059	0.2871136869	0.6078431373	0.8871233093	0.730572137	0.5882466988
5 50-99	11	826286	0.2156862745	0.0806373887	0.8235294118	0.967760698	0.948784998	0.822381671
6 20-49	8	316073	0.1568627451	0.0308456168	0.9803921569	0.9986063148	0.9986063148	0.9803921569
7 10-19999	1	14281	0.0196078431	0.0013936852	1	1	0	0
8 2000-9999	0	0	0	0	1	1		

3.1341120623 2.5963124916 0.5377995707

2011

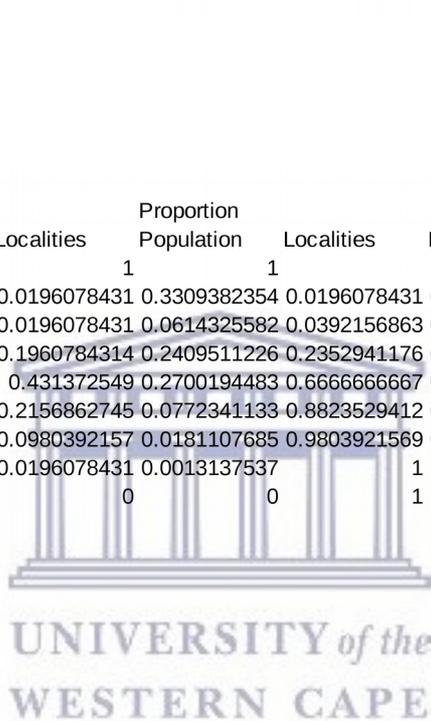
	Localities	Population	Proportion		Localities	Population	X <sub>i</sub> Y <sub>i</sub> +1	Y <sub>i</sub> X <sub>i</sub> +1
			Localities	Population				
All localities	51	10267300	1	1	1	1		
1 000 000+	1	3442361	0.0196078431	0.3352742201	0.0196078431	0.3352742201	0.0131480086	0.0077552454
500-999	1	618536	0.0196078431	0.0602432967	0.0392156863	0.3955175168	0.0697972088	0.0225654987
200-499	7	1847115	0.137254902	0.1799027008	0.1764705882	0.5754202176	0.3497652303	0.1546837676
100-199	22	3091701	0.431372549	0.3011211321	0.6078431373	0.8765413497	0.773418838	0.595911952
50-99	14	1066053	0.2745098039	0.1038299261	0.8823529412	0.9803712758	0.9611483096	0.8812445107
20-49	5	188636	0.0980392157	0.018372503	0.9803921569	0.9987437788	0.9987437788	0.9803921569
10-19999	1	12898	0.0196078431	0.0012562212	1	1	0	0
2000-9999	0	0	0	0	0	1	1	

3.1660213742 2.6425531313 0.5234682429

2016

	Localities	Population	Proportion		Localities	Population	X <sub>i</sub> Y <sub>i</sub> +1	Y <sub>i</sub> X <sub>i</sub> +1
			Localities	Population				
All localities	51	11065240	1	1	1	1		
1 1 000 000+	1	3661911	0.0196078431	0.3309382354	0.0196078431	0.3309382354	0.01297797	0.007693545
2 500-999	1	679766	0.0196078431	0.0614325582	0.0392156863	0.3923707936	0.0923225397	0.0248361536
3 200-499	10	2666182	0.1960784314	0.2409511226	0.2352941176	0.6333219162	0.4222146108	0.2125509093
4 100-199	22	2987830	0.431372549	0.2700194483	0.6666666667	0.9033413645	0.7970659098	0.6537169852
5 50-99	11	854614	0.2156862745	0.0772341133	0.8823529412	0.9805754778	0.9613485076	0.8811937467
6 20-49	5	200400	0.0980392157	0.0181107685	0.9803921569	0.9986862463	0.9986862463	0.9803921569
7 10-19999	1	14537	0.0196078431	0.0013137537	1	1	0	0
8 2000-9999	0	0	0	0	0	1	1	

3.2846157843 2.7603834966 0.5242322876



## Appendix 18: Gini concentration index Northern Cape.

1996

	Localities		Proportion		Localities		$\bar{X}\bar{Y}_i+1$	$\bar{Y}_i\bar{X}_i+1$
	Population	Localities	Population	Localities	Population	Localities		
All localities	27	1011864	1	1				
1 1 000 000+	0	0	0	0	0	0	0	0
2 500-999	0	0	0	0	0	0	0	0
3 200-499	1	205103	0.037037037	0.2026981887	0.037037037	0.2026981887	0.0150146806	0.0116227741
4 100-199	1	112435	0.037037037	0.1111167113	0.0740740741	0.3138149	0.0697366445	0.0421535203
5 50-99	4	258286	0.1481481481	0.2552576236	0.2222222222	0.5690725236	0.316151402	0.187493137
6 20-49	9	277905	0.3333333333	0.2746465928	0.5555555556	0.8437191164	0.7499725479	0.5412755293
7 10-19999	9	132126	0.3333333333	0.1305768364	0.8888888889	0.9742959528	0	0
8 2000-9999	3	26009	0.1111111111	0.0257040472		1	1	

1.150875275 0.7825449607 0.3683303143

2001

	Localities		Proportion		Localities		$\bar{X}\bar{Y}_i+1$	$\bar{Y}_i\bar{X}_i+1$
	Population	Localities	Population	Localities	Population	Localities		
All localities	27	991919	1	1				
1 000 000+	0	0	0	0	0	0	0	0
500-999	0	0	0	0	0	0	0	0
200-499	1	202246	0.037037037	0.2038936647	0.037037037	0.2038936647	0.0075516172	0.0075516172
100-199	0	0	0	0	0.037037037	0.2038936647	0.0453097033	0.0212051365
50-99	5	365666	0.1851851852	0.3686450204	0.2222222222	0.5725386851	0.2968719108	0.1846960846
20-49	8	256504	0.2962962963	0.2585936957	0.5185185185	0.8311323808	0.7387843385	0.5052398058
10-19999	10	142101	0.3703703704	0.1432586733	0.8888888889	0.9743910541	0	0
2000-9999	3	25402	0.1111111111	0.0256089459		1	1	

1.0885175697 0.7186926441 0.3698249256

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WESTERN CAPE

2007

	Localities		Proportion		Localities		$\bar{X}\bar{Y}_i+1$	$\bar{Y}_i\bar{X}_i+1$
	Population	Localities	Population	Localities	Population	Localities		
All localities	27	1058060	1	1				
1 1 000 000+	0	0	0	0	0	0	0	0
2 500-999	0	0	0	0	0	0	0	0
3 200-499	1	243018	0.037037037	0.2296826267	0.037037037	0.2296826267	0.0170135279	0.0120394349
4 100-199	1	100920	0.037037037	0.0953821144	0.0740740741	0.3250647411	0.0722366091	0.0420394139
5 50-99	4	256545	0.1481481481	0.2424673459	0.2222222222	0.567532087	0.3573350178	0.1959065543
6 20-49	11	332281	0.4074074074	0.3140474075	0.6296296296	0.8815794945	0.7836262174	0.6133928903
7 10-19999	7	98011	0.2592592593	0.0926327429	0.8888888889	0.9742122375	0	0
8 2000-9999	3	27285	0.1111111111	0.0257877625		1	1	

1.2302113722 0.8633782933 0.3668330788

2011

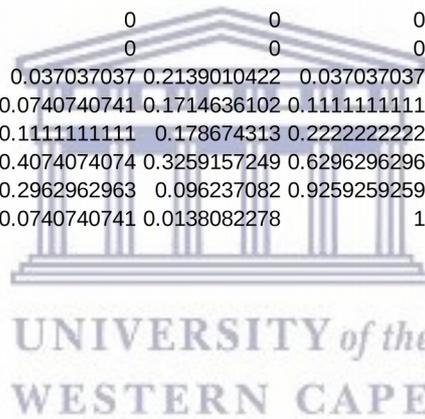
	Localities	Population	Proportion		Localities	Population	$\bar{X}Y_i+1$	$Y_i\bar{X}+1$
			Localities	Population				
All localities	27	1145860	1	1				
1 000 000+	0	0	0	0	0	0	0	0
500-999	0	0	0	0	0	0	0	0
200-499	1	248041	0.037037037	0.2164671077	0.037037037	0.2164671077	0.0080173003	0.0080173003
100-199	0	0	0	0	0.037037037	0.2164671077	0.0481038017	0.0211254882
50-99	5	405544	0.1851851852	0.3539210724	0.2222222222	0.5703881801	0.3380078104	0.1938103744
20-49	10	345773	0.3703703704	0.3017585045	0.5925925926	0.8721466846	0.8398449555	0.5889709233
10-19999	10	139499	0.3703703704	0.1217417486	0.962962963	0.9938884331	0	0
2000-9999	1	7003	0.037037037	0.0061115669	1	1		

