

**SOCIO-SPATIAL CHANGE IN THE POST-APARTHEID CITY OF TSHWANE
METROPOLITAN MUNICIPALITY, SOUTH AFRICA**

by

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ABSTRACT

The premise of the research concerns negative spatial legacies and questions doubting the existence of the true post-apartheid city in South Africa. The study describes the socio-spatial structure of the functional urban core of the City of Tshwane Metropolitan Municipality (CTMM). An empirical analysis, a unique segregation-desegregation classification, a relative socio-economic classification and three continuity-discontinuity hypotheses was used to compare past and present socio-spatial characteristics. Structural racial-residential segregation is evident along with high levels of socio-economic inequality. Spatial polarisation of societal attributes has created a clear north-west and south-east divide in the study area. The study area is described as one with a central-south citadel (inhabited by the wealthy) and a dynamic periphery (diverse but relatively deprived). Current socio-spatial characteristics can be attributed to strong spatial legacies, ineffective policy interventions and underlying socio-spatial influences that inhibit true inclusivity and equality in the study area.

KEY TERMS

Continuity-discontinuity; desegregation; post-apartheid; racial-residential segregation; social polarisation;
socio-economic inequality; socio-spatial change; South Africa, spatial legacies; Tshwane.

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CHAPTER 1

CONCEPTUALISING SOCIO-SPATIAL RESEARCH IN THE CITY OF TSHWANE

“Research is creating new knowledge”

- *Neil Armstrong*



1.1. Introduction

The 21st century can be described as the century of urbanisation – a process that has resulted in significant urban growth and increasingly complex urban environments, which ultimately means that cities have become crucial life-supporting spaces for societies and communities. Modern cities (both those with a significant global reach and those with a less significant influence) have become adamant drivers of the global and national economies and, in doing so, cities are shaping crucial aspects of social and cultural life while still being “... areas of unsolved problems” (Mierzejewska & Parysek, 2014:15). Simply put, modern urban spaces have become contested social spaces that require rigorous investigation to ensure that social, political, economic and environmental changes that take place in future remain suitable to the demographic composition of a society as well as the geographical distribution of the population (Pelser, 2005). The concerns related to these dynamics and growth directions have put many governments, including the South African Democratic Government, on a path to integrate and establish principles such as equity, inclusivity, economic prosperity, good governance, environmental sustainability and liveability in urban environments.

Among the varying significance of globalisation, economic growth and challenges such as urbanisation, it is evident that it is societal attributes that remain a consistent and fundamental element that defines the future of a country (or city) and the quality of life provided to citizens (Bourne & Rose, 2001). Considering the abovementioned influence of societal attributes on quality of life, it is appropriate to assume that the spaces where people reside are equally significant in determining the quality of life that citizens in urban areas experience. It is therefore in cities that dynamic neighbourhood spaces are found that are intrinsic to both the demographic composition, the geographic distribution of the population and the functioning of society. These multifaceted spaces comprise a mix of physical, social and psychological attributes that embody the demographic and economic situation of the residents (Hulchanski, 2011), and also influence access to all the elements (such as income, employment, housing and education) that are generally required for good quality of life. The effects of residential choice, for example, have the potential to spark social change, influence culture, social organisation, equality, the physical environment and the operating structures of local governments. As much as neighbourhoods reflect and shape society, it is also evident that neighbourhood change is a result of both society’s historical context and an ongoing character-shaping process influenced by internal and external social, political and economic forces (Hulchanski, 2011). In South Africa, it is true that neighbourhoods are treated as “safe” spaces where culture and identity are groomed and preserved and then

extended into various other spaces and roles in society – thus making residential spaces an important factor in social, political and economic relations.

Considering the abovementioned importance of understanding neighbourhood dynamics and various democratic goals, this study employed a distinct spatial perspective to explore the socio-spatial characteristics and changes (in terms of racial-residential segregation and socio-economic inequality) that shape the residential environment of one of the most dynamic metropolitan areas in South Africa, namely the City of Tshwane Metropolitan Municipality (CTMM). The research was done in South Africa, 20 years after the repeal of apartheid legislation that defined socio-spatial conditions by inducing racial-residential segregation and the associated socio-economic inequality into the country's cities. In addition to its turbulent history, the South African urban context remains dynamic due to the consistent influence of ongoing rapid urbanisation and the prominence of metropolitan areas (The Presidency, 2006), while some authors have indicated that spatial mobility is still being restricted (Rex & Visser, 2009) and that the apartheid legacy lives on (The Presidency, 2013a). Subsequently it has been noted that segregation has strong geographical implications (Brown & Chung, 2006), along with important feedback effects on socio-economic inequality (Massey & Denton, 1993), which need to be fully understood in order to build a truly democratic, equal and integrated society.

Bourne and Rose (2001) have indicated that social and demographic changes have varying impacts over space and time and are always influenced by a variety of interrelated factors or processes in the social, economic and political spheres of society. Urban geography, as a subset of human geography, provides a spatial perspective on these various social, economic, political and institutional dynamics and how they change in a particular locality. Two of these social dynamics that are also influenced by the economic, political and institutional context of the locality, are that of racial-residential segregation and socio-economic inequality. This study investigated (through description, analysis and interpretation) the aforementioned segregation and inequality as it materialised in a particular urban locality and as it changed over time in order to make a unique contribution to the monitoring of segregation and inequality in South African cities.

1.2. Background literature and core argument

“Space is produced and reproduced through human intentions, even if unanticipated consequences also develop, and even as space constrains and influences those producing it” (Molotch, 1993:887). It is evident throughout history that cities give spatial expression to

the social, economic and political activities of the residents in the city and the cultural dynamics in society (Badenhorst *et al*, 2005). In other words, there is a definite relationship between the social-cultural dynamics of society and the spatial dynamics in cities. There is also a significant relationship between the physical distance between groups of people and the social distance between the same groups, and these differences are often mutually reinforcing (Massey & Denton, 1993; Badenhorst *et al*, 2005). Considering that the South African Democratic Government is driven by various goals at a social level, such as social inclusivity and expressions of mutual solidarity, it then becomes clear that the spatial context in which these goals are pursued should be carefully understood to ensure that they can be achieved. Keeping these dynamics in mind, the following section outlines the foundation of the study. The section provides an overview of South Africa's development context as well as the literature related to racial-residential segregation and socio-economic inequality. The aspects discussed here also informed the chapter outline of the study and the content that will be presented in the subsequent chapters.

Urban development in South Africa has been influenced over time by various national political-economic ideologies that created a class-like system of social organisation and institutionalisation (Davies, 1981). Two very broad and significant eras of political influence are that of apartheid (pre-1994) and democracy (post-1994), both of which were built on a series of policies and laws that were designed to accomplish the goals of the government of the time. The repercussions of the policies and laws from the apartheid era (which endorsed territorial segregation and restricted the movement of numerous population groups) are still experienced today. Numerous studies, such as those of Hindson *et al* (1994), Maylam (1995), Rogerson and Rogerson (1997) and Saff (2009), have indicated the effect that the apartheid era, especially from the 1960s to the late 1990s, had on various facets of urban development. Subsequently the democratic government implemented a wide range of policies, with both positive and negative effects, to redress the social and spatial imbalances and injustices of the past. The policies were implemented while the population kept growing rapidly, the population's location changed considerably due to urbanisation, the functional significance of metropolitan areas increased significantly (Nel, 2011) and economic growth posed a significant challenge to the nation's prosperity (The Presidency, 2013a). Policy changes have played a prominent role in South Africa's development context in the sense that policies shaped the development context while also creating an enduring need for new research into the development context of the country that could inform the appropriateness and success of new policies. Apart from policy considerations, various theoretical considerations also need to be taken into account when discussing the South African development context. Theoretical explanations help to understand the spatial changes in

urban areas and include aspects such as the development of central places, forces that influence human environments, urban structure models and urban growth or development processes (Cilliers, 2010). Theoretical considerations similar to these were highlighted throughout the study where they are deemed applicable and where they especially influence the interpretation of the current socio-spatial structure of the CTMM.

The South African urban development context serves as an important background against which the first main focus of this study, namely racial-residential segregation, can be interpreted. Racial-residential segregation has been a prominent topic for many urban researchers in many parts of the world and is an equally important dynamic to consider in the South African urban society. The United States of America (USA) has made a significant contribution to urban segregation literature due to the nation's history of segregation between Whites and African-Americans (Blacks). A large group of researchers pursuing the segregation dynamic have found notable trends and factors that contribute to the situation (Massey & Denton, 1993; Iceland, 2002; Poulsen *et al*, 2002; Johnston *et al*, 2003). Research in the USA has also emphasised numerous negative effects that high levels of racial segregation have on socio-economic conditions in American neighbourhoods. Jargowsky (2003), Roberts and Wilson (2009) and Walks and Bourne (2006) have specifically indicated that residents in highly segregated neighbourhoods are more likely to be poor and remain poor because their segregated state does not provide access to diverse social networks, social resources or employment. The possibility that this socio-spatial relationship could also exist in other urban environments provided an important motivation to investigate similar socio-spatial relationships in the South African context. A number of studies from European countries have also contributed to the body of literature on the segregation subject, although European researchers focus on ethnic segregation rather than racial segregation (Schlemmer & Stack, 1990; Petsimeris & Ball, 2014). In Europe, it is especially immigrants from countries such as India, Pakistan and Bangladesh who experience the most severe levels of segregation. These ethnic minorities would, in most cases, form specific clusters and associated social divisions in cities that are also related to specific socio-economic conditions in the same areas (Petsimeris & Ball, 2014). Thus, the European segregation research also suggests a clear connection between segregation and specific socio-economic conditions. In the South African context, there has also been noteworthy contributions to racial-residential segregation research from Cape Town (Turok, 2001; Lemanski, 2006), the Durban Metropolitan area (Morris & Hindson, 1997; Schensul, 2009) and Tshwane/Pretoria area (Horn, 2012), with limited studies in other cities like Bloemfontein (Rex & Visser, 2009) and Polokwane (Donaldson & Kotzé, 2006). The South African case studies are, however, predominantly based on national census data between

1985 and 2001, with the addition of some municipal data in selected cases. South African case studies predominantly use data for the main population groups in the country, namely White, Black-African, Coloured and Indian/Asian¹ to analyse segregation. The aforementioned racial classifications were instituted by Statistics South Africa for the national census counts and were therefore also used in this study. The abovementioned studies indicated that desegregation is generally slow, that segregation patterns have become increasingly complex and that continued segregation has a significant negative impact on the socio-spatial structure of South African cities. Complexities include that fact the inner cities often experience significant racial change while some racially mixed areas have re-segregated and while in other cases racial segregation have been “replaced” by income or class segregation (Oldfield, 2004). Despite some positive findings it remains evident that a great deal still needs to be achieved in terms of integrating previously excluded population groups into the urban fabric (Christopher, 2005). The details regarding these studies and their findings are discussed in chapter 3 of the study.

Socio-economic inequality, the second main focus of the study, is also influenced by the urban development context of South Africa, and has also become a growing concern throughout the world, especially in developing countries of the global South. Most developed nations, for example Canada, Finland, the United Kingdom and the USA, have Gini levels of below 0.4 (Walks, 2013), while countries in the global South, like Brazil, Chile, Namibia and South Africa, have Gini index values of between 0.5 and 0.7 (Whiteford & McGrath, 1994; Crankshaw & Parnell, 2004; Leibbrandt *et al*, 2010; United Nations Development Programme, 2013). Gini levels, ranging from 0 to 1, provide an indication of the extent of income inequality in a country, where 0 represents perfect equality and 1 represents perfect inequality (MacLachlan & Sawada, 1997). The measurement of inequality is in most cases done as a monitoring exercise and used to describe a current inequality situation as well as possible causes and solutions to ongoing inequality challenges. The South African case is no different in the sense that monitoring the state of inequality aims to answer two fundamental questions. The first is to determine whether the post-apartheid economy and various policy efforts by Government have in fact improved the socio-economic inequality situation in the country, and the second is to determine whether the racial composition of inequality has changed (Leibbrandt *et al*, 2007). The vast number of inequality measurements (mostly statistical) allows researchers to describe inequality from various perspectives and also to clearly identify the trends and extent of inequality. In most instances indicators such as income, wages, employment, education and housing are used to describe

¹ See Christopher (2001a; 2005) or chapter 2 for the classification of the four main racial groups in South Africa.

a person or household's socio-economic status in relation to the rest of the population. Growing inequality in countries such as Canada and the USA has been ascribed to increases in the income of the top 1% of income earners (Walks, 2013) rather than to a reduction in the income of "poorer" income earners. In other countries, however, it is due to shifts in the labour market related to globalisation, deindustrialisation, declining unionisation, immigration and an aging population (Walks, 2013; Florida & Mellander, 2014). All the research on inequality clearly indicates that local conditions are key to the extent of inequality, and also that national inequality is very different from local-level inequality and therefore has different policy implications and cannot be approached in the same way (Glaeser *et al*, 2009). Numerous perspectives have identified South Africa as one of the most unequal countries in the world, which has subsequently drawn a great deal of attention to this research area (Crankshaw & Parnell, 2004; Leibbrandt *et al*, 2007; Tregenna & Tsela, 2012). The South African socio-economic inequality situation is particularly unique and is constantly shaped by its historical context of discrimination and exclusion (that is, inequality created between racial groups during apartheid), the extent and location of poverty as well as the current economic situation of the country. In this study, socio-economic inequality is considered in conjunction with racial-residential segregation because it is evident that there are numerous linkages between these dynamics (Massey & Denton, 1993; Petsimeris & Ball, 2014) that need to inform future policy. Past levels of poverty and inequality in South Africa painted a dismal picture of socio-economic inequality; numerous sources provide an empirical and statistical analysis of this picture in the country, including those by Whiteford and McGrath (1994), Leibbrandt *et al* (2001), Crankshaw and Parnell (2004), Naidoo (2005), Leibbrandt *et al* (2007) and Goldman Sachs (2013). Considering the extent of socio-economic inequality in South Africa, the National Development Plan of 2013 has subsequently set a clear goal to reduce poverty and inequality in the country by 2030. Research and investigations into socio-economic inequality in South Africa are also shaped by the desire to change the strong racial undertone related to poverty and its continuation in post-apartheid South Africa (Gelderblom, 2006; Leibbrandt *et al*, 2010). A more detailed perspective on the socio-economic inequality situation in South Africa and the study area is provided in the fourth chapter of the study.

It is evident from this short background analysis that racial-residential segregation and socio-economic inequality research has been motivated by a number of factors and sparked by various market needs and academic debates. Ultimately, the occurrence of segregation and inequality in a society can cause powerful social tensions because both these situations eventually lead to one group or groups of people being excluded from certain benefits in society, and due to the spatial nature of resources it consequently leads to a myriad of

spatial consequences ranging from spatial inequality to certain spaces becoming deteriorated in terms of the quality of life they offer. Consequently, the socio-spatial structure of the city has the ability to aggravate or alleviate social tensions in society, improve or cripple the liveability of residential environments and promote or hamper progressive urban development. It is these possibilities that make a greater understanding of the city's socio-spatial structure invaluable. In the South African context, as will be explained later, social tensions are mainly caused by a lack of change to unequal and discriminatory conditions of the past. Previous discrimination and inequality had distinctive spatial patterns and therefore the main debate that sparked and drove this study, is the debate over the true existence of the post-apartheid city. This debate is outlined in more detail in the section that follows.

1.2.1. The post-apartheid city debate: Does it exist?

Bill Freund (2010) asked the question that journalists, scholars, politicians, activist groups and citizens often asked themselves: Is there such a thing as a post-apartheid city and is the South African nation really freed from apartheid? The purpose of this debate is firstly to determine whether the resistance to the apartheid system, laid by politicians and South African citizens, made any impact on creating a new post-apartheid socio-spatial order in South African cities, and secondly to inform the aims, objectives and structure of the rest of this study.

The debate regarding the existence of the post-apartheid city also considers society's perception of the true post-apartheid city. This perception will undoubtedly influence the side of the debate that is supported the strongest; it is an perception that could be different for each individual reader. The post-apartheid era is undoubtedly characterised by phrases such as *democracy, freedom, the rainbow nation, simunye* (isiZulu word meaning "we are one"), *Ubuntu, equality, integration, prosperity and development*. On hearing and reading these phrases, a utopian image of the city is created, but it is also one that is probably not within our abilities to attain. However, when these phrases are given spatial meaning, it is possible to judge whether (or to what extent) cities offer a piece of this post-apartheid utopian vision.

a) Arguments against the post-apartheid city reality

Most responses to the introductory question of this debate would indicate widespread scepticism and disbelief (Freund, 2010), or would note a new form of segregation, one that is more subtle but with the same relative effect as the apartheid era. A situation that is unlikely to change in the near future (Saul, 2001). During the 2013 State of the Nation Address, the President of South Africa indicated that "... (A)partheid spatial patterns still persist in our

towns and cities” and that “(W)e need a national approach” (The Presidency, 2013a) for combatting the problem. These statements clearly suggest that the ideal post-apartheid city does not yet exist. It also indicates the important role that cities and their governments play in providing the opportunities for a rapidly urbanising population to integrate into areas that were previously inaccessible.

It can also be argued that apartheid still exists along other lines, especially “income apartheid”, when considering the widening gap between the “rich” and the “poor” in the country (*Pretoria News*, 2003; Naidoo, 2005). According to Professor Sampie Terreblanche, the African National Congress (ANC) Government has allowed the country to develop into a state of inequality that is worse than that of the apartheid era. He suggests that the apartheid system has been replaced with an inhumane socio-economic system that is fundamentally flawed by an inefficient and corrupt government at the one end and a selfish, global-orientated economic sector at the other end (*Beeld*, 2012). Therefore one can argue that a city that segregates (or allows segregation) on the basis of income is no better than the apartheid city of the past, and therefore South Africa is not truly in a post-apartheid state but rather still in a transition stage. According to Terreblanche inequality was not reversed, but intensified, while unequal power relations have also persisted in society. Consequently, only a minority of blacks have benefitted from the post-apartheid Broad-based Black Economic Empowerment (BBBEE) programme, which was intended to redress the racial imbalances in the South African employment market. Thus South Africa has not achieved solidarity and is still divided among ethnic and racial groups (*Beeld*, 2012; *Sunday Times*, 2012).

Further arguments against the existence of the post-apartheid city include (1) that redistribution (in terms of income and access to opportunities) has not been possible due to the lack of and slow land reform process, (2) the lack of initial change due to the system of rules imposed through various policies and the Constitution of the Republic of South Africa, Act no. 108 of 1996, and (3) the shift from social policy (in the form of the Reconstruction and Development Programme [RDP]) to economic policy (in the form of the Growth Employment And Redistribution [GEAR] policy) that limited the extent of redistribution (Freund, 2010). In other words, laws and policies created to improve certain aspects of life in South Africa and to redress imbalances have failed in many respects and thus created more barriers for progressive change. Related to these policy shifts are the concerns over the increased neoliberal nature of policies in South Africa. The neoliberal market approach has been noted to increase social and class divisions in society and neglects the needs of the urban poor at the expense of improving the country’s position in the global economic market (Pillay, 2008; Mini, 2012). Furthermore, South Africa has not been able to adapt sufficiently

to population growth and the growing need to provide income opportunities to the new population. Crime has also increased since democracy, resulting in increased inequality and danger, which in turn reduces mobility and quality of life (Freund, 2010), while capitalistic ideals and development phenomena like gated communities perpetuate inequality and exclusion in cities (Badenhorst *et al*, 2005; Grant, 2005; Freund, 2010). At an institutional and cultural level, the South African society has not been able to resolve issues of identity, space and place, while racism seems to remain strong (*The Guardian*, 2012). It is also evident that neo-liberalism has a dominant influence on government decision making (McDonald & Smith, 2004) and, when coupled with global capitalism, produces nothing positive in terms of equality (Saul, 2001). Even though free trade, open markets and economic liberalisation contribute to equity, it is doubtful whether the same can be said of privatisation, as the private market only provides services where higher profit is available.

b) Arguments for the post-apartheid city reality

Despite the numerous arguments against the post-apartheid city reality, some writers do highlight reasons to support the post-apartheid reality. The most prominent reason being the fact that in terms of legislation, South Africa is no longer in a state of apartheid. Legislation like the Natives Urban Areas (Consolidation) Act of 1945 and the Group Areas Act (GAA) of 1950 has long been repealed and “replaced” by the post-apartheid Constitution of South Africa. The abolition of all apartheid laws through the Abolition of Racially Based Land Measures Act of 1991 has created (or at least allowed the opportunity for) an integrated and equitable nation (Christopher, 2005). The effect of these policy removals is evident in the rate of rural to urban migration as well as the increases in black property ownership in many urban areas (*Pretoria News*, 1997; Horn & Ngcobo, 2003; Donaldson & Kotzé, 2006). It is thus evident that South Africa has moved through a period of deracialisation (achieved through institutional reform) into a period of desegregation.

In addition to these initial changes, Freund (2010) indicates that the amalgamation of municipal jurisdictions makes for equitable management and removes the autonomy of small suburban communities on the urban periphery. Giraut and Maharaj (2002) also indicate that the South African Government has tried to achieve a more equitable distribution of resources through the Municipal Demarcation Board, who occasionally redraws the boundaries of the local municipalities (of which 843 were officially demarcated in 1995/1996 under the Constitution) in the country. One example of such a municipal boundary change was the new boundaries drawn for the CTMM in 2011 (City of Tshwane, 2011a; South Africa, 2011). The main reason for including the Metsweding District Municipality (comprising of the Nokeng Tsa Taemane and Kungwini Local Municipalities) in the CTMM was their respective

financial troubles, which influenced their ability to provide equitable services to their communities (Beeld, 2008; 2010). The amalgamation therefore makes the larger area more “equitable”. Freund (2010) also explains that the shift towards “independent” planning mechanisms has made equity and integration possible in South Africa. These planning shifts include the requirements that each municipality has for creating integrated development plans (IDPs) for their region, responsibilities toward local economic development (LED) and creating spatial strategies that were all introduced through the Municipal Systems Act of 2000 (South Africa, 2000a). Widespread focus and national government support (and guidance) for service delivery (through strategies such as the RDP, GEAR and the Breaking New Ground [BNG] policy²) should create equitable living conditions throughout the nation. Strategies such as GEAR have had a significant positive effect on infrastructure development and service delivery (McDonald & Smith, 2004). There are also areas of success in policy and institutional reform and urban planning that have increased public participation. Land reform has achieved some success, there is the introduction, promotion and success of BBBEE in creating a prominent black middle-income class (Iheduru, 2004), albeit small, there are inner city renewal programmes that create jobs and attract new investment, the introduction of various grant systems as well as widespread improvements in public transport systems and public places. These examples indicate a focussed effort towards creating the ideal post-apartheid city.

The discussion above indicates that on the one hand, the country has numerous strategies on the ground that provide the opportunity for integration but, on the other hand, there are a few government strategies, political attitudes and societal attributes that are so well rooted in society and the urban milieu that it prevents complete integration. It is evident that the effects that policies had on progressive development since the end of apartheid were in many respects both supportive and crippling. Due to the singularity and dynamic nature of urban environments, it is expected that the debate surrounding suitable responses to spatial legacies will remain open for the time being. In essence, the argument in this study boiled down to a question of continuity or discontinuity. Therefore the continuity-discontinuity hypothesis is presented as the aim of the study. In order to answer this hypothesis, the current socio-spatial structure of South African urban areas, and in this case the CTMM, can

² The RDP was introduced to address the inequalities of the past by providing basic infrastructure services and housing based on development principles of compaction and densification (Du Plessis & Boonzaier, 2015).

GEAR was introduced to improve South Africa’s position in the global economic market and to improve various aspects of the country’s local economic environment, including economic growth, job creation, poverty alleviation and increased foreign investment (Dlali, 2005).

The BNG policy was introduced to improve housing delivery, but also for creating sustainable living environments that are compact and accessible to all citizens (Pillay, 2008).

be described in one of three ways, namely (1) *connected-continuity*, (2) *disconnected-continuity* and (3) *discontinuity*. The first suggests that the same influences from the apartheid era are still at work and perpetuate racial-residential segregation and socio-economic inequality, with little change in urban form; the second suggests that spatial segregation and inequality still persists in cities but in a new or different spatial form of segregation and inequality, and the third suggests that society is no longer bound by the restraining social, economic, spatial and institutional conditions of the past. The rest of the study aims to uncover evidence to support any of these three hypotheses and ultimately place the socio-spatial structure of the study on the continuity-discontinuity continuum. It is important to note that all these arguments have significant spatial implications that are difficult to reverse; therefore the focus of this study was to analyse the extent of racial-residential segregation and socio-economic inequality patterns in the city instead of policies that were implemented in the study area.

1.3. Research aim and questions

1.3.1. Research aim

In the introduction of this chapter, the overall aim of the study was defined as investigating the socio-spatial structure of the city (in terms of racial-residential segregation and socio-economic inequality) as it materialised in space and changed over time. More specifically, the aim of the study is to describe the socio-spatial structure of the CTMM by (1) describing the spatial and policy changes that occurred since the Transition period (1990 to 1994), (2) measuring, analysing and interpreting the extent and character of both racial-residential segregation and socio-economic inequality and (3) supporting this investigation with an integrated perspective on the socio-spatial structure and character of the study area, which could then be placed on a continuity-discontinuity continuum and inform similar analyses in other South African urban localities.

1.3.2. Research question

What is the current socio-spatial structure of the City of Tshwane Metropolitan Municipality (CTMM) of South Africa in terms of racial-residential segregation and socio-economic inequality and how do these current patterns (1) compare to those of the segregationist and unequal spatial structure of the city in the past and (2) contribute to an understanding of socio-spatial relationships in the South African context?

1.3.3. Research sub-questions

The abovementioned research question is supplemented by a number of sub-research questions. These sub-questions, which indicate aspects that the research was able to answer in the various chapters, are listed below.

- What are the historical demographic, policy and spatial influences that shape the current socio-spatial structure of South African cities? (Chapter 2)
- What is the extent and spatial pattern of racial-residential segregation in the City of Tshwane? (Chapter 3)
- What is the extent and spatial pattern of socio-economic inequality in the City of Tshwane? (Chapter 4)
- What are the changes that have taken place in the study area's overall socio-spatial structure and how do these changes inform the current socio-spatial characteristics and relationships in the study area? (Chapter 5)
- Is there evidence favouring a connected-continuity hypothesis, a disconnected-continuity hypothesis or a discontinuity hypothesis in terms of the socio-spatial structure of the "post-apartheid" City of Tshwane and what insights does this provide into post-apartheid socio-spatial relationships in South Africa? (Chapter 6)

1.4. Importance and contribution related to the study

The study is important because socio-spatial dynamics that are not regularly and accurately monitored can cause numerous challenges for institutional development and for the achievement of political goals in a particular locality. Extreme racial-residential segregation and severe socio-economic inequality are difficult to reverse and hamper the image of the city and the overall quality of life of its citizens. These aspects are especially true in the dynamic 21st century urban environment with such diverse cultures as South Africa. Therefore "(A)n understanding of current and future demographic change is thus of vital importance to inform planning and decision-making at local, regional and national level" (Pelser, 2005:17). It is also noted that segregation and its reversal are more complicated than previously believed and it necessitates constant review of concepts and measurements (Horn, 2005). The true geographical dimensions of processes such as the rise in White poverty (and the perpetuation of wide-spread Black poverty) in South Africa remain mostly unexplored in recent literature (Schuermans & Visser, 2005). Furthermore it is important that local areas, such as the one under investigation, receive considerably more attention when monitoring segregation and inequality patterns (Brown & Chung, 2006). The study also makes an important contribution to monitoring certain urban management goals and

providing updated information on the changing urban environment that policy makers constantly require in order to implement suitable responses to urban issues. The Gauteng City Regional Observatory (GCRO), which is a research partnership between Universities and local governments in the Gauteng City Region (GCR), plays a particularly important role in providing the abovementioned updated information on urban dynamics in the region. One particular set of information that is important in this regard is information that allows the GCRO to monitor the Gauteng 2055's conceptual framework for development that sets out goals for equitable growth, social inclusivity and cohesion, good governance and sustainable development and infrastructure as key developmental goals for the GCR (Gauteng Planning Commission, 2012; Wray *et al*, 2013). This study made an important contribution towards monitoring these goals, as the study area is in the GCR, as well as in the sense that the socio-economic inequality situation in the city relates to the equitable growth objective, while the racial-residential segregation situation in the city informs the progress towards social inclusivity and cohesion in the city. The study provided a current picture of the socio-spatial structure of the city whereas previous studies only provided a partial picture of the situation and was based on data that is now more than 10 years old. It is evident in debates and all the relevant literature that the issue of racial-residential segregation, and its socio-economic inequality dimension, is a complex issue, to say the least.

1.5. The study area

The racial-residential segregation and socio-economic inequality analysis of this study was based on the functional urban core of the CTMM. The national importance, diverse demography (figure 1.1) and dynamic nature of the CTMM are some of the reasons why it has been chosen as the study area for this project. The CTMM, also referred to as Pretoria (when statistics and references before 2007 are applicable), is situated in the Gauteng province of South Africa and currently borders on three district municipalities in the Gauteng province, as well as three provinces in South Africa (figure 1.2, p. 16). The proximity of other municipal areas, both in Gauteng and other provinces, puts the CTMM in a very important spatial nexus with regard to rural to urban migration, as well as with regard to providing certain opportunities and services for residents in other regions to use their "newfound" spatial mobility. The CTMM is home to the seat of the National Government of South Africa and has very important linkages with the rest of the Gauteng province, including development corridors along the N1 and R21 highways. The region is experiencing constant growth, both spatially and economically, and plays an important role in the formation of the Gauteng Global City region (City of Tshwane, 2011b; The Presidency, 2006).

The spatial extent of the CTMM tripled after the recent amalgamation with the adjacent Metsweding District Municipality. This study did not take the entire extent of these new boundaries into consideration, but did consider suburbs that developed on the fringe of the old CTMM boundaries. Other suburbs in the extended parts of the CTMM are spatially separated from the core area to such an extent that segregation and inequality dynamics can be expected to be different and not influenced by the same dynamics as in the core of the Municipality. Another reason for selecting the core of the Municipality is the fact that the amalgamation with the adjacent District Municipality only took effect on 18 May 2011, after the Local Government elections (City of Tshwane, 2011a; South Africa, 2011), and therefore various spatial dynamics are expected to be different in the outlying parts of the previous CTMM, which could result in inaccurate conclusions relating to the segregation and inequality patterns in the study area. Developments on the fringes of the old CTMM (like the Silver Lakes golf estate, which was developed under the Kungwini Local Municipality) occurred under similar conditions as those developments inside the old CTMM boundaries and are therefore included, while changes on the outskirts (such as in Cullinan and Bronkhorstpruit) are unlikely to have taken effect in such a short period of time since 2011. The selected study area, which forms the core of the administrative area of the CTMM, will hereafter be referred to as the City of Tshwane. The study area, comprising 549 sub-places or neighbourhoods, is depicted in more detail below (figure 1.2, p. 16).