1.2339738679 0.8119240861 0.4220497818

2016

	Localities	Population	Proportion		Localities	Population	$\bar{X}Y_i+1$	$Y_i\bar{X}+1$
			Localities	Population				
All localities	27	1193781	1	1				
1 000 000+	0	0	0	0	0	0	0	0
500-999	0	0	0	0	0	0	0	0
200-499	1	255351	0.037037037	0.2139010422	0.037037037	0.2139010422	0.0237667825	0.0142727649
100-199	2	204690	0.0740740741	0.1714636102	0.1111111111	0.3853646523	0.0856365894	0.0626709961
50-99	3	213298	0.1111111111	0.178674313	0.2222222222	0.5640389653	0.3551356448	0.1977677089
20-49	11	389072	0.4074074074	0.3259157249	0.6296296296	0.8899546902	0.8240321205	0.6209355603
10-19999	8	114886	0.2962962963	0.096237082	0.9259259259	0.9861917722	0	0
2000-9999	2	16484	0.0740740741	0.0138082278	1	1		

1.2885711372 0.8956470302 0.392924107



## Appendix 19: Gini Concentration Index Limpopo.

1996

	Localities		Proportion		Localities		Localities		
	Population	Localities	Population	Localities	Population	Localities	$\bar{X}Y_{i+1}$	$Y_i\bar{X}_{i+1}$	
All localities	25	4576563	1	1					
1 1 000 000+	0	0	0	0	0	0	0	0	
2 500-999	1	533757	0.04	0.1166283519	0.04	0.1166283519	0.0513164748	0.0298545612	
3 200-499	10	2882025	0.4	0.6297356772	0.44	0.7463640291	0.4478184174	0.3786307235	
4 100-199	4	522462	0.16	0.1141603426	0.6	0.8605243717	0.7228404722	0.5812465381	
5 50-99	6	495275	0.24	0.1082198584	0.84	0.9687442301	0.9299944609	0.8371231337	
6 20-49	3	127370	0.12	0.027830929	0.96	0.9965751591	0.9965751591	0.96	
7 10-19999	1	15674	0.04	0.0034248409	1	1	0	0	
8 2000-9999	0	0	0	0	1	1			
							3.1485449845	2.7868549564	0.3616900281

2001

	Localities		Proportion		Localities		Localities		
	Population	Localities	Population	Localities	Population	Localities	$\bar{X}Y_{i+1}$	$Y_i\bar{X}_{i+1}$	
All localities	25	4995534	1	1					
1 1 000 000+	0	0	0	0	0	0	0	0	
2 500-999	2	1089106	0.08	0.2180159318	0.08	0.2180159318	0.09592701	0.0592453339	
3 200-499	9	2610420	0.36	0.5225507423	0.44	0.7405666742	0.4739626715	0.3849381468	
4 100-199	5	670864	0.2	0.1342927503	0.64	0.8748594244	0.8048706705	0.6310231499	
5 50-99	7	555075	0.28	0.1111142472	0.92	0.9859736717	0.9859736717	0.92	
6 20-49	2	70069	0.08	0.0140263283	1	1	1	1	
7 10-19999	0	0	0	0	1	1	0	0	
8 2000-9999	0	0	0	0	1	1			
							3.3607340236	2.9952066306	0.3655273931

2007

	Localities		Proportion		Localities		Localities		
	Population	Localities	Population	Localities	Population	Localities	$\bar{X}Y_{i+1}$	$Y_i\bar{X}_{i+1}$	
All localities	25	5238286	1	1					
1 1 000 000+	0	0	0	0	0	0	0	0	
2 500-999	2	1164591	0.08	0.2223229125	0.08	0.2223229125	0.0978220815	0.0596626301	
3 200-499	9	2742033	0.36	0.5234599638	0.44	0.7457828763	0.5369636709	0.404770339	
4 100-199	7	912246	0.28	0.1741497123	0.72	0.9199325886	0.8831352851	0.7176883736	
5 50-99	6	402598	0.24	0.0768568192	0.96	0.9967894078	0.9569178315	0.9569178315	
6 20-49	0	0	0	0	0.96	0.9967894078	0.9967894078	0.96	
7 10-19999	1	16818	0.04	0.0032105922	1	1	0	0	
8 2000-9999	0	0	0	0	1	1			
							3.4716282769	3.0990391743	0.3725891026

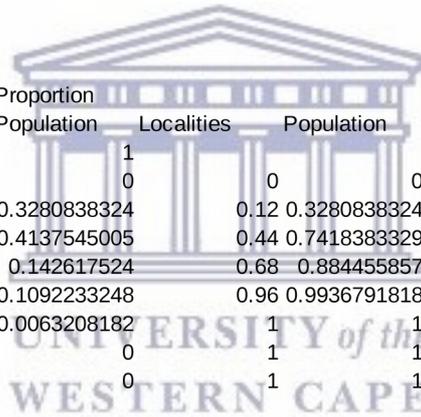
Gini Concentration Index

2011

Localities	Population	Proportion		Localities	Population	$X_i Y_{i+1}$	$Y_i X_{i+1}$	$X_i Y_{i+1} - Y_i X_{i+1}$
		Localities	Population					
All localities	25	5404868	1	1				
1 000 000+	0	0	0	0	0	0	0	0
500-999	3	1763492	0.12	0.3262784586	0.12	0.3262784586	0.1435625218	0.0889849817
200-499	8	2244442	0.32	0.4152630555	0.44	0.7415415141	0.5042482296	0.3907669901
100-199	6	792166	0.24	0.1465652815	0.68	0.8881067956	0.8525825238	0.6755160422
50-99	7	569128	0.28	0.1052991488	0.96	0.9934059444	0.9934059444	0.96
20-49	1	35640	0.04	0.0065940556	1	1	1	1
10-19999	0	0	0	0	1	1	0	0
2000-9999	0	0	0	0	1	1		
								3.4937992195 3.1152680139 0.3785312056

2016

Localities	Population	Proportion		Localities	Population	$X_i Y_{i+1}$	$Y_i X_{i+1}$	$X_i Y_{i+1} - Y_i X_{i+1}$
		Localities	Population					
All localities	25	5799091	1	1				
1 000 000+	0	0	0	0	0	0	0	0
500-999	3	1902588	0.12	0.3280838324	0.12	0.3280838324	0.1443568863	0.0890206
200-499	8	2399400	0.32	0.4137545005	0.44	0.7418383329	0.5044500664	0.3891605771
100-199	6	827052	0.24	0.142617524	0.68	0.884455857	0.8490776227	0.6757018436
50-99	7	633396	0.28	0.1092233248	0.96	0.9936791818	0.9936791818	0.96
20-49	1	36655	0.04	0.0063208182	1	1	1	1
10-19999	0	0	0	0	1	1	0	0
2000-9999	0	0	0	0	1	1		
								3.4915637571 3.1138830206 0.3776807365



## Appendix 20: Gini Concentration Index South Africa.

1996

	1996		Proportion		1996		$\sum Y_i^{i+1}$	$Y_i X_i^{i+1}$	
	Localities	Population	Localities	Population	Localities	Population			
All localities	237	40583129	1	1					
1 1 000 000+	5	11768382	0.0210970464	0.2899821253	0.0210970464	0.2899821253	0.0146826393	0.008436231	
2 500-999	7	4459892	0.029535865	0.1098952227	0.0506329114	0.399877348	0.0809878173	0.0327744859	
3 200-499	36	10041027	0.1518987342	0.2474187488	0.2025316456	0.6472960969	0.2895079589	0.1714658313	
4 100 000-199 9	58	8088885	0.2447257384	0.199316445	0.447257384	0.8466125419	0.5786971805	0.4231226332	
5 50-99	56	4035010	0.2362869198	0.0994257983	0.6835443038	0.9460383402	0.8662038811	0.679061185	
6 20-49	55	1923763	0.2320675105	0.0474030231	0.9156118143	0.9934413633	0.9724826847	0.9146872486	
7 10-19999	15	225190	0.0632911392	0.0055488575	0.9789029536	0.9989902208	0	0	
8 2000-9999	5	40980	0.0210970464	0.0010097792		1	1		
							2.8025621619	2.2295476149	0.573014547

2001

	2001		Proportion		2001		$\sum Y_i^{i+1}$	$Y_i X_i^{i+1}$	
	Localities	Population	Localities	Population	Localities	Population			
All localities	237	44948216	1	1					
1 1 000 000+	6	14674319	0.0253164557	0.3264716669	0.0253164557	0.3264716669	0.016530211	0.0103198379	
2 500-999	6	3648084	0.0253164557	0.0811619309	0.0506329114	0.4076335977	0.0877186223	0.0334937397	
3 200-499	39	11410903	0.164556962	0.253867762	0.2151898734	0.6615013597	0.3181905274	0.1869260488	
4 100 000-199 9	63	9311247	0.2658227848	0.2071549847	0.4810126582	0.8686563444	0.6414129126	0.4625079179	
5 50-99	61	4174488	0.2573839662	0.0928732744	0.7383966245	0.9615296189	0.8844449659	0.7345101385	
6 20-49	43	1492594	0.1814345992	0.0332069687	0.9198312236	0.9947365875	0.9779477844	0.9191746898	
7 10-19999	15	204499	0.0632911392	0.0045496578	0.9831223629	0.9992862453	0	0	
8 2000-9999	4	32082	0.0168776371	0.0007137547		1	1		
							2.9262450236	2.3469323727	0.5793126509

2007

	2007		Proportion		2007		$\sum Y_i^{i+1}$	$Y_i X_i^{i+1}$	
	Localities	Population	Localities	Population	Localities	Population			
All localities	237	48431485	1	1					
1 1 000 000+	6	16974430	0.0253164557	0.3504833684	0.0253164557	0.3504833684	0.0207036589	0.0114587082	
2 500-999	8	4946579	0.0337552743	0.1021356046	0.05907173	0.452618973	0.1126772971	0.0426994951	
3 200-499	45	13087276	0.1898734177	0.2702224803	0.2489451477	0.7228414532	0.3476958889	0.2186512204	
4 100-199	55	7529613	0.2320675105	0.1554693811	0.4810126582	0.8783108344	0.6151881793	0.4604635396	
5 50-99	52	3824568	0.2194092827	0.0789686296	0.7004219409	0.957279464	0.8845746946	0.6973082321	
6 20-49	53	1853718	0.223628692	0.0382750601	0.9240506329	0.9955545241	0.9703506121	0.9231646934	
7 10-19999	12	168867	0.0506329114	0.0034867194	0.9746835443	0.9990412435	0	0	
8 2000-9999	6	46434	0.0253164557	0.0009587565		1	1		
							2.9511903308	2.3537458887	0.5974444421

2011

	Localities		Proportion		Localities		Proportion		$\bar{X}Y_i+1$	$Y_i\bar{X}+1$
	Localities	Population	Localities	Population	Localities	Population	Localities	Population		
All localities	234	51770560	1	1						
1 1 000 000+	6	18869279	0.0256410256	0.3644789432	0.0256410256	0.3644789432	0.0218064325	0.0124589263		
2 500-999	8	6285939	0.0341880342	0.1214191811	0.0598290598	0.4858981243	0.1225127749	0.041774197		
3 200-499	45	10992326	0.1923076923	0.2123277399	0.2521367521	0.6982258643	0.3401613185	0.2221654778		
4 100-199	55	9469095	0.235042735	0.182905014	0.4871794872	0.8811308782	0.6250757512	0.4728008088		
5 50-99	52	4625958	0.2222222222	0.0893549925	0.7094017094	0.9704858707	0.908275238	0.7065361384		
6 20-49	53	1318840	0.2264957265	0.02547471	0.9358974359	0.9959605807	0.9831918553	0.9356209903		
7 10-19999	12	193831	0.0512820513	0.0037440391	0.9871794872	0.9997046198	0	0		
8 2000-9999	3	15292	0.0128205128	0.0002953802		1	1			
										3.0010233705 2.3913565387 0.6096668318

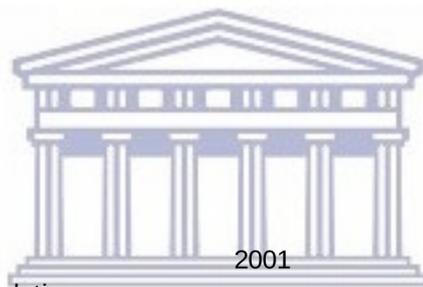
Gini Concentration Index

2016

	Localities		Proportion		Localities		Proportion		$\bar{X}Y_i+1$	$Y_i\bar{X}+1$
	Localities	Population	Localities	Population	Localities	Population	Localities	Population		
All localities	234	55653654	1	1						
1 1 000 000+	6	20533358	0.0256410256	0.3689489642	0.0256410256	0.3689489642	0.0268039846	0.0127870886		
2 500-999	11	7220922	0.047008547	0.1297474915	0.0726495726	0.4986964558	0.1236085232	0.0523987106		
3 200-499	41	12386076	0.1752136752	0.2225563842	0.2478632479	0.7212528399	0.4006960222	0.2237161162		
4 100-199	72	10091453	0.3076923077	0.1813259737	0.5555555556	0.9025788136	0.7097200927	0.5407288861		
5 50-99	54	3936560	0.2307692308	0.0707331813	0.7863247863	0.9733119949	0.9109202004	0.7835296665		
6 20-49	35	1287455	0.1495726496	0.0231333418	0.9358974359	0.9964453367	0.9836703965	0.935470651		
7 10-19999	12	172451	0.0512820513	0.0030986465	0.9871794872	0.9995439832	0	0		
8 2000-9999	3	25379	0.0128205128	0.0004560168		1	1			
										3.1554192196 2.5486311189 0.6067881007

## Appendix 21: Size of locality of the residence of median inhabitant Free State.

Size of Locality	Population	1996	
	2 633 504		
3 000 000 – 3 999 999		$Q_1$	199999
2 000 000 -2 999 999		$Q_{1+1}$	399999
1 000 000 - 1 999 999			5000
900 000 – 999 999		$PP_1$	4556
800 000 – 899 999		$PP_{1+1}$	5897
700 000 – 799 999		$(Q_{1+1} - Q_1)$	200000
600 000 – 699 999	603 528	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.3310961969
500 000 – 599 999		MI	266218.23937
400 000 – 499 999	476 763		
300 000 – 399 999	353 238		
200 000 – 299 999		0	
100 000 – 199 999	613 925		
50 000 – 99 999	416 027		
20 000 – 49 999	170 023		
10 000 – 19 999			
2000 – 9999			
less than 2000			



2001

### Free State

Size of Locality	Population	2001	
	2 706 603		
3 000 000 – 3 999 999		$Q_1$	199999
2 000 000 -2 999 999		$Q_{1+1}$	399999
1 000 000 - 1 999 999			5000
900 000 – 999 999		$PP_1$	4774
800 000 – 899 999		$PP_{1+1}$	6107
700 000 – 799 999		$(Q_{1+1} - Q_1)$	200000
600 000 – 699 999	645 440	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.1695423856
500 000 – 599 999		MI	233907.47712
400 000 – 499 999	408 170		
300 000 – 399 999	360 787		
200 000 – 299 999		0	
100 000 – 199 999	654 780		
50 000 – 99 999	498 189		
20 000 – 49 999	139 237		
10 000 – 19 999			
2000 – 9999			
less than 2000			