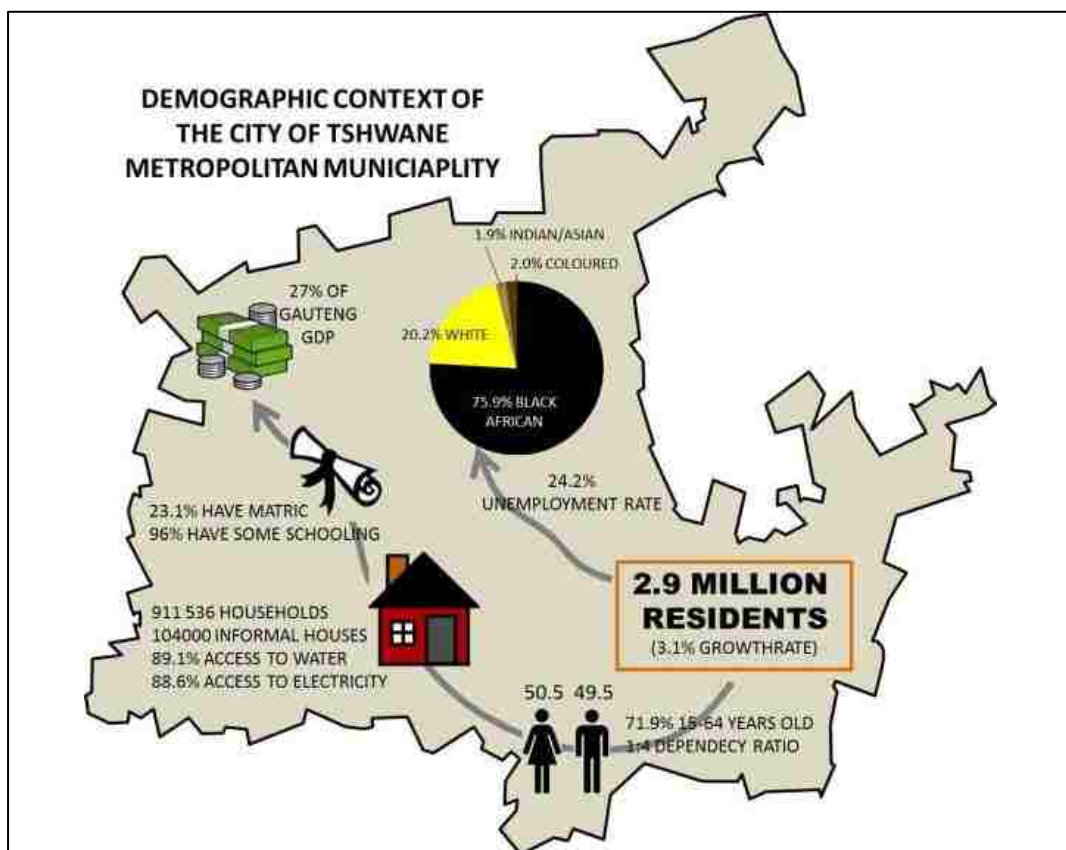
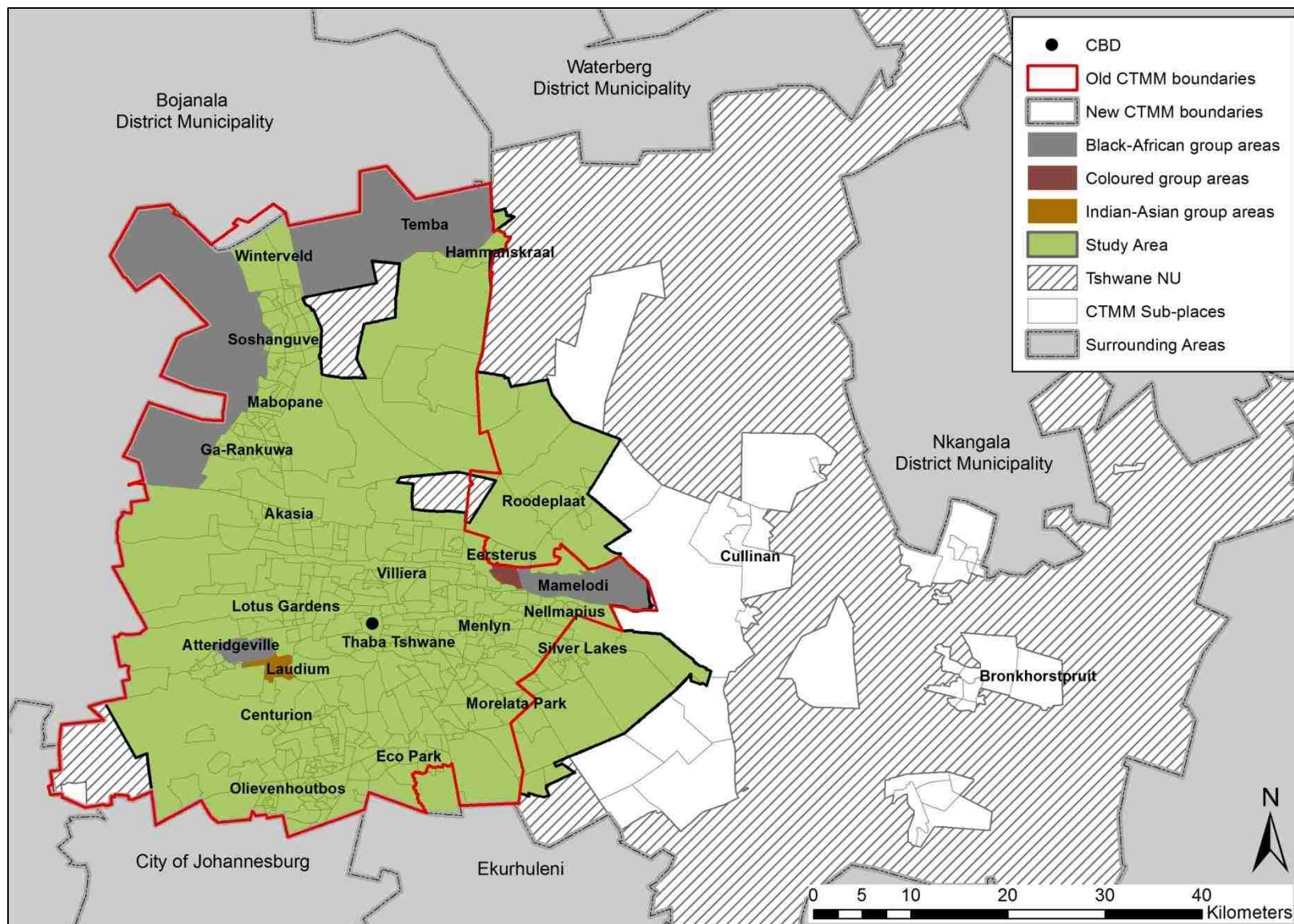


FIGURE 1.1: The demographic context of the City of Tshwane Metropolitan Municipality (CTMM)



15 FIGURE 1.2: Map of the City of Tshwane

The municipal area, as well as the census counts for the area, includes a sub-place “Tshwane NU”, which covers a significant part of the CTMM outskirts. Tshwane NU simply refers to a “remaining area” in the municipality which have not been classified into specific sub-places. This sub-place was excluded from the study area because the population statistics associated with the sub-place cause a skewed indication of conditions in the study area due to its size. The influence of the Tshwane NU sub-place also supports the selection of the core of the City of Tshwane. The exclusion of the Tshwane NU sub-place causes three spatial gaps in the study area (in the central north, the central east and the south-western corner of the study area). This study is limited, to some extent, by the choice of the study area. This inductive case study is based on an initial theory of the continuity-discontinuity hypotheses but does not make generalisations about conditions in other urban areas in South Africa. Therefore, generalisations from this study need to be carefully evaluated against other contexts to which they are applied.

1.6. Research design and the associated paradigms

The research is fundamentally empirical in nature and followed a case study design. The case refers to the core of the CTMM, as indicated in the study area description above. In terms of broad segregation and inequality components and dimensions, this study investigated the distributive components of segregation and inequality through quantitative analysis. The study analysed changes in the patterns of racial-residential segregation and socio-economic inequality between the South African Government transition period (1990 to 1994) and the year of the latest national census count, 2011.

The study was influenced by a certain paradigm. A paradigm is synonymous with words like “example”, “model”, “pattern”, “exemplar” and “worldview” (Kuhn, 1962; Royall, 2000; Sobh & Perry, 2006) and has been defined in many different ways in different research fields. In this study, a paradigm is defined as a view that encompasses patterns of perceiving, conceptualising, acting, validating and valuing that is associated with a particular image of reality, and that informs theories and methodology in scientific research. Paradigms ultimately influence how researchers answer questions related to the validity and value of the research endeavour, the research methods employed and the ways in which research findings are applied to practice. Two distinct paradigms that are associated with this study are *pragmatism* and *realism*. These two paradigms framed and influenced the scope, structure and outcome of the study. The study should therefore be interpreted with these in mind.

Pragmatism is "... the position in philosophy that defines meaning and knowledge in terms of their function in experience, with reference to adjustment and the resolution of problematic situations" (Frazier, 1981:62) and is derived from the words actions, practice and practical (William, 1995). This means that the paradigm basically deals with practical problems and regards a particular situation as important to an improved understanding of the world. According to William (1995) a pragmatic approach is one which views a situation, problem or dispute from all the possible angles but gives primary consideration to respective practical consequences of each angle in order to determine its validity in the given context. As such, the aforementioned echoes Carruthers (1987) who stated that a pragmatist is someone who makes pragmatic choices between distinct concepts that initially seemed similar. This approach is furthermore concerned with the impact that an alternative would have on a situation. If an alternative has no impact on changing a situation, it is not considered pragmatic and thus the consequence of impact of change is used to validate an image of reality (William, 1995). However, a true pragmatic approach also considers theoretical notions (Frazier, 1981). Pragmatism, according to Frazier (1981), views the world as an imperfect reality made up of knowledge and error. It acknowledges that reality is always changing and therefore past success cannot guarantee future accomplishments, making the constant re-evaluation of a situation a key feature of this paradigm. Furthermore, "... the pragmatist deals with the evolution of theory, hypothesis elaboration, validation and policy decisions over time" (Frazier, 1981:66) while focusing on using new knowledge to solve problems. The value of the research is measured by its practical success.

Realism has existed in various forms in the past, but a new realism developed along with the publication of the book *New Realism* in 1912 and it is often described or known as critical realism or scientific realism (Gibson, 1981; Krauss, 2005). Realism draws from both the positivism (Gibson, 1981) and constructivism paradigms, which means that the basis of realism concerns "... multiple perceptions about a single, mind-independent reality" (Krauss, 2005:761) while recognising that there are differences between the reality and people's perceptions of the reality (Krauss, 2005). Both Gibson (1981) and Krauss (2005) note that the empirical nature of this particular study is closely associated with the realist perspective and that it is used to discover knowledge of the real world by describing the mechanisms and casual processes that create the observed physical and social patterns or events in the world. The realism paradigm ultimately extends the empirical findings of the study, through analytical generalisations, to show its relationship with theories (Sobh & Perry, 2006). Very importantly, and different from positivism, the realist asks why a pattern is produced and seeks to discover connections and underlying causes between observed patterns or events in both nature and society and does not seek to apply the findings to populations, but rather to existing theories (Gibson, 1981; Sobh & Perry, 2006). The characteristics of realism

provide scope for researchers to use a variety of methods like combinations of qualitative and/or quantitative methodologies (Krauss, 2005; Hoggart *et al*, 2002) and are especially applicable to case studies (Sobh & Perry, 2006).

The characteristics of these two paradigms were used throughout the study, including in the nature of the study, the aim of the study, the methods used and the way in which conclusions were drawn from the study. These paradigms are important since the quality of the research is influenced by the appropriateness of the paradigm that was used. These chosen paradigms should provide a suitable framework within which to explain the racial-residential segregation and socio-economic inequality situation in the study area simply because “(G)eographic studies are concerned with the practical problems of man in space” (Frazier, 1981:70).

1.7. Research methods

1.7.1. Primary data

The official South African population census data for 2011 was used as the main primary data set for this study, together with secondary data from previous census counts (from 1911 to 2001). The sub-place level counts for racial distribution, annual median household income categories, employment status, highest level of education, tenure status and housing quality were used for the various analyses throughout the study. The census statistics were obtained from Statistics South Africa, who conducts a national census every 10 years since 2001 and did so every five years up to 2001. The census data is available in the public domain and its usage required no formal permission. The census data for 2011 was considered the primary data, as it was obtained in an unaltered state. Despite population data constantly changing, it was decided that Statistics South Africa provided the best source of data (both in terms of spatial and statistical data) to conduct the study. Therefore the exact counts and percentages of change are not as significant as the racial-residential segregation and socio-economic inequality trends identified in the study area.

The study also required and used various sets of GIS data including the district municipality boundaries of South Africa as well as sub-place boundaries and sub-place centroids for the study area. These data sets were obtained from a variety of agents and collections. The data was available in the public domain and the usage thereof required no formal permission.

1.7.2. Secondary data

The analyses in the study were supported by secondary data sources including previous segregation and inequality studies in South Africa (specifically those done in the CTMM) that used previous census data. Reference to 1985, 1991, 1996 and 2001 demographic data (from previous census counts) are made to provide a comparative perspective on the 2011 census data and to identify changes in demographic, racial-residential segregation and socio-economic inequality situations. The secondary data sources also included maps, graphs and visual representations that indicated the spatial and demographic structure of the country and the study area in the past.

1.7.3. Methods for analysis

The study investigated a variety of aspects related to the socio-spatial characteristics of the study area. These aspects were viewed in the context of the present urban reality as well as past conditions. This inevitably created a need for the use of a variety of analytical methods required to provide this perspective in the most accurate way possible. An overview of the various analytical methods used in the study is provided in this section, while more detail is provided in each subsequent chapter.

All of the chapters start with a desktop study that applied literature sources to describe the core aspects of the respective chapters. The literature included government or research institution reports and academic and newspaper articles, and were used to provide insights into the past development context of South Africa as well as past racial-residential segregation and socio-economic inequality conditions in both the country and the study area. The various visual representations from the 2011 national census survey for the respective chapters were created by using Microsoft Excel as well as ArcGIS software. These visual representations provide a graphic or spatial representation of the statistical data.

Racial-residential segregation was analysed by means of various segregation indices that included the multi-group segregation index, the dissimilarity index, the interaction index and the isolation index, as well as a spatial representation of population concentrations and the percentage of other population per sub-place. The findings from the statistical and spatial analyses were supported by a relative description of the racial-residential segregation situation in each sub-place. Socio-economic inequality in the study area was analysed by using statistical indicators such as the Gini coefficient and the Lorenz curve, as well as a spatial representation of median household income levels per sub-place in the study area. Because personal and household income is not always accurate and because the study aimed to analyse socio-economic inequality, the analysis also included spatial

representations of unemployment levels, housing quality, tenure status and highest education levels in order to provide a holistic picture of the socio-economic inequality situation in the study area. The findings from these analyses were supported by a representation of the overall socio-economic status of each sub-place in relation to median values for each socio-economic variable. In both the racial-residential segregation and socio-economic inequality analyses, sub-places with a total population of less than 20 people (referred to as subminimum population counts) were excluded, since these sub-places gave a false indication of the spatial distribution of the abovementioned aspects when included. The analytical methods for the fifth chapter in the study were much less complicated than the aforementioned analysis methods in the sense that it involved combinations of the previous chapter's results in the form of graphic representations. This allowed for a qualitative description of the study area's socio-spatial structure as well as the changes that have taken place since the advent of democracy.

1.8. Chapter outline

All of the abovementioned debates, aims, objectives and analyses are distributed over five subsequent chapters and follow a specific order that is used to answer the main research question of the study. The study is structured in such a way that each chapter forms an individual part of the larger study. Therefore the relevant literature is integrated into each chapter rather than including a chapter devoted entirely to literature. The chapter outline for the study is described in more detail in table 1.1.

TABLE 1.1: The chapter outline for the study

Chapter	Title	Chapter aim and content
Chapter 1	Conceptualising socio-spatial research in South Africa	This chapter provides an overview of the research field and details related to the study including the background, the research aims and objectives, the study area, the research methods and design and the motivation for the research.
Chapter 2	The urban development context of South Africa	This chapter provides a background to the urban development context of South Africa. The chapter aims to identify and describe the historical demographic, policy and spatial influences that shape the current socio-spatial structure of cities and how these have changed over time.

Chapter 3	The extent and spatial pattern of racial-residential segregation in the City of Tshwane	This chapter highlights the most important aspects in racial, residential and ethnic segregation literature (both local and international) and contains the racial-residential segregation analysis of the study area. The analysis aims to describe the current extent and spatial pattern of racial-residential segregation in the City of Tshwane.
Chapter 4	The extent and spatial pattern of socio-economic inequality in the City of Tshwane	This chapter highlights the most important aspects related to socio-economic inequality from both international and South African literature. The chapter aims to describe the extent and spatial pattern of socio-economic inequality in the City of Tshwane by using various socio-economic indicators and a relative comparison of sub-places' socio-economic status.
Chapter 5	The urban socio-spatial structure of the City of Tshwane	This chapter aims to find a correlation between the dimensions and spatial patterns of racial-residential segregation and socio-economic inequality in order to describe the socio-spatial character and changes in the City of Tshwane since the demise of apartheid. The chapter also aims to identify specific underlying factors that contribute to the observed socio-spatial structure in the study area.
Chapter 6	Conclusion	This chapter highlights the conclusions regarding the state of racial-residential segregation and socio-economic inequality in the study area and its influence on the overall socio-spatial structure of the City of Tshwane, especially in relation to the continuity-discontinuity hypotheses.

CHAPTER 2

THE URBAN DEVELOPMENT CONTEXT OF SOUTH AFRICA

“Yet, 17 years into the transition it is clear that urbanisation is the spatial nexus of multidimensional change in South Africa from which the future social fabric will emerge”

- *Camaren Peter*



2.1. Introduction

The urban environment is an intriguingly dynamic and complex part of the human environment, and also one of the most influential environments in any country (in both a positive and negative sense). Cities are key to a country's success in the global economic market, especially in developing countries like South Africa, and it has been noted that "(C)ities are centres of employment and production and sites of technological innovation" (South African Cities Network [SACN] 2006:2-2). However, it is also true that cities have "... the capacity to exclude, to marginalise, to reinforce patterns of inequality" (SACN 2006:2-2). The dynamism of the abovementioned characteristics has specific spatial implications and consequences. Thus it is clear that the dynamic nature of urban environments juxtaposes significant development opportunities alongside potential social tensions, with important spatial implications, and therefore signifies the need for developmental and societal priorities to be balanced in order to create liveable cities. One of the key concerns of this study is the potential negative effects that social tensions (specifically related to the racial composition of neighbourhood spaces and socio-economic inequality) have on living conditions in the city. In order to comprehend the possibility of social tension and its spatial implications in an urban society, it is important to consider the forces that drive change in the city (of which growth, urbanisation, natural environment, climate, economy, resource availability, politics, culture and even choices are just a few examples) and that have an impact on the socio-spatial structure of urban environments. The scope of this study does not allow an in-depth discussion on all these forces or factors; therefore the focus will remain on those that have a more direct impact on racial-residential segregation and socio-economic inequality at a local level. The numerous influences applicable to the socio-spatial structure of the urban environment are described in this study under the banners of (1) the demographic, (2) the policy and (3) the spatial contexts, which collectively are referred to as the development context of the urban environment. These three interrelated contexts have shaped the current socio-spatial structure of South African urban areas over many years and thus form the main focus of this chapter.

The broader development context of South African urban areas has always been influenced by a number of local factors, including population growth and migration, as well as external factors such as globalisation and technological development. Although both local and external factors influence development in South African urban areas, the significance and spatial location of their impacts have varied. For example, the influence of globalisation increased after South Africa's isolation period but was mostly focussed on the policy sector (Dlali, 2005), while local factors like rural to urban migration have a direct bearing on the demographic composition and spatial structure of cities. Considering all these varying and

dynamic influences, the purpose of this chapter is to lay down a contextual foundation for the interpretation and understanding of the analyses of the current socio-spatial structure of the study area. The chapter therefore provides a contextualisation of the socio-spatial change that has taken place in South Africa since the early 1990s and which have a significant influence on the levels of racial-residential segregation and socio-economic inequality that are currently evident in the study area. This is achieved through a historical overview of demographic, policy and spatial conditions in South African urban areas as well as a review of these conditions in the current urban development context of the country's major cities.

The structure of this chapter applies the three contextual perspectives mentioned above to discuss the urban development context of South Africa, which directly influences the socio-spatial structure (specifically the racial-residential segregation and socio-economic inequality situation) of cities (figure 2.1). These contexts all relate to each other; there are numerous overlaps and the contexts should therefore be viewed holistically. The demographic factors that influence change in cities will be explored first before discussing the policy influences over three policy eras that created the current spatial and development context of urban areas in South Africa. In the final section of the chapter, the spatial context of South African urban areas, which resulted from the aforementioned contexts, is discussed. The demographic, policy and spatial contexts are described at various spatial levels including the national, provincial and local (or metropolitan). The local context, in this case, will refer to the study area: the functional urban core of the City of Tshwane Metropolitan Municipality (CTMM).

2.2. Demographic context of South African urban areas

It has already been noted that urban environments are among the most dynamic of all the institutions created by society (Fick, 1990) and the number of factors that influence changes in cities are immensely diverse. Therefore the focus in this study will remain on those factors that are closely related to the socio-spatial structure of the study area. The first factor that this study will consider in order to inform an understanding of the socio-spatial structure of the city, is the demographics of society. The demographics of society are ever changing and have a significant influence on many aspects of the urban environment (Pacione, 2009). It therefore forms a significant part of the broader development context of South African urban areas (and any urban settlement for that matter). Another reason for discussing the demographics is because "(F)uture social, political, economic and environmental changes will to a large extent be propelled by the size, geographic distribution and demographic compilation of populations" (Pelser, 2005:17).

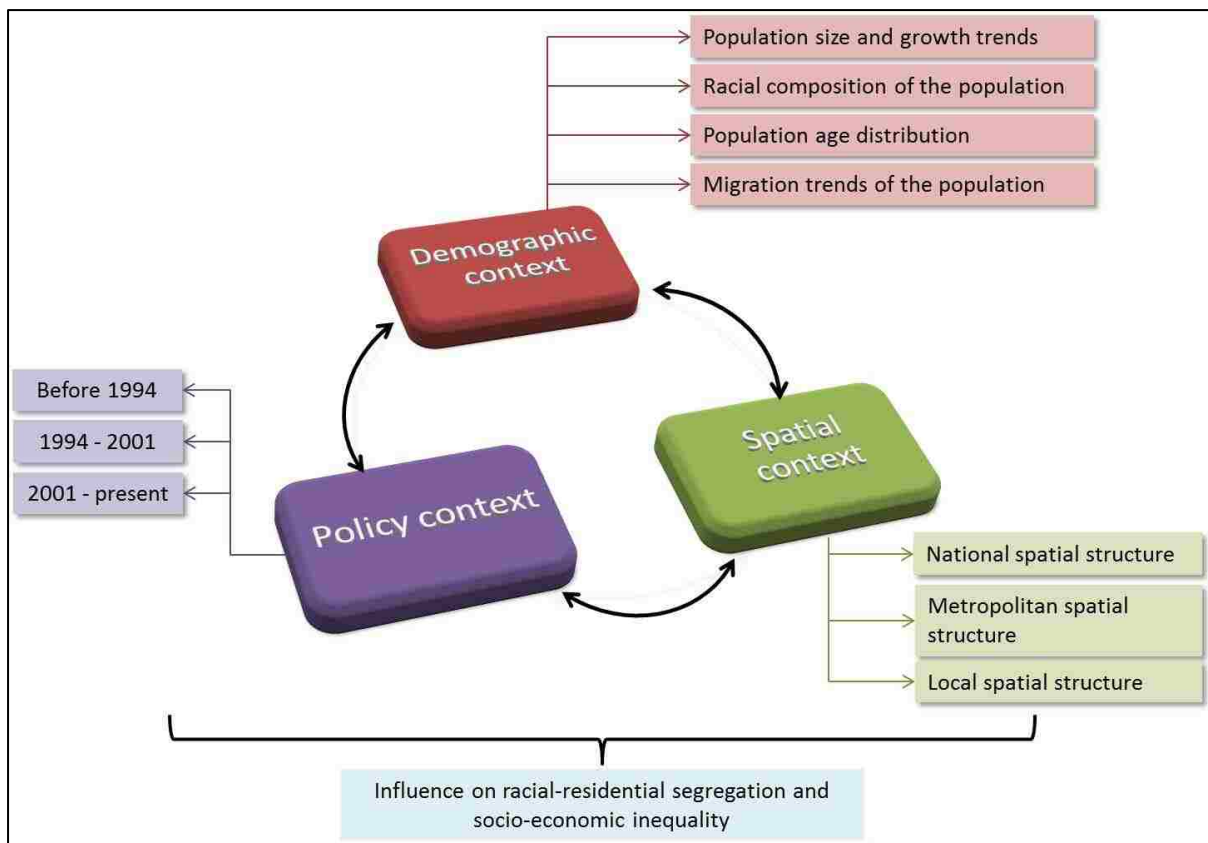


FIGURE 2.1: The outline of chapter 2

Considering the aforementioned facts, it is evident that demographics not only have a significant influence on racial-residential segregation and socio-economic inequality in the city, but are also crucial for future decision making. The further significance of urban demographics is found in the fact that urban areas have always been the most segregated living spaces in a society and home to severe inequality (later discussions will highlight these issues), while urban areas also experience the highest population growth. Therefore, if restructuring actions are not successful it effectively means that the urban population is growing from a segregated and unequal state into an even more segregated and unequal state. It is also possible to argue that a population that grows in a situation of segregation (or poverty) is likely to remain in this position since the new population does not have the ability to change their own situation and therefore requires action from outside actors (such as the government) to improve the quality of their lives. The population growth of society also has important socio-economic implications. The population growth rate and the economic growth rate in South Africa do not always boast a positive relationship, meaning that in such a case the South African society is getting poorer in terms of its per capita income generated per annum (The Urban Foundation, 1991a). Such a situation is worsened by events such as the global economic crisis of 2006/2007 that subdued the South African economic growth rate (Goldman Sachs, 2013), although the population growth did not slow down significantly. The

spatial implication of these situations is that it has a direct impact on the income distribution in the country in terms of providing income opportunities for the fast-growing population during difficult economic periods. Finally, it has been noted that urban population growth is a crucial part of policy debates and interventions (Nel, 2011). Population dynamics influence and change the context for which policies are developed and thus influence their effectiveness. This is directly related to the policy context of the country which, as the past has proven, has the ability to create, perpetuate and possibly relieve racial-residential segregation and/or socio-economic inequality situations. This short discussion indicates an important relationship between demographic changes and the racial-residential segregation and socio-economic inequality situation on the ground that needs to be thoroughly explored in order to fully comprehend the socio-spatial structure of the city.

A comprehensive perspective on society's demographics can be given by discussing the population size, density and growth, the racial composition of the population, the population age distribution and the migration trends of the population. The socio-economic characteristics of the population can also be included as an important trend, but this aspect will be discussed in detail in chapter 4 of the study. Population trends in South Africa can be best observed by means of an analysis of the official census counts, of which the most recent four were done in 1991, 1996, 2001 and 2011. There are, however, numerous other publications that provide estimates of and discussions on changes and trends in the South African society. The following discussion will draw on both the official census counts and population estimates to indicate changes and trends in the abovementioned demographic topics and thus outline the demographic context in South Africa within which the research took place.

2.2.1. The population size, density and growth trends

The importance of and interest in population size in the development context of South Africa are due to the number of conditions that influence population size, and also because it determines how space and resources are used. The total South African population has almost doubled between 1985 and 2011, with urban areas showing the most notable population growth. The 2011 official population census (Statistics South Africa, 2011a) shows that South Africa has a total population of about 51 million people (compared to approximately 31 million in 1985), which has been steadily increasing throughout all the recent official census counts (figure 2.2). Due to the inconsistency of enumeration procedures, especially during high apartheid and in former homelands, the exact population count is not as important as the population growth trend. The size of the population directly

influences the geographic distribution and density of the population (figure 2.3, p. 29). Thus the population growth in South Africa caused changes in the size and number of metropolitan areas that make a significant contribution to development in the country. This growth simultaneously influence the resource utilisation and resource availability in the country – something to which people are drawn and which they attempt to exploit and preserve for themselves. One of South Africa’s most prominent metropolitan areas, namely the Pretoria-Witwatersrand-Vereeniging (PWV) area (now Gauteng), had approximately seven million residents in 1985 (The Urban Foundation, 1991a). Today, South Africa has at least seven other equally prominent metropolitan areas. The abovementioned metropolitan area was, in 2011, home to more than 12 million residents. Although migration plays a significant part in the urban growth rate, it is evident that in South Africa the bulk of the urban growth comes from natural population increase (The Urban Foundation, 1991a).

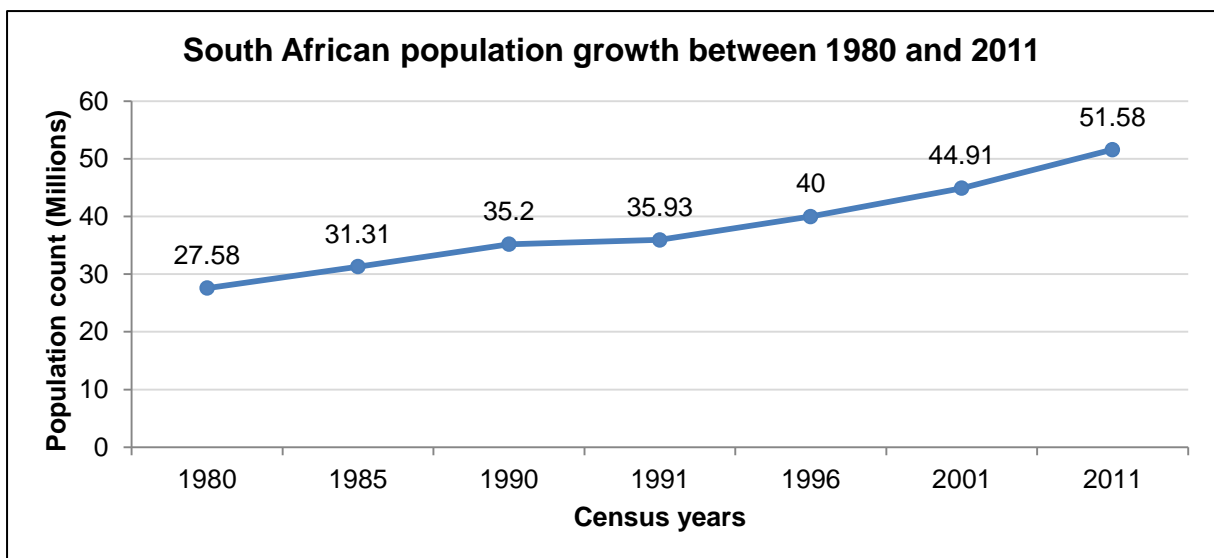


FIGURE 2.2: South Africa population growth between 1980 and 2011 (Source: Trading Economics, 2015).

The population growth characteristics in South Africa and the subsequent population distribution and density (figure 2.3, p. 29) have elevated the importance of metropolitan areas for providing the country’s population with liveable urban spaces that provide in all the relevant social and economic needs and resources. Ultimately the complexity of urban environments is a result of the social diversity among the people in the city; therefore it is clear that more people would mean more diversity and complexity. The population growth, distribution and density trends identified here help to identify the spaces where social diversity could be a concern and where more insight into socio-spatial relations are required. It is for this reason that population growth in metropolitan areas is so significant, because it

creates a need to understand social relationships and the extent of possible social tensions in order to manage these and create more liveable urban environments. This realisation supports the choice of the study area in terms of the insights that could be gained into racial-residential segregation and socio-economic inequality dynamics, but also because population growth trends are expected to continue in much the same way for the foreseeable future in South Africa. This state of affairs would subsequently make the abovementioned insights even more valuable if they could inform future policy and development decisions.

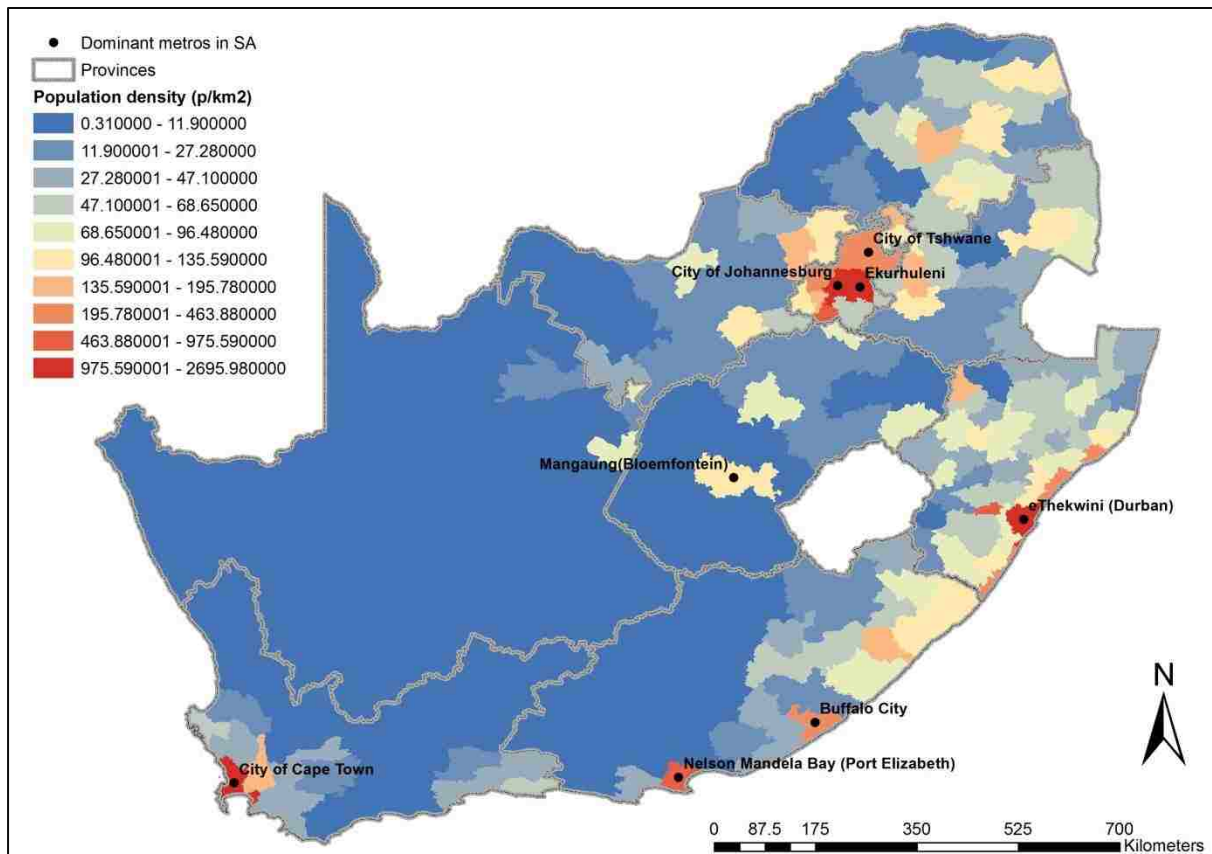


FIGURE 2.3: Population distribution in South Africa in 2011 (Source: Compiled by author using Statistics South Africa [2011a] data)

2.2.2. The racial composition of the population

The South African population is classified into four main racial groups, namely Black-African, White, Indian/Asian and Coloured. The classification of racial groups has been a highly debated topic between scholars, and various applications have been used in the past. It is important to take note of the history and application of these classifications in order to understand the rest of the study. Racial classifications have existed since colonial times and were introduced in many countries for the purpose of census enumeration. South Africa

serves as a unique example of where racial classifications have been used politically to discriminate against some population groups and uplift others (Christopher, 2002). The racial classifications have also been emphatically used to spatially separate certain population groups from each other and to exclude them from certain parts of the city during the apartheid era in South Africa. Once racial classifications were formally introduced by the Group Areas Act (GAA) of 1950, the consequent racial-residential segregation and socio-economic inequality were inevitable. According to Christopher (2001b; 2005), the four main racial classifications applicable to South Africa are identified as follows:

- the *Black-African* population is the descendants of people indigenous to the African continent;
- the *White* population is the descendants of people indigenous to the European continent;
- the *Indians or Asians* are the descendants of people indigenous to the Asian continents, specifically India; and
- the *Coloureds* are people from mixed ancestry; the descendants of slaves in the Cape Colony and descendants from the Khoisan.

Statistics South Africa still uses this classification for census enumeration, and therefore it will be used throughout this study. This racial classification, although it is a reminder of the social divide of the past, is essential to monitor the country's progress towards various redress policies including, among others, the Employment Equity Act (Christopher, 2005), and it provides a less complicated foundation on which to measure racial-residential segregation and racial inequality. The pros and cons of such a classification are evident in the fact that in the past the White population benefitted more from unrestricted rights in urban areas, whereas the present Black-African population benefits more from affirmative action programmes like Broad-based Black Economic Empowerment (BBBEE). Despite these four dominant categories, South Africa can still be described as having a cosmopolitan population (SACN, 2006) due to the inclusion of numerous other ethnic groups, especially in the metropolitan areas. Therefore the census also includes a category for *Other* population if one chooses not to be associated with either of the four main classification categories.

The changes in the racial composition of the South African population (figure 2.4) have been significant, with both the Black-African and White population groups showing notable increases and decreases respectively while the percentages of population in the Indian/Asian and Coloured population groups have remained largely unchanged. The almost 10% increase in the share of the Black-African population compared to an almost 10%

decrease in the share of the White population while the other population groups have remained mostly unchanged, imposes significant changes on the racial and cultural make-up of the city. The Black-African population, which historically contains the younger, least-skilled and poorest section of the population (The Urban Foundation, 1991a), has the fastest population growth rate compared to the other groups. Hence it is the dynamics in this population group (and relative to other population groups) that has the most significant influence on the extent and spatial distribution of racial-residential segregation and socio-economic inequality in cities. The socio-economic status of the majority population, for example, is often regarded as the real concern and a prominent contributor to racial-residential segregation and socio-economic inequality, as opposed to population size. The racial composition of the population does not have such a direct influence on the racial-residential segregation situation in a city, although the 80/20 relationship between the dominant racial group and the other groups in South Africa makes it much more difficult to attain racial-residential integration in cities. These dynamics suggest that residential integration on the ground is not as important as providing equitable access to all residential areas for all population groups and thus also supports an investigation into the socio-economic status of sub-places in urban areas.

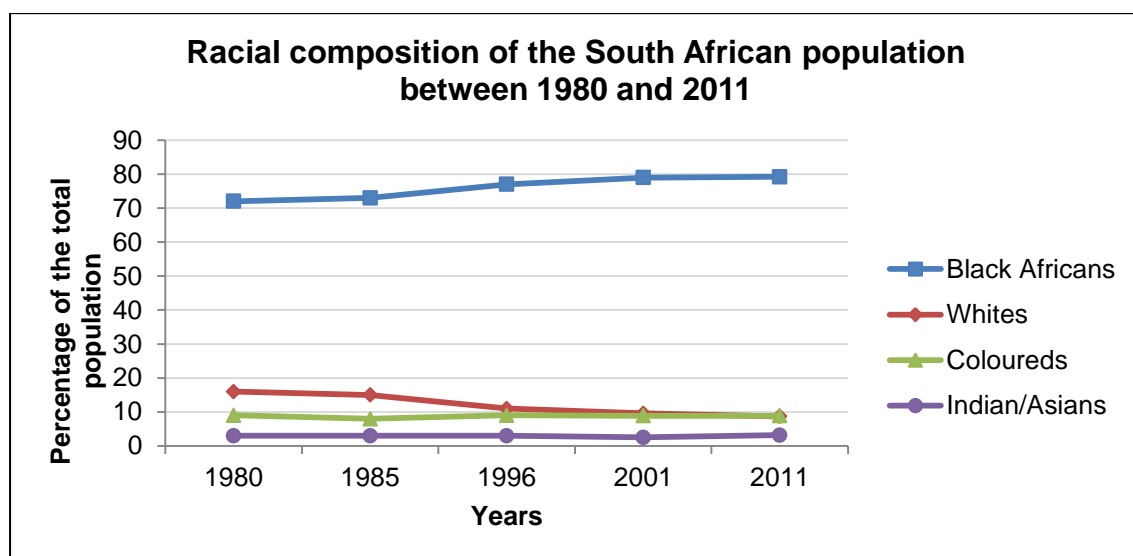


FIGURE 2.4: The racial composition of the South African population between 1980 and 2011 (Note: The figures for 1980 and 1985 are from The Urban Foundation [1991a] and the figures for 1996, 2001 and 2011 are from the respective national census counts)

2.2.3. The population age distribution

South Africa has a very young population (Pillay, 2008), as indicated by the population pyramid (figure 2.5) below, with the average age of the South African population being only

25 years in 2011. The young South African population should, however, not come as a surprise, as in 1999 it was already evident that approximately 44% of the population was under the age of 20 years (CSIR, 1999); therefore a continuation of this trend is evident in 2011. The 2011 population pyramid for South Africa shows a decline in the age categories from five years old to 19 years old. This trend is not typical of a developing nation's population pyramid, which usually has a large base of young and economically inactive people. The South African population pyramid, however, apart from showing a growing population and relatively short life expectancy, indicates that birth rates were low or death rates were high at some point between five and 15 years ago compared to a rapid increase in birth rates during the last five years. On the one hand, the fluctuation in birth rates can possibly be attributed to economic conditions in the country. Specifically the economic downturn in 2006/2007 could have caused a decline in birth rates, with recent more favourable economic conditions leading to an increase in birth rates along with the availability of child grants. On the other hand, the fluctuation in death rates can possibly be associated with the negative effects that HIV/AIDS and other health conditions have on the life expectancy of the young South African population. This scenario has improved in the last five to 10 years. For example, the introduction of Prevention of Mother to Child Transmission (PMTCT) guidelines in 2009 provided anti-retroviral treatment (ART) to between 80% and 90% of HIV-positive pregnant women in South Africa and thus significantly reduced the risk of children contracting HIV/AIDS. This intervention thus improves life expectancy and quality of life of mothers and children in the country (Department of Health, 2014).

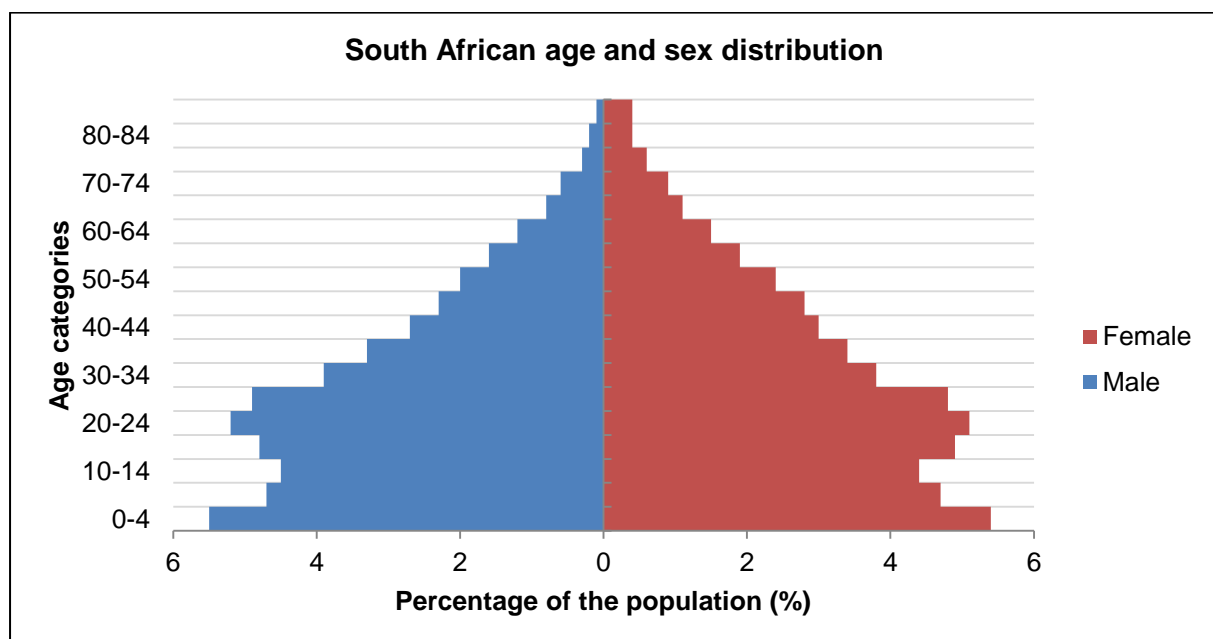


FIGURE 2.5: South African age and sex distribution (Source: Statistics South Africa, 2011a)

The implications of the population age distribution might not be regarded as significant in terms of the racial-residential segregation, but the age structure of the population is considered to be a direct determinant of socio-economic status because it influences dependency ratios per household as well as a household's ability to enter the employment market. The young population could hold more possibilities for integration but it also means that a greater focus on education, creating job opportunities and providing housing is essential if development towards equality is to succeed in the near future. The other significant factor related to the population's age structure is that a young population is less likely to be able to change their economic circumstances, especially not during difficult global economic times. This can therefore be considered another underlying factor that perpetuates racial-residential segregation and socio-economic inequality.

2.2.4. The population migration trends

Movements in the geographic distribution of a country or city's population have very important implications for various aspects relating to the management of the country and the city (including infrastructure service delivery, housing provision, the spatial economy etc.) and therefore the most prominent trend in population movement, and specifically for the South African urban development context, is that of urbanisation. The prominence of urbanisation stems from evidence that the location of the South African population has changed considerably from being a predominantly rural population in the past to a predominantly urban population at present (Nel, 2011). Although the South African urbanisation trend started as early as 1930 when a large number of White South Africans moved from rural areas into urban areas (The Urban Foundation, 1991a), the process experienced its greatest surge after the eradication of the restrictions imposed on population movement during the apartheid era (Nel, 2011), and also after the impact of industrialisation changed the nature of the country's economy. Apartheid, for example, can in fact be viewed as a struggle that arose from the desire to urbanise (Peter, 2011) while mining and manufacturing industries led to vast urban developments. The ability to provide an accurate number for the urbanised population is complicated by the fact that the boundaries between urban and rural are blurred and that these areas are not mutually exclusive areas. The South African case is somewhat more complicated than usual due to the existence of homelands and the size of "rural" settlements created under apartheid (Todes *et al*, 2008). Subsequently, the current level of urbanisation varies between authors and between interpretations of urban areas, but it is evident that more than half of the South African population currently live in areas that are functionally regarded as urban (Department of Housing, 1997; Donaldson, 2001; Pillay, 2008; Todes *et al*, 2008). Future predictions also

indicate that the figure is expected to reach at least 70% in a few years (The Presidency, 2014a). The trend of urbanisation nevertheless remains significant and mainly because the increased concentration of the South African population in cities account for approximately 92% of all formal economic activities in the country (Du Plessis & Boonzaier, 2015).

An extensive analysis by Nel (2011) of all census counts between 1911 and 2001 clearly shows that rural areas were predominantly favoured in the past until urban areas gradually became more attractive and eventually became the most favourable location for population settlement (figure 2.6). The urbanisation trend shows that the difference between the rural and urban population gradually narrowed before it stabilised for a few years and then increased significantly. The significant increase in urbanisation after 1991 can be attributed to the newfound freedom of residential movement for all racial groups in South Africa after the demise of apartheid, as well as the impact of the aforementioned industrialisation process in the country.

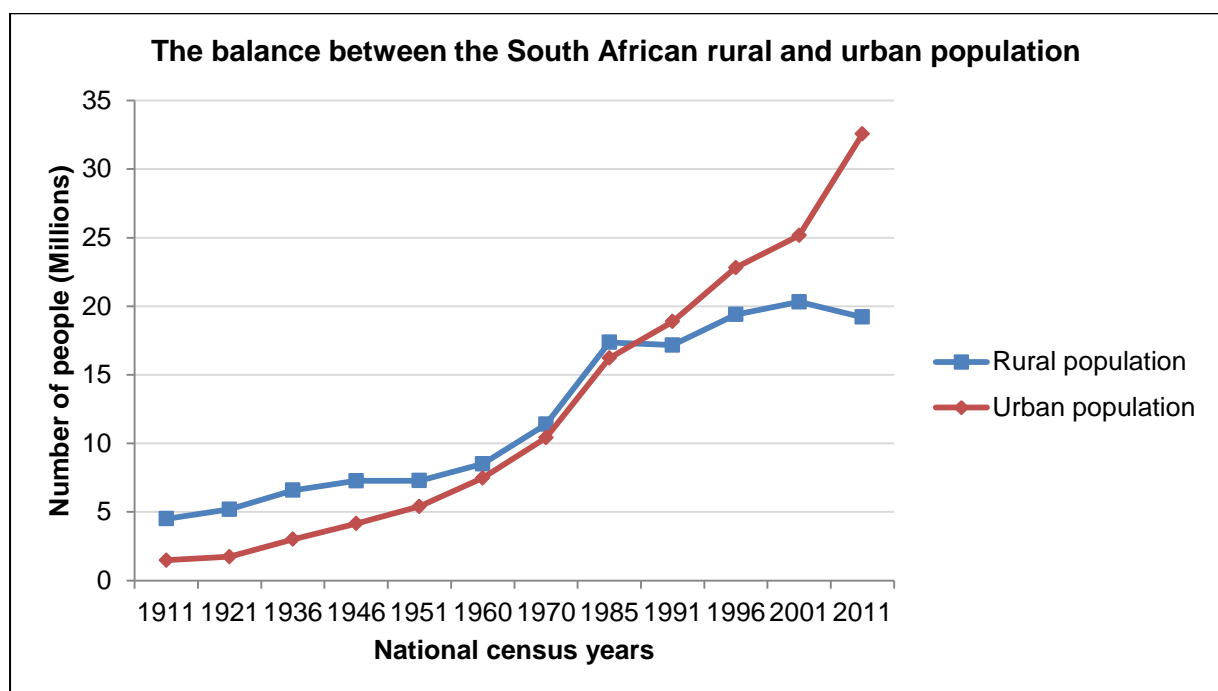


FIGURE 2.6: The balance between the South African rural and urban population (Source: Nel, 2011; Statistics South Africa, 2011a)

Currently (in 2011), the difference between the South African rural and urban population is ever increasing at a rapid pace and is expected to continue. It thus holds important implications for urban areas. The importance and effects of urbanisation are very similar to that of population growth, distribution and density, because urbanisation ultimately also increases the social diversity and complexity of cities. The similarity also extends to the

prominence of the Black-African population, who is considered to be the most mobile population group due to their long standing trend of migrating from rural areas to urban areas. They therefore make a significant contribution to migration trends, both from and to the areas that the process encompasses. The main difference, however, is the unique spatial implications of urbanisation and the unknown economic effects of urbanisation on a local level as well as the complexities surrounding the effective integration of the new population into the existing urban structure in a way that would promote equality and inclusivity.

Growth statistics from prominent metropolitan municipalities in South Africa during the 1990s are clear proof of the abovementioned urbanisation trends in the country (The Presidency, 2007). Metropolitan areas are the main areas of in-migration in South Africa and it is likely to remain so in the future (The Urban Foundation, 1991a), and therefore further signifies the need to ensure that metropolitan areas have an accommodating socio-spatial structure for rapid urbanisation. The population concentration in South Africa (figure 2.3, p. 29), which indicates that the highest population concentrations are found in the dominant metropolitan areas, can be explained through the characteristics of urbanisation in the country. Research done by the Council for Scientific and Industrial Research (CSIR) in 2011 indicated that the population pressure areas in South Africa correspond to the population density calculated from the 2011 national census (figure 2.3, p. 29). The CSIR research did, however, add an indication of the direction of migration flows in the country. These migration flows indicated that there is a very strong north to south migration trend in the country. Population movement is strongest from the Limpopo Provincial area towards the Gauteng Province and from the northern parts of the east coast towards the Western Cape Province (CSIR, 2011).

The reason why these metropolitan areas need to have an accommodating socio-spatial structure for urbanisation is attributable to the risks and unique spatial implications associated with rapid urbanisation. Firstly, evidence from the past suggests that migration-induced urban growth takes place on the periphery of the city (Pillay, 2008). This creates a distance separation phenomenon that influences the spatial structure of the city and could intensify spatial segregation and spatial inequality. Secondly, and related to the first, is that the urbanisation process often separates people according to class, culture and sexual orientation. It is clear that these potential consequences are not in line with the goals of the democratic Government (which is grounded in the Constitution) but would rather intensify racial-residential segregation and socio-economic inequality in cities (Peter, 2011). For example, migrants from a poor rural area, such as Thohoyando in the Limpopo Province of South Africa, who move to an urbanised province such as Gauteng, will most likely settle in

the peripheral township areas of the cities in Gauteng. This implies that they are not integrated into the residential and social structure of the whole city but only the periphery. Such a situation would perpetuate the current racial-residential segregation in peripheral townships as well as the associated socio-economic inequality and are thus not conducive to a socio-spatial structure that effectively accommodates urbanisation.

Considering the past trends and the current demographic context as described above, it is possible to make various predictions related to shifts in migration patterns and population distribution for South Africa that are applicable to all urban areas in the country. The prominent movement from rural to urban areas is expected to remain a significant trend, while population growth in the metropolitan areas is also expected to remain high (Pelser 2005; Pillay, 2008). Urbanisation will most probably lead to an increase in informal settlements that are more often than not detached from the main urban structure and fragmented with very little opportunity to access services and income opportunities in the city. These predictions could involve numerous social and spatial changes for urban areas. It is therefore important to understand the social-spatial context of a city and the planning implications of these predictions in order to be able to address potential problems related to the spatial structure and social well-being of the city. The planning implications include the provision of infrastructure services, social services and housing to the rapidly increasing urban population. Ultimately, service availability and quality create preconditions for racial-residential segregation and socio-economic inequality. Areas with good services and housing tend to be spatially separated from areas without the same level of services. Consequently, racial-residential segregation and socio-economic inequality can only be fully eradicated if equal service delivery is provided in sub-places. These become especially important when the arguments for a new type of segregation (which is based squarely on access to opportunities, income and services) are considered. Therefore, the focus of planning interventions needs to be on the right areas, both spatially and institutionally, which can be identified by using the country or city's demographic context. For example, in metropolitan areas like Gauteng and the Western Cape, the focus should be on improved service delivery, while in rural areas and small towns the focus should be on maintenance or in line with any other population trend that is applicable (Pelser, 2005).

In summary, it is evident that from a demographic perspective, South Africa has a predominantly Black-African (although still racially diverse), youthful and unskilled population who are found more and more in a few large urban areas. The urbanisation trend and growth experienced in urban areas should create an urgency to ensure that the "new" population (whether it is migrants or new-borns) are efficiently and equally integrated into the socio-

spatial structure of the city. It is these realisations and trends that should also guide the country's development agenda and policies to reduce racial-residential segregation and socio-economic inequality.

2.3. The urban policy context of South Africa

The organisation of space is central to all questions about how to establish, or at least increase, social justice, but it is not the answer in itself (Mabin, 2005a). Therefore it is important to consider both spatial and policy contexts to efficiently understand and tackle racial-residential segregation and socio-economic inequality in urban areas. The introduction of the chapter and the previous section clearly noted that cities have dynamic demographic influences that ultimately affect the socio-spatial context of the city. Considering the population size and distribution of the country, its location (which is predominantly urban) and the associated local economic activities, it becomes clear that any policy directions taken in the national urban policy environment have a significant influence on the national population and on the national space economy (Du Plessis & Boonzaier, 2015). The same can be said of local urban policy, as urban areas have an increasingly strong influence on the national urban policy agenda (Pillay, 2008). Urban policy is mostly aimed at managing urban areas, but ultimately also influences the spatial structure and, to a limited extent, the demographics of the particular city; it therefore shapes the socio-spatial context of the urban environment. The policy environment in particular is related to the behavioural aspects of segregation (Horn, 2005) and has a significant influence on the socio-economic dynamics in the city. Urban policy also includes those policies that are aimed at social or economic issues in the urban environment (like urban housing development programmes). This section will, however, focus mainly on those policies from the past and the present that had a direct bearing on the socio-spatial structure of the cities in South Africa. These policies are important to the development context discussion in South Africa due to their long-lasting legacies and because the spaces created by means of these policies, which still remain, serve as reminders of their effects. For a detailed perspective on how policies influenced urban planning and also the structure of the post-apartheid city readers can consult the seminal work of Harrison *et al* (2008) entitled "Planning and Transformation: Learning from the post-apartheid experience". The following discussion will highlight the reasons and effects of urban policies implemented in three different eras of South African policy making, defined here as (1) before 1994, (2) between 1994 and 2001 and (3) after 2001 until the present day. The eras of policy development discussed here indicate times when significant changes took place in the approach to policy development and the objectives of the policies; however, these eras should not be interpreted too rigidly, as there are always some time

overlaps and fundamental linkages between two or more eras. The various policies in each era are discussed in chronological order and not in the order of their significance. It is also evident that most policies were created to solve past urban problems but it also created (or highlighted) new urban problems (Pillay, 2008) that required further policy development.

2.3.1. Important policy influences on South African urban areas before 1994

The policy and governance era in South Africa before 1994 was one characterised by the ruling minority oppressing the powerless majority. This era was based squarely on creating and sustaining apartheid spatial planning and the associated segregation (Pillay, 2008). The legislative and policy influences under discussion had its first impact as long ago as 1913 when the Natives Land Act (Act 27 of 1913) was introduced. This Act was mostly applicable to rural or farm land, but it is an important starting point to the discussion, especially due to the Act's perennial effects. Urban areas were later strongly affected by the Natives (Urban Areas) Act of 1923, the Natives Urban Areas (Consolidation) Act of 1945 and the Group Areas Act of 1950 during this policy era.

The Natives Land Act, No. 27 of 1913 was the first major piece of segregation legislation passed by the Parliament of the Union of South Africa (established in 1910) that restricted the ownership of land by native³ people. The native people were initially limited to acquiring 7% of the available land in the country (*The Global Herald*, 2013), but this was later increased to 13% by the Native Trust and Land Act of 1936. The Natives Land Act represented a first step towards territorial segregation imposed by the ruling minority who viewed the country as a “white man’s country” and is considered to be one of the cornerstones of the apartheid system, the subsequent segregation policies and the creation of homelands in 1950 (Horn, 1998; *The Global Herald*, 2013). The implications for the policy actions inevitably had a significant influence on race relations for many years to come (Horn, 1998), and the issues resulting from these land deprivations still require a sustainable solution. The Act prohibited natives from buying land in certain areas like the Transvaal (part of the current Gauteng province) and Natal provinces (the current KwaZulu-Natal province) with some exceptions provided in Section 1 of the Act (*The Global Herald*, 2013). The Act included a schedule of native areas that were essentially the areas in which natives could acquire land. The schedule related to the Pretoria area included 27 farm portions for the native population that amounted to approximately 59 121.4 hectares of land (Horn, 1998).

³ The term ‘native’ is defined by the Natives Land Act, 1913 as any person, male or female, who is a member of an aboriginal race or tribe of Africa as well as any company or body of persons where natives have the controlling interest (Natives Land Act, Act 27 of 1913, Section 10).

The long-term impacts of this act are still evident today and, although much has changed since 1913, it can be (and is being) argued that depriving natives from the equal opportunity to acquire land in South Africa was the start of their eventual and current socio-economic disposition.

Although the Natives Land Act of 1913 became the foundation of racial segregation in South Africa, there was, during the period of its creation and implementation, no specific national approach to racial segregation. Therefore, some regional trends and dissimilarities towards racial segregation started to emerge as provinces and municipalities created their own regulations to control the movement of the native population (Maylam, 1990). Provinces like the Free State stood out in terms of its attempts to strictly control the movement of the non-White population. A number of other acts, in addition to the abovementioned, were also implemented to strengthen the government's ability to segregate population groups and to control the movement of the native population – most of which will be briefly discussed in the following sections.

According to Maylam (1990) policies from the 1920s were influenced by factors like the changing economy of South Africa (which required more cheap labour to increase production) and the dramatic growth of the Black-African population in urban areas. The need to control the labour force in cities created the need to have more control over the movement of the Black-African population, especially in mining cities like Kimberley and Johannesburg (Maylam, 1990). Subsequently, the *Natives (Urban Areas) Act, No. 21 of 1923* was introduced as a result of the abovementioned ideals. The Act did not materialise without several contestations; the Bill was subjected to intense debate and opposition from a variety of actors, including strong opposition from the Black-African community before being approved by Parliament (Davenport, 1971). The debate mostly revolved around whether Black-Africans should be allowed to own property outside their designated residential areas of the time, with a general consensus that they could own and control property in their own areas, regardless of whether it was an urban or rural area. The Act allowed municipalities to create segregated areas for the Black-African population for the purpose of influx control. The Act also allowed Black-Africans to participate in advisory boards that would deal with local issues experienced by the population, but they were given no power to change policy (Maylam, 1990). These provisions clashed with the ideals to restrict native property ownership in cities but were nonetheless introduced with the intention to promote a “bottom up” approach to development and problem solving in townships (Davenport, 1971), and possibly to give something back to the community despite their oppression. Still, the Act was subjected to initial dissimilarities in terms of its implementation. The reason for different

levels of segregation in South African cities is that municipalities of the time could choose to implement the provisions of the Act according to their own means and interests; it was not obligatory and thus the short-term effect of the Act was insignificant. Nevertheless, this Act was considered to be the foundation stone of high apartheid in South African urban areas (Maylam, 1995).

The measures to control the native population in urban areas were motivated by several views in the political arena. One such a view, a pragmatic one, was expressed in the 1932 Native Economic Commission Report and noted that natives are allowed in urban areas, but not encouraged, and the number of natives allowed should ensure that the labour market remains stable (Maylam, 1990). Therefore it is evident that influx control was implemented with both segregation ideologies and economic development goals in mind. This ultimately meant that the long-term impact of the Natives (Urban Areas) Act was much more significant and enduring than its short-term impact. This central state initiative was the foundation for other legislation with various mechanisms which, once refined, resulted in severe levels of segregation (Maylam, 1990). The abovementioned segregation and economic development goals were reinforced by the *Native Laws Amendment Act, No. 46 of 1937* that tightened influx control and gave the Minister of Native Affairs the power to force municipalities to implement the Natives (Urban Areas) Act and thus induce a statutory level of segregation across South Africa (Maylam, 1990). The *Natives Urban Areas (Consolidation) Act, No. 25 of 1945* was passed to consolidate all legislation governing the movement of Black-Africans and their use of space in urban areas, and thus intensified the segregation situation. Section 10 of the Act, for example, strictly regulated the movement of Black-Africans to the city.

The ideas, views, principles, practices and measures from the aforementioned Acts continued to grow and strengthen under the National Party and resulted in greater centralising of power. Maylam (1995:34) describes the process by saying that “(O)ne tendency is to stress an apparent sharp turn in policy in the mid-twentieth century: the National Party comes to power, reverses the more liberal policy trends of the 1930s and 1940s, centralises urban policy making and administration and imposes a monolithic system of racial separation and domination, vigorously reshaping cities in the apartheid mould”. In this sense, racial-residential segregation became a national goal and political ideal (Maylam, 1990). The centralisation of power did, however, result in various internal clashes between the Department of Native Affairs (and its Minister) and municipalities that opposed the plans to relocate groups of people. Such struggles could have easily halted the process of forced removal and segregation, but ultimately had little effect, since the National Government held the power to steer and implement their racial ideals.

In 1948, the National Party (NP) was elected into power and in the process strengthened the notion and existence of apartheid (Christopher, 2001b). The policies implemented by this government during the apartheid era were aimed at economic exploitation (based on cheap migrant labour and racial capitalism), political domination and discrimination (Mare, 2003). The segregation ideas, processes and power struggles of the previous 30 years and the newfound national approach culminated into one act that solidified the racial-residential segregation (and associated socio-economic inequality) situation in South African cities, namely the *Group Areas Act (GAA), No. 41 of 1950*. The GAA brought about absolute residential segregation by assigning the different population groups to proclaimed land. These actions were based on the foundations laid for the separation between whites and non-whites by the previous policies (Horn, 2000) and established a more "... comprehensive and ordered regime" (Christopher, 2001b:3) than the policies previously implemented. The essentials of the Act were that South Africans should live in separate residential areas assigned according to statutory race groups. In this way central government attempted to preserve "White South Africa" (Christopher, 2001b) and created urban residential patterns that led to numerous problems in cities and society (McCarthy, 1990), one of which is also the current state of socio-economic inequality in South African urban areas.

In terms of a planning strategy, the GAA had a specific spatial-political vision where absolute separation between racial groups (through natural and man-made barriers serving as buffer zones) and self-governance were the ultimate goal. Some studies indicated that these were not always achieved, especially not self-governance (McCarthy, 1990). The implementation of the Act meant that an estimated 1.5 million people were relocated to achieve racial separation, which had significant negative spatial implications for urban areas. The introduction of the GAA was also followed by the creation of the Group Areas Board who had the responsibility of identifying areas in the city that would be demarcated for certain racial groups. The result was approximately 1 700 proclaimed areas in cities for the exclusive occupation of certain racial groups (McCarthy, 1990). The GAA created a specific city structure that would last for a very long time and solidified the notion of segregated urban space (Christopher, 2001b; Pillay, 2008). Large townships were created for Black-Africans with the focus on spatial separation through buffer zones, reinforced with influx control strategies and designs that would allow authorities to easily contain the population if necessary (Maylam, 1990; Mini, 2012). The pattern of segregation was solidified by distance and the separation of economic classes that inevitably resulted in negative structural changes in cities (McCarthy, 1990), including spatial inequalities, spatial fragmentation and urban sprawl (Mini, 2012). The consequences of the GAA included deficiency (urban fragmentation), welfare decline (reduced level of material welfare and access to land with

impacts on residential options for the poor) and socio-political turmoil (discrimination and rejection) (McCarthy, 1990). All these consequences and effects underline the current extent of racial-residential segregation and socio-economic inequality in the study area. Some writers even describe the GAA as "... a massive, legally entrenched form of social engineering" (Schlemmer & Stack, 1990:15) that still stands today. The GAA was furthermore supported by various other acts to achieve racial-residential segregation, including, but not limited to, the policies highlighted in table 2.1.

TABLE 2.1: Policies implemented in support of the Group Areas Act (GAA), No. 41 of 1950

The policies	The purpose
Prohibition of Mixed Marriages Act, No. 55 of 1949	The Act stated that it was illegal for a South African citizen to marry someone from a different race. The Act was also amended in 1986 (O'Malley, 2005).
Population Registration Act, No. 30 of 1950	The Act was the main tool that allowed the GAA to succeed (Christopher, 2001b) and institutionalised the classification of the population into three discrete racially defined groups in South Africa (Horn, 2000; Christopher, 2001b). A person was classified according to his/her physical appearance and social attributes (like linguistic abilities). These classifications could be contested with an appeal to a special board (O'Malley, 2005).
Prevention of Illegal Squatting Act, No. 52 of 1951	The Act gave the Minister of Native Affairs the power to force Black-Africans to move from private-owned land and also gave municipalities the power to establish resettlement camps to which squatters were relocated (O'Malley, 2005).
The Natives Laws Amendment Act, No. 54 of 1952	This Act amended the Native Labour Regulation Act of 1911 and the Natives Urban Areas (Consolidation) Act of 1945. The Act limited Black-Africans to reside in urban areas, extended influx control and reinforced the conditions under which Black-Africans could live permanently in urban areas (O'Malley, 2005).
Reservation of Separate Amenities Act, No. 49 of 1953	The main aim of the Act was to minimise social contact between different population groups. This was achieved by reserving public facilities for specific population groups (O'Malley, 2005) and in such a way instilling

social inequality. The Act, along with the GAA and the Population Registration Act formed the cornerstones of urban apartheid (Horn, 1998).

**The Natives Resettlement Act,
No. 19 of 1954**

This Act empowered Government to relocate Black-Africans from any area (even property owned by them) in and around the Johannesburg area (South African History Online, n.d; Christopher, 2001b) and thus allowed Government to impose their ideas of social engineering on the native population (O'Malley, 2005).

**Group Areas Development Act,
No. 69 of 1955**

This Act was directly related to giving effect to the goals of the GAA and was later replaced by the *Community Development Act, No. 3 of 1966* (O'Malley, 2005).

All the abovementioned policies contributed to the spatial separation of different population groups and to strengthening apartheid; but its downfall came, among other factors, from a fundamental flaw in its design. The proponents of apartheid aimed to create a stable labour force (made up of Black-Africans) in cities to promote economic growth, but simultaneously tried to minimise their presence as urban residents (Maylam, 1990). When this realisation sunk in, along with pressure from the citizens, opposing parties, the financial burdens of sustaining segregation and sanctions, it became evident that the segregationist ideal would not last. A painstaking and gradual reform process that continues until today was set into motion. Policy changes or legislative instruments proved vital to the government as part of their strategy to transform segregation and reverse the discriminatory effects of the apartheid era but policy changes were also reactions to conditions in urban areas. The *Group Areas Amendment Act, No. 101 of 1984* provided local municipalities with the option to create free trading zones in cities (Horn, 1998) and in combination with the *Abolition of Influx Control Act, No. 68 of 1986* eased the movement of the native population and provided numerous prospects for future development in urban areas. These policy changes were also accompanied by physical changes in urban areas such as the removal of racially restrictive signs, the desegregation of entertainment and leisure facilities and amenities as well as the desegregation of transport facilities (Horn, 1998).

Evidence of unofficial grey areas (comprising of different population groups) led to the creation of the *Free Settlement Areas Act, No. 102 of 1988*. Although the Act was welcomed as a step away from strict segregationist policies and interpreted as a reduction in influx control it fundamentally remained an attempt to control the residential location of the urban population (Elder, 1990). The Act introduced the concept of open residential areas (areas

where a member/family of any population group could reside) and had a significant impact on the racial-residential distribution of population groups in urban areas. The effects of the Act were initially only seen in large cities like Cape Town, Durban, Johannesburg and Port Elizabeth, with other cities only following suit later. Two years after its implementation 54 Free Settlement Areas (FSAs) had been created in South Africa urban areas (Horn, 1998). At various stages political parties also supported the idea of proclaiming entire cities as FSAs (Elder, 1990). In and around Pretoria, official FSAs were approved by the Free Settlement Board in Mooikloof east of the city, Bronkfontein, Country View, Diepsloot, Olievehoutbosch and The Reeds south of the city as well as Zandfontein west of the city (Horn, 1998) while sub-places like Sunnyside in the central parts of Pretoria were also described as “open” or ethnically mixed (Elder, 1990). FSAs and other grey areas, despite obvious flaws, resembled the first official traits of a desegregated urban society.