## Free State

		2007	
Size of Locality	Population		
	2 773 059		
3 000 000 – 3 999 999		$Q_1$	199999
2 000 000 -2 999 999		$Q_{1+1}$	399999
1 000 000 - 1 999 999			5000
900 000 – 999 999		$PP_1$	4434
800 000 – 899 999		$PP_{1+1}$	5824
700 000 – 799 999		$(Q_{1+1} - Q_1)$	200000
600 000 – 699 999	752 906	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.4071942446
500 000 – 599 999	0	MI	281437.84892
400 000 – 499 999	405 031		
300 000 – 399 999	385 413		
200 000 – 299 999	0		
100 000 – 199 999	536 627		
50 000 – 99 999	442 984		
20 000 – 49 999	250 098		
10 000 – 19 999			
2000 – 9999			
less than 2000			



## Free State

		2011	
Size of Locality	Population		
	2 745 589		
3 000 000 – 3 999 999		$Q_1$	199999
2 000 000 -2 999 999		$Q_{1+1}$	399999
1 000 000 - 1 999 999			5000
900 000 – 999 999		$PP_1$	4574
800 000 – 899 999		$PP_{1+1}$	5797
700 000 – 799 999	747 431	$(Q_{1+1} - Q_1)$	200000
600 000 – 699 999		$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.3483237939
500 000 – 599 999	0	MI	269663.75879
400 000 – 499 999	406 461		
300 000 – 399 999	335 784		
200 000 – 299 999	0		
100 000 – 199 999	671 461		
50 000 – 99 999	313 810		
20 000 – 49 999	270 642		
10 000 – 19 999			
2000 – 9999			
less than 2000			

## Free State

Size of Locality	2016	
	Population	
	2 834 715	
3 000 000 – 3 999 999		$Q_1$ 199999
2 000 000 -2 999 999		$Q_{1*1}$ 399999
1 000 000 - 1 999 999		5000
900 000 – 999 999		$PP_1$ 4560
800 000 – 899 999		$PP_{1+1}$ 5807
700 000 – 799 999	759 693	$(Q_{1*1} - Q_1)$ 200000
600 000 – 699 999		$(5000 - PP_1)/(PP_{1+1} - PP_1)$ 0.3528468324
500 000 – 599 999	0	MI 270568.36648
400 000 – 499 999	428 843	
300 000 – 399 999	353 452	
200 000 – 299 999	0	
100 000 – 199 999	694 879	
50 000 – 99 999	370 645	
20 000 – 49 999	227 203	
10 000 – 19 999		
2000 – 9999		
less than 2000		



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## Appendix 22: Size of locality of the residence of median inhabitant Eastern Cape.

Size of Locality	Population	1996	
	6 147 248		
3 000 000 – 3 999 999		$Q_1$	199999
2 000 000 -2 999 999		$Q_{1*1}$	299999
1 000 000 - 1 999 999			5000
900 000 – 999 999	969 518	$PP_1$	3920
800 000 – 899 999		$PP_{1+1}$	6662
700 000 – 799 999		$(Q_{1*1} - Q_1)$	100000
600 000 – 699 999	685 727	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.3938730853
500 000 – 599 999		MI	239386.30853
400 000 – 499 999			
300 000 – 399 999	396 312		
200 000 – 299 999	1 685 392		
100 000 – 199 999	1 642 463		
50 000 – 99 999	357 313		
20 000 – 49 999	363 490		
10 000 – 19 999	47 033		
2000 – 9999			
less than 2000			

### Eastern Cape

Size of Locality	Population	2001	
	6 278 651		
3 000 000 – 3 999 999		$Q_1$	199999
2 000 000 -2 999 999		$Q_{1*1}$	299999
1 000 000 - 1 999 999	1 005 779		5000
900 000 – 999 999		$PP_1$	4184
800 000 – 899 999		$PP_{1+1}$	6603
700 000 – 799 999	702 281	$(Q_{1*1} - Q_1)$	100000
600 000 – 699 999		$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.337329475
500 000 – 599 999		MI	233731.9475
400 000 – 499 999	416 348		
300 000 – 399 999			
200 000 – 299 999	1 518 855		
100 000 – 199 999	1 849 044		
50 000 – 99 999	408 099		
20 000 – 49 999	344 201		
10 000 – 19 999	25 702		
2000 – 9999			
less than 2000			

### Eastern Cape

2007

Size of Locality                      Population  
6 527 747

3 000 000 – 3 999 999		$Q_1$	199999
2 000 000 -2 999 999		$Q_{1+1}$	299999
1 000 000 - 1 999 999	1 050 930		5000
900 000 – 999 999		$PP_1$	2978
800 000 – 899 999		$PP_{1+1}$	6109
700 000 – 799 999	724 312	$(Q_{1+1} - Q_1)$	100000
600 000 – 699 999		$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.6458000639
500 000 – 599 999		MI	264579.00639
400 000 – 499 999	444 830		
300 000 – 399 999	314 273		
200 000 – 299 999	2 043 813		
100 000 – 199 999	1 237 704		
50 000 – 99 999	279 891		
20 000 – 49 999	386 864		
10 000 – 19 999	39 756		
2000 – 9999			
less than 2000			

**Eastern Cape**



2011

Size of Locality                      Population  
6 562 053

3 000 000 – 3 999 999		$Q_1$	199999
2 000 000 -2 999 999		$Q_{1+1}$	299999
1 000 000 - 1 999 999	1 152 115		5000
900 000 – 999 999		$PP_1$	4024
800 000 – 899 999		$PP_{1+1}$	6405
700 000 – 799 999	755 200	$(Q_{1+1} - Q_1)$	100000
600 000 – 699 999		$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.4099118018
500 000 – 599 999		MI	240990.18018
400 000 – 499 999	451 710		
300 000 – 399 999			
200 000 – 299 999	1 561 918		
100 000 – 199 999	1 793 210		
50 000 – 99 999	623 618		
20 000 – 49 999	195 984		
10 000 – 19 999	28 298		
2000 – 9999			
less than 2000			

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## Eastern Cape

Size of Locality	Population	2016	
	6 996 979		
3 000 000 – 3 999 999		$Q_1$	199999
2 000 000 -2 999 999		$Q_{1*1}$	299999
1 000 000 - 1 999 999	1 263 059		5000
900 000 – 999 999		$PP_1$	3647
800 000 – 899 999	810 528	$PP_{1+1}$	5002
700 000 – 799 999		$(Q_{1*1} - Q_1)$	100000
600 000 – 699 999		$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.9985239852
500 000 – 599 999		MI	299851.39852
400 000 – 499 999	490 207		
300 000 – 399 999	933 029		
200 000 – 299 999	947 669		
100 000 – 199 999	1 768 779		
50 000 – 99 999	514 638		
20 000 – 49 999	240 322		
10 000 – 19 999	28 756		
2000 – 9999			
less than 2000			



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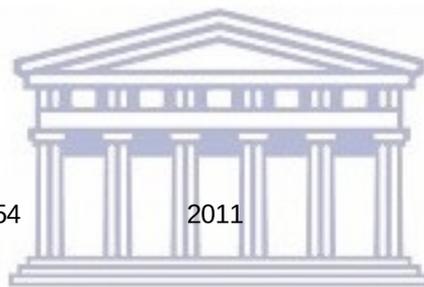
## North West

Size of Locality	Population	2007	
	3 271 948		
3 000 000 – 3 999 999		$Q_1$	199999
2 000 000 -2 999 999		$Q_{1+1}$	299999
1 000 000 - 1 999 999			5000
900 000 – 999 999		$PP_1$	3458
800 000 – 899 999		$PP_{1+1}$	6311
700 000 – 799 999		$(Q_{1+1} - Q_1)$	100000
600 000 – 699 999		$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.5404837014
500 000 – 599 999		MI	254047.37014
400 000 – 499 999	449 776		
300 000 – 399 999	756 979		
200 000 – 299 999	933 661		
100 000 – 199 999	580 886		
50 000 – 99 999	406 970		
20 000 – 49 999	143 676		
10 000 – 19 999			
2000 – 9999			
less than 2000			

## North West

3 509 954

2011



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3 000 000 – 3 999 999		$Q_1$	199999
2 000 000 -2 999 999		$Q_{1+1}$	299999
1 000 000 - 1 999 999			5000
900 000 – 999 999		$PP_1$	4416
800 000 – 899 999		$PP_{1+1}$	5938
700 000 – 799 999		$(Q_{1+1} - Q_1)$	100000
600 000 – 699 999		$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.3837056505
500 000 – 599 999	549 575	MI	238369.56505
400 000 – 499 999	477 381		
300 000 – 399 999	398 676		
200 000 – 299 999	534 081		
100 000 – 199 999	1 184 312		
50 000 – 99 999	365 929		
20 000 – 49 999			
10 000 – 19 999			
2000 – 9999			
less than 2000			