The most significant attempts to deracialisation in South Africa were to scrap the legislation from the apartheid era (Mini, 2012). Thus the *Abolition of Racially Based Land Measures Act, No. 108 of 1991* was one of the first counter-apartheid pieces of legislation enacted by Parliament. This Act signalled the transition between the policy eras and the gradual movement towards democracy in South Africa. These early policy reforms were also accompanied by the idea of a possibility that policy changes would spark spontaneous desegregation as opposed to focussed government intervention to integrate the severely segregated population. The growing opposition to the apartheid era realised that the policies of the time would need to be replaced once democracy is achieved and that the country would need policies that would speak to the needs of the people. Thus, during the early 1990s, and especially after 1994, South Africa entered a policy formation phase – a phase focussed on policy development (guided by international ideologies and trends), reconciliation and reconstruction (Donaldson, 2001). The early products from this phase set the scene for a myriad of policies created to achieve the post-apartheid reconciliation goals over the years to come; it would be the born free generation of South Africa that would grow up beside these policies and experience their effects first hand. The transition towards democracy would, however, not be an easy one (figure 2.7) and would take considerably longer than anticipated (Christopher, 2001b).



FIGURE 2.7: The South African policy challenge to achieve democracy⁴ (Source: Fick, 1990:33)

2.3.2. Important policy influences on South African urban areas between 1994 and 2001

The most significant shift in South Africa's policy environment came when the African National Congress (ANC) triumphed in the country's first democratic elections in 1994 and took over the governance of the country (Oranje, 2010). The advent of democracy came after decades of determined struggles by the opposition, who in the process opened up new political possibilities. From these possibilities they chose democracy as the desired state of governance that would serve the country (Mare, 2003). The first order of business of the new democratic government was committed to the concerns over poverty, inequality and service delivery backlogs (Roberts, 2005; Pillay, 2008). The policy makers, however, faced an overwhelming task to align social, political, economic and cultural institutions to their goals of democracy (Donaldson, 2001). The new democratic government realised that the mere lifting of apartheid discriminatory regulations would not improve the racial-residential segregation or the socio-economic situation of the majority population and they required policies that would, for example, specifically support Black-African business, economic redistribution and spatial planning. Some of the notions that would influence policy

⁴ The image depicts a situation where former president F.W. de Klerk has done a significant amount of work to remove the barriers that were blocking the door to a democratic South Africa, but despite the efforts there remain stumbling blocks (not necessarily limited to group areas and population registration but certainly relevant) for entering into a true democratic society.

development for the next 20 years included (1) the redemarcation of municipal boundaries in order to create integrated, equal and democratic local governments, (2) a focus on developmental local government and the resultant integrated development planning and local economic development policies and (3) the objective of mass housing delivery (Pillay, 2008). Policies were also influenced by the state of socio-economic development in the country as well as by the reconciling and democratic impetus of President Nelson Mandela (Habib *et al*, 2003). The most significant policy development from this era was the new Constitution of the Republic of South Africa, Act no. 108 of 1996 which, as the supreme law of the country, guided all other future policy actions in the country. Before the introduction of the new Constitution there were various other policy developments that shaped the democratic South Africa; these are discussed in the following section in chronological order.

One way of attempting to address the poverty, inequality and severe service delivery challenges in the country was to reintroduce and emphasise a national approach to planning and policy making (Oranje, 2010). Hence, in 1994, the ANC introduced the *Reconstruction and Development Programme (RDP)* to address many of the inequalities created during the apartheid era, to promote democracy and to accelerate economic growth in the country (Pycroft, 2000; Christopher, 2001b; Pillay, 2008). The programme was personified in the RDP Office shortly after the programme's inception (Oranje, 2010). The RDP Office contributed to service delivery in the country as well as the development of a draft Urban Development Framework (UDF). However, the RDP Office had a short lifetime and the finalisation of the UDF was left to the Department of Housing (Department of Housing, 1997; Donaldson, 2001). The RDP remained the vehicle that was intended to drive change in the country and free the country from its apartheid past (Donaldson, 2001) with compaction and densification development principles outlining the programme (Du Plessis & Boonzaaier, 2015). Its main focus was on providing basic infrastructure to the citizens of South Africa, including housing, water, sanitation, access to land and employment. Although the programme recognised the need for a coherent approach to urban and rural development (Department of Housing, 1997), it is evident that the tasks were complicated by the lack of information on the number of basic services required in rural and urban areas (Pillay, 2008). A number of other policies were also introduced to improve the socio-economic disparities created under apartheid and included the *National Small Business Act, No. 102 of 1996*, the *Employment Equity Act, No. 55 of 1998*, the *Skills Development Act, No. 97 of 1998*, the *Competition Act, No. 89 of 1998*, the *National Empowerment Fund Act, No. 105 of 1998* and the *Preferential Procurement Policy Regulation of 2001* (Mustapha, 2011). Despite the prospective intent of these policies, their effect was limited in terms of improving the socio-economic position of the Black-African population in society.

The themes of integration and equality, which were consistent policy themes since 1994, were most enthusiastically supported by land-reform initiatives that were regarded as a key aspect for redressing the societal imbalances of the past. In 1994 it was estimated that the five million White people in South Africa owned 87% of the land, whereas 37 million non-whites owned the remaining 13% of the land (Porteous *et al*, 2005). This imbalance had a significant influence on poverty in the country and created an urgent need for land reform. Land reform in South Africa was no easy task and the programme consisted of three pillars, namely land redistribution, land restitution and tenure reform. Land redistribution and tenure reform was guided by a variety of policy measures, but land restitution was specifically guided by the implementation of the *Restitution of Land Rights Act, No. 22 of 1994* and was intended to replace (or correct) the Natives Land Act of 1913. The goals of the Act were taken up by the Commission of the Restitution of Land Rights (CRLR) established by the Act (African National Congress, 2012). It was also believed that the housing subsidy programmes (like the RDP) would be able to achieve land-reform objectives in urban areas (Porteous *et al*, 2005). The success of land reform goals has been dismal from the beginning, with only 27 land claims solved in the first four years since the introduction of the Act. Applications for land redistribution and restitution have been reopened and extended several times in the past, but it remains an issue of significance in the country, especially in terms of poverty and the associated inequality. Hence, land reform remains an important tool for achieving inclusivity and equality and is therefore still a high priority on the agenda of many political parties.

A number of other policies were introduced to promote and fast track service delivery, including the *Housing White Paper of 1994* and the *Water and Sanitation White Paper of 1994*. The most significant of these supporting strategies (due to its long-standing influence) is the creation of the *Development Facilitation Act (DFA) of 1995*. The Act was created to work in conjunction with the UDF, with the common goal of creating sustainable cities by reconstructing the urban environment through a focus on compact city development and other good practice planning principles (Donaldson, 2001). The Act provides normative principles that guide spatial development (Du Plessis & Boonzaaier, 2015) and promotes the integrated development of residential and employment opportunities, or at least in close proximity to each other. This would ultimately create more compact towns while also improving sustainability (City of Tshwane, 2011b). The DFA enjoyed strong support for its theme of urban integration and subsequently created more favourable conditions for property developers to initiate their projects. It is debatable whether densification and more development freedom had a positive or negative influence on the racial-residential segregation or socio-economic inequality in cities, but it did have an impact on the spatial

structure of cities and allowed for facilities to be created in underdeveloped areas. The policy has, however, also been exploited to achieve faster development approvals due to its convenient facilitation structure, with little regard to integration and sustainability. Its true impact still hangs in the balance and is dependent on wise urban management decisions.

The abovementioned initial attempts to democracy were notable, but the most notable was Parliament's introduction of the new *Constitution of the Republic of South Africa, Act no. 108 of 1996*. This is regarded as one of the most important pieces of legislation that replaced apartheid with democracy and is also the supreme law of the country (South Africa, 1996). Clauses like the human rights clause had a significant impact on the mandate of all levels of government. Other sections of the Constitution also mandated local government to ensure service provision to communities, promote social and economic development and encouraged the involvement of communities to support equitable development (South Africa, 1998). The spatial impact of the Constitution is not as clear as other policies, but the regulations and rights stipulated in the Constitution all manifest in space and therefore it influenced all structural changes that took place in South African cities and laid a foundation for integration and equality.

The RDP mentioned earlier was not entirely unsuccessful in its goals, but the housing delivery under the RDP was often unsatisfactory in terms of size and quality; the housing projects contributed to fragmented urban sprawl and residents did not really feel better off (Donaldson, 2001). Subsequently the government made a second attempt at the same goals, which came in the form of the *Growth, Employment and Redistribution (GEAR) policy* in 1996. The shift from RDP to GEAR is due to changes in policy making that were partly influenced by the increasing impact that globalisation had on the South African society (Dlali, 2005). The main aim of the GEAR policy was to favourably position South Africa in the global economic arena and to take advantage of the benefits of globalisation while also promoting economic development that is led by the private sector. This was at a time in South Africa when infrastructure development was one of the key (new) national policy goals, along with the existing poverty alleviation goals (Cross, 2001). The GEAR policy promoted economic growth, job creation, low inflation, increased exporting, increased saving and increased foreign investment (Dlali, 2005). These were aimed at improving the economy of South Africa and improving the economic position of all South African citizens; even if it only meant that they were associated with a strong national economy. The economy is not a significant factor in this study, but the fact that the aims of this policy had a direct impact on the socio-economic position of South African citizens is significant. This again indicates the interrelated nature between policy, racial-residential segregation and socio-economic

inequality. Considering the current development issues in South Africa, it is evident that GEAR failed in its employment goals and partly in its goals for economic growth (Dlali, 2005). The reasons for its failure are countless (and often debatable), but it seemed that the benefits from the programme's global investments never "trickled" down to the local levels. It has been noted by Pillay (2008) that economic growth (especially in terms of global competitiveness) and equitable service provision (housing, jobs) are not mutually compatible and practical to pursue at the same time. Even if the macro-economic situation of the country improves, the economy should still make positive micro-economic advances in order to prevent the perpetuation of social-economic inequality. It was also evident at this point in South Africa's policy development phase that Government's interventions for housing delivery and poverty alleviation ended up being in remote locations and in the form of partly serviced formal-informal settlements that were not very different to those created in the late apartheid era (Mabin, 2005a, Du Plessis, 2014). Examples of these settlements in Gauteng include Diepsloot (± 15 km North-West of Midrand), Nellmapius (± 20 km East of Pretoria CBD), Hammanskraal (± 40 km North of Pretoria CBD) and Orange Farm (± 30 km South-West of the Johannesburg CBD). The characteristics of these housing developments had a significant impact on the fragmented spatial structure that is currently evident in the metropolitan areas, such as those in the Gauteng province.

The *Urban Development Framework (UDF)* was finalised by the Department of Housing in 1997 (Department of Housing, 1997; Donaldson, 2001). It included four main goals, namely (1) improving integration in cities, (2) improving housing and infrastructure, (3) promoting urban economic development and (4) creating institutions for service delivery (Donaldson, 2001). It is clear that all of the abovementioned goals were aimed at reinventing South African urban spaces and dislodging them from their spatial past. The UDF was also developed to give substance to the strategies and goals in the aforementioned GEAR programme (Department of Housing, 1997). The framework outlines various priorities that are aimed, among others, at aligning existing urban development practices, overcoming the separation between economic and spatial planning and improving the success of land reform and redistribution (Department of Housing, 1997).

In addition to these the attempts to address the urban structuring issues of the past, restructuring and improving local government also became prominent policy objectives. The *Local Government White Paper of 1998*, for example, established a basis for creating a developmental local government system that would serve the people of the country in the way the Constitution intended (South Africa, 1998). However, local government and its operation were most significantly influenced by the *Municipal Systems Act, No. 32 of 2000*.

This Act imposed a number of principles, mechanisms and requirements on local Government that were designed to uplift the social and economic conditions of local communities, to create some equality between municipal areas and to establish a simple framework for the envisaged developmental local government (South Africa, 2000b). The Act required all municipalities to develop a Spatial Development Framework (SDF) that forms part of the Integrated Development Plan (IDP) (City of Tshwane, 2011b). Principles provided for spatial development frameworks, which are part of the required IDP process, also include a focus on compaction and densification along with socio-economic integration and efficient urban functioning (Du Plessis & Boonzaaier, 2015). The IDP can be considered the most important part of the whole policy, as it was intended to change living conditions on the ground. The Act had the ability to ensure equitable and sustainable service delivery and spatial restructuring that would allow for at least some integration in all the desired areas of the urban environment.

It can be argued whether these policies and development changes were for the better or for worse and it will forever remain uncertain whether a different political entity could have done better in the given situational context. The South African democracy and its government had its victories (for example socio-economic improvements and positive global recognition) and its losses (for example corruption and the general deficiency of the education system) during this particular policy era. At the local level, for example, the RDP and GEAR policies were working against each other (Pycroft, 2000). The reasons for certain policies or a lack of others were also influenced by the financial constraints (including the lack of foreign investment) present in the country (Oranje, 2010) that could not allow the implementation or, in some cases, the creation of desired policies. The fatal flaw related to the housing development policies of this era was that the policies were unable to acquire well-located land for housing development in order to facilitate the goals of integration and restructuring, and subsequently had little influence on changing the socio-spatial structure of South African urban areas. The policies from this era did, however, create a significant number of initial changes that have the potential to change the socio-spatial conditions in South African cities for the better; it is therefore not necessary to question their immediate success but rather assess the extent to which the start of change has been converted into more tangible results. The end of this era and the beginning of the following era was brought on by new leadership in South Africa, President Thabo Mbeki, who is described as a technocrat who aimed to centralise power (Habib *et al*, 2003).

2.3.3. Important policy influences on South African urban areas since 2001

Around 2001, the South African policy environment experienced another shift in focus and development – the apartheid legislation had been repealed and democracy was settled in the country, but there was still a crucial need for better development policies, especially sustainable development policies and policies that would fast track the eradication of service delivery backlogs and policies that would improve socio-economic conditions in the country. Part of the problem is that the removal of apartheid restrictions unfortunately does not guarantee a change in income redistribution or the direct accessibility of social services (such as housing and education). Income redistribution ultimately favours the wealthy, those who have the ability to separate themselves in the social system from others, and thus intensifies income inequality and merely creates new forms of segregation (Mabin, 2005a). This scenario requires specific policies to address the issues at hand. Because these issues remained throughout the country, the national planning approach of the previous era continued to a large extent with some delegation to local authorities in the form of integrated development planning. Its impact, however, remained significant on paper but not in practice (Oranje, 2010). As a result, for better or for worse, a range of policies and plans were amended while some were newly created. This particular policy era also saw a greater influence from the neoliberalism and market-orientated paradigm, as well as a shift from managerialism governance (bureaucracy) to entrepreneurialism (privatisation) governance (Mini, 2012), which significantly influenced the planning, functioning and organisation of the urban environment.

Within the aforementioned mind-set, the *Housing Amendment Act, No. 3 of 2001* was one of the first policies introduced in this policy era. The Act promoted housing development that would create sustainable public and private residential environments with convenient access to opportunities for income and various amenities to improve the quality of life of the residents (City of Tshwane, 2011b). This Act was also followed by the *Municipal Infrastructure Investment Framework (2001)*, the *White Paper on Spatial Planning and Land Use Management (2001)*⁵, the *Urban Regeneration Strategy (2002)* as well as provincial policy developments like the *Gauteng Planning and Development Act, No. 3 of 2003*. The latter also promoted compact development and the establishment of viable communities with convenient access to various services and income opportunities (City of Tshwane, 2011b).

In January 2003, The Presidency published the *National Spatial Development Perspective (NSDP)*. The NSDP was controversial and unfavourable in a certain sense and thus not

⁵ The White Paper was replaced by the Spatial Planning and Land Use Management Act, No. 16 of 2013.

easily approved by Cabinet (Oranje, 2010). Many writers do not regard this document as a policy but rather describes it as a "... indicative guideline" or as a "... instrument for discussing spatial development priorities" (Pillay, 2008:125). This inevitably causes some confusion in terms of its value and interpretation; but nevertheless, the document has some crucial policy implications and is therefore included in this discussion. The document promoted the interaction between all departments and spheres of government (The Presidency, 2007) and all government departments' decisions related to planning and expenditure were based on their alignment with the NSDP (Pillay, 2008). The NSDP therefore had a notable impact on the location of infrastructure investment and service delivery for economic development purposes. Furthermore, this meant that the NSDP can be regarded as a "migration policy" because people are compelled to migrate towards the areas in the country where economic investment is focussed. These decisions and dynamics had an impact on the deeper racial-residential segregation and socio-economic inequality situation as it effectively determined which areas would have more opportunities for income and services than others and also drew high and low income earners to the same areas. The Presidency also published a 2006 version of the NSDP, which focused on the national space economy and its implications for development, in which it was made clear that this was not merely an update of the original but "... also provides a framework for a far more focused intervention by the State in equitable and sustainable development" (The Presidency, 2007:i). In essence, both the 2003 and 2006 NSDP documents provided a framework for making context-specific decisions for national infrastructure investment. Alongside this national perspective of the national space economy, there was still an urging need to improve the economic position of non-whites in the country, as the policies from the previous era did not have significant impacts in this regard. The most prominent effort made by the ruling government (the African National Congress [ANC]) towards establishing socio-economic equality came in the form of BBEE. *The Broad based Black Economic Empowerment Act, No. 53 of 2003* was formally introduced with the purpose of providing previously disadvantaged racial groups with access into the South African labour market. The success of BBEE is more notable than most other policies, but has still been very limited to date and various reasons are ascribed to its failure. The sharpest criticism is directed at the lack of broad improvement in the welfare of the Black-African population and the appearance of a few individuals that exhibit increasing welfare and financial mobility.

The *Breaking New Ground (BNG) policy (2004)* was also introduced to the South African development scene and with great expectations. The policy framework indicated that urban segregation and fragmentation had worsened since 1994 despite the notable progress of previous public housing provision programmes (Pieterse, 2007). The BNG was therefore

regarded as a new housing policy (also aimed at addressing the housing demand), but had a distinctive focus on the sustainability of housing settlements (Pillay, 2008). The policy also aimed to create integrated and compact settlements and to make property accessible as an asset to all citizens. Housing formed an integral part of the plan because it was regarded as a crucial tool for creating sustainable human settlements and supporting spatial restructuring through the strategic location of new housing developments (City of Tshwane, 2011b). The policy was also regarded as a tool for poverty alleviation, job creation, promoting social cohesion and improving the quality of life of citizens (Pillay, 2008). For these reasons, it had a significant bearing on the racial-residential segregation and socio-economic inequality situation in cities like the CTMM.

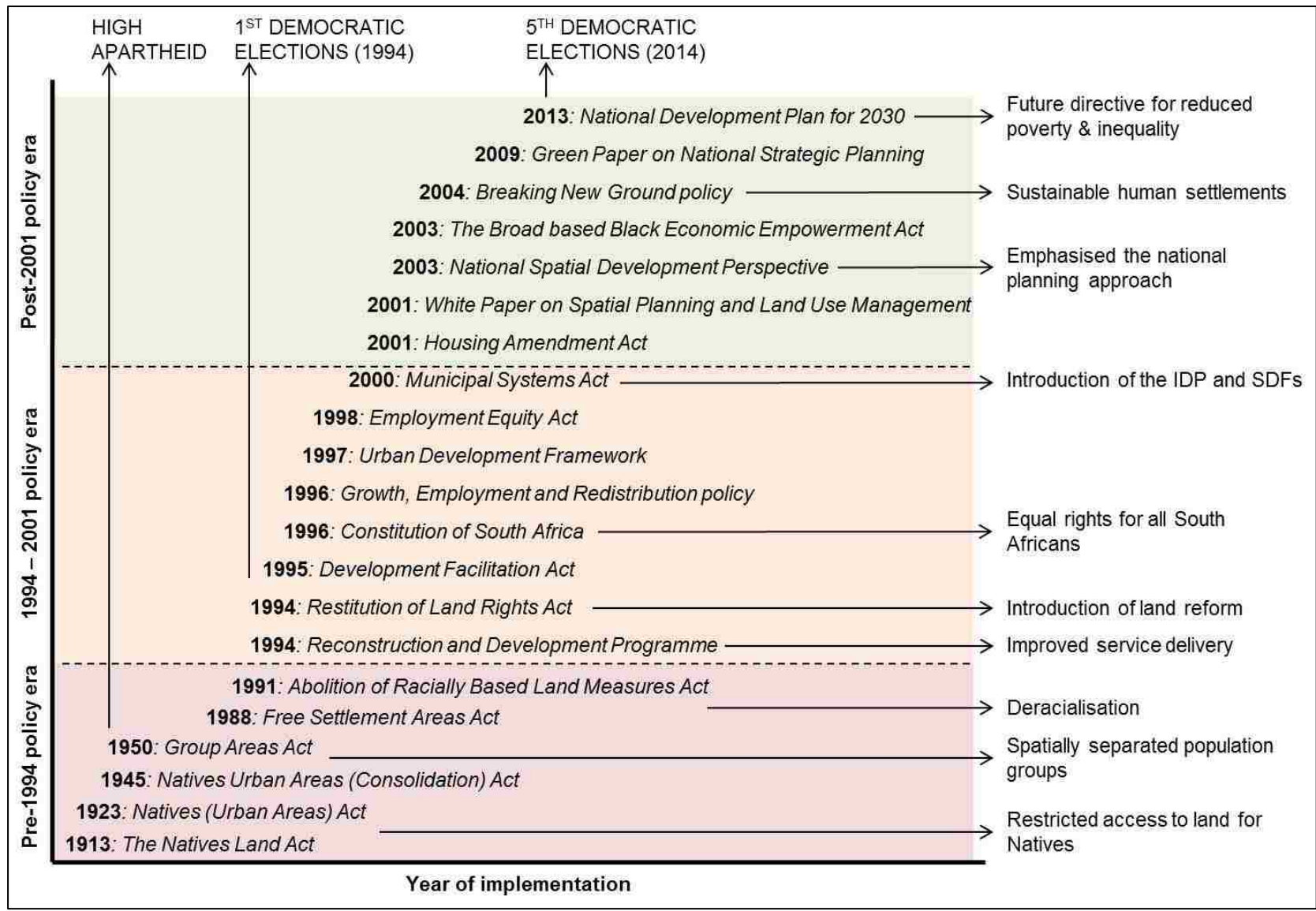
Among the vast number of policy developments, there are a few that have very direct implications for racial-residential segregation and socio-economic inequality. The *Municipal Property Rates Act, No. 6 of 2004* aimed to improve the local government revenue base, but directly relates to the costs of properties and municipal levies. These factors could easily determine where a household was located, and thus potentially lead to continued segregation based on the ability to afford property rates. However, it also has the potential to induce more equal rates structures. The *Regional Industrial Development Strategy (2007)* also addressed further inequalities apparently caused by apartheid. The policy considered the lack of economic activity between regions, which it saw as regional inequality (Oranje, 2010) as a factor that perpetuates local poverty and segregation. At a national level, the *Green Paper on National Strategic Planning* was introduced in 2009, which presented the government's position on national strategic planning (The Presidency, 2009). The significance of national planning is justified by the argument that all national development plans aim to improve equality through a holistic perspective as well as the general aim to improve socio-economic conditions in the country. The Green Paper outlines how the structures in The Presidency can achieve various national planning goals and indicates the interrelated nature of the development process (The Presidency, 2009). One of the most recent policy developments in South Africa that impacts the urban environments is the *National Development Plan for 2030*. The comprehensive plan guides the national approach to development and addresses a number of development challenges, including the elimination of poverty and the reduction of inequality by 2030 (The Presidency, 2013b). These two main goals will have a direct impact on the racial-residential segregation and socio-economic inequality situation in the country.

The policies from this era were designed to improve racial-residential segregation and socio-economic inequality even further, while it redefined planning, land use management and

development (Mini, 2012) – basically the whole spatial context of the country. Some writers, like Pillay (2008) and Mini (2012), did, however, raise their concern over neoliberalism and entrepreneurialism potentially resulting in new and intensified dimensions of social and class divisions along with spatial inequality, which is to the disadvantage of the urban poor when global economic desires are prioritised over their needs. The neoliberal urban policies also exposed the majority of the urban population to “unfamiliar” market forces while property owners were protected by their property rights (Mini, 2012) and thus prevented true integration.

From the Natives Land Act and the GAA to the Constitution of South Africa and the National Development Plan for 2030, there have been many policies that had significant implications for the past and present socio-spatial structure (in terms of racial-residential segregation and socio-economic inequality) of South Africa urban areas (figure 2.8). Many of the early policies had very specific spatial implications for racial-residential segregation and created socio-economic inequality among population groups but few of the recent policies have had the ability to combat spatial fragmentation. Some initial success has only been evident in relative reductions of exclusion and separation (like service delivery and social benefits). Ultimately it is important for the government not to determine just the success or failure of its policy development initiatives but also why they are successful or unsuccessful. Very often this is difficult to determine considering the time it takes for these policies (especially spatial policies) to make a real impact on the city.

One certainty that fortunately remains is the fact that the policies from the apartheid era are no longer active, and it is merely some of their effects that linger on. The question is then: Have the democratic government made changes for the better? This is one of the fundamental questions that this study aims to illuminate. At this stage, it does seem as if the country’s government has a good set of policies to efficiently manage urban areas. The strong integration theme since 1994 has been inspiring. However, a number of writers also noted that the policies aimed at integration and compaction offer very little to the urban poor, especially to those who are located on the outskirts of the city (Pillay, 2008). Considering the current demographic context and spatial structure of cities in South African, it should be emphasised that policies that are able to address the right problems in the right ways are still required and, as such, make this policy era neither the last nor the ultimate.



55 FIGURE 2.8: Significant policy interventions and their impacts in South Africa since 1913

2.4. Spatial structure and context of South African urban areas

Racial-residential segregation and socio-economic inequality are both phenomena that manifest in space; therefore it is crucial to understand the influences that the spatial structure and the spatial context of the country and the city have on the current racial-residential segregation and socio-economic inequality situation (be it positive or negative) in urban areas. The main reason for focussing on both metropolitan and local spatial structures is that it allows for a basis on which to formulate a conceptual comparison between past and present socio-spatial conditions in cities and a better understanding of socio-spatial relationships in urban areas. For four centuries urban development in South Africa has been influenced by various national political-economic ideologies that created a class-like system of social organisation and institutionalisation (Davies, 1981) with significant spatial consequences that are already evident from both the demographic and policy contexts of South Africa. The legacy of these past political-economic ideologies has come to be most visible in the structure and morphology of South African cities (Du Plessis & Boonzaaier, 2015) and the spatial relationships between neighbourhoods in the city. From a national perspective, it is evident that a number of factors contribute to the spatial structure of the country, including the attractiveness of metropolitan areas and their separation from rural areas or former non-White settlements. The rough spatial structure of South African urban areas can be described as one with a random and scattered pattern with clusters of dense urban development around the capital cities in each province. This is also the case with economic activity, most of which is concentrated in the Gauteng province and some around the major coastal towns. Already in 2007 it has been found that Gauteng (which includes three of the most prominent metropolitan areas in South Africa), Cape Town, eThekweni and Nelson Mandela Bay housed 39% of the total population on merely 3% of the country's land (CSIR, 2011; Nel, 2011). Generally, at a local level, South Africa is characterised by a severely distorted spatial pattern, (relatively) underdeveloped transport infrastructure, inequality in terms of access to socio-economic opportunities and spatially disadvantaged low-income settlements (Du Plessis & Boonzaaier, 2015).

2.4.1. The influence of homelands on the current spatial structure of South Africa

The spatial structure of South Africa in terms of population distribution was significantly influenced by the apartheid laws. According to Horn (1998) urban areas were the spatial locations that were hit the hardest by various political-economic ideological influences during apartheid. *De facto* racial-residential segregation has always been high in South Africa, but was spatially engraved into cities through the GAA after 1950. The mere removal of the act will not solve the problem (McCarthy, 1990). The Natives (Urban Areas) Act of 1923 and the

GAA, for example, was the heart of urban policy-making for many years. The GAA in particular guided urban reorganisation in the 1950s (Horn, 1998) with the creation of the apartheid city and the creation of the former homelands, also known as the Transkei, Bophuthatswana, Venda and Ciskei (TBVC) states (figure 2.9). The former homelands were located outside the main metropolitan areas of the country and had very limited economic bases (Todes *et al*, 2008). Especially Bophuthatswana and Venda were located far from any of the prominent urban areas in South Africa. This resulted in a socio-economic situation where the poorest of the population were moved furthest away from city centres, jobs and other facilities (Fick, 1990). It also created a spatial structure where the majority of the South African population at the time was located far from the urban areas. Consequently, these are the areas from which a large number of migrants came since the apartheid era, although these areas are still home to significant portions of the current population.

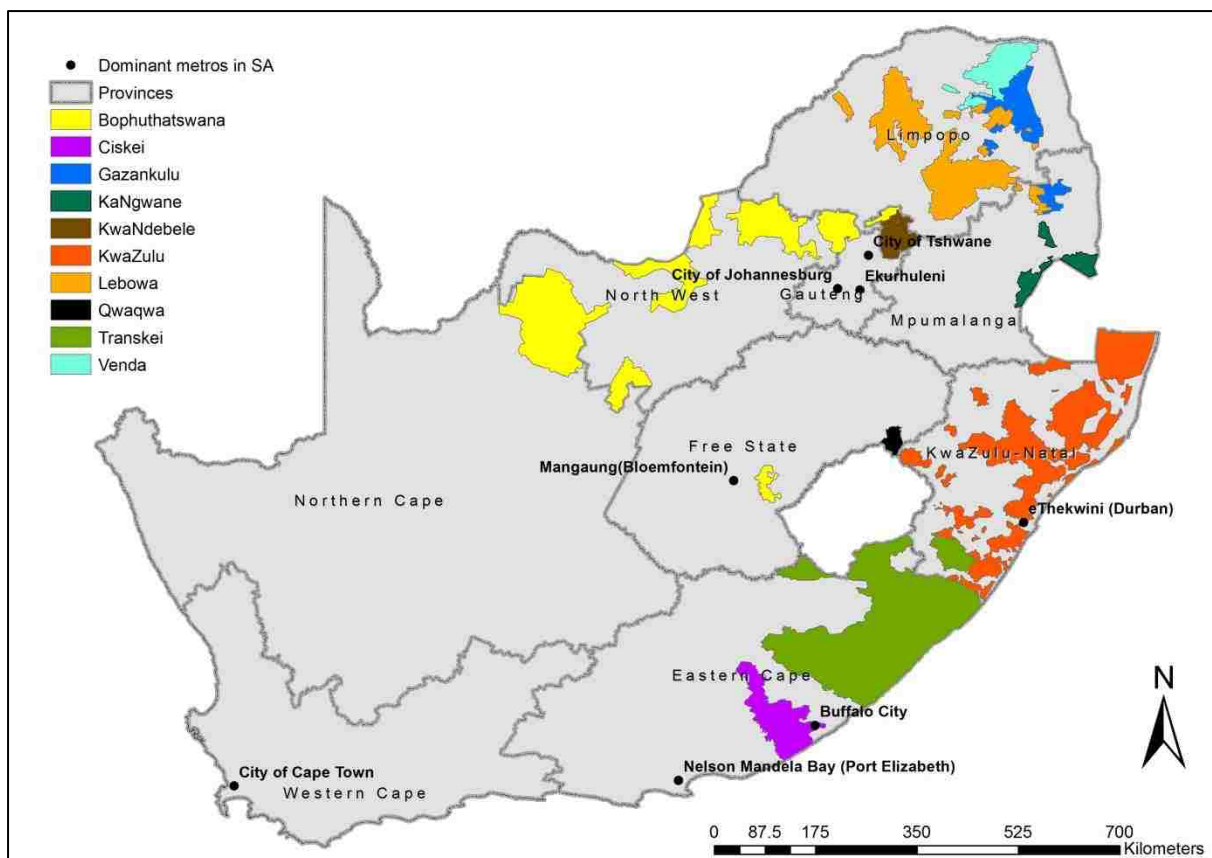


FIGURE 2.9: The former TBVC states and current provinces and major cities in South Africa (Source: Compiled by Author using Statistics South Africa [2011a] data)

The CTMM is greatly influenced by these developments, as a number of group areas were situated in and around the current administrative boundaries of the municipality. These areas still have a significant impact on the spatial structure of the municipality, since they remain

as locations with high concentrations of the Black-African population. The spatial repercussions of the apartheid legislation (which endorsed territorial segregation and restricted the movement of black people) are therefore still felt today, especially in the fragmented nature of the apartheid city (Peter, 2011) and the consequent inefficiencies in the national space economy (McCarthy, 1990). Numerous studies, (Hindson *et al*, 1994; Maylam, 1995; Rogerson & Rogerson, 1997 & Saff, 2009) have indicated the effect that the apartheid era, especially from the 1960s to late 1990s, had on various facets of urban development.

2.4.2. The significance of metropolitan areas in the South Africa spatial structure and the national space economy

Throughout the discussion it has become evident that a few metropolitan areas in South Africa have the most significant influence on all aspects of the society's well-being. It is at this point of value to elaborate more on the dynamics in these metropolitan areas. The nine most prominent cities in the current South African national spatial structure include the Buffalo City Municipality (Eastern Cape province), the City of Cape Town (Western Cape province), the City of Johannesburg (Gauteng province), the City of Tshwane Metropolitan Municipality (Gauteng province), the Ekurhuleni Metropolitan Municipality (Gauteng province), the eThekweni Municipality (KwaZulu-Natal province), the Mangaung Local Municipality (Free State province), the Msunduzi Municipality (KwaZulu-Natal province) and the Nelson Mandela Metropolitan Municipality (Eastern Cape province). According to the National Spatial Development Perspective (NSDP) of 2006, these areas constitute the prominent functional areas in the country as well as the core economic and most populated areas (The Presidency, 2007). These areas are also constantly among the top 20 regions in statistics as areas with high levels of private sector investment, total Gross Value Added (GVA) to the national economy, areas experiencing in-migration, high poverty gaps and high concentrations of people with limited educational qualifications. These regions are therefore very complex and dynamic, as they express high levels of diversity and various development challenges, all of which are preconditions for increased racial-residential segregation and socio-economic inequality. In many ways this situation summarises the current development context in South Africa; a context that influences development at all spatial levels. Challenges related to poverty, inequality and the widespread lack of access to opportunities could not be overcome by policies like the RDP (Oranje, 2010); various other developmental plans initiated since 1994 still remain in these metropolitan areas because they have not reached their desired effect.

Despite these negative connotations to metropolitan areas in South Africa, they remain crucial to the structure and functioning of the national space economy – which can be argued as the real determinant of the local spatial structure of metropolitan areas in South Africa. Metropolitan areas have become increasingly significant since their productivity and economic outputs exceed that of other (rural) areas (figure 2.10), while also accommodating the largest number of poor people in the country (SACN, 2006; Nel, 2011). It is estimated that urban areas in South Africa are responsible for 85% of all economic activity (Department of Housing, 1997; CSIR, 2011). The strongest economic growth points are also the areas experiencing the most in-migration (Todes *et al*, 2008).

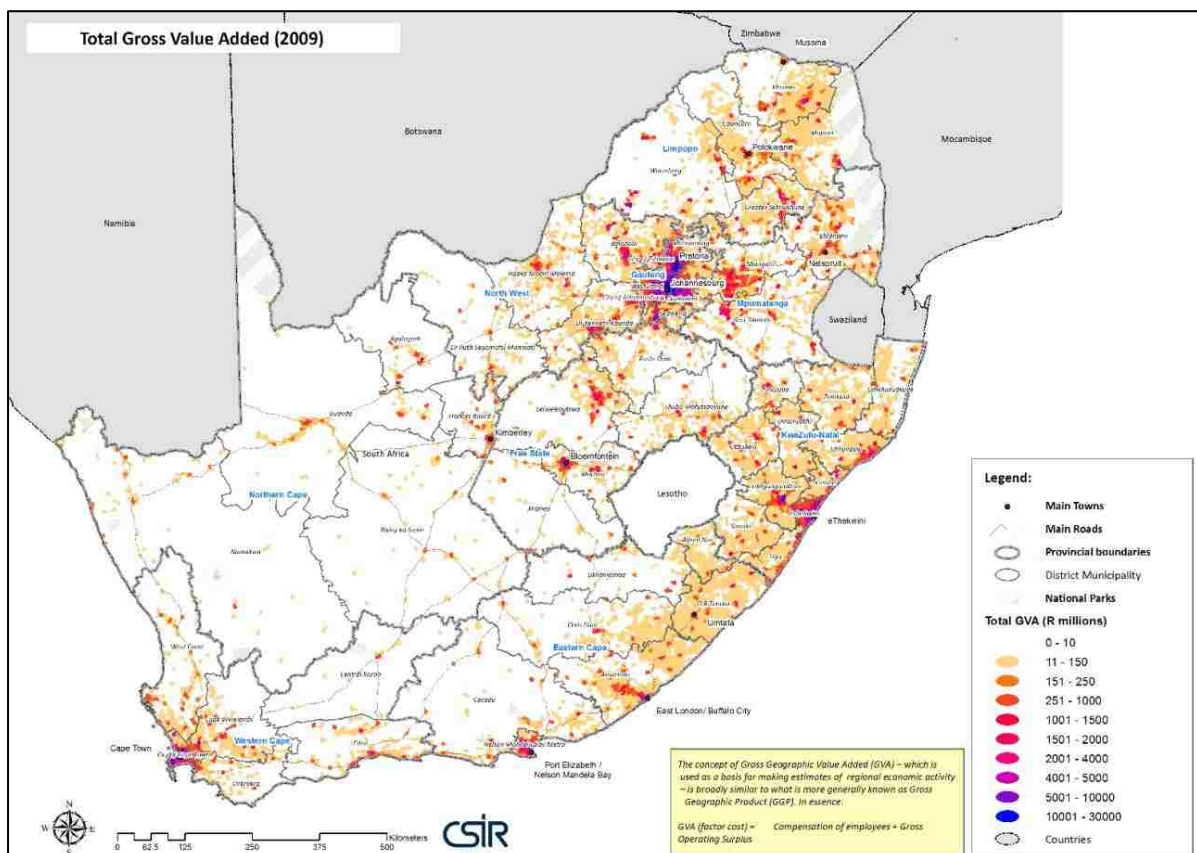


FIGURE 2.10: The 2009 total GVA distribution in South Africa (Source: GAP CSIR, n.d.)

This spatial structure and its characteristics stress the importance of cities and their crucial role in government’s plans to “move” forward because all essential elements of progress (including jobs, social services, education, urbanisation, industry, housing) converge and are made accessible in urban areas (The Urban Foundation, 1991b). Due to the economic importance of metropolitan areas, it is evident that metropolitan areas are constantly expanding along various dimensions, of which population growth and spatial growth are the most notable. Population growth has already been discussed and, according to Du Plessis

and Boonzaaier (2015), metropolitan areas show an annual increase in built-up areas of between 1% and 1.5% with a maximum of 3.2%, while just the residential footprints show an annual increase of between 1.7% and 5.7%. The CTMM, for example, had a population density of 41.3 persons per hectare in 2011, while in 2009 the residential footprint of the city accounted for 56.6% of the total city footprint (Du Plessis & Boonzaaier, 2015). The extent of residential growth indicates the dual value of metropolitan areas – as an economic hub and as a home – and thus emphasises the need to understand the dynamics in residential environments, as they ultimately influence the economy.

All of the abovementioned characteristics are evident (table 2.2) in all the metropolitan areas including the CTMM, making it a significant study area when combined with the city's national importance. In the case of the CTMM, it is evident that unemployment is high while property ownership is low. Access to basic services is relatively equal, especially considering that some parts of the CTMM are considered rural areas. These statistics do not indicate much about racial-residential segregation, but it does highlight some aspects to consider for the analysis of socio-economic inequality. In summary, the location of metropolitan areas in relation to the majority of the South African population has sparked significant population movement, as these areas have become crucial drivers of the national economy while also being important residential spaces. The challenge is to balance economic goals and social development goals in these dynamic environments in order to ensure a suitable socio-spatial structure that eliminates the negatives effects of racial-residential segregation and the social tensions related to socio-economic inequality.

2.4.3. Local spatial structures and processes

In addition to the metropolitan perspective it is also important to investigate the specific local influences of the socio-spatial structure of urban areas. Because apartheid operated at the local urban level, it is evident that there is a correlation between past spatial influences and present spatial realities that contribute to the observed levels of racial-residential segregation and socio-economic inequality in urban areas. According to Olivier and Hattingh (1985), the events of the past and their characteristics led to the development of three main types of city structures in South Africa. The first of these city types was the *Segregated city (1910 – 1949)*. This city structure was characterised by unforced or natural ethnic clusters where people with the same cultural characteristics and behaviour patterns were drawn to each other and to specific areas in the city. These characteristics are evident in post-apartheid South Africa where, for example, strong “Coloured-only” communities developed in Cape Town and “Indian-only” communities in Durban.

TABLE 2.2: Comparing the most prominent metropolitan areas in South Africa in terms of selected statistics (Source: Compiled by author using Statistics South Africa, 2011a data)

Prominent cities in South Africa	Province	Total population (2011)	Percentage of the national population	Population growth (% p.a.) (2001 – 2011)	Economically active population (2011) ⁶	People with matric (2011)	Unemployment rate (2011)	Access to piped water (2011) ⁷	People owning property (2011) ⁸
Buffalo City Municipality	Eastern Cape	755 200	1.45 %	0.69%	67.6%	27.1%	35.1%	52.6%	49.8%
City of Cape Town	Western Cape	3 740 026	7.22 %	2.57%	69.6%	29.8%	23.9%	75.0%	54.2%
City of Johannesburg	Gauteng	4 434 827	8.57 %	3.18%	72.7%	34.7%	25.0%	64.7%	40.2%
City of Tshwane Metropolitan Municipality	Gauteng	2 921 488	5.64 %	3.10%	71.9%	34.0%	24.2%	64.2%	52.0%
Ekurhuleni Metropolitan Municipality	Gauteng	3 178 470	6.14 %	2.47%	71.7%	35.4%	28.8%	57.2%	44.0%
eThekweni Municipality	KwaZulu-Natal	3 442 361	6.65 %	1.08%	70.0%	37.1%	30.2%	60.2%	54.5%
Mangaung Local Municipality	Free State	747 431	1.44 %	1.47%	67.8%	30.1%	27.7%	46.1%	62.3%
The Msunduzi Municipality	KwaZulu-Natal	618 536	1.19 %	1.12%	68.4%	33.7%	33.0%	47.9%	57.9%
Nelson Mandela Metropolitan Municipality	Eastern Cape	1 152 115	2.23 %	1.36%	68.5%	30.5%	36.6%	74.1%	61.4%

⁶ The economically active population in this case is counted as the population in the age group 15 to 64 years, as this is the groups in which data from the 2011 national census survey is available.

⁷ The count includes those with access to piped water inside their dwelling.

⁸ The count includes those who own property that is fully paid off and those who own property that is not yet paid off. The count does not include properties that are rented or occupied rent free.

The second type of city structure that emerged was the *Apartheid city* (1950 – 1987). This was a city specifically structured and managed to minimise contact between different ethnic and racial groups with the belief that it would also minimise potential conflict between the groups. Pretoria was significantly influenced by this racial restructuring (figure 2.11) with the establishment of suburbs such as Brooklyn/Waterkloof (White), Atteridgeville and Mamelodi (Black-African), Laudium (Indian/Asian) and Eersterust (Coloured). The third type of city structure that emerged in South Africa is the *Separate city* (1960 – 1987). This structure developed due to the proclamation of the *Promotion of Bantu Self-government Act, No. 46 of 1959*, which led to the development of small towns on the edges of the black homelands. The townships of Garankuwa, Mabopane and Temba developed in one such homeland, namely Bophuthatswana, located near Pretoria. This resulted in several separate cities developing, which became apparent as the CTMM administrative area expanded. This type of polycentric urban structure is evident in many metropolitan areas in the country.

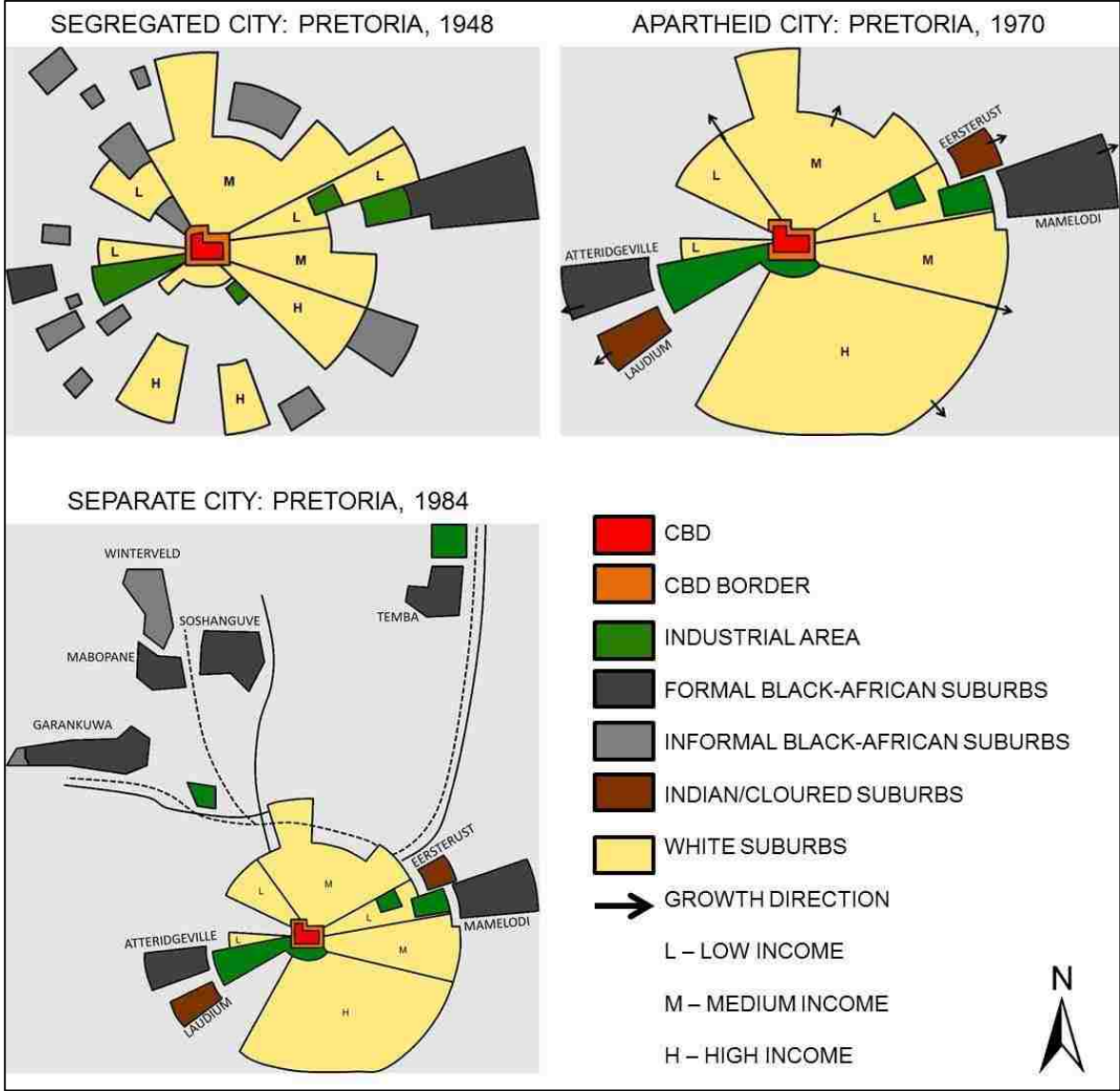


FIGURE 2.11: Past spatial configurations of Pretoria (Adapted from: Olivier & Hattingh, 1985)

All of the abovementioned urban structures contribute to the current unequal and dysfunctional structure of South African urban areas (Donaldson, 2001). Using the case of the CTMM, these abovementioned spatial structures raise concern regarding the legacy of socio-economic inequality in the South African urban morphology. It is evident from past spatial structures that in more than 50 years, the general income zones in the city have remained in the same relative spatial locations (figure 2.11).

The local spatial structure of South African cities also has a number of other unique characteristics that influence the development context of urban areas (and ultimately the racial-residential segregation and socio-economic inequality situations). The settlement pattern of a typical South African town is complicated by various settlement types or zones found in one urban area (Donaldson, 2001). The White Paper on Local Government (1998) describes a total of nine such categories. These categories include the urban core, urban fringe, small towns, dense rural settlements, “betterment” settlements, informal settlements, villages, agri-villages and dispersed or scattered settlements. The complicated nature of these classifications is found in the fact that more than half of these diverse classifications can be identified in one metropolitan region, like the CTMM. This has numerous implications for the future development of the region as it determines the type of support for which the regions qualify (Nel, 2011) and could therefore influence various rates policies for revenue, priority areas for funds, political representation, infrastructure development, private sector investment and housing delivery programmes.

Local urban development in Africa is generally very unique compared to that of other continents. The general model of the African city is one where the indigenous population live in areas of high densities, whereas low density land users are found in the areas where colonial elites settle (Pillay, 2008). These characteristics, with the exception of some mixing here and there, are also evident in most South Africa cities where suburbs have low densities as opposed to the townships and informal areas (occupied by the majority and often poor population) with very high densities. This presents a serious urban management challenge and one that directly influences the opportunity for racial-residential integration and socio-economic equality. The spatial structure of South African cities (and that of the CTMM) is also characterised by a strong suburbanisation and decentralisation trend that have supported the aforementioned characteristics (figure 2.12). The city centre is still prominent in the spatial structure of South African cities, but a more decentralised city structure (or multi-nodal structure) is quickly emerging in most South African urban areas (Du Plessis & Boonzaaier, 2015). The 1990s saw a significant decentralisation trend in most cities, like the CTMM, and in many instances fuelled the already accelerating process of suburbanisation.

At the time, and probably still, there was no planning policy with both the capacity and the enforcement tools to decelerate this process.



FIGURE 2.12: Decentralisation (left) and suburbanisation (right) in the CTMM. (Sources: <http://www.tshwane.gov.za> [left] & www.harcourts.co.za [right])

Decentralisation also meant that workers who live on the “wrong side” of the decentralisation movement were now separated even further from their job opportunities – a situation that does not help to improve their socio-economic conditions (Beavon, 1998). Beavon’s (1998) extensive work on decentralisation in Johannesburg also indicates that this process has a significant negative effect on the quality and functionality of the city’s CBD; a dynamic that can be expected in most South African cities and one that requires significant state intervention to improve. In the case of the CTMM, suburbanisation and decentralisation are taking place towards the south and east of the city, as opposed to the north and west where the biggest portion of the Black-African population is located. This contributes to a multi-nodal spatial structure in the city and creates a divide between the north-west and south-east in terms of development, growth and wealth. South African suburbanisation is also strongly characterised by spatial segregation (Mabin, 2005a). This is partly due to the “retreat” of the affluent population into enclaves or closed neighbourhoods. Suburbanisation is also significant in terms of social segregation, because as soon as the previously disadvantaged and excluded population gains access to the previous areas of wealth (like the inner city) and the newly located public institutions, they find that most of the economic opportunities thought to have been available in these areas have moved to the suburbs (Mabin, 2005a) and other outlying areas.

An important local spatial dynamic to consider along with suburbanisation (and partly the reason for suburbanisation) is the increase in the number of houses in South African cities. The earlier part of the discussion already indicated the extent of residential growth in metropolitan areas, but this process needs further investigation at a local spatial level. At a

local level, statistics indicate that the average household size is constantly decreasing in South Africa. The average household size in South Africa declined from 4.5 in 1991 to 3.6 in 2011 (Statistics South Africa, 2012). This causes an inevitable increase in the number of houses required to accommodate natural population growth and in-migration (Pillay, 2008; Todes *et al*, 2008) and therefore determines the extent of urban growth. It is very important to realise and understand that these new houses are more often than not built on the periphery of the city. Although housing delivery in itself is generally good, it does create further fragmentation and segregation in the city. This is a serious concern when it is noted that fragmentation often takes place at the lower levels of the urban system's hierarchical structures like the residential environment (Ianos, 2000). On the other hand, we can also note the prominent trends of enclosed neighbourhoods (due to the abovementioned suburbanisation) that create "pockets of wealth in the ocean of poverty" as well as inner city deterioration. The different parts of the city, like the northern suburbs in Johannesburg for example, are often classified as neo-apartheid cities (Beavon, 1998). The neo-apartheid spatial structure referred to here is characterised by fragmentation and disconnected sprawling enclaves. According to Peter (2011), it is this type of spatial fragmentation that causes the continuation of inequalities, limited access to services as well as socio-economic immobility. The current development trends in the eastern and southern parts of the CTMM suggest that evidence of neo-apartheid cities found in Johannesburg might also be applicable to the study area.

The local urban environments are not only influenced by the abovementioned processes but also by urban management principles with specific spatial implications. Planning principles that became evident in present-day South African cities, especially the metropolitan areas, include compact development principles, inner city renewal or regeneration, mixed land uses (based on the principles of new urbanism), public transport nodes, development corridors and infill development (Donaldson, 2001; Du Plessis & Boonzaaier, 2015). The abovementioned principles are based on key urban planning concepts that include "integrated development planning", "spatial restructuring", "socio-economic and spatial integration", "compaction and densification" and "mixed land use development" (Du Plessis & Boonzaaier, 2015). These principles and concepts allowed cities to proceed into a period of desegregation through their respective "Spatial Development Frameworks (SDFs)" (Freund 2010; Giraut & Maharaj, 2002). The SDFs are in essence a spatial embodiment of all the principles mentioned, as the SDF is a crucial part of a city's IDP and guides the spatial implementation of all planning decisions. This has at least allowed many cities to put plans forward for more integrated and equitable residential spaces.

The spatial development context of South African urban areas can be viewed from three distinct spatial levels, namely the national, metropolitan and local levels. Each of which has its own historical influences and current situations; but each spatial level is ultimately influenced by the others. The discussion highlighted the main influences of each spatial level on the current racial-residential segregation and socio-economic inequality situations in the country. It is evident that the spatial development context is very closely related to both the demographic and policy context of the country and it would in future be wise to view these together in any development scenario. Ultimately, the South African urban structure remains resilient and has not changed significantly over the last two decades (Du Plessis & Boonzaaier, 2015). The success of planning reforms to change local spatial structures is in doubt due to comments (and evidence in policy documents like the National Urban Development Framework [NUDF] from the National Planning Commission and in the National Development Plan 2030) that suggest that South African urban areas have remained as segregated and fragmented as they were at the beginning of the democratic era (Du Plessis & Boonzaaier, 2015).

2.5. Concluding remarks

In this chapter of the study, the discussion was focussed on three crucial and interrelated development contexts, namely the demographic context, the policy context and the spatial context of South Africa. All three development contexts and their respective challenges and opportunities have a significant influence on the current racial-residential segregation and socio-economic inequality situation in South African urban areas. The first part of the chapter revealed that urbanisation and population growth are significant drivers of urban development and thus emphasise the importance of urban areas in the South African development context. The second part of the discussion summarised the main policy developments that created apartheid and in turn also worked towards eradicating apartheid. The myriad of policies that were implemented were noteworthy attempts at social and spatial integration, economic growth and poverty alleviation, but many of their impacts, like those of the IDP, remained significant on paper and not in practice (Oranje, 2010). The final part of the discussion focussed on the spatial structure of both South African metropolitan areas and local urban spaces. The discussion highlighted the placement of metropolitan areas at the top of the urban hierarchy and indicated that development, growth and poverty are notable in high concentrations in a few large urban areas. At a local level, it was also evident that the individual spatial structures of cities and current urban processes often hamper the possibilities for racial-residential desegregation and socio-economic equality. These discussions also highlight the possibility that, although formal apartheid restrictions have been removed, informal restrictions to integration and equality still exist in the form of various

neoliberal policy influences, socio-spatial legacies and current underlying socio-spatial dynamics. Mabin (2005a:227) also suggests this possibility when noting that the post-apartheid era seems to offer little on “restructuring apartheid urban space, but rather offer the development of new forms of social division”. Therefore it does seem that the democratic government has made policy changes for the better, but its impact on the ground (and specifically the spatial structure of cities) remains in doubt.

The geographical implication of apartheid cannot be stressed enough. It is a legacy that remains significant long after its formal abolishment. Various efforts have been made to desegregate the post-apartheid city in South Africa, but the socio-spatial legacies of apartheid persist are continually being recreated at a local spatial level (Oldfield, 2004; Du Plessis, 2014), which suggests that South African urban areas are not more integrated or equal than they were at the beginning of democracy. The overall impression from this chapter is that most of the challenges faced since 1994 are still present, while some might have been aggravated. There is a clear indication of the principles and guidelines that are required to influence future urban management strategies. It is, for example, imperative that policies are influenced by a combination of economic, social, political and cultural characteristics of each of the interrelated development spheres, as well as the singularity of urban environments (Pillay, 2008), in order to ensure sustainable development and positive development outcomes. These policies should play a key role in empowering local government to provide access to land, create efficient urban forms, plan proactively and reinvest growth. The apartheid era can be described as an era where injustice was urbanised and it is now a question of whether justice can be urbanised (Mabin, 2005a). The challenges that are faced in urban areas require firstly a reassessment of the policies that are currently implemented to solve (or at least relieve) socio-spatial problems, and secondly the implementation of holistically developed policies that can address a variety of competing demands in cities. Ultimately it is important to realise that urban planning is crucial in the fight against racial-residential segregation and socio-economic inequality in South Africa – because planning is one of the few tools that understands and uses tools from all three interrelated development spheres discussed in this chapter to achieve progressive development goals.

CHAPTER 3

THE EXTENT AND SPATIAL PATTERN OF RACIAL-RESIDENTIAL SEGREGATION IN THE CITY OF TSHWANE⁹

**“When you live under the power of terror and segregation,
you can't ever start a work of art”.**

- *Jeanne Moreau*



⁹ Parts of this chapter, specifically those related to the analysis of racial-residential segregation in the City of Tshwane, have been published by the author and supervisor in the accredited journal *Urban Forum*. The article referred to here is cited as Hamann, C. & Horn, A.C., 2015: Continuity or Discontinuity? Evaluating socio-spatial change in the City of Tshwane, South Africa. *Urban Forum*, 26 (1), 39 – 57.

3.1. Introduction

Previous research from urban geography, planning and anthropology revealed that there is a direct relationship between the spatial dynamics (growth patterns, development types and spatial distribution) of a city and the socio-cultural dynamics of society. This relationship is furthermore evident throughout history where cities have time and time again spatially expressed the social, economic and political activities of the residents in the city and the cultural dynamics in society (Badenhorst *et al*, 2005). There is also a significant relationship between the physical distance between groups of people and the social distance between the same groups, and these differences are often mutually reinforcing (Badenhorst *et al*, 2005). In many instances the spatial distribution of different population groups (or segregation) is established by means of three main processes, namely (1) levels of social status, (2) basis of family status and lifestyle, and (3) ethnic segregation (Rex & Visser, 2009). These processes could be voluntary or could arise in a forced manner from either social pressures through racial discrimination or from legislation. It is also noted that individual and socio-cultural preferences regarding residential location have a significant influence on the continuity of racial-residential segregation (Goldberg, 1998). All these processes are evident in the South African case, although South Africa is unique in the sense that forced segregation was instituted under the apartheid banner mainly through racially based legislation. Considering that the goal of the post-apartheid government is social cohesion, defined as the extent of social integration and the expression of mutual solidarity (Department of Art and Culture, 2013), it becomes clear that the abovementioned dynamics are important to understand. Understanding how these dynamics play out in South African cities makes it possible to identify the most suitable responses to the observed racial-residential segregation situation.

The previous chapter highlighted the significant demographic, political and spatial changes in South Africa over a few decades and how these influence the current socio-spatial characteristics of South African cities. These changes affected all aspects of life in cities, and especially that of racial-residential segregation patterns (Christopher, 2001a). Lifting the apartheid segregationist legislation allowed for numerous desegregation opportunities in cities, but it was hampered by demographic, socio-cultural and structural barriers. Therefore, in this chapter, the intention is to determine whether the City of Tshwane Metropolitan Municipality (CTMM) has in fact desegregated to more appropriate levels, and to describe the current racial-residential segregation characteristics of the study area. A statistical definition of more appropriate segregation levels is very difficult to define due to the social complexities in society; it is therefore more valuable to have a conceptual understanding of more appropriate segregation levels. In the case of this study, more appropriate segregation

levels would mean a better mix of population groups in areas of the city that were previously inaccessible to most population groups, and thus allowing all population groups the same residential opportunities. In other words, more appropriate segregation levels should harness a sense of residential “freedom” in the city. The continuity-discontinuity hypotheses tested in this study is specifically constructed to describe the appropriateness of the current extent and character of racial-residential segregation in the study area. Leading up to such a comparison, the chapter includes a discussion on the background to racial-residential segregation research, the dimensions and measurements thereof as well as some of the causes and consequences of racial-residential segregation (figure 3.1). The chapter will also highlight some international trends and lessons in segregation (specifically from the Americas and Europe) before the focus will shift to the South African context and the racial-residential segregation analysis in the study area.

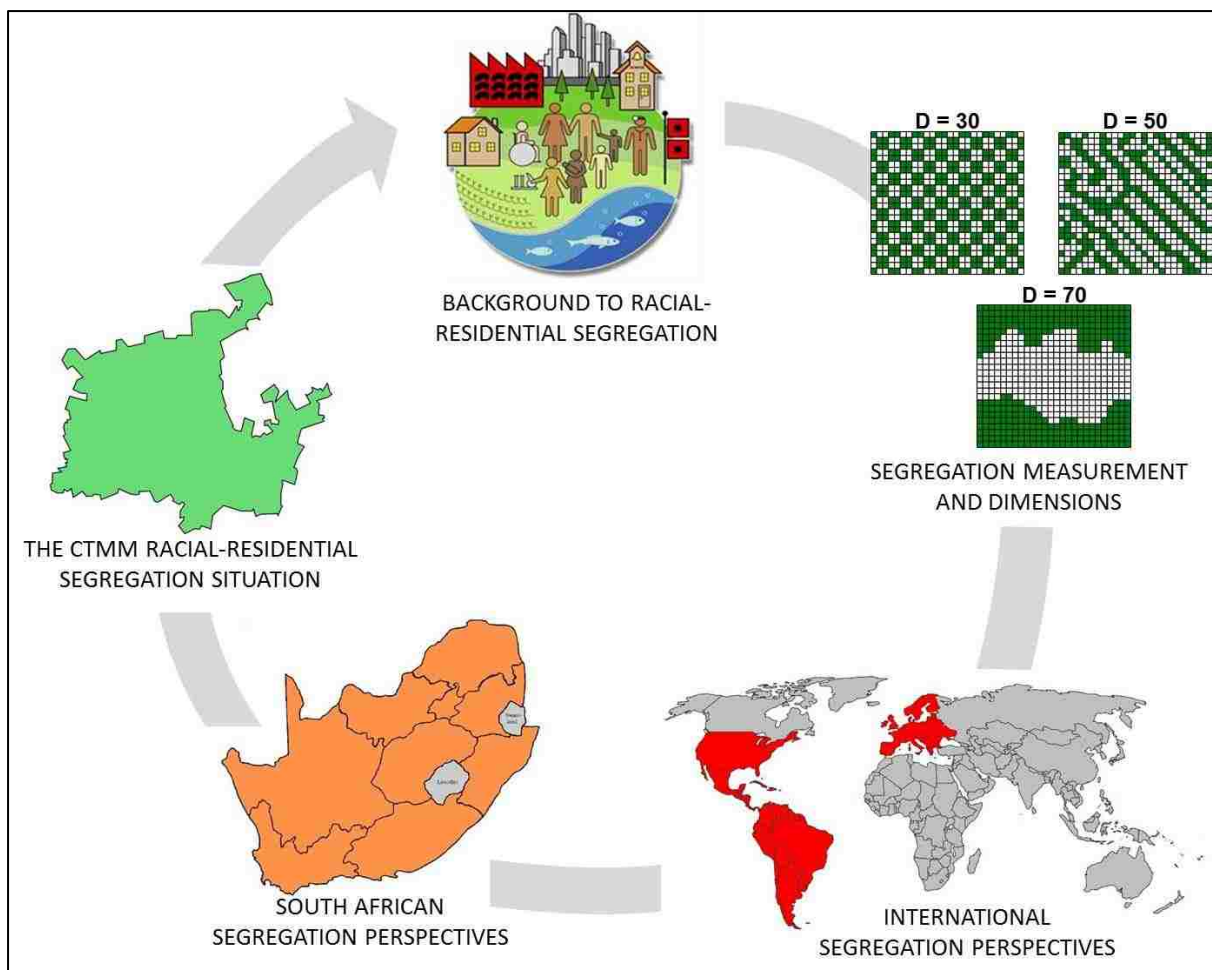


FIGURE 3.1: The outline of chapter 3

3.2. A background to racial-residential segregation research

Segregation between population groups is an ancient phenomenon that has varied only in terms of the characteristics, spatial embodiments and severity associated to it. Distinct living quarters based on a person's power and position in society were, for example, evident in the 2000 BC city of Babylon (Van Kempen & Ozuekren, 1998). Other significant periods of segregation were unambiguously based on income and employment status, while the location of the "other" population groups varied between being in the central business district (CBD) and being on the periphery of the city. During the European colonial periods (from the 1500s to mid-1900s), segregation in Africa and the Americas were also inherently based on income and employment status, but was enforced on the basis of racial classifications. Arguably the only aspect of segregation that remained the same throughout history was the domination of the minority over the majority population and distinctive terms like "haves" and "have nots" or "them" and "others". Despite this long history of the segregation phenomenon, research in this field is still very young (Van Kempen & Ozuekren, 1998), with the most significant theories, measurements, debates and discussions emerging only after 1955. Why then has segregation become so important and relevant to development in modern cities? It is certainly a subject that can easily be disregarded by some when considering the importance of economic development or global politics. The most obvious answer, but not the only one, is that a highly segregated society negatively influences urban functionality by hindering equal access to certain opportunities, and that segregation has the potential to cause social tensions that inevitably hamper the quality of life in the city. The relevance of segregation for urban development will be discussed in more detail later, along with its history, dimensions and measurement to further emphasise the importance of understanding this phenomenon. However, first it is important to clarify important definitions indispensable for the interpretation of the rest of the chapter.