## North West

Size of Locality	2016	
	Population	
	3 748 437	
3 000 000 – 3 999 999		$Q_1$ 299999
2 000 000 -2 999 999		$Q_{1+1}$ 399999
1 000 000 - 1 999 999		5000
900 000 – 999 999		$PP_1$ 4942
800 000 – 899 999		$PP_{1+1}$ 5781
700 000 – 799 999		$(Q_{1+1} - Q_1)$ 100000
600 000 – 699 999	626 522	$(5000 - PP_1)/(PP_{1+1} - PP_1)$ 0.0691299166
500 000 – 599 999	537 516	MI 306911.99166
400 000 – 499 999	417 282	
300 000 – 399 999	314 394	
200 000 – 299 999	243 649	
100 000 – 199 999	1 214 749	
50 000 – 99 999	394 325	
20 000 – 49 999		
10 000 – 19 999		
2000 – 9999		
less than 2000		



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## Appendix 24: Size of locality of the residence of median inhabitant Gauteng.

Size of Locality	Population	1996	
	7 834 126		
2 600 000 – 2 699 999	2 638 471		
2 000 000 -2 099 999	2 026 978	$Q_1$	1799999
1 700 000 – 1 799 999	1 792 357	$Q_{1+1}$	2099999
1 000 000 - 1 099 999			5000
900 000 – 999 999		$PP_1$	4044
800 000 – 899 999		$PP_{1+1}$	6632
700 000 – 799 999		$(Q_{1+1} - Q_1)$	300000
600 000 – 699 999		$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.3693972179
500 000 – 599 999	597 285	MI	1910818.1654
400 000 – 499 999			
300 000 – 399 999			
200 000 – 299 999	436 173		
100 000 – 199 999	223 303		
50 000 – 99 999	119 559		
20 000 – 49 999			
10 000 – 19 999			
2000 – 9999			
less than 2000			

### Gauteng

Size of Locality	Population	2001	
	9 388 854		
3 200 000- 3 299 999	3 226 055		
2 400 000 – 2 499 999	2 481 762		
2 300 000 – 2 399 999			
2 200 000 – 2 299 999			
2 100 000 -2 199 999			
2 000 000 – 2 099 999	2 026 978	$Q_1$	2099999
1 500 000 – 1 999 999		$Q_{1+1}$	2499999
1 000 000 - 1 499 999			5000
900 000 – 999 999		$PP_1$	3972
800 000 – 899 999		$PP_{1+1}$	6782
700 000 – 799 999		$(Q_{1+1} - Q_1)$	400000
600 000 – 699 999	658 420	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.3658362989
500 000 – 599 999		MI	2246333.5196
400 000 – 499 999			
300 000 – 399 999			
200 000 – 299 999	505 596		
100 000 – 199 999	347 124		
50 000 – 99 999	191 539		
20 000 – 49 999			
10 000 – 19 999			
2000 – 9999			
less than 2000			

### Gauteng

2007

Size of Locality	Population		
	10 451 713		
3 200 000- 3 299 999	3 888 180		
2 700 000 – 2 799 999	2 724 229		
2 300 000 – 2 399 999	2 345 908		
2 200 000 – 2 299 999			
2 100 000 -2 199 999			
2 000 000 – 2 099 999		$Q_1$	2399999
1 500 000 – 1 999 999		$Q_{1+1}$	2799999
1 000 000 - 1 499 999			5000
900 000 – 999 999		$PP_1$	4157
800 000 – 899 999		$PP_{1+1}$	6763
700 000 – 799 999		$(Q_{1+1} - Q_1)$	400000
600 000 – 699 999	650 867	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.3234842671
500 000 – 599 999		MI	2529392.7068
400 000 – 499 999			
300 000 – 399 999	322 559		
200 000 – 299 999	505 596		
100 000 – 199 999	221 410		
50 000 – 99 999	249 170		
20 000 – 49 999	49 389		
10 000 – 19 999			
2000 – 9999			
less than 2000			

**Gauteng**

Size of Locality	Population		
	12 272 263		
4 400 000 – 4 999 999	4 434 827		
3 100 000 – 3 199 999	3 178 470		
2 900 000 – 2 999 999	2 921 488		
2 200 000 – 2 299 999			
2 100 000 -2 199 999			
2 000 000 – 2 099 999		$Q_1$	2999999
1 500 000 – 1 999 999		$Q_{1+1}$	3199999
1 000 000 - 1 499 999			5000
900 000 – 999 999		$PP_1$	3796
800 000 – 899 999		$PP_{1+1}$	6386
700 000 – 799 999	721 663	$(Q_{1+1} - Q_1)$	200000
600 000 – 699 999		$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.4648648649
500 000 – 599 999		MI	3092971.973
400 000 – 499 999			
300 000 – 399 999	362 422		
200 000 – 299 999			
100 000 – 199 999	458 573		
50 000 – 99 999	194 821		
20 000 – 49 999			
10 000 – 19 999			
2000 – 9999			
less than 2000			



2011

**Gauteng**

2016

Size of Locality	Population		
	13 399 724		
4 900 000 – 4 999 999	4 949 347		
3 300 000 – 3 399 999	3 379 104		
3 200 000 – 3 299 999	3 275 152		
2 200 000 – 2 299 999			
2 100 000 – 2 199 999			
2 000 000 – 2 099 999		$Q_1$	3299999
1 000 000 – 1 099 999		$Q_{1+1}$	3399999
900 000 – 999 999			5000
800 000 – 899 999		$PP_1$	3784
700 000 – 799 999		$PP_{1+1}$	6306
600 000 – 699 999	733 445	$(Q_{1+1} - Q_1)$	100000
500 000 – 599 999		$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.4821570182
400 000 – 499 999		MI	3348214.7018
300 000 – 399 999			
200 000 – 299 999	383 864		
100 000 – 199 999			
50 000 – 99 999	678 814		
20 000 – 49 999			
10 000 – 19 999			
2000 – 9999			
less than 2000			



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## Appendix 25: Size of locality of the residence of median inhabitant Mpumalanga.

Size of Locality	Population	1996	
	3 123 870		
4 900 000 – 4 999 999			
3 300 000 – 3 399 999			
3 200 000 – 3 299 999			
2 200 000 – 2 299 999			
2 100 000 -2 199 999			
2 000 000 – 2 099 999		$Q_1$	199999
1 000 000 - 1 099 999		$Q_{1+1}$	299999
900 000 – 999 999			5000
800 000 – 899 999		$PP_1$	2969
700 000 – 799 999		$PP_{1+1}$	6888
600 000 – 699 999		$(Q_{1+1} - Q_1)$	100000
500 000 – 599 999	545 811	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.5182444501
400 000 – 499 999	426 090	MI	251823.44501
300 000 – 399 999			
200 000 – 299 999	1 224 192		
100 000 – 199 999	523 810		
50 000 – 99 999	279 375		
20 000 – 49 999	124 593		
10 000 – 19 999			
2000 – 9999			
less than 2000			

### Mpumalanga

Size of Locality	Population	2001	
	3 365 815		
4 900 000 – 4 999 999			
3 300 000 – 3 399 999			
3 200 000 – 3 299 999			
2 200 000 – 2 299 999			
2 100 000 -2 199 999			
2 000 000 – 2 099 999		$Q_1$	199999
1 000 000 - 1 099 999		$Q_{1+1}$	299999
900 000 – 999 999			5000
800 000 – 899 999		$PP_1$	3136
700 000 – 799 999		$PP_{1+1}$	6103
600 000 – 699 999		$(Q_{1+1} - Q_1)$	100000
500 000 – 599 999		$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.6282440175
400 000 – 499 999	974 551	MI	262823.40175
300 000 – 399 999	334 420		
200 000 – 299 999	998 586		
100 000 – 199 999	701 677		
50 000 – 99 999	272 370		
20 000 – 49 999	81 625		
10 000 – 19 999			
2000 – 9999			
less than 2000			