3.2.1. Important terms and definitions related to racial-residential segregation

Defining the term *segregation* is a very important aspect of the study and one that can be interpreted from various perspectives. The pioneers in American segregation analysis, Massey and Denton (1988:282), describe residential segregation as "... the degree to which two or more groups live separately from one another, in different parts of the urban environment". Schnell *et al* (2000:289) describe segregation as "... a state of socio-spatial exclusion and isolation among social groups", while it can also be considered to be a situation where a population group is overrepresented in one area of the city and underrepresented in another area of the city (Van Kempen & Ozuekren, 1998). Socio-economic segregation can also be described as the separation between lower-class

households and middle- or high-class households in different parts of the city. The location of a population group, which is evident from the abovementioned definitions, is a crucial part of the segregation definition and how it is viewed (Massey & Denton, 1993). Taking these descriptions and numerous other segregation studies into account, segregation in this study is defined as a process of spatial separation among ethnic groups (and between income groups) that is often related to conditions of isolation, exclusion and deprivation (Wong, 1998; Horn, 2005). This definition is the most relevant to the study, as the study has an inherent spatial perspective, but also because segregation can be described as an attitude or an idea held by people, made possible by certain types of residential development and market conditions and therefore fundamentally interrelated to numerous other factors. The rest of this discussion and ensuing chapters will highlight some of the aforementioned interrelated factors that influence racial-residential segregation. Segregation can occur at various *spatial levels* and at different levels of *intensity*. The spatial levels refer to the geographic region being used in the analysis and can vary between national level, provincial level, municipal level and neighbourhood (sub-place) level. The intensity can be determined from the actual segregation index values as calculated by a particular segregation index or by the number of dimensions in which segregation occurs. Racial-residential segregation is measured in five dimensions (these are discussed in detail later) and when population groups are segregated in two or more of these dimensions, it can be described as high-intensity segregation or *hypersegregation* (Massey & Denton, 1993). *Ethnicity* has often been used as a theme in segregation studies, as it is one of the social distinctions that have found very strong spatial expression in cities. Ethnic variables can also be identified with relative ease when using census data and it provides a very obvious line of segregation (as opposed to other socio-economic data like for example housing quality data) (Herbert & Thomas, 1982). For the purposes of this study, ethnicity is a social distinction based on cultural factors (especially language and self-identified cultural affiliation) rather than physical appearance.

Considering the definitions above, it is important to clarify a few other spatial arrangements of different population groups in the city that are related to racial-residential segregation but have some distinctive differences. A prominent term used in American literature to describe one such spatial arrangement is the *ghetto*. A ghetto can be defined as "... an institutionalised residential area in which all inhabitants belong to a single ethnically, racially or religiously defined group and all the members of this group live only in this area" (Van Kempen & Ozuekren, 1998:1634) and not in any other areas of the city. It is also noted that the population groups residing in such an area are often forced to live there and are an ethnic minority living in conditions of poverty and social exclusion (Varady, 2005). Spatial

arrangements that look similar to segregation but are created by choice can be referred to as *congregation* (Van Kempen & Ozuekren, 1998) or *ethnic enclaves* (Varady, 2005). It can be argued whether either of these is a better form of segregation, but it depends on the circumstances and context of the segregation. Ultimately no form of segregation is ideal, as it restricts mobility to access opportunities (jobs, education, services) for those not included in the more desirable areas (Charles, 2003). The characteristics of all these spatial arrangements are described on numerous occasions in literature (Massey & Denton, 1993; Varady, 2005), but for the purposes of this study it is important to consider these definitions and note that although the ghetto is not applicable to South Africa, the ethnic enclave is a significant feature in the spatial arrangement of the urban population. These ethnic enclaves are very often areas of severe economic segregation and protected by certain living standards which a large part of the population are unable to attain. Another important description of a residential area, especially in the South African context, is that of a *township*. A township most commonly refers to land that is formally allocated for the establishment of a town; in the South African context, however, it is more often than not used to refer to residential areas that were exclusively reserved for occupation by non-Whites (Black-African, Coloureds and Indians) during the apartheid era (Pernegger & Godehart, 2007; SACN, 2009). Townships in South Africa are characterised by high levels of segregation among the aforementioned population groups, poor service delivery, low socio-economic conditions and peripheral locations. These characteristics provide a notable challenge for urban managers and hamper many attempts towards improved urban functioning, equality and inclusivity (Pernegger & Godehart, 2007).

The opposite of segregation can be considered to be desegregation or socio-spatial integration. The choice of the term and the definitions thereof will have a significant impact on the goals of the policies designed to achieve either of these. Socio-spatial *integration* in this case refers to "... a significant reduction in racial and class segregation, more integrative land-use patterns to maximise the opportunities for particularly poor urban residents to access urban services and employment opportunities, and finally, a reduction in levels of economic and social inequality across the urban region" (Pieterse, 2007:2). Integration is best achieved where interaction, structural differentiation and functional specialisation take place (Ianos, 2000). In the context of segregation, a crucial part of defining and achieving integration is determining the appropriate segregation levels that constitute integration. These appropriate levels will differ in each spatial context and will be directly related to the perceptions and attitudes of the population in terms of their willingness to reside with citizens from other racial, ethnic or socio-economic groups. An appropriate racial composition for this study would be one that best represents the racial composition of the country, that is, a racial

composition close to the national averages of 79% Black-African, 16% White, 2.5% Indian/Asian and 2.5% Coloured (figure 2.4, p. 31) respectively, and one that does not impede progressive socio-economic development and equality. These levels will be difficult to attain in any context due to social relations and because cultural groups tend to locate close to each other. Therefore a variety of factors that contribute to segregation should be taken into account before a conclusion is made regarding the ideal level of segregation in the neighbourhood. Therefore, and as indicated earlier, a conceptual comparison to the past socio-spatial conditions of the city is more relevant for determining whether people's access to opportunities is still being restricted and therefore not allowing integration.

3.2.2. The relevance of segregation for urban development

In the introduction of this chapter, the relevance of segregation to urban development was questioned. Although many writers might dismiss the idea that residential segregation contributes to urban poverty and the creation of an urban underclass, it has been extensively noted as a crucial part of alleviating urban poverty (Massey & Denton, 1993). Residential segregation is of particular importance, since the residential environment encompasses crucial aspects of socio-economic development and general well-being in the city. It is also noted that residential segregation is beyond the ability of any single individual to change (Massey & Denton, 1993) and therefore requires a collaborated approach from an urban management perspective. According to Roberts and Wilson (2009), it comes down to the significance of locality and neighbourhood effects in all aspects of urban development, especially residential development. Physical and social characteristics of neighbourhoods and the availability of quality amenities create disparities between neighbourhoods that reinforce individual socio-economic conditions. This in turn, among others, affects health, crime and education levels in the society. Proximity to socio-economically different neighbourhoods can also lead to certain advantages and disadvantages due to spill-over effects (Roberts & Wilson, 2009). What is the role of segregation in all these processes then? Racial-residential segregation is regarded as an integral aspect of racial inequality and the perpetuation thereof (Charles, 2003). Segregation between racial groups (and economic groups for that matter) means that one population group is persistently trapped in certain living conditions. If this trapped population group happens to be the largest group in the city and trapped in disadvantaged conditions and locations, it ultimately creates severe inequality and inefficiency in cities. From here, the spiral down the social (and economic) hierarchy is inevitable and very difficult to reverse.

The rise in residential segregation studies and literature since 1955 might therefore not be seen as such a big surprise and can be ascribed to the perceived negative effects of the phenomenon on urban development. Considering the significance of racial inequality highlighted in the previous chapter, it is also clear why racial-residential segregation receives such a great amount of attention in South Africa. Measuring the extent of the segregation phenomena is an important part of monitoring and achieving integration and equality in post-apartheid South Africa. Residential segregation affects a number of societal factors that are necessary to create sustainable equality, including interaction and shared public and private facilities. Neither of these is possible if a situation of residential segregation exists (Charles, 2003), and the negative impact on progressive socio-economic development makes the reality of segregation even more important (Massey & Denton, 1993). Measuring residential segregation and delving into the detail of neighbourhood dynamics are also important because some demographic and migration trends do not reflect the real situation on the ground. One such a trend, noted by Massey and Denton (1993), is that of suburbanisation. High levels of suburbanisation by Black-Africans were noted in the American society, which was regarded as good, but in reality the suburbanisation took place in areas that were located just outside declining inner city districts or were old areas with high population densities and poor socio-economic environments. Thus, the suburbanisation of this previously disadvantaged group held little improvement for their socio-economic situation and make it crucial to determine whether this is not true in South Africa, considering the location of townships around major urban areas. This increases the relevance of segregation and its underlying factors because mere urbanisation, suburbanisation or growth does not guarantee integration and an improved quality of life for previously disadvantaged population groups.

There are numerous other disadvantages highlighted in segregation literature and summarised appropriately by Van Kempen and Ozuekren (1998). One of the most prominently argued and proven effects of segregation is that it inhibits people from participating in civil society. The spatial separation of a particular population group will affect their ability to interact with society and, for example, acquire information about employment opportunities. The spatial distribution of households with the ability to demand services also creates a spatial mismatch between those who provide the services (the poorer population) and those who use the services (the higher-income households). Negative neighbourhood conditions are cemented into oppressed and segregated neighbourhoods that create mutually reinforcing spirals of decline. These residential environments become more isolated from society in geographic, social and economic terms (Massey & Denton, 1993), which makes it more difficult to reverse. It is also the case in South Africa that many Black-African

neighbourhoods are seen as concentrations of poverty due to the economic deprivation enforced during the apartheid era. Furthermore, the literature mentions that residential segregation (and the associated income levels) leads to education segregation (Van Kempen & Ozuekren, 1998). This means that disparities arise between the level and quality of the education attained in the different parts of the city. According to Charles (2003), this is because young people in segregated environments are exposed to more crime and stressful life events that hampers their education. This could also be related to the ability of the residents to access good quality education due to their income status. It is thus at an early stage of this discussion clear that residential segregation often goes hand in hand with certain income levels. This a very important aspect to keep in mind and one that will be further explored in the ensuing parts of the study. There are also numerous sociological drawbacks related to segregation, including chronic community misery, misconceptions due to spatial separation and a lack of empathy between population groups. On the other hand, the most significant socio-economic consequences of residential segregation are related to the inherent concentrations of poverty and wealth in the city that is perpetuated by segregation. Concentrated poverty among any population group or spatial entity in a city leads to numerous socio-economic disadvantages and social ills in the population group or spatial entity, including long-term joblessness, low wages, school drop-outs, crime, social disorder and eventually the deterioration of public services (Charles, 2003). Segregation has also been noted to undermine home ownership (Charles, 2003) due to the interrelated nature of residential segregation consequences. The income of residents directly affects the quality of the housing and subsequently the ability to acquire new and improved housing due to a number of market forces and restrictions. Ultimately the housing conditions experienced by poor and segregated population groups are detrimental to their future social mobility (Massey & Denton, 1993; Charles, 2003).

There are many disadvantages to segregation and rightly so, but what are the possible advantages of residential segregation in the city? The preservation of individuality is one of the most prominent advantages to note. The values and beliefs of a segregated group of people are less likely to be influenced by mainstream society, while a strong culture could also provide all the necessary support that a community needs to ensure a high quality of life (Boal, 1998; Van Kempen & Ozuekren, 1998). This is evident in South Africa where several towns or residential areas have been created to preserve a specific culture; these communities are not necessarily poor and underdeveloped (for example Orania in the Northern Cape as well as Kleinfontein and Laudium in the CTMM). The close-knit ethnic relationships in segregated communities can also be beneficial to small enterprises, since knowledge and experience gained from the social connections ultimately give entrepreneurs

a competitive edge over other competitors (Boal, 1998; Van Kempen & Ozuekren, 1998). Boal (1998) further indicates that segregation can provide a certain organisational basis for political and even protest actions by a society. It is also noted that groups congregate (or segregate willingly) for safety reasons and to limit their exposure to dominant racial groups. This is especially evident among ethnic groups of the same race if their cultural, religious or ancestral connections are not widely accepted or appreciated in society.

The relevance of segregation to urban development indicates that the pros and cons of residential segregation are contradictory at best. It is evident that most of the advantages of segregation are mostly sociological in nature, if the process is initiated voluntarily. On the other hand, the strong negative perception of segregation stems from the very few structural and institutional advantages it holds for the city, as well as the possible negative socio-economic effects. It therefore remains crucial to determine whether any observed residential segregation in a city is voluntary or forced before it is possible to truly determine its positive or negative attributes. The apparent inability of the South African society to overcome high levels of racial-residential segregation indicates that it is not only legislative regulations that lead to the apparent segregation. The factors that are generally regarded to contribute to segregation include, among others, socio-economic status, family status, ethnic status and migrant status of the population (Herbert & Thomas, 1982). It can be argued that choice is a fundamental antidote to segregation, but the notion of choice is too complicated to support in these arguments. Even if a certain degree of validity is assigned to the role that choice plays in desegregation, it becomes evident that various constraints, even the most subtle, are always present and rarely give individuals absolute power over their decisions (Herbert & Thomas, 1982). It is clear that residential segregation has far-reaching and long-lasting effects on the social well-being of a society that need to be understood in the urban context in order to ensure that the effects are not damaging to social cohesion.

3.2.3. The dimensions of segregation and their measurement

Residential segregation can be described in five different dimensions, each of which is measured with different indices and thus measures the various aspects of segregation in the city. Massey and Denton (1988) were the first scholars to propose these five dimensions of segregation that are generally adopted in segregation research and include *evenness*, *exposure*, *clustering*, *concentration* and *centralisation*. The *evenness* dimension describes the differential distribution of population groups between measurable units in the city (Horn, 2005); typically neighbourhoods (or sub-places). This dimension shows in which areas of the city a population group is either overrepresented or underrepresented in relation to another

population group (Massey & Denton, 1988). Evenness will therefore be maximised, and residential segregation minimised, when citizens from different population groups live in the same spatial unit or sub-place (Flores, 2009). *Exposure* gives an indication of the opportunities that exist for population groups to interact with each other in their residential spaces in the city (Horn, 2005; Flores, 2009). This dimension can be differentiated from the previous since it takes into account the relative size of the population groups being compared (Massey & Denton, 1988). The *concentration* dimension refers to the relative extent of geographical space that a population group occupies in the city in comparison to the space occupied by the majority population group (Massey & Denton, 1988; Horn, 2005). This dimension could give an indication of whether residential discrimination is restricting minority population groups to a small proportion of the city (Massey & Denton, 1988). *Centralisation* gives an indication of the location of a specific population group in relation to the centre of the city (Horn, 2005). This dimension could also give insight into a population group's socio-economic situation, as some minority groups are confined to the declining central business district or the underdeveloped periphery of the city. This dimension is, however, regarded as the least applicable to modern cities because many cities, like the CTMM, have multi-nodal spatial structures that make it difficult to define only one functional central business district for the measurement. The fifth dimension, *clustering*, refers to the extent to which those units in the city that are inhabited by the same population groups are located next to each other (Horn, 2005; Flores, 2009). This dimension differs from the others in the sense that it does not compare different population groups, but compares the same population groups in terms of their distance from each other. Thus, if clustering is high, it would probably result in the minority group forming a large connecting enclave in the city (Massey & Denton, 1988). All five of the dimensions provide a different perspective on the segregation situation in the city and each has different social and behavioural implications for segregation. In addition, it is important to also note that although all the dimensions are conceptually distinct, they still overlap to some extent. Therefore, if a group is segregated according to one dimension, it is most likely to be segregated in some of the other dimensions as well (Massey & Denton, 1988).

The abovementioned dimensions of segregation can all be measured in some or other way with a segregation index specifically designed for the dimension (figure 3.2). "A segregation index is a quantitative measure of the degree of racial segregation or integration where 0 represents perfectly proportional distribution of the different groups in each neighbourhood" (McCarthy, 1990:7). The segregation is always measured at a specific spatial level, depending on the data that is available and ranges from the national level to the neighbourhood level. It is important to note that the segregation measured at one spatial

level does not necessarily mean the same level of segregation exists at another spatial level (Van Kempen & Ozuekren, 1998). Some writers also argue for only one index to measure residential segregation, but the multi-dimensionality of residential segregation cannot be measured by only one index or one dimension (Massey & Denton, 1988). Brown and Chung (2006) also argue that centrality is not relevant in modern multi-nodal cities, but further note that the abovementioned five dimensions can be reduced to two groups, namely *concentration-evenness* and *clustering-exposure*. When using segregation indices that could measure each of these two groups, the results would indicate the most accurate segregation situation.

Dimension	Indices						
Evenness	<i>D</i>	<i>G</i>	<i>H</i>	<i>A1</i>	<i>A5</i>	<i>A9</i>	<i>LD</i>
Exposure	xP_y^*	xP_x^*	<i>V</i>				
Concentration	<i>DEL</i>	<i>ACO</i>	<i>RCO</i>				
Centralisation	<i>PCC</i>	<i>ACE</i>	<i>RCE</i>				
Clustering	<i>ACL</i>	<i>SP</i>	<i>RCL</i>	DP_{xy}	DP_{xx}^*		

Legend

D = Index of Dissimilarity; *G* = Gini Index; *H* = Entropy Index; *A1* Atkinson Index with *b* = .10; *A5* Atkinson Index with *b* = .50; *A9* Atkinson Index with *b* = .90; *LD* = Linear Dominance Index; xP_y^* = Interaction Index; xP_x^* = Isolation Index; *V* = Correlation Ratio or Eta Squared; *DEL* = Delta Index; *ACO* = Absolute Centralisation Index; *RCO* = Relative Concentration Index; *PCC* = Proportion in Central City; *ACE* = Absolute Centralisation Index; *RCE* = Relative Centralisation Index; *ACL* = Absolute Clustering Index; *SP* = Spatial Proximity Index; *RCL* = Relative Clustering Index; DP_{xy} = Distance Decay Interaction Index; DP_{xx}^* = Distance Decay Isolation Index

FIGURE 3.2: Past segregation indices (Source: Horn, 2005:60)

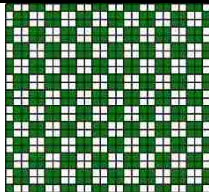
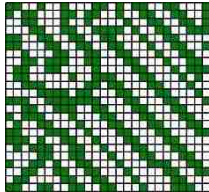
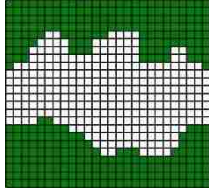
Segregation studies have always been plagued by methodological challenges that reduce the validity of their results (Wong, 2008) and therefore a number of indices have been developed and refined over the years. The following discussion will not introduce all of these indices but rather the most widely used indices and those specifically related to this study. The first segregation index was developed by Duncan & Duncan in 1955 and was known as the Dissimilarity Index (*D*) (Wong, 1998; Wong, 1999; Reardon & Firebaugh, 2002; Horn, 2005). The *D* index was one of the most widely applied measures of segregation, mostly due to its simplicity, but it was also the most contested and debated index (Horn, 2005). Some problems with this index included its lack of spatial representation or consideration of spatial proximity (Reardon & Firebaugh, 2002; Poulsen *et al*, 2002). Thereupon, the index does not take multiple-ethnicity into account, as it measures segregation between only two groups and is greatly influenced by population totals (Wong, 1998). The *D* index is calculated as:

$$D = \frac{1}{2} \sum_i \left| \left(\frac{a_i}{A} \right) - \left(\frac{b_i}{B} \right) \right|$$

where *a* represents the population of one population group under investigation in a particular sub-place (*i*); *A* represents the total population of the same population group in the entire

study area; b represents the rest of the population in the sub-place (i) and B represents the total population not under investigation in the entire study area. In the case of this study, this description is used to indicate the degree of segregation between one population group and the rest of the population, taking the relative size of the population groups into account. The values obtained from this index can be interpreted in many ways and should be considered along with other determinants of residential location. One interpretation, expressed by Christopher (2001a), is explained in table 3.1.

TABLE 3.1: The interpretation of segregation indices (Christopher, 2001a)

The value of D	The interpretation	A possible spatial representation
D < 30	The study area population is distributed in a manner that does not indicate significant segregation patterns.	
30 < D < 70	A degree of segregation exists in the study area, but it could be interpreted as voluntary congregation.	
D > 70	Structural segregation exists in the study area.	

When considering an analysis over multiple years, it should be noted that changes in the D index value can be attributed to changes in population counts or new demarcation boundaries. Therefore the results from such calculations should be interpreted carefully and with additional data considerations. However, in the complex urban societies of the modern era, such as in South Africa, it remains more realistic to use a multi-group segregation measure (Wong, 1998). The critique against the D index led to further methodological evolution in segregation indices. The index has been adapted to create the boundary adjusted segregation index $D(\text{adj})$, the multi-group segregation index $D(\text{m})$, the weight-modified segregation index $D(\text{w})$, the multi-ethnic spatial segregation index $SD(\text{m})$ as well as the most recent generalised index (GD). These indices, except for the $SD(\text{m})$ index, are all explained in table 3.2.

TABLE 3.2: The different variations on the Dissimilarity Index (D)

Index	D(adj)	D(m)	D(w)	GD
Equation	$D(\text{adj}) = D - \frac{\sum_i \sum_j c_{ij}(z_i - z_j) }{\sum_i \sum_j c_{ij}}$	$D(m) = \frac{1}{2} \frac{\sum_i \sum_j N_{ij} - E_{ij} }{\sum_j NP_j(1 - P_j)}$ where $E_{ij} = \frac{N_i N_j}{N}$	$D(w) = D - \frac{1}{2} \sum_i \sum_j w_{ij} z_i - z_j $ $w_{ij} = \frac{d_{ij}}{\sum_j d_{ij}}$	$GD = \frac{1}{2} \sum_i \left \frac{cz_i}{\sum_i cz_i} - \frac{cy_i}{\sum_i cy_i} \right $ $cz_i = \sum_r d(z_r)$
Explanation¹⁰	In the above equation, z_i and z_j are the proportions of population group z in adjacent units of an area, and c_{ij} refers to the value of the cell in row i and column j of the connectivity matrix, where i and j are adjacent areal units (Wong, 1993, 2005; Horn, 2005).	In this equation, N_{ij} is the population count of population group j in areal unit i . E_{ij} is the expected population size of population group j in areal unit i , under the assumption of a proportional population distribution. N_i is the total population count in areal unit i ; N_j is the total population count in group j ; N is the total population count in the entire study area; and P_j is the proportion of the population in group j (Wong, 1998; Horn, 2005).	In order to calculate this index, it should be noted that d_{ij} is the length of the common boundary of areal units i and j . z_i and z_j are again the proportions of population group z in adjacent units of an area (Wong, 1993; Horn, 2005).	The GD index uses the same calculation as the original D index to measure segregation between any two population groups, but employs composite populations to add a spatial perspective to the results. In this index, the composite population for a population group in a areal unit (cz_i or cy_i) is calculated, where z_r or z_j is the population group count in areal unit r and $d(.)$ is a function defining the neighbourhood of i . r and i can be the same and should refer to areas in the study area (Wong, 2005).

¹⁰ All the variations of the Dissimilarity Index (D) indicated here are interpreted in the same way as D, with values ranging from 0 to 1, and can be multiplied by 100 to indicate a position on a range from 0 to 100.

These variations to the Dissimilarity Index (D) have allowed researchers to represent the different aspects of segregation, although each index still poses various challenges. Continuing with the notion of adapting and improving segregation indices, the multi-ethnic spatial segregation index (SD(m)) was developed and has become a more widely used index for measuring segregation in modern cities. According to Wong (1998) the index is computed as follows:

$$SD(m) = \frac{1}{2} \left[\frac{\sum_i \sum_j |CN_{ij} - CE_{ij}|}{\sum_j CN^* CP_j (1 - CNP_j)} \right]$$

$$CE_{ij} = \frac{(CN_i)(CN_j)}{CN}$$

The SD(m) index combines the spatial element of segregation with the multi-ethnicity of societies to provide an accurate perspective on the actual level of segregation (Horn, 2005). The index is calculated in the same way as the D(m) index, but uses composite population counts and composite population totals in the equation. These population counts are derived under the assumption that a population group from one sub-place can interact with the population of an adjacent sub-place (Wong, 1998). The composite population counts also contribute to the strong spatial sense of the index. One of the few drawbacks to using the multi-ethnic spatial segregation index in the past was the inability to acquire place-specific spatial information (Horn, 2005), although these datasets are readily available today. The measuring of all these indices, especially in South Africa, uses census data, as it is regarded the best source of data with which to monitor current levels of segregation (Christopher, 2001a). The D index and all its variations would be the best measure for the concentration-evenness dimensions of the entire study area.

The clustering-exposure dimensions of residential segregation can be measured by using a different set of indices. In order to measure clustering, one could employ the Location Quotient (LQ) index or the Local Moran's I (LM-I) index. Both these clustering indices were effectively presented by Brown and Chung (2006). The exposure dimension, on the other hand, is most often calculated using either the Interaction index (${}_xP_y^*$) or the Isolation index (${}_xP_x^*$). These two exposure indices effectively indicate the probability of a minority group sharing a spatial unit (or sub-place) with a majority group or another minority group (U.S. Census Bureau, 2002). These four indices are expressed and explained in table 3.3 and table 3.4.

TABLE 3.3: Clustering indices commonly used to indicate the level of concentration in an area.

Index	LQ	LM-I
Equation	$LQ_i = \left(\frac{z_i}{t_i}\right) / \left(\frac{Z}{T}\right)$	$I_i = (z_i - z^*) \frac{\sum_j W_{ij}(z_j - z^*)}{\left(\frac{\sum_i (z_i - z^*)^2}{n}\right)}$
Explanation	For the purposes of this equation, z_i and t_i are the population group and total population in areal unit i , while Z and T are the totals for the particular population group and the entire study area (Brown and Chung, 2006).	For the purpose of this equation, z_i refers to the percentage of a population group in area i ; z^* is the mean percentage of the same population group in the study area; n is the number of areal units and w_{ij} is the binary (0/1) spatial weights matrix between i and j (Brown and Chung, 2006).

TABLE 3.4: Exposure indices commonly used to indicate the level of concentration in an area

Index	${}_xP_y^*$	${}_xP_x^*$
Equation	${}_xP_y^* = \sum i \left[\left(\frac{X_i}{X}\right) \left(\frac{Y_i}{t_i}\right) \right]$	${}_xP_x^* = \sum i \left[\left(\frac{X_i}{X}\right) \left(\frac{X_i}{t_i}\right) \right]$
Explanation	In the equations above, x_i refers to the minority population in area i ; X refers to the total minority population in the study area; y_i refers to the majority population in area i , and t_i refers to the total population in area i . When these indices are calculated for two population (or socio-economic) groups, the indices sum to 1; thus lower values in the interaction index and higher values in the isolation index indicate higher segregation (U.S. Census Bureau, 2002).	

3.2.4. The causes and consequences of racial-residential segregation

Racial-residential segregation, as it has extensively been eluded to up to now, is evident in modern cities and is mostly regarded as a negative phenomenon with consequences that are difficult to reverse. Although it is very good to measure and monitor the levels of segregation in cities, it is of fundamental importance to also understand the causes and consequences of racial-residential segregation. The following section will elaborate on both these aspects in more detail.

Apart from measuring racial-residential segregation in the study area, a large part of this study is devoted to identifying underlying factors that perpetuate the segregation situation in cities, as it is evident that subtle contributing factors must exist if segregation persists in the absence of statutory regulations. The previous chapter, for example, highlighted the political influences in South Africa that were responsible for severe segregation. Segregation among racial groups does, however, not depend squarely on statutory measures. The unique characteristics of an urban area and its spatial variation in terms of age, history and morphology can, for example, be considered underlying contributing factors to the extent of racial-residential segregation (Herbert & Thomas, 1982). Segregation that takes place at a neighbourhood level is inherently influenced by the property market. Therefore, the property market is a prominent theme in racial-residential segregation studies (Massey & Denton, 1993; Morris & Hindson, 1997; Christopher, 2001c; Donaldson & Kotzé, 2006). The property market is one that easily segregates people according to their financial capabilities or socio-economic status in the particular community. Prospective home buyers' preference for a neighbourhood comes second to their ability to afford a home in that particular neighbourhood or even the availability of homes in the given area. There are also a number of mechanisms and processes (some of which could aggravate racial-residential segregation) related to the property market that could contribute to segregation, including those below.

- *Blockbusting* is a process initiated by real estate agents that changes the racial composition of a neighbourhood from one dominant population group to another. The process starts when the real estate agent introduces a racially underrepresented family into the neighbourhood and thus sparks the moving away (or flight) of the racially dominant residents (Pacione, 2009). This was a popular movement in the United States of America (USA) and allowed real estate agents to sell properties at reduced prices. This process initially resulted in desegregation, but soon turned to mere resegregation (referring to a reproduction of segregation) while the socio-economic status of the new residents led to eventual deterioration of the neighbourhood.
- The process of *gentrification* effectively removes a poor population group from an area to allow a more affluent group to enter the area (Schlemmer & Stack, 1990). The displaced group often relocates to areas that are furthest away from their income opportunities and thus creates segregation based on household incomes.
- The mechanism used by real estate agents of *red lining* certain neighbourhoods is a collectively organised decision that determines “who” lives “where” in the city and

also influences the socio-economic composition of a neighbourhood. These actions of real estate agents are also often termed “steering” (Massey & Denton, 1993).

These property market-related factors that have a potential influence on racial-residential segregation in the city emphasise the need for focussed intervention in the property market to mitigate the negative effects of racial-residential segregation. Other causes of racial-residential segregation that have been identified include colour-consciousness, tolerance and sensitivity to reside in the same neighbourhood as another racial, ethnic or socio-economic group (Schlemmer & Stack, 1990; Massey & Denton, 1993). People’s perceptions of another racial, ethnic or socio-economic group, the perceived effects that such groups would have on the neighbourhood, as well as people’s own ideals for their residential environment, are also very strong influences on neighbourhood change. These influences are often collectively expressed as the *tipping point* of change in a neighbourhood. Massey and Denton (1993), in their study on segregation in the American society, noted that the White population, for example, often perceives the Black-African population as a group that undermines both property values and neighbourhood safety. These perceptions and ideals are very often expressed as physical acts in the form of policies to control a particular residential environment. When one racial, ethnic or socio-economic group has a very low tolerance for other racial, ethnic or socio-economic groups and it is combined with physical acts or opportunities for separation, it will inevitably perpetuate the racial-residential segregation situation in a city. In South Africa, Horn (2000) investigated the attitudes towards desegregation. The results of the study indicated that ±67% of the population are in favour of desegregating public facilities, public schools and residential areas, although residential areas remain more opposed to desegregation with a relatively low 62.2% of the population in favour of desegregation. All these reasons indicate that even though legislation in South African cities does not force anyone to live in certain areas, socio-economic conditions and market mechanisms still “regulate” people’s residential location, the population mix in neighbourhoods and subsequently also the extent of desegregation. Regardless of the exact causes, the residential make-up of a city is ultimately created by selfish interests directly linked to the social and economic welfare of the individual rather than the welfare of the entire society (Herbert & Thomas, 1982).

3.3. International perspectives and research on residential segregation

A large number of segregation studies have supported the notion that separation is a feature of western cities (Herbert & Thomas, 1982). The following section will explore the segregation dynamic as studied in the Americas. The American contribution to racial-

residential segregation literature is particularly large and in many instances applicable to the South Africa case. Subsequently many comparisons have been made between the USA and South Africa (Saff, 2002; McClinton & Zuberi, 2006; Saff & Lemanski, 2010).

3.3.1. Residential segregation in the Americas

The USA has a significant influence on urban segregation studies due to the nation's history of segregation between Whites and African-Americans (Blacks) and a large group of researchers pursuing the segregation dynamic. Massey and Denton (1993), in their book entitled *American apartheid: Segregation and the making of the underclass*, provide an extensive analysis and discussion of the racial-residential segregation situation in the USA. Their analysis has a strong focus on the creation of ghettos and their effects on socio-economic conditions in the American society. The research by Massey and Denton mostly indicate severe segregation levels in cities. However, more recent research does suggest that segregation is decreasing in some cities (Iceland, 2002), although structural and institutional challenges remain. Other segregation studies in the USA note an increase in ethnic diversity in American cities (Iceland, 2002; Poulsen *et al*, 2002; Johnston *et al*, 2003), while economic changes are significant in segregation dynamics. Economic changes have resulted in changes in the urban structure, and there is evidence of new, diverse post-modern cities with new perspectives on social segregation (Poulsen *et al*, 2002; Johnston *et al*, 2003). The segregation research in the USA also indicates that racial-residential segregation meant that Black-Africans were in disadvantaged locations in relation to job opportunities and were kept in these areas by land-use regulations as well as real-estate and employment discrimination (Anas, 2002). The degree of Black-African poverty and restrictions related to the use and acquisition of property were key instruments that created and perpetuated racial-residential segregation and prevented any threats to social stability in American neighbourhoods (Massey & Denton, 1993). Segregation was furthermore institutionalised when Black-Africans were regarded as a financial risk and therefore did not receive the same housing assistance as the White population (Schlemmer & Stack, 1990). A significant finding in American segregation research, and a valuable lesson for South Africa, is that many case studies have found that informal mechanisms (like housing, poverty, choice) have persisted and allowed segregation to continue (Schlemmer & Stack, 1990) despite state intervention.

Racial-residential segregation has not only been a prominent concern in the USA. An emerging trend of socio-economic segregation also occurred in numerous Latin American cities, along with the major socio-spatial transformation that has become evident in

metropolitan areas of, for example, Brazil (da Anunciacao Alves, 2014). Latin American cities are especially intriguing cases due to their rapid urbanisation rate and subsequent high urbanisation levels (in excess of 70% since 2000) (Roberts & Wilson, 2009). These dynamics also make any possible segregation lessons extremely valuable to South Africa, since South African cities are heading in the same development direction as many Latin American cities, especially due to the involvement in the Brazil, Russia, India, China and South Africa (BRICS) economic development partnership. It is possible to relate a number of Latin American city characteristics discussed by Roberts and Wilson (2009) to similar conditions in South Africa. For example, urban populations in Latin America are mostly over 100 000 people and a small number of major cities house a quarter of the population. The macroeconomic structure of Latin American cities has become much more neoliberal in nature since the 1980s, with free trade and privatisation playing an increasingly important role and market-driven housing development and commercial development having a significant impact on segregation. Political changes in Latin American countries also introduced more democratic and decentralised forms of government to cities. Local government in these cities has received significantly more responsibility for development and is also influenced by international agencies' principles, like for example, the World Bank. Researchers on Latin American cities have also been able to benefit from new methodologies to analyse segregation, especially by means of geo-coded census data. Research from Latin American context has also indicated that spatial segregation is one aspect (along with urban poverty, crime, discrimination) that has a negative impact on the living environment and living quality of urban residents (da Piedade Morais *et al*, 2003). All of the abovementioned dynamics and changes are evident in and applicable to South African cities in varied degrees (as indicated in the discussion in the previous chapter). Thus segregation is an issue of equal importance in Latin American and South African cities, and experiences can be shared between the two regions.

3.3.2. Residential segregation in Europe

Residential segregation research has also become prominent in European cities, but focusses on ethnic segregation rather than racial segregation, as in the American context. In some European cities, it has become increasingly more difficult for immigrants to fit in with society due to the increasing social complexity of the European society that has led to more segregation (Petsimeris & Ball, 2014). In London, for example, analyses done using data from 1991, 2001 and 2011, show that the Indian, Pakistani and Bangladeshi population groups experience the most severe levels of segregation. The segregation levels for these population groups varied between 40% and 60% at borough level, and kept increasing for all the population groups considered (Petsimeris & Ball, 2014). The analysis by Petsimeris and

Ball (2014) does, however, indicate differences in segregation levels on different geographic scales. On larger scales, the level of segregation is lower for some groups than at a finer geographic level, and thus suggests high levels of concentration on a larger scale in the London area. It is also evident from a segregation analysis of 2011 data, that population groups with a lower share of the total population in the city show much higher segregation index values, thus suggesting a socio-spatial relationship where the less dominant population groups tend to cluster together and remain segregated from other population groups. The London perspective on segregation also indicates that viewing segregation solely at an ethnic or racial level does not adequately account for the social divisions in the city; therefore it is imperative to consider socio-economic dynamics as a crucial determinant for the true socio-spatial context of the city (Petsimeris & Ball, 2014). Areas of high segregation remain a reality and require a change in policy to improve the situation. The focus of policies should move away from forcing integration towards a focus on addressing the various needs of the disadvantaged population groups (Petsimeris & Ball, 2014). The Dutch experience of residential segregation shows a somewhat different picture than some other European cities like London. In general, residential segregation in Dutch cities is average compared to European standards and has shown a general decline in residential segregation for the four main ethnic minorities in large Dutch cities. The lower levels of segregation in major Dutch cities can possibly be attributed to various direct and subtle policy interventions since the 1970s (some of which were successful while other less so) that promoted the integration of minority population groups into society (Musterd & Ostendorf, 2009). These dynamics in European cities highlight that minority population groups should be carefully considered in order to ensure their equitable access the city's services, but also emphasise the need for a context-driven analysis of residential segregation.

Despite positive similarities, the international experiences indicate some caution to South Africa to ensure that resegregation does not take place. This could easily happen when White flight takes place only to create a racial ghetto, or when a population group retreats into social enclaves that remain inaccessible to the "other" population due to the expensive nature of these enclaves (Schlemmer & Stack, 1990). Visual evidence and experience of the city would suggest that this is the case in the CTMM, especially because of the strong indication that socio-economic segregation has become significant not only in the city, but also in the entire country. Later analysis will be able to shed more light on this expected situation.

3.4. The South African racial-residential segregation situation

Racial-residential segregation in South Africa, as in the USA, is an integral part of racial injustice. The Black-African population in South Africa is generally geographically isolated from the core urban fabric where they endure a world filled with social perils far removed from the experience of the rest of society (Massey & Denton, 1993). Racial-residential segregation in South Africa is the result of industrialisation after the peak of the gold and diamond era in the late 19th century (McClinton & Zuberi, 2006), as well as the segregation (\pm 1910 to 1948) and apartheid eras (Mabin, 2005b; Hamann & Horn, 2015), as described in the previous chapter. Racial-residential segregation levels in South Africa have always been high, especially during the late apartheid years (Christopher, 2001a; Saff, 2002), due to the obvious influence of segregationist legislation from the 1950s. McCarthy (1990) also notes that South African cities showed high levels of racial-residential segregation before 1950, and the racial-residential segregation levels increased only marginally after the introduction of the GAA and the subsequent forced removals. Nevertheless, segregation levels kept on increasing into the early 1990s, even though the stranglehold of apartheid was lightening (Christopher, 2001a). The first significant downward trends in segregation were seen in the 1996 census, indicating that racial-residential segregation levels reached its peak around 1991. Urban segregation levels throughout the country started to decline after 1991 (figure 3.3 & figure 3.4), with the White population segregation index also showing widespread but small reductions (Christopher, 2001c). The South African cases highlight a number of important segregation characteristics to consider in the current study. One of these characteristics, according to Mabin (2005a), is that the originally White residential spaces in cities have never been completely White. These spaces have also undergone considerable racial change since 1994, whereas the originally Black-African residential spaces have always been racially segregated from other areas, with little inclusion of the White, Coloured or Indian/Asian population to date. It is, however, evident that some former White areas have now become the prominent resegregated areas in the urban areas due to extensive social polarisation (Donaldson, 2001). In addition to the expected economic differences between these areas and the available housing options, it is possible that language or culture is one of the reasons for these continuing dynamics. It is important to note that the segregation levels in South African urban centres between 1991 and 1996 were positively correlated with the population growth over the same time period (Christopher, 2001a). This affirms that when a population grows in a state of segregation, it is most likely to stay in that state of segregation unless there is significant intervention from other actors (like Government). The same could be expected of income-, employment- and education-segregation.

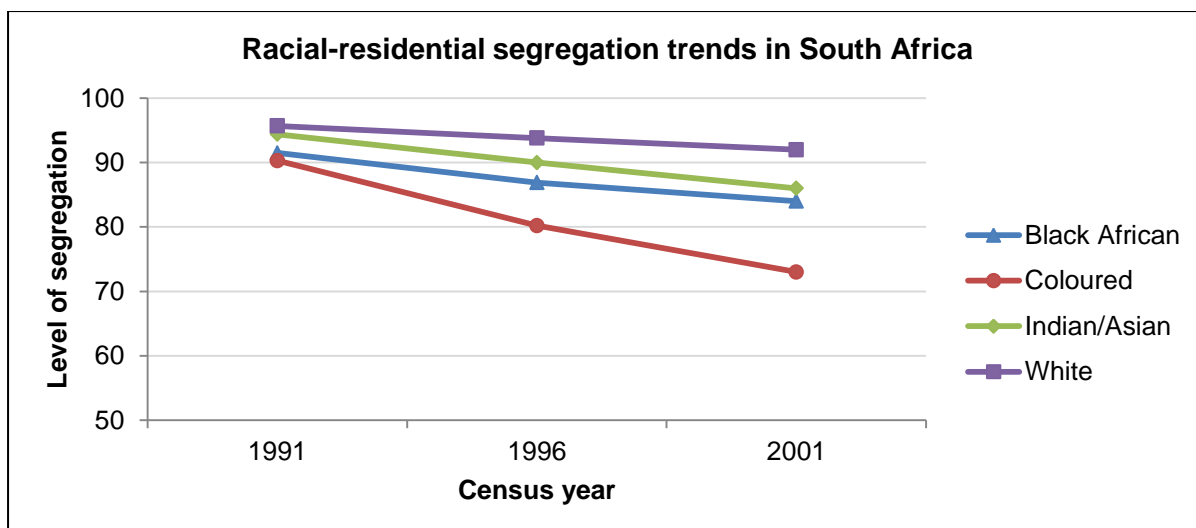


FIGURE 3.3: Racial-residential segregation trends for the four main population groups in South Africa since 1991¹¹ (Source: adapted from Christopher, 2001a; 2005)

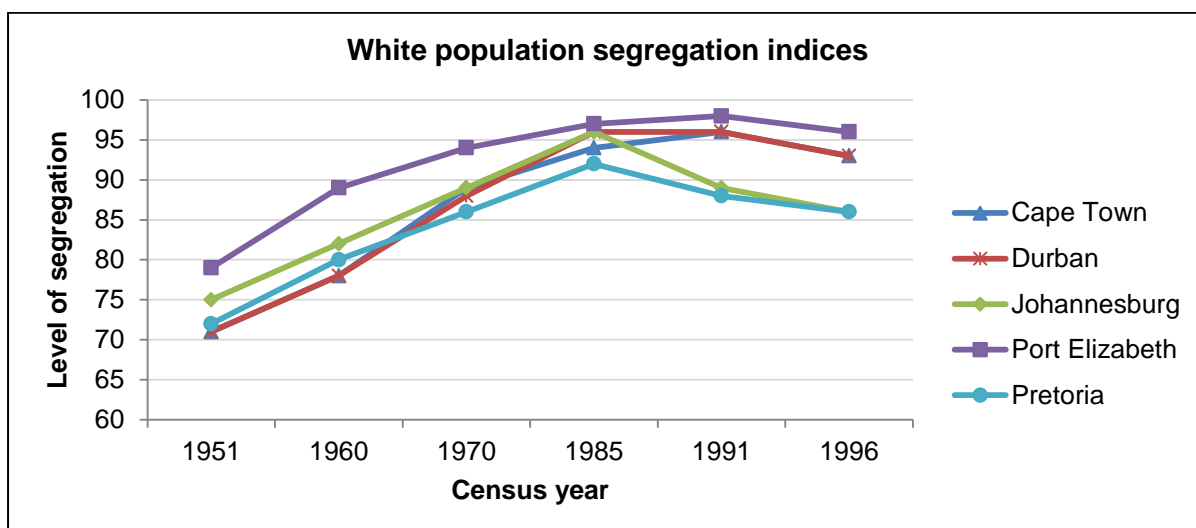


FIGURE 3.4: White population segregation indices (D) for five metropolitan areas in South Africa between 1951 and 1996 (Source: adapted from Christopher, 2001a)

According to Beavon (1998), Kotzé and Donaldson (1998), Donaldson and Van der Merwe (1999), Prinsloo (1999), Horn, (2002), Saff (1994, 1996, 2002) and Prinsloo and Cloete (2003), the process of desegregation in South Africa had very specific characteristics and trends in the 1990s. The first of these trends was the faster tempo of desegregation in the inner city, which re-segregated in most cases, compared to the white suburbs. The slow desegregation of white suburbs is closely linked to their class-based nature, where access depends on economic status rather than racial classification. The second trend showed that informal settlements expanded to land that were previously earmarked for other population

¹¹ Consult the relevant sources for an explanation of how the calculations were done.

groups, and a number of new informal settlements appeared on the periphery of cities. The third important trend refers to the slow expansion of informal areas that are located close to or in more affluent neighbourhoods. Racial change in South African cities is therefore mostly confined to inner city desegregation and the expansion of outlying informal settlements (Saff, 2002). As long as these processes and trends continue, it will remain difficult to integrate different population and socio-economic groups into one area of the city. Another significant trend that has a direct influence on racial-residential segregation in South Africa is that of suburbanisation and the related security (social and physical) provided by walled neighbourhoods. These trends have created a shift towards class rather than racial or ethnic segregation, as well as a shift from state to market forms of segregation (Mabin, 2005a). This is evident, since suburbanisation requires one to have the social and economic ability to move away from centralised job opportunities, something that the majority of the South African population can often not afford. The power of suburbanisation has been underestimated by most observers, especially along with rapid urbanisation and poverty; the result of all these factors is new (or continued) forms of segregation. Mabin (2005a) also notes that our knowledge of the costs and benefits of suburban development is simply not adequate to make informed policy decisions with regard to the process and how to manage it, and therefore it contributes to continued racial-residential segregation.

Segregation case studies in South Africa have focussed on parts of cities, including studies on Cape Town (Turok, 2001; Lemanski, 2006), the Durban Metropolitan area (Morris & Hindson, 1997; Schensul, 2009) and the Tshwane/Pretoria (Horn, 2005; 2012) areas, with limited studies in other cities like Bloemfontein (Rex & Visser, 2009) and Polokwane (Donaldson & Kotzé, 2006). Crankshaw (2008) and Horn (2012) also include employment and income dynamics in their studies on Johannesburg and the CTMM respectively. Lemon and Clifford (2005), as well as Siyongwana and Sihele (2013), also provide some insight into segregation-desegregation dynamics in small towns in South Africa with their studies on Margate and Port St. Johns respectively. The analysis of these small towns has shown some desegregation, but also suggests that socio-economic conditions form a barrier to further desegregation. The South African case studies are mostly based on a combination of the 1985, 1991, 1996 and 2001 census data, while some also include municipal data related to property values and property registers (Hamann & Horn, 2015). South African case studies predominantly use data for the main population groups in the country, namely Black-African, Coloured, Indian/Asian and White (Christopher, 2001a, 2005; Horn, 2012) to analyse segregation. All the above mentioned studies indicate that segregation, although it declined in some instances, is generally slow, has a significant impact on the spatial structure and socio-economic disparities of South African cities and a great deal still needs to be achieved

in terms of integrating previously excluded population groups into the urban fabric (Christopher, 2005). The studies also indicate that the gradual desegregation of South African cities began in the central cities of the largest metropolitan areas, especially Johannesburg, Tshwane/Pretoria, Durban and Cape Town (McCarthy, 1990). Initially, central cities were the focus areas for integration and redevelopment, but suburbs, and especially newly constructed suburbs, have now become equally important to achieve racial and socio-economic integration. Central cities still remain in the spotlight in many metropolitan areas, but with an emphasis on urban renewal (to attract a broader socio-economic group) due to the detrimental effects of decentralisation.

The high levels of racial-residential segregation in all the abovementioned studies have highlighted important variations, reasons, benefits and drawbacks of the desegregation process. In most of these cases the desegregation process remains directly related to questions of distribution (Mabin, 2005b). This refers to both the distribution of the population and the distribution of economic activity (often changing as a result of decentralisation), as well as the accompanying resources and how these constantly change in the urban environment. Inner cities in, for example the cities of Johannesburg and Tshwane/Pretoria, were some of the first areas to show significant desegregation, but also the first to become re-segregated after a period of shared residence (Fick, 1990; Horn & Ngcobo, 2003), and therefore undermines the initial success of desegregation. Mabin (2005a) notes that in Cape Town, for example, previously disadvantaged people that have gained access to land in the exclusive Hout Bay valley have gained nothing of the quality of life or socio-economic benefits in the area they occupy. In Johannesburg, similar dynamics are evident when considering that the majority of the Black-African population remained literally and figuratively on the margins of the city (Beavon, 2000) despite various changes in housing development trends and the dominance of the northern suburbs. This means that residential spaces have in fact deracialised, but remain highly segregated (Oldfield, 2004). These general drawbacks of desegregation can also be coupled with various contextual differences regarding the desegregation process in South Africa. Unique spatial characteristics of cities, like those of the CBD of Bloemfontein, for example, cause a slower rate of desegregation than other cities in South Africa (Rex & Visser, 2009). The Bloemfontein case does show strong continued desegregation among all the population groups in the city, although it is very unevenly distributed compared to other cities in the country. In Cape Town, there is again another wayward example of the Westlake neighbourhood area that underwent a purposefully driven process to develop a neighbourhood and to integrate residents from various socio-economic groups. This process would seem ideal, but has several drawbacks. According to Lemanski (2006), the success of integrated physical development is often

overshadowed by issues of racial identity and who actually belongs in the area and who does not belong in the area. This case provides a deeper perspective on the experiences of social integration at ground level and proof that social integration is indeed possible to some extent. In other cities in South Africa, such as Polokwane (previously known as Pietersburg), residential desegregation has again been more significant. Donaldson and Kotzé (2006) found that Polokwane's desegregation level rose from 1% in 1992 to 32% in 2002, while the Black-African home ownership doubled in most neighbourhoods during the same period. Many of these changes were made possible because of land restitution and various forms of land development that eventually allowed the city to reshape its form to be more integrative (Donaldson & Kotzé, 2006). These cases all affirm the diversity of South African cities in terms of their racial-residential segregation situations and contexts. It not only emphasises the need to investigate each city separately, but also the importance of paying considerable attention to the specific and unique characteristics of neighbourhoods that have experienced substantial desegregation, as well as those that have experienced very little integration. Mabin (2005a), for example, describes the situation of a suburb like Melville in Johannesburg which has experienced little influx of Black-African residents. This is not due to constraints or menacing underlying factors, but merely because the characteristics of this previously White-only suburb has nothing attractive or significant to offer a prospective Black-African homeowner. These city-specific and neighbourhood-specific conditions might not be addressed in detail in this study, but are nevertheless noteworthy for future research and should be considered before a final policy decision is made on how to further integrate different population groups into a particular city or suburb.

The South African racial-residential segregation literature therefore indicates that no one city contains simple divisions of race, class or income, but all these aspects are interdependent and have become more complex over time (Mabin, 2005a). In terms of desegregation processes, it is evident that townships are the most notable reminders of South Africa's segregationist past and that the suburbanisation trends and the housing market play a crucial role in both allowing integration and perpetuating segregation. These are all evident in cases where old forms of racial-residential segregation tend to persist in cities despite various spatial, policy and socio-economic changes (Mabin, 2005a).

3.5. The City of Tshwane Metropolitan Municipality racial-residential segregation situation

The City of Tshwane Metropolitan Municipality (CTMM) is part of the increasingly dynamic Gauteng province and contributes to the province's ever-increasing importance in the

national space-economy. The CTMM is therefore one of the most influential metropolitan areas in the country as it has always been since Pretoria was established in 1855. Due to its national significance, the city is influenced by decisions and changes in all spheres of government. The demographic context of the CTMM is closely related to that of the entire South Africa and has been discussed in both chapter 1 (figure 1.1, p. 15) and chapter 2 (table 2.2, p. 61) of this study. The demographic context indicates a number of positive developments, especially in terms of service delivery, but also some concerns in terms of unemployment and informal housing. The demographics also indicate that in terms of population size, the Black-African population is the overwhelming majority in the study area (table 3.5). The spatial structure of the CTMM is unique due to the influence of natural barriers (in the form of three small mountain ranges) and the proximity of a number of the previous homelands. These barriers and past spatial arrangements influence the mobility and interaction opportunities of the population. The multi-nodal spatial structure in the study area was created through an extensive process of decentralisation and suburbanisation. The structure of the city also suggests significant pockets of poverty on the periphery of the city. These remain important contexts against which the following racial-residential segregation analysis of the study area should be interpreted.

TABLE 3.5: The population distribution in the City of Tshwane (1991 and 2011)

	Racial group					Total
	Black-African	Coloured	Indian/Asian	White	Other	
Population count (1991)	310 596	24 289	19 935	476 026	n/a	830 846
Population count (2011)	2 066 293	57 042	53 034	565 075	18 708	2 760 152

Source: Calculated from 1991 and 2011 census data from Statistics South Africa

3.5.1. A statistical analysis of racial-residential segregation in the study area

Given the short contextual introduction and the foregoing discussion in the chapter, the following racial-residential segregation analysis relates to the distributional aspect of segregation (Horn, 2005:59) and is applied to the study area. The multi-group segregation index ($D(m)$) produced a value of 81.59 in 2011, compared to 81.73 in 1991. This indicates a slight improvement, but also that structural segregation remains among the four racial groups in the study area. Using the Dissimilarity Index (D), the relative segregation of each of these four racial population groups in relation to the other population groups in the city

was also calculated (table 3.6). This effectively gives an indication of the evenness of a population group's distribution and how much of the population should have to move in order to acquire an even distribution of population groups in the sub-places of the study area. The population classification in the 2011 census for "Other population" was not considered in these calculations. This is mainly for comparative reasons (this classification was not part of the 1991 census count) and because this population group comprises only 0.7% of the total population in the study area; it therefore has no significant effect on the analysis.

TABLE 3.6: Dissimilarity Index (D) values for the study area in 1991 and 2011

Population group	Black-African		Coloured		Indian/Asian		White	
	1991	2011	1991	2011	1991	2011	1991	2011
Black-African	79.30 ¹²	83.10	90.66	72.75	96.06	81.84	80.16	85.63
Coloured			89.63	58.95	95.26	66.80	92.84	66.16
Indian/Asian					94.91	69.07	96.07	63.65
White							81.87	84.15

The results indicate that the White and Black-African populations are the most segregated from all other population groups, and also from each other, while their segregation index values also show increases since 1991. The Coloured and the Indian/Asian population groups are the least segregated from the other population groups in the study area, except for the Black-African population, and their segregation values show decreases since 1991. This further suggests that the Black-African population is the most segregated and disadvantaged population group in the study area. It is also evident that even though the White population is relatively well integrated into the Coloured and Indian/Asian population groups, when all three other population groups are considered, the White population's segregation index remains very high. This can be attributed to the size of the Black-African population in the study area and signifies that the largest racial or ethnic group in the study area has the most significant influence on the socio-spatial dynamics in the study area. The respective increases and decreases in segregation levels show some success, but highlight the possibility of underlying hindering factors to true desegregation.

Whereas the abovementioned analysis provided an indication of the concentration-evenness dimensions of segregation, it is also important to consider the clustering-exposure dimensions of racial-residential segregation for the study area. The clustering perspective is best provided by the racial concentration map (figure 3.5, p. 97). The concentration analysis

¹² The shaded cells indicate the population group compared to all three other population groups.

indicates that the Coloured and Indian/Asian populations are concentrated in only a few areas of the city, whereas the Black-African and White populations occupy significantly larger areas of the city. All the population groups occupy certain areas in the city in very high concentrations. This therefore affirms the high levels of racial-residential segregation between the four main racial groups in the study area. The locations of the Coloured and Indian/Asian populations are central and adjacent to the other population groups in the study area, which motivates their lower segregation index values. The Black-African and White populations, on the other hand, occupy very large areas in the city that are not adjacent to as many areas inhabited by other population groups; they subsequently have higher levels of segregation.

The exposure dimension of segregation is highlighted using some statistical indicators, namely the interaction and isolation indices. The results for the interaction and isolation indices (table 3.7) for 1991 are calculated with the White population as the majority; the 2011 calculations were done with the Black-African population as the majority population (Hamann & Horn, 2015). This decision is based on the respective population totals in the study area during each period. All the population groups have interaction values below 0.4, which indicates their spatial separation from each other at a residential level. The isolation index values also confirm that the Coloured and Indian/Asian populations (due to their low values on this index) are the least segregated from other population groups in the study area. According to these calculations, the White population remains the most isolated population group with the least amount of interaction with other population groups at a residential level. Both table 3.6 (p. 95) and table 3.7 can be interpreted in conjunction with the racial concentration of the study area (figure 3.5, p. 97) to enhance the spatial perspective of all the segregation index calculations.

TABLE 3.7: The interaction and isolation index values for the study area in 2011

Population groups	Black-African		Coloured		Indian/Asian		White	
	1991	2011	1991	2011	1991	2011	1991	2011
Black-African	0.820 ¹³	0.907					0.169	
Coloured		0.360	0.848	0.386			0.065	
Indian/Asian		0.310			0.861	0.376	0.036	
White		0.255					0.885	0.686

¹³ The shaded cells indicate the results for the isolation index (${}_xP_x^*$).

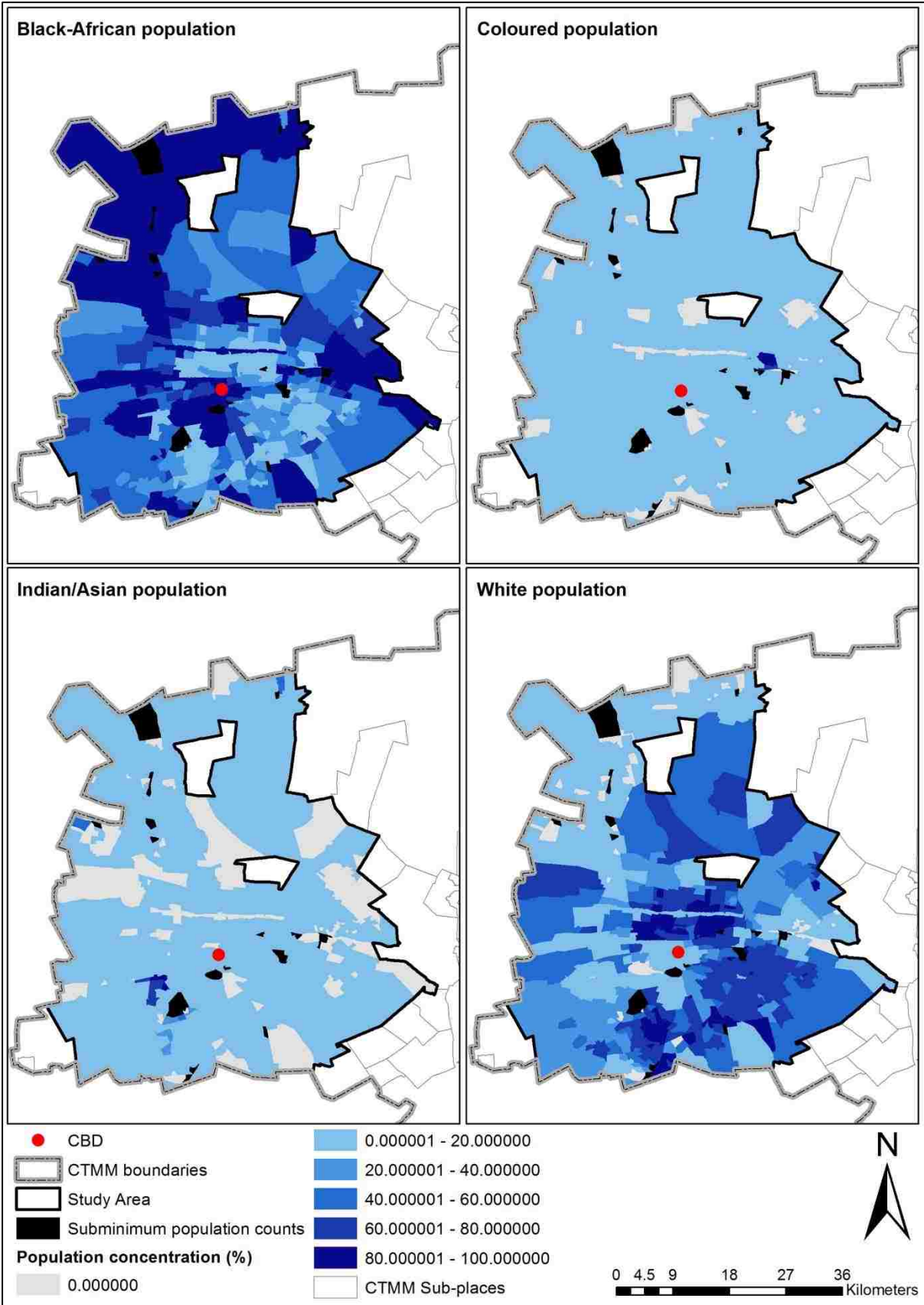


FIGURE 3.5: The racial concentration in the study area in 2011

3.5.2. A spatial representation of racial change in the study area

The introduction of this chapter noted a significant relationship between the spatial dynamics in a city and the socio-cultural dynamics, as well as a relationship between the physical distance between population groups and their social distance from each other. This is an important indicator to the desegregation process, as Horn (2000) also notes that the distance from former white-only areas is an important consideration in the analysis of residential desegregation, since the assumption is that the greater the distance the less likely desegregation is to take place. The abovementioned population concentrations clearly indicate that the Black-African population (who dominates the north-west) and the White population (who dominates the south-east) are physically distanced from each other and support the notion that distance could be one of the hindering factors in the desegregation process. The Coloured and Indian/Asian population concentrations, on the other hand, clearly support their limited interaction with the other population groups, but their respective location (and smaller distances from other population groups) supports the fact that their segregation levels should be lower than those of the other population groups. These distances, accompanied by the physical barriers in the CTMM's spatial structure, support the high levels of segregation indicated the by various indices. The segregation levels show changes in the racial composition of the study area, but these are not visible from the population concentration analysis and therefore the next section will highlight the spatial changes in racial-residential segregation.

The spatial dimensions of the abovementioned racial change in the study area are highlighted by calculating how many other population groups (as opposed to the original dominant population in the sub-place) have come to reside in a particular sub-place. For the purpose of this analysis, the dominant population group per sub-place (figure 3.6) was determined according to the Group Areas of 1991. Thereafter the percentage of "other" population (the total population not part of this original dominant population group) that is currently residing in the neighbourhood was calculated (figure 3.7, p. 100). Mapping these calculations provides a distinct and accurate spatial perspective on the racial transformation (or the lack thereof) that took place in sub-places of the study area since 1991. The analysis clearly indicates that most original Black-African, Coloured and Indian/Asian sub-places have remained racially monotonous. The former White-dominated areas have also seen little racial change, but the racial dominance has been reduced in all former White-dominated areas. The inner city areas have seen significant racial change and resegregation – after being predominantly White, these areas are now dominated by the Black-African population. This confirms Horn's (2000) findings that desegregation is fastest in the central city areas where flats are available for rental and sale.

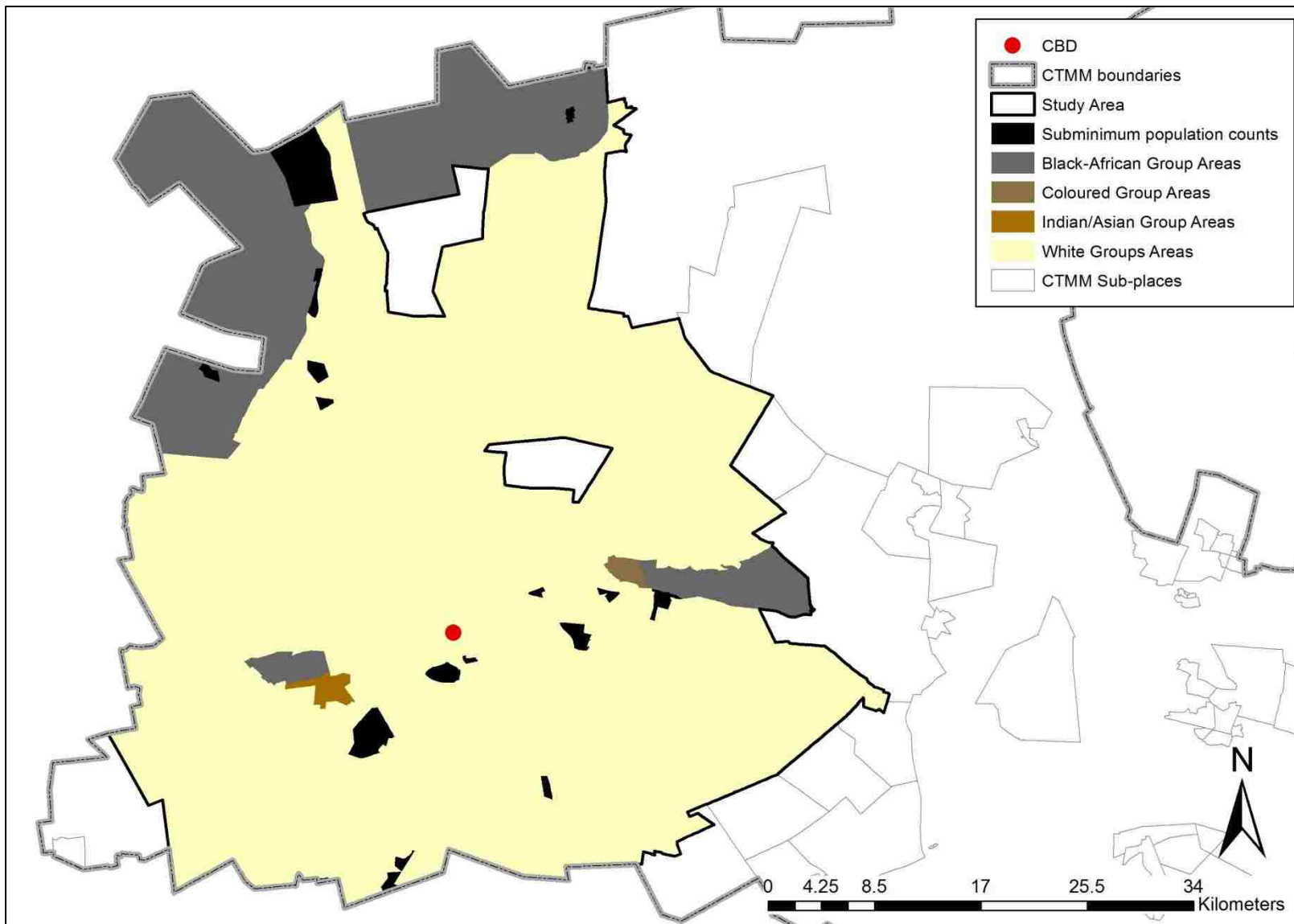


FIGURE 3.6: Dominant population groups per sub-place in the study area in 1991

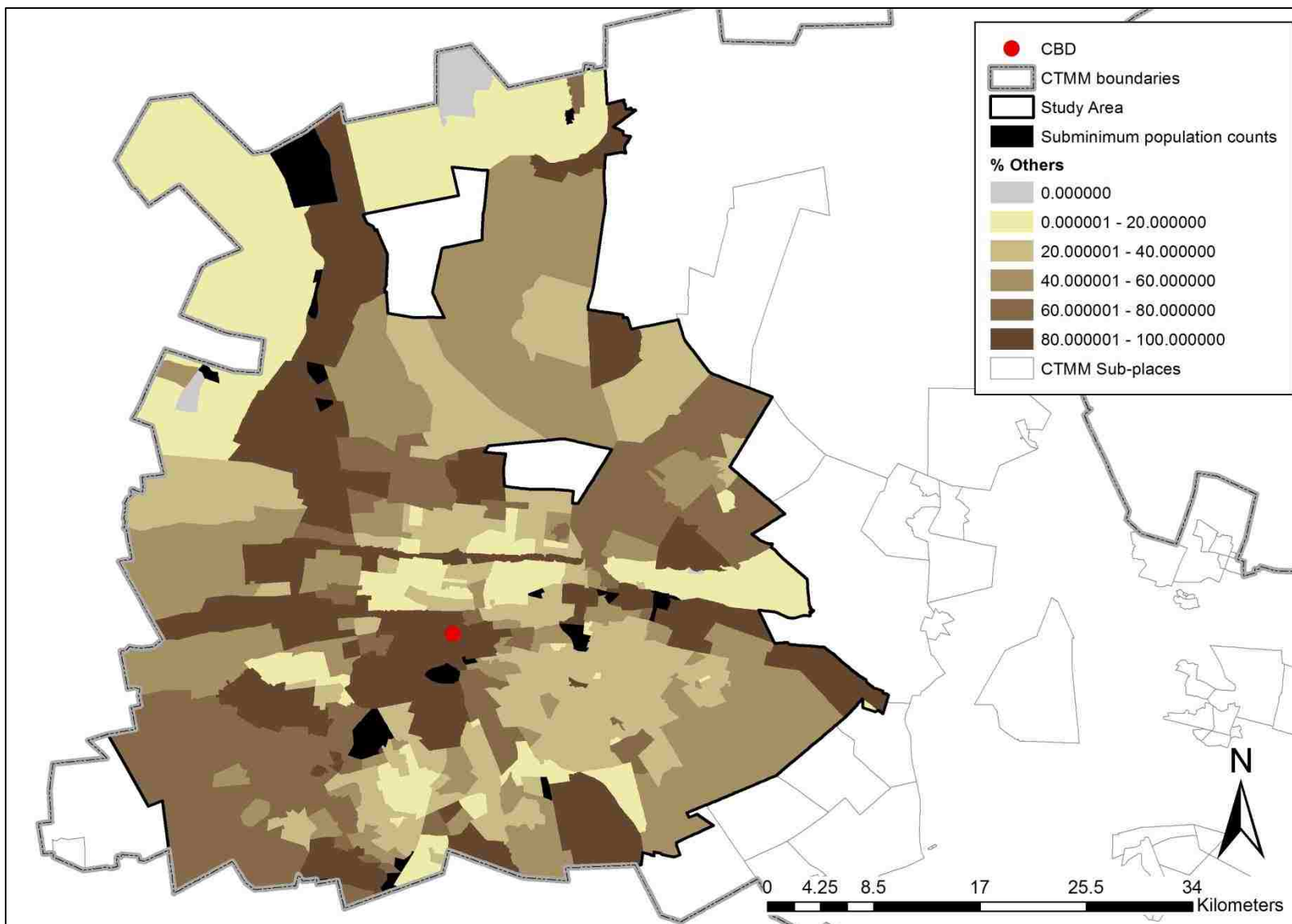


FIGURE 3.7: Percentage other population per sub-place in the study area in 2011

3.6. Segregation-desegregation classification

In order to describe the characteristics of the observed racial changes in the study area, a unique conceptual typology of segregation-desegregation is used (Hamann & Horn, 2015). This classification consists of six possible scenarios of segregation-desegregation. These six scenarios are described in table 3.8 below and applied to the study area (figure 3.8, p. 102).