## Mpumalanga

Size of Locality	Population	2007	
	3 643 435		
4 900 000 – 4 999 999			
3 300 000 – 3 399 999			
3 200 000 – 3 299 999			
2 200 000 – 2 299 999			
2 100 000 -2 199 999			
2 000 000 – 2 099 999		$Q_1$	199999
1 000 000 - 1 099 999		$Q_{1*1}$	299999
900 000 – 999 999			5000
800 000 – 899 999		$PP_1$	2842
700 000 – 799 999		$PP_{1+1}$	5022
600 000 – 699 999		$(Q_{1*1} - Q_1)$	100000
500 000 – 599 999	1 037 173	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.9899082569
400 000 – 499 999	435 217	MI	298989.82569
300 000 – 399 999	338 095		
200 000 – 299 999	794 440		
100 000 – 199 999	609 306		
50 000 – 99 999	355 543		
20 000 – 49 999	70 713		
10 000 – 19 999			
2000 – 9999			
less than 2000			

## Mpumalanga

Size of Locality	Population	2011	
	4 039 939		
4 900 000 – 4 999 999			
3 300 000 – 3 399 999			
3 200 000 – 3 299 999			
2 200 000 – 2 299 999			
2 100 000 -2 199 999			
2 000 000 – 2 099 999		$Q_1$	299999
1 000 000 - 1 099 999		$Q_{1*1}$	399999
900 000 – 999 999			5000
800 000 – 899 999		$PP_1$	4482
700 000 – 799 999		$PP_{1+1}$	7202
600 000 – 699 999		$(Q_{1*1} - Q_1)$	100000
500 000 – 599 999	1 130 402	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.1904411765
400 000 – 499 999		MI	319043.11765
300 000 – 399 999	1 098 954		
200 000 – 299 999	774 074		
100 000 – 199 999	623 031		
50 000 – 99 999	324 230		
20 000 – 49 999	89 606		
10 000 – 19 999			
2000 – 9999			
less than 2000			



## Mpumalanga

Size of Locality	Population	2016	
	4 335 966		
4 900 000 – 4 999 999			
3 300 000 – 3 399 999			
3 200 000 – 3 299 999			
2 200 000 – 2 299 999			
2 100 000 -2 199 999			
2 000 000 – 2 099 999		$Q_1$	299999
1 000 000 - 1 099 999		$Q_{1+1}$	399999
900 000 – 999 999			5000
800 000 – 899 999		$PP_1$	3748
700 000 – 799 999		$PP_{1+1}$	5306
600 000 – 699 999	622 158	$(Q_{1+1} - Q_1)$	100000
500 000 – 599 999	548 760	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.8035943517
400 000 – 499 999	866 135	MI	380358.43517
300 000 – 399 999	675 422		
200 000 – 299 999	524 765		
100 000 – 199 999	766 588		
50 000 – 99 999	240 757		
20 000 – 49 999	93 381		
10 000 – 19 999			
2000 – 9999			
less than 2000			



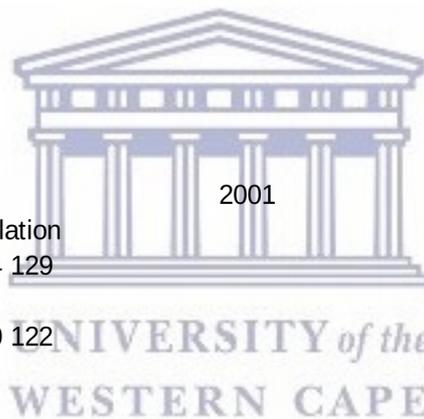
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## Appendix 26: Size of locality of the residence of median inhabitant KwaZulu-Natal

Size of Locality	Population	1996	
	8 572 292		
3 000 000 – 3 999 999			
2 000 000 – 2 999 999	2 748 299		
1 000 000 - 1 999 999			
900 000 – 999 999			
800 000 – 899 999		$Q_1$	99999
700 000 – 799 999		$Q_{1+1}$	199999
600 000 – 699 999			5000
500 000 – 599 999	524 266	$PP_1$	1882
400 000 – 499 999		$PP_{1+1}$	5578
300 000 – 399 999		$(Q_{1+1} - Q_1)$	100000
200 000 – 299 999	517 864	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.8436147186
100 000 – 199 999	3 167 790	MI	184360.47186
50 000 – 99 999	1 227 478		
20 000 – 49 999	374 665		
10 000 – 19 999	11 930		
2000 – 9999			
less than 2000			

### KwaZulu-Natal

Size of Locality	Population	2001	
	9 584 129		
3 000 000 – 3 999 999	3 090 122		
2 000 000 – 2 999 999			
1 000 000 - 1 999 999			
900 000 – 999 999			
800 000 – 899 999		$Q_1$	199999
700 000 – 799 999		$Q_{1+1}$	299999
600 000 – 699 999			5000
500 000 – 599 999	522 837	$PP_1$	4848
400 000 – 499 999		$PP_{1+1}$	5843
300 000 – 399 999	332 981	$(Q_{1+1} - Q_1)$	100000
200 000 – 299 999	953 897	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.1527638191
100 000 – 199 999	3 498 024	MI	215275.38191
50 000 – 99 999	965 516		
20 000 – 49 999	167 569		
10 000 – 19 999	15 309		
2000 – 9999			
less than 2000			



## KwaZulu-Natal

2007

Size of Locality	Population		
	10 246 934		
3 000 000 – 3 999 999	3 468 086		
2 000 000 – 2 999 999			
1 000 000 - 1 999 999			
900 000 – 999 999			
800 000 – 899 999		$Q_1$	199999
700 000 – 799 999		$Q_{1+1}$	299999
600 000 – 699 999	616 730		5000
500 000 – 599 999		$PP_1$	3999
400 000 – 499 999		$PP_{1+1}$	5369
300 000 – 399 999	659 793	$(Q_{1+1} - Q_1)$	100000
200 000 – 299 999	1 403 650	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.7306569343
100 000 – 199 999	2 942 035	MI	273064.69343
50 000 – 99 999	826 286		
20 000 – 49 999	316 073		
10 000 – 19 999	14 281		
2000 – 9999			
less than 2000			



2011

## KwaZulu-Natal

Size of Locality	Population		
	10 267 300		
3 000 000 – 3 999 999	3 442 361		
2 000 000 – 2 999 999			
1 000 000 - 1 999 999			
900 000 – 999 999			
800 000 – 899 999		$Q_1$	199999
700 000 – 799 999		$Q_{1+1}$	299999
600 000 – 699 999	618 536		5000
500 000 – 599 999		$PP_1$	4245
400 000 – 499 999		$PP_{1+1}$	5365
300 000 – 399 999	697 695	$(Q_{1+1} - Q_1)$	100000
200 000 – 299 999	1 149 420	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.6741071429
100 000 – 199 999	3 091 627	MI	267409.71429
50 000 – 99 999	1 066 053		
20 000 – 49 999	188 636		
10 000 – 19 999	12 898		
2000 – 9999			
less than 2000			

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**KwaZulu-Natal**

Size of Locality	Population	2016	
	11 065 268		
3 000 000 – 3 999 999	3 661 911		
2 000 000 – 2 999 999			
1 000 000 - 1 999 999			
900 000 – 999 999			
800 000 – 899 999		$Q_1$	199999
700 000 – 799 999		$Q_{1+1}$	299999
600 000 – 699 999	679 766		5000
500 000 – 599 999		$PP_1$	3666
400 000 – 499 999		$PP_{1+1}$	5389
300 000 – 399 999	759 696	$(Q_{1+1} - Q_1)$	100000
200 000 – 299 999	1 906 486	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.7742309925
100 000 – 199 999	2 987 830	MI	277422.09925
50 000 – 99 999	854 614		
20 000 – 49 999	200 428		
10 000 – 19 999	14 537		
2000 – 9999			
less than 2000			



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## Appendix 27: Size of locality of the residence of median inhabitant Limpopo.