TABLE 3.8: A conceptual typology of segregation-desegregation

Segregation-desegregation situation	Situational characteristics
Continued segregation	A racially monotonous sub-place (which was previously established) that shows little change in comparison to its apartheid racial composition (0% to 20% change).
New segregation	New residential development (often close to former Group Areas) that exhibits racial monotony of a different group that occupied the redeveloped area during the apartheid era (80% to 100% change).
Resegregation	A previously established sub-place that exhibits racial dominance (80% to 100% change) of a different racial group than during the apartheid era.
Hindered desegregation	A previously established sub-place that shows very little change in its racial composition (20% to 40% change) due to undetermined underlying factors.
False desegregation	A previously established sub-place that shows significant racial composition change (60% to 100% change), which can be attributed to known accommodation benefits linked to employment.
Active desegregation	A previously established or newly developed sub-place that exhibits significant racial composition change (40% to 80% change) and integration.

According to Hamann and Horn (2015), the classification of the racial change in the study area highlights a number of important trends and characteristics of racial-residential desegregation in the study area. *Continued segregation* is evident in most non-White Group Areas (Atteridgeville, Eersterust, Ga-Rankuwa, Laudium, Mamelodi and Soshanguve) and some central White dominated suburbs (Menlyn, Moreleta Park and Villiera). Continued segregation is less severe in former White sub-places due to the fact that these spaces were never completely White and their characteristics naturally draw more people to these areas.

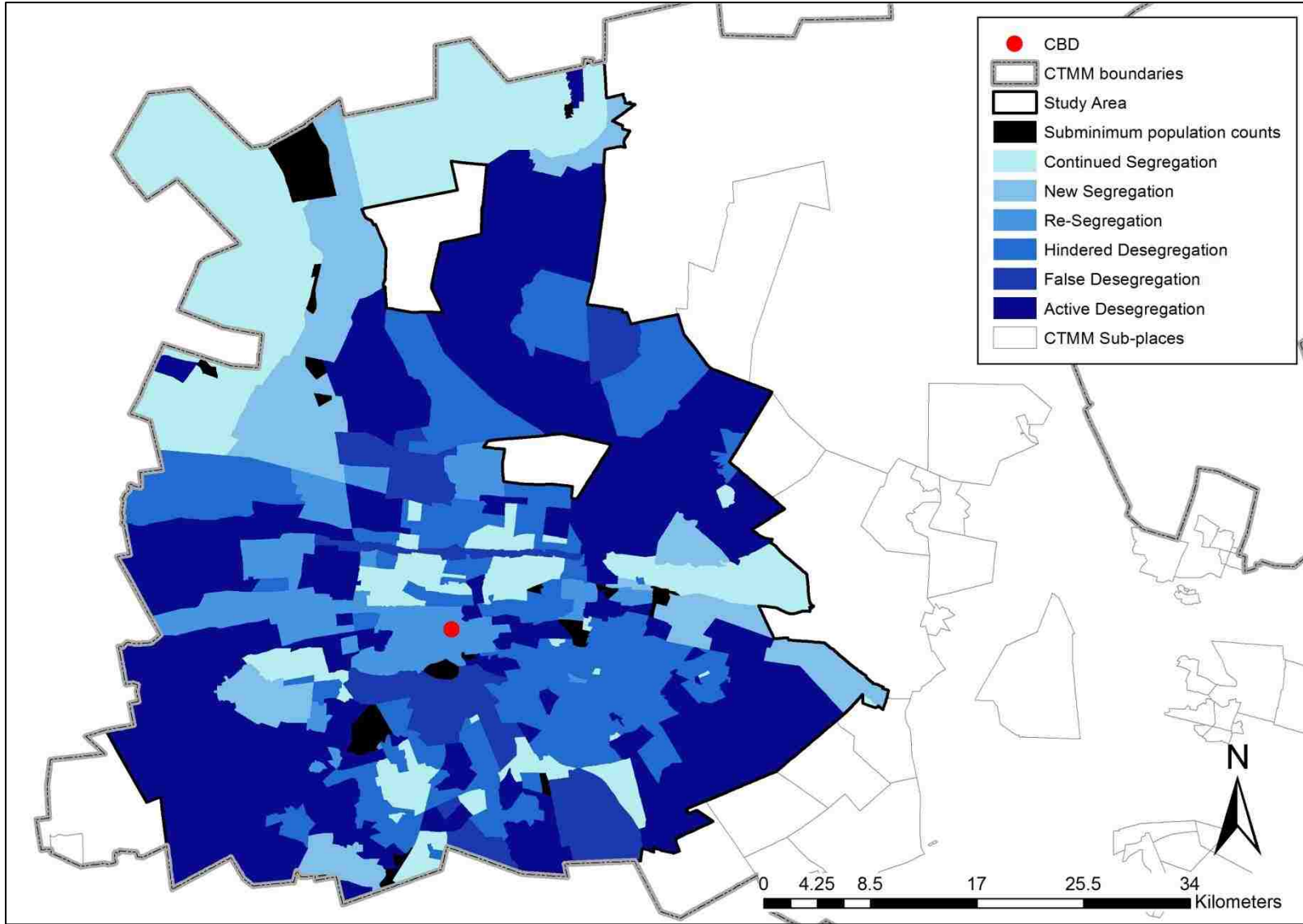


FIGURE 3.8: Segregation-desegregation classification of racial change in the study area in 2011

New segregation (in both formal and informal residential areas) has taken place predominantly on the periphery of previous Group Areas and homeland towns, with examples being the homeland towns of Mabopane, Ga-Rankuwa and Temba, and the former Black-African Group Areas of Atteridgeville, Mamelodi and Soshanguve. *Resegregation* has taken place in the inner city areas and in areas of higher income located relatively close to previous Group Areas (Akasia). *Hindered desegregation* is very prominent in higher income sub-places in the south-eastern parts of the city, which suggests that socio-economic conditions form a barrier to desegregation. The most common underlying factor hindering desegregation (because all these suburbs showed less than 40% change in their racial composition) is the ability to acquire and afford accommodation and the lifestyle in certain neighbourhoods. It is also assumed that in some areas, the cultural environment hinders desegregation, such as in the cases of Laudium (Indian/Asian) and Eersterust (Coloured). *False desegregation* has taken place in areas where nature reserves, military areas (Thaba-Tshwane), research institutes and corporate parks (Eco Park) are located and where accommodation is offered to some employees, especially caretakers. These sub-places are classified as such because the change in racial composition is a consequence of institutional reforms and not greater racial tolerance or improved attractiveness and accessibility of the area. Also, it is classified as false desegregation because the racial change has not created a more positive socio-spatial situation in the city. *Active desegregation* is taking place in numerous areas in the study area, although it is mostly on the periphery of the city where the redevelopment of agricultural holdings created opportunity for lower- and median-income housing. The active desegregation of areas in the vicinity of Hammanskraal, Temba and Ga-Rankuwa could be attributed to their close proximity to industrial areas (Babelegi and Rosslyn) and new housing opportunities on land rezoned from White agricultural holdings. Therefore industrial development (or industrial employment) and new housing development can be regarded as potential drivers of desegregation in the study area. Refer to figure 1.2 (p. 16) for the relative location of the sub-places mentioned in this discussion.

The overall racial-residential segregation analysis indicates that the level of residential exposure between the various population groups is limited in the study area, but not in all sub-places, and thus suggests a changing socio-spatial pattern in the study area. Considering both the population concentration and racial change analysis, it is evident that the Black-African population group has a higher residential mobility than other population groups. Because this is the largest population group in the study area, they also have the most significant influence on the future socio-spatial structure of the study area. Outlying sub-places have generally shown more significant racial change than centrally located suburbs (excluding the inner-city). These trends and characteristics affirm that racial change in South Africa is mostly happening in inner city areas and around previous Group Areas or

informal settlements (Hamann & Horn, 2015). The non-White Group Areas of 1991 boast the least amount of desegregation, which suggests that numerous factors, including infrastructure and service availability, community structures, cultural beliefs, racial tolerance, and economic status, preserve racial monotony. The strongest driver of desegregation (and in some cases resegregation) is found to be residential expansion and densification. This is evident in areas surrounding Akasia, Eco Park, Hammanskraal, Mamelodi and Soshanguve. It can be expected that future desegregation will take place in new middle-income residential developments in the outlying suburbs of the study area, which are also in close proximity to emerging nodes (areas such as Akasia, Centurion, Eco Park, Silver Lakes and Roodeplaas).

3.7. Concluding remarks

Residential segregation is both a historic and global occurrence that manifests in various forms, due to numerous influences for which no universal and sustainable solutions are available. It remains a significant socio-spatial aspect hindering progressive urban development and one that is studied by a growing group of researchers in more and more locations around the world. Arguably the most complicated aspect of residential segregation is to determine the extent to which it takes place voluntarily in cities, and to implement remedial actions accordingly. The answer to this question would inevitably spark questions of whether a solution is necessary. Since 1855, the study of residential segregation has evolved from using one general index to using numerous sophisticated indices and software that are able to provide a more accurate perspective on segregation (in its various dimensions) and its spatial patterns. In South Africa, the racial-residential segregation situation is reminiscent of the apartheid era, but it is also very different in each of the major cities in South Africa. The general trend is one of consistent (albeit slow) desegregation since the fall of apartheid in the early 1990s. Urban development contexts in the country vary greatly and each city poses its own successes and challenges to the national racial-residential segregation situation.

The empirical and spatial analysis in this chapter indicated that the current racial-residential segregation situation in the study area indicates structural segregation, especially among the Black-African and White population groups throughout the study area, with less severe segregation among the Coloured and Indian/Asian population groups. The level of segregation between these population groups can also be described as hyper segregation because it is evident that similar levels of segregation are found for the various racial groups in more than one dimension of segregation. Racial-residential segregation therefore continues in the study area, although some changes are evident in its spatial pattern. In terms of concentration-evenness, the racial groups are not distributed in an ideal spatial

pattern. This is indicated by the high values of the $D(m)$ and D indices as well as the population concentration mapping of the racial groups per sub-place. It is worth noting that in areas where the Black-African and Indian/Asian populations are evenly represented in one sub-place, these sub-places are in or close to industrial areas. This suggests that industrial development or industrial employment opportunities is one factor that supports co-habiting between these two population groups and could therefore be considered a driver of desegregation between these two population groups. The Black-African population, which is the dominant population group in the study area, is concentrated in the north-east informal areas, the central city areas and the far eastern informal areas. The level of exposure between the various population groups is limited in the study area, but not in all sub-places. This is evident in sub-places where higher concentrations of Coloured and Indian/Asian populations reside which are centrally located to the other two population groups in the study area. Another very important aspect of the analysis is the extent of racial change in sub-places in the study area. The analysis revealed significant changes in the central city sub-places and some suburban areas. In terms of racial composition, the analysis indicated that the sub-places in the study area that are dominated by the Black-African population have experienced the least amount of racial change in comparison, but also that Indian/Asian and Coloured sub-places show a similar robust racial composition. Former White-only sub-places show much more racial change but is still hindered by certain underlying influences. In terms of spatial entities, the outlying sub-places have shown more racial change than the centrally located suburbs. Both these findings can be attributed to the location of the sub-places in proximity to the residents' previous homes (in townships, homelands or adjacent provinces), the proximity of job opportunities and the availability of affordable land and rental housing. This analysis also suggests the significant influence of the housing market on the process of desegregation, as was indicated by the literature.

Considering the discussion and analysis of this chapter, it is evident that structural racial-residential segregation remains in the study area, but also that the spatial patterns of racial-residential segregation have changed considerably since the apartheid era. Therefore the evidence describing the current socio-spatial structure of the study area in terms of racial-residential segregation supports the disconnected continuity hypothesis. The emphasis can now shift to determining whether other parts of the socio-spatial structure of the study area, specifically the socio-economic dynamics, also exhibit the same relationship with the conditions during the apartheid era.

CHAPTER 4

THE EXTENT AND SPATIAL PATTERN OF SOCIO-ECONOMIC INEQUALITY IN THE CITY OF TSHWANE

“In a capitalist society there are always inequalities of class and wealth. People who inherit money and property will always see themselves as being superior to those who have to work for it”.

- *Sally Wentworth*



4.1. Introduction

Inequality – a social enemy that people (especially those disadvantaged by it) have been struggling to conquer for many years; an elusive concept that has been difficult to grasp by means of policy. In the dynamic nature of cities and the important role that neighbourhoods play with regard to limiting social tensions and creating liveable spaces, it is inequality that can have significant negative effects on the structure, functioning and liveability of the city. Inequality surfaced as a major theoretical concern for classical economists such as Carl Marx and his peers in the mid-1800s when increasing capitalism was regarded as the main reason for income inequality (Florida & Mellander, 2014), while empirical work on social deprivation was pioneered by Charles Booth's first modern social survey of economic conditions and social deprivation in London, along with earlier perspectives on poverty by Engel in 1844 and Mayhew in 1861 (Vaughan *et al*, 2005). Several decades since these initial concerns and contributions were made towards understanding inequality, deprivation and poverty it is evident that these same situations remain at the forefront of an array of developmental concerns for researchers, economists, politicians and governing bodies in many countries around the world. The extent of this concern and the amount of resources being invested in countering inequality suggest that this quarrelsome topic is as unknown and dynamic as ever, and a great deal more is required in order to suitably respond to the dilemma. The research efforts leave a number of critical questions behind, including what is a suitable response to inequality? What is wrong with inequality? Is a response required or is inequality a perception that might never be satisfied? These questions have countless perspectives and will vary in every social, political and economic context. Ultimately, these questions can only be answered once an agreed on level of inequality has been established in the environments under investigation. The answers to these questions and the elusive suitable response might be within reach, but merely out of sight and hidden in unexplored areas. Numerous works on inequality have, however, made it evident that geography has a significant effect on inequality in terms of its influence on the distribution of income and wealth across space (Naudé & Krugell, 2003). There is also an important link between spatial separation and social discrimination that is influenced by the level of inequality in a particular area. Thus, although inequality has mostly been interpreted from an economic perspective (measured in terms of income shares and welfare disparities), there has also been a growing trend to investigate and understand the spatial dimensions of inequality.

The racial-residential segregation analysis in the previous chapter indicated that structural segregation remains evident in the study area despite changes in the spatial pattern of segregation when compared to patterns of the apartheid era. This chapter aims to answer the next research question regarding the socio-economic dynamics in the study area

(namely, what are the extent and spatial pattern of socio-economic inequality in the study area?) and comparing these, by again using the continuity-discontinuity hypotheses, to the conditions under apartheid. Inequality and exclusion have been dominant themes in South Africa's economic history (Leibbrandt *et al*, 2001) and are equally dominant in future considerations as a result of the highly anticipated and ascribed National Development Plan (The Presidency, 2013a, b) that aims to reduce poverty and inequality by 2030. The South African socio-economic inequality situation is ultimately shaped by the country's historical context of discrimination and exclusion (Ulriksen, 2012), which had very specific spatial implications for all spheres and functions of the society.

In the light of the above, this chapter aims to determine the severity and spatial pattern of socio-economic inequality in the study area. This continues from the previous chapter in order to compare the current socio-spatial structure of the study area to its segregationist and unequal spatial structure of the past, as well as to describe the socio-spatial characteristics of South African urban areas in more detail. The comprehensive structure of the chapter (figure 4.1) and the unique spatial perspective on socio-economic inequality in the study area, along with a classification of sub-places according to their relative socio-economic status, should provide valuable insights into the study objectives and the socio-spatial structure of South African urban areas. The chapter first explores the background to inequality research by highlighting the various spatial perspectives, important terms and definitions and methods for determining the extent of inequality, as well as how these have been applied to analyse various international experiences of socio-economic inequality. Thereafter the focus turns to South Africa and the analysis of socio-economic inequality in the study area, as well as a classification of the relative position of each sub-place in the study area to other sub-places. The theoretical background and the spatial analysis of socio-economic inequality are intended to contribute towards context-specific solutions for improving equality in the study area.

4.2. A background to spatial inequality research

Literature on inequality dynamics and inequality measurements indicates that inequality is vast, continuing and generally growing across the globe, in both developed and developing countries (Nel & Rogerson, 2009; Warwick-Booth, 2013). The heads of various states often make reference to the increasing gap between the rich and the poor in their countries and the accompanying global crisis (Beeld, 2006a). The Presidency of South Africa (2013) indicated that between 1950 and 2000, the global Gini index increased from 0.44 to 0.54,

while Lakner and Milankovic (2013) found that between 1988 and 2008, global inequality has seen very little decline and remains around 0.70 on the Gini index.

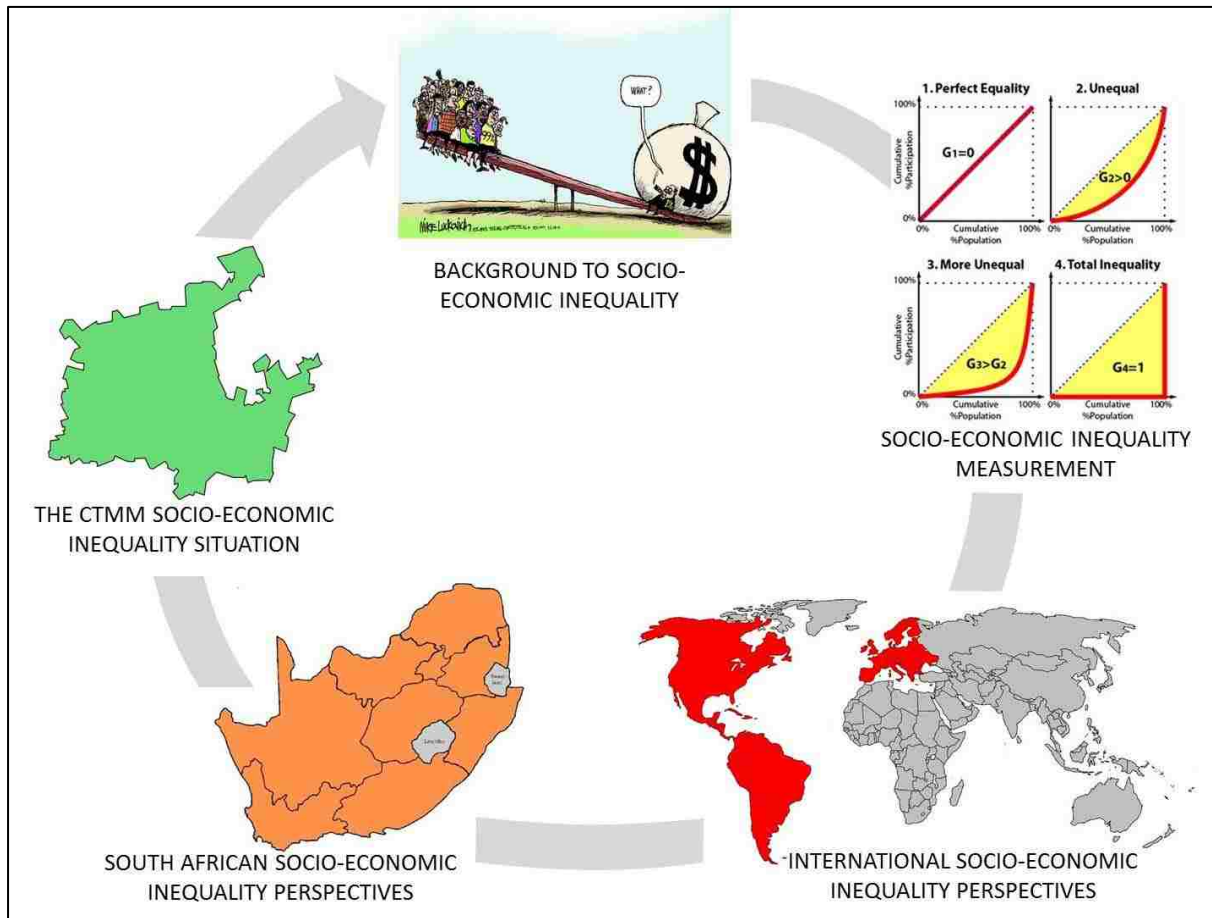


FIGURE 4.1: The outline of chapter 4

The growing gap between the “rich” and the “poor” has also become evident in global cities such as New York and London, and in well-developed countries such as Canada (Prouse *et al*, 2014). Calculating global inequality is complicated by various factors, including the availability of data and currency differences, and therefore a consistent measurement is rare. Research, however, still clearly indicates that severe inequality exists and positive change remains difficult to achieve. The inequality experienced at a global level can exist between a vast number of factors, with the most notable and commonly used one being income (measured per person or per household). On the other hand it can also include inequality in terms of health, education, employment and housing. These inequalities vary significantly throughout the world and are caused by a myriad of conditions and dynamics; the common thread related to all forms of inequality, however, is that its consequences hold little positive value for the social well-being of society. The complications related to the measurement of inequality and the attention it requires, especially in the developing world, present

governments with a formidable development challenge (Kim, 2008) and therefore emphasise the need to understand inequality dynamics and to consider them in all plans for future progressive development.

Inequality, from a geographic perspective, can be viewed at a variety of spatial levels. The spatial levels that are most commonly used to describe inequality include the global, the regional (or national) and the local levels. Each spatial level has different determinants, consequences and responses; therefore the scope is too broad to consider each spatial level in this chapter of the study. For the purposes of the background discussion, the following section will briefly highlight some dynamics related to each of the three abovementioned spatial levels, especially those dynamics that can be used to understand the socio-economic inequality situation in South Africa and ultimately in the study area.

Selected statistics mentioned earlier indicate that inequality is a lasting phenomenon that is very difficult to reverse. It can be argued that global inequalities are the most difficult to change, simply because the reach of interventions to improve equality does not extend beyond the boundaries of the governing body implementing them, and also because different contexts require different solutions. The extent of global inequalities is clearly visible in terms of wealth and income (figure 4.2), especially between developed and developing countries. When global income disparities are considered, it is interesting to note that, in 2001, Mexico, South America and South Africa are prominent not only in cases where people earn between \$10 and \$20 per day, but also where people earn more than \$200 per day (Worldmapper, 2006). This data representation, although based on 2001 data, suggests high levels of income inequality in these aforementioned societies. Global inequalities can be attributed to a vast number of factors that are beyond the scope of this discussion, but it includes historical developments (influenced by colonisation), current stages of development, resource availability (natural and human), governance structures and economic structures (labour and trade markets). The important understanding lies in knowing that inequalities exist due to specific contextual influences and that it is these contextual influences that need to be uncovered in order to make informed policy decisions to improve the situation. At a global level, South Africa stands out in terms of inequality with most of the abovementioned causes of inequality being applicable, thus resulting in a situation where South Africa has been confirmed by numerous writers (and supporting empirical evidence) as one of the countries in the world with the most severe levels of inequality (Crankshaw & Parnell, 2004; Leibbrandt *et al*, 2007; Tregenna & Tsela, 2012).

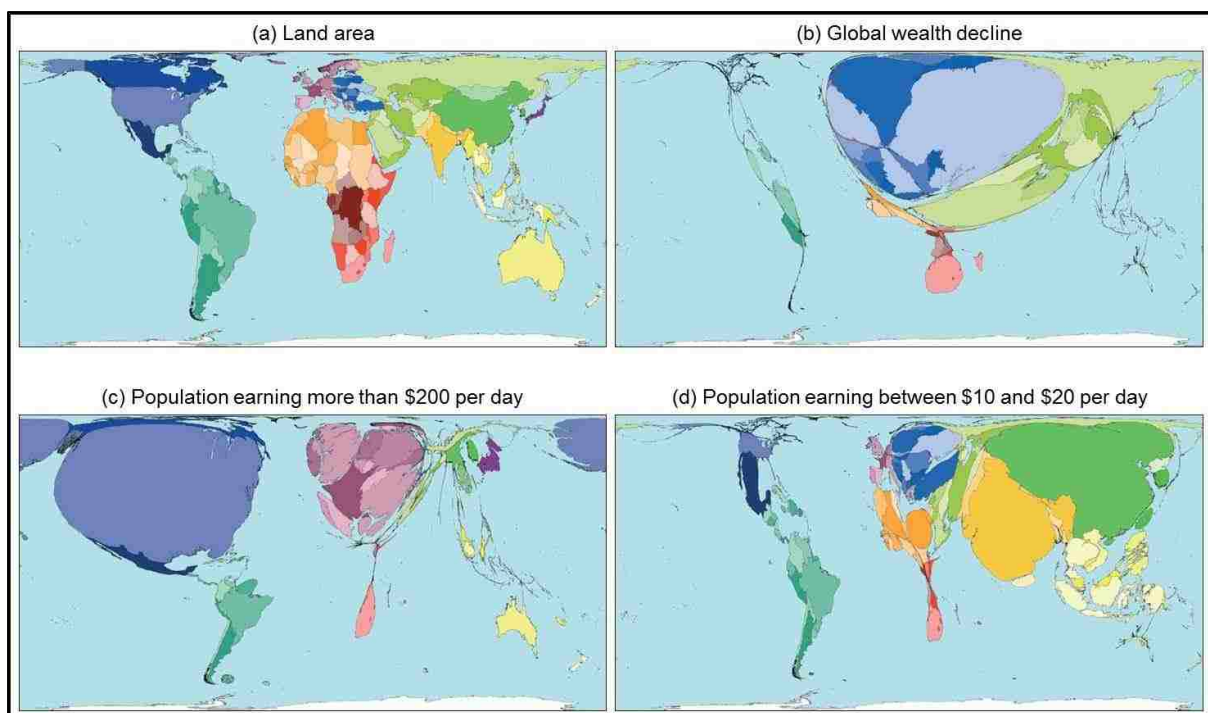


FIGURE 4.2: The extent of global wealth and income inequality (Source: Worldmapper, 2006)

In addition to the abovementioned global perspective, it is also common to view inequality from a regional perspective in countries, especially between rural and urban regions or different metropolitan areas. Regional inequalities often result from differences in natural resource availability (which is closely linked to the national space economy), historical influences, the political environment, the rapid pace of urbanisation as well as various physical and human geography influences (like natural features, population counts and population movement). Regional inequalities, as opposed to inequality at other spatial levels, can, however, be regarded as positive for development since it creates the opportunity for specialisation and agglomeration in regions. These opportunities created by regional inequalities in most instances promote a stable and growing national economy. The South African development context discussed in chapter 2 of the study (figure 2.10, p. 59) already suggested that the South African economy is significantly influenced (and in fact driven) by regional inequalities and can therefore be considered a positive influence. The concentration of these regional inequalities, coupled with the immobility of a large segment of the South African population (which does not allow them access to the benefits of the economic centres), does, however, attach a certain degree of concern to these regional inequalities.

Research related to inequality has traditionally been approached from the abovementioned regional perspective as opposed to the local perspective. Therefore the local perspective is relatively unknown in some instances, but ultimately these two perspectives are

interdependent from a policy-making perspective, as they have such significant influence on each other (Kim, 2008). The local perspective is the third spatial perspective of inequality discussed in this chapter, and also the main focus. The real concern about inequality often lies at this spatial level, because it is at this level where inequality is felt and experienced the most intensely and personally. The causes and consequences of inequality at a local level are also much more complex than at the other spatial levels. Local level inequality is firstly related to the morphological structure and history of the city. The status of each morphological entity in a city changes throughout history, depending on the development context of the area (for example, from the inner city being poor to the periphery being poor and vice versa). The socio-economic status of a morphological entity is also related to its use and purpose in the larger city structure, and thus creates certain spatial patterns of inequality in the city. For example, industrial and agricultural areas are often poorer than suburbs, residential estates and business nodes. Furthermore, spatial inequalities experienced at a local level are created by the location of businesses and households (Kim, 2008). The spatial concentration of business development is usually concentrated in a small number of nodes in the city that inevitably leads to spatial inequalities. City-wide socio-economic inequality will ultimately be spatially reinforced by the value and importance of these nodes, which is derived from the location of employment, income opportunities, resources and services in these nodes as opposed to the lack of development in the peripheral areas. The knock-on effects that business nodes have on inequality can be addressed to some extent by the development of new nodes or the natural spreading of development to other areas, although this requires considerable effort from the city's management. Socio-economic inequality at a local level is often associated with negative cultural implications (like jealousy), various health and social problems, political instability and reduced general well-being of society (Warwick-Booth, 2013). In current dynamic urban environments, socio-economic inequality and the associated consequences obtain a distinctive spatial embodiment and spatial pattern that has the potential to perpetuate severe socio-economic inequality over long periods of time, increase social tensions in the society and inevitably complicate any attempts to improve the situation.

4.2.1. Important terms and definitions related to spatial inequality research

The in-depth analysis of socio-economic inequality in the study area is associated with various nuances and context-specific interpretations. It is therefore important to clarify a number of important definitions and concepts that will be used throughout the rest of the chapter. *Inequality*, as has been introduced, is the main concept discussed in this chapter and, despite it being a reality in every human environment, it can be conceptualised in many

different ways. Inequality in this study is a multidimensional concept and "... refers to structured differences in the distribution of income, the resources with which to earn income (skills, capital) as well as power and status" (Gelderblom, 2006:190). These structural differences are maintained by way of institutions, various social processes and by those who hold the most power in the society (Warwick-Booth, 2013). The multidimensional nature of inequality means that it is influenced by a very broad range of variables that are also closely related to a person's quality of life and their class identity. These include monetary income (both personal and household income), but also the level of education, employment opportunities, housing quality, access to land, access to and quality of healthcare, access to services and even life expectancy. Inequality is also influenced by factors such as human capital, skill, race, poverty, unionisation and tax rates (Florida & Mellander, 2014). This chapter will attempt to analyse as many of these as possible in order to identify the real situation in the study area in terms of socio-economic inequality and its spatial patterns. *Spatial inequality* is an important dimension, especially in this chapter, of overall inequality that "... refers to a condition in which different spatial or geographical units are at different levels on some variable of interest" (Nel & Rogerson, 2009:141). In other words, spatial inequality is described as a situation where one person or one household's level of, among others, income, education and employment is compared to another and either one is deemed less desirable for those associated with it, but it is also linked to a specific spatial location. This is created in most cases by the forces of concentration and dispersion in cities (Kim, 2008).

Another important definition to consider is that of *poverty*, which is most commonly imagined as urban slums and informal settlements in the developing world (Lines, 2008). Poverty is, however, infinitely more than this image, since it has both a physical and a psychological dimension. Poverty can also be defined as a state of being extremely poor (in a number of measurable variables), as a situation where one is unable to afford essential things for living or as a state of severe socio-economic deprivation. Definitions and interpretations of poverty have also come to include capabilities, livelihoods, social exclusion and civil or human rights (Naidoo, 2005), which allow for a wider interpretation of poverty. The focus of this chapter remains on inequality and will therefore not analyse the exact level or extent of poverty in the study area. Because the one side of inequality always include people at a certain level of poverty it is, however, important to understand the basics of poverty in order to analyse inequality.

Socio-spatial polarisation is also an important process to consider along with the spatial patterns of socio-economic inequality. This is a process whereby society becomes

differentiated between the “rich” and the “poor”, and spatial segregation exists and intensifies between these two socio-economic groups (Kesteloot, 1998). Pratschke and Morlicchio (2012) also describe the process as an increase in the number of people in high- or low-income groups without increases in the number of people in the middle-income group. In other words, socio-spatial polarisation refers to a process whereby the middle-income group becomes smaller and the population is distributed