Size of Locality	Population	1996
	4 576 563	
3 000 000 – 3 999 999		$Q_1$ 199999
2 000 000 -2 999 999		$Q_{1+1}$ 299999
1 000 000 - 1 999 999		5000
900 000 – 999 999		$PP_1$ 2536
800 000 – 899 999		$PP_{1+1}$ 6161
700 000 – 799 999		$(Q_{1+1} - Q_1)$ 100000
600 000 – 699 999		$(5000 - PP_1)/(PP_{1+1} - PP_1)$ 0.6797241379
500 000 – 599 999	533 757	MI 267971.41379
400 000 – 499 999	880 432	
300 000 – 399 999	342 551	
200 000 – 299 999	1 659 042	
100 000 – 199 999	522 462	
50 000 – 99 999	495 275	
20 000 – 49 999	127 370	
10 000 – 19 999	15 674	
2000 – 9999		
less than 2000		

### Limpopo

Size of Locality                      Population                      2001  
4 995 537



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3 000 000 – 3 999 999		$Q_1$ 199999
2 000 000 -2 999 999		$Q_{1+1}$ 299999
1 000 000 - 1 999 999		5000
900 000 – 999 999		$PP_1$ 2594
800 000 – 899 999		$PP_{1+1}$ 6076
700 000 – 799 999		$(Q_{1+1} - Q_1)$ 100000
600 000 – 699 999		$(5000 - PP_1)/(PP_{1+1} - PP_1)$ 0.6909821941
500 000 – 599 999	1 089 106	MI 269097.21941
400 000 – 499 999	495 261	
300 000 – 399 999	375 586	
200 000 – 299 999	1 739 573	
100 000 – 199 999	670 864	
50 000 – 99 999	555 075	
20 000 – 49 999	70 069	
10 000 – 19 999		
2000 – 9999		
less than 2000		

## Limpopo

Size of Locality	Population	2007	
	5 238 286		
3 000 000 – 3 999 999			$Q_1$ 299999
2 000 000 -2 999 999			$Q_{1+1}$ 399999
1 000 000 - 1 999 999			5000
900 000 – 999 999			$PP_1$ 4922
800 000 – 899 999			$PP_{1+1}$ 6876
700 000 – 799 999			$(Q_{1+1} - Q_1)$ 100000
600 000 – 699 999	602 819		$(5000 - PP_1)/(PP_{1+1} - PP_1)$ 0.0399181167
500 000 – 599 999	561 772		MI 303990.81167
400 000 – 499 999	471 805		
300 000 – 399 999	1 023 204		
200 000 – 299 999	1 247 024		
100 000 – 199 999	402 598		
50 000 – 99 999			
20 000 – 49 999	16 818		
10 000 – 19 999			
2000 – 9999			
less than 2000			



## Limpopo

Size of Locality	Population	2011	
	5 404 868		
3 000 000 – 3 999 999			$Q_1$ 299999
2 000 000 -2 999 999			$Q_{1+1}$ 399999
1 000 000 - 1 999 999			5000
900 000 – 999 999			$PP_1$ 4824
800 000 – 899 999			$PP_{1+1}$ 6736
700 000 – 799 999			$(Q_{1+1} - Q_1)$ 100000
600 000 – 699 999	1 247 461		$(5000 - PP_1)/(PP_{1+1} - PP_1)$ 0.0920502092
500 000 – 599 999	516 031		MI 309204.02092
400 000 – 499 999			
300 000 – 399 999	1 033 453		
200 000 – 299 999	1 210 989		
100 000 – 199 999	792 166		
50 000 – 99 999	569 128		
20 000 – 49 999	35 460		
10 000 – 19 999			
2000 – 9999			
less than 2000			

## Limpopo

Size of Locality	Population	2016	
	5 799 091		
3 000 000 – 3 999 999		$Q_1$	299999
2 000 000 -2 999 999		$Q_{1+1}$	399999
1 000 000 - 1 999 999			5000
900 000 – 999 999		$PP_1$	4754
800 000 – 899 999		$PP_{1+1}$	6000
700 000 – 799 999	702 180	$(Q_{1+1} - Q_1)$	100000
600 000 – 699 999	657 982	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.1974317817
500 000 – 599 999	542 416	MI	319742.17817
400 000 – 499 999	416 488		
300 000 – 399 999	722 618		
200 000 – 299 999	1 260 294		
100 000 – 199 999	827 052		
50 000 – 99 999	633 396		
20 000 – 49 999	36 665		
10 000 – 19 999			
2000 – 9999			
less than 2000			



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## Appendix 28: Size of locality of the residence of median inhabitant Northern Cape.

Size of Locality	Population	1996	
	1 011 864		
3 000 000 – 3 999 999			$Q_1$ 49999
2 000 000 -2 999 999			$Q_{1+1}$ 99999
1 000 000 - 1 999 999			5000
900 000 – 999 999			$PP_1$ 4309
800 000 – 899 999			$PP_{1+1}$ 6861
700 000 – 799 999			$(Q_{1+1} - Q_1)$ 50000
600 000 – 699 999			$(5000 - PP_1)/(PP_{1+1} - PP_1)$ 0.2707680251
500 000 – 599 999			MI 63537.401254
400 000 – 499 999			
300 000 – 399 999			
200 000 – 299 999	205 103		
100 000 – 199 999	112 435		
50 000 – 99 999	258 286		
20 000 – 49 999	277 905		
10 000 – 19 999	132 126		
2000 – 9999	26 009		
less than 2000			

### Northern Cape

Size of Locality	Population	2001	
	991 919		
3 000 000 – 3 999 999			$Q_1$ 49999
2 000 000 -2 999 999			$Q_{1+1}$ 99999
1 000 000 - 1 999 999			5000
900 000 – 999 999			$PP_1$ 4275
800 000 – 899 999			$PP_{1+1}$ 7961
700 000 – 799 999			$(Q_{1+1} - Q_1)$ 50000
600 000 – 699 999			$(5000 - PP_1)/(PP_{1+1} - PP_1)$ 0.1966901791
500 000 – 599 999			MI 59833.508953
400 000 – 499 999			
300 000 – 399 999			
200 000 – 299 999	202 246		
100 000 – 199 999			
50 000 – 99 999	365 576		
20 000 – 49 999	256 594		
10 000 – 19 999	142 101		
2000 – 9999	25 402		
less than 2000			



## Northern Cape

Size of Locality	Population	2007	
	1 058 060		
3 000 000 – 3 999 999			$Q_1$ 49999
2 000 000 - 2 999 999			$Q_{1+1}$ 99999
1 000 000 - 1 999 999			5000
900 000 – 999 999			$PP_1$ 4316
800 000 – 899 999			$PP_{1+1}$ 6740
700 000 – 799 999			$(Q_{1+1} - Q_1)$ 50000
600 000 – 699 999			$(5000 - PP_1)/(PP_{1+1} - PP_1)$ 0.2821782178
500 000 – 599 999			MI 64107.910891
400 000 – 499 999			
300 000 – 399 999			
200 000 – 299 999	243 018		
100 000 – 199 999	100 920		
50 000 – 99 999	256 545		
20 000 – 49 999	332 281		
10 000 – 19 999	98 012		
2000 – 9999	26 388		
less than 2000			



## Northern Cape

Size of Locality	Population	2011	
	1 145 860		
3 000 000 – 3 999 999			$Q_1$ 49999
2 000 000 - 2 999 999			$Q_{1+1}$ 99999
1 000 000 - 1 999 999			5000
900 000 – 999 999			$PP_1$ 4296
800 000 – 899 999			$PP_{1+1}$ 7835
700 000 – 799 999			$(Q_{1+1} - Q_1)$ 50000
600 000 – 699 999			$(5000 - PP_1)/(PP_{1+1} - PP_1)$ 0.1989262504
500 000 – 599 999			MI 59945.312518
400 000 – 499 999			
300 000 – 399 999			
200 000 – 299 999	248 041		
100 000 – 199 999			
50 000 – 99 999	405 544		
20 000 – 49 999	345 773		
10 000 – 19 999	139 499		
2000 – 9999	7 003		
less than 2000			

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## Northern Cape

Size of Locality	Population	2016	
	1 193 781		
3 000 000 – 3 999 999			$Q_1$ 49999
2 000 000 -2 999 999			$Q_{1*1}$ 99999
1 000 000 - 1 999 999			5000
900 000 – 999 999			$PP_1$ 4359
800 000 – 899 999			$PP_{1+1}$ 6146
700 000 – 799 999			$(Q_{1*1} - Q_1)$ 50000
600 000 – 699 999			$(5000 - PP_1)/(PP_{1+1} - PP_1)$ 0.3587017348
500 000 – 599 999			MI 67934.086738
400 000 – 499 999			
300 000 – 399 999			
200 000 – 299 999	255 351		
100 000 – 199 999	204 690		
50 000 – 99 999	213 298		
20 000 – 49 999	389 072		
10 000 – 19 999	114 886		
2000 – 9999	16 484		
less than 2000			



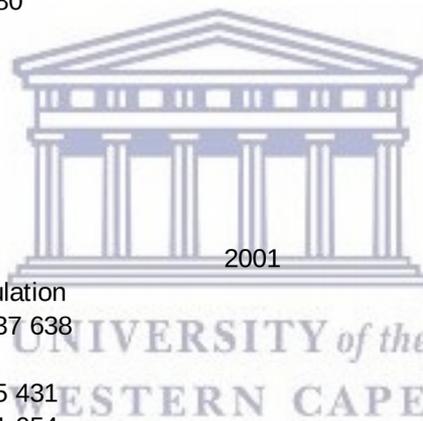
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## Appendix 29: Size of locality of the residence of median inhabitant South Africa.

		1996	
Size of Locality	Population		
	40 583 129		
1 000 000 +	11 768 382		
900 000 – 999 999	969 518		
800 000 – 899 999		$Q_1$	199999
700 000 – 799 999		$Q_{1+1}$	299999
600 000 – 699 999	1 289 255		5000
500 000 – 599 999	2 201 119	$PP_1$	3527
400 000 – 499 999	1 783 285	$PP_{1+1}$	5054
300 000 – 399 999	2 058 208	$(Q_{1+1} - Q_1)$	100000
200 000 – 299 999	6 199 534	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.9646365422
100 000 – 199 999	8 088 885	MI	296462.65422
50 000 – 99 999	4 035 010		
20 000 – 49 999	1 923 763		
10 000 – 19 999	225 190		
2000 – 9999	40 980		
less than 2000			

## South Africa

		2001	
Size of Locality	Population		
	44 737 638		
4 000 000 – 4 999 999			
3 000 000 – 3 999 999	6 315 431		
2 000 000 – 2 999 999	5 371 054		
1 000 000 - 1 099 999	2 988 014		
900 000 – 999 999			
800 000 – 899 999		$Q_1$	299999
700 000 – 799 999	702 281	$Q_{1+1}$	399999
600 000 – 699 999	1 303 860		5000
500 000 – 599 999	1 641 973	$PP_1$	4835
400 000 – 499 999	2 294 330	$PP_{1+1}$	5396
300 000 – 399 999	2 496 747	$(Q_{1+1} - Q_1)$	100000
200 000 – 299 999	6 418 361	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.2941176471
100 000 – 199 999	9 311 147	MI	329410.76471
50 000 – 99 999	4 175 274		
20 000 – 49 999	1 492 594		
10 000 – 19 999	204 499		
2000 – 9999	32 082		
less than 2000			



## South Africa

2007

Size of Locality	Population		
	48 502 063		
4 000 000 – 4 999 999			
3 000 000 – 3 999 999	10 853 363		
2 000 000 – 2 999 999	5 070 137		
1 000 000 - 1 099 999	1 050 930		
900 000 – 999 999			
800 000 – 899 999		$Q_1$	299999
700 000 – 799 999	1 477 218	$Q_{1*1}$	399999
600 000 – 699 999	1 870 416		5000
500 000 – 599 999	1 598 945	$PP_1$	4222
400 000 – 499 999	2 206 656	$PP_{1+1}$	5005
300 000 – 399 999	3 797 398	$(Q_{1*1} - Q_1)$	100000
200 000 – 299 999	7 083 219	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.993614304
100 000 – 199 999	7 529 613	MI	399360.4304
50 000 – 99 999	3 824 568		
20 000 – 49 999	1 853 718		
10 000 – 19 999	168 867		
2000 – 9999	20 046		
less than 2000			



## South Africa

2011

Size of Locality	Population		
	51 770 560		
4 000 000 – 4 999 999	4 434 827		
3 000 000 – 3 999 999	10 360 857		
2 000 000 – 2 999 999	2 921 488		
1 000 000 - 1 099 999	1 152 115		
900 000 – 999 999			
800 000 – 899 999		$Q_1$	399999
700 000 – 799 999	2 224 294	$Q_{1*1}$	499999
600 000 – 699 999	1 865 997		5000
500 000 – 599 999	2 195 648	$PP_1$	4813
400 000 – 499 999	1 335 552	$PP_{1+1}$	5071
300 000 – 399 999	3 564 562	$(Q_{1*1} - Q_1)$	100000
200 000 – 299 999	5 729 790	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.7248062016
100 000 – 199 999	9 469 095	MI	472479.62016
50 000 – 99 999	4 625 958		
20 000 – 49 999	1 318 840		
10 000 – 19 999	193 831		
2000 – 9999	15 292		
less than 2000			

## South Africa

2016

Size of Locality	Population		
	55 655 639		
4 000 000 – 4 999 999	8 954 140		
3 000 000 – 3 999 999	6 654 256		
2 000 000 – 2 999 999			
1 000 000 - 1 999 999	1 152 115		
900 000 – 999 999			
800 000 – 899 999	810 528	$Q_1$	399999
700 000 – 799 999	2 195 318	$Q_{1*1}$	499999
600 000 – 699 999	2 586 428		5000
500 000 – 599 999	1 628 692	$PP_1$	4542
400 000 – 499 999	2 618 955	$PP_{1+1}$	5013
300 000 – 399 999	4 142 475	$(Q_{1*1} - Q_1)$	100000
200 000 – 299 999	5 626 646	$(5000 - PP_1)/(PP_{1+1} - PP_1)$	0.9723991507
100 000 – 199 999	10 091 453	MI	497238.91507
50 000 – 99 999	3 936 560		
20 000 – 49 999	1 287 440		
10 000 – 19 999	172 451		
2000 – 9999	25 379		
less than 2000			



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## Appendix 30: Urban, Rural, Total and City Population Projections.

### Population Projections

#### Urban

Province	P <sub>0</sub>	r	P <sub>2030</sub>	P <sub>2050</sub>
Western Cape	5313340		0.022633 7294222.8133	11470088.414
Eastern Cape	2849957		0.010598 3305791.4213	4086283.6193
Kwazulu Natal	6198155		0.016801 7841778.5705	10973526.246
Gauteng	13287254		0.02684 19347539.037	33094437.929
Free State	1646876		0.00587 1787932.9212	2010654.2366
Northern Cape	355633		0.010908 414308.68015	515311.35986
Mpumalanga	1908983		0.025364 2722816.0017	4521965.0255
North West	2075318		0.022132 2829110.6235	4404392.749
Limpopo	1031095		0.018841 1342314.4752	1956613.8358
South Africa	34666611		0.020902 46451325.676	70558701.214

#### Rural

Province	P <sub>0</sub>	r	P <sub>2030</sub>	P <sub>2050</sub>
Western Cape	966390		0.025672 1384335.4437	2313265.5875
Eastern Cape	4147022		0.003824 4375087.3542	4722821.9244
Kwazulu Natal	4867086		0.008053 5447939.1564	6399996.2263
Gauteng	112472		0.026966 164059.35807	281335.61097
Free State	1187839		0.000786 1200982.1614	1220010.774
Northern Cape	838149		0.007187 926870.52884	1070149.7693
Mpumalanga	2426983		0.010319 2804190.5467	3446967.7178
North West	1673119		0.009199 1903083.6594	2287490.921
Limpopo	4767997		0.010444 5518699.8635	6800677.9148
South Africa	20987057		0.008342 23586957.581	27869528.245

#### Total Population

Province	P <sub>2030</sub>	P <sub>2050</sub>
Western Cape	8678558.257	13783354
Eastern Cape	7680878.7755	8809105.5437
Kwazulu Natal	13289717.727	17373522.472
Gauteng	19511598.395	33375773.54
Free State	2988915.0826	3230665.0106
Northern Cape	1341179.209	1585461.1292
Mpumalanga	5527006.5485	7968932.7433
North West	4732194.2829	6691883.67
Limpopo	6861014.3387	8757291.7506
South Africa	70038283.257	98428229.46



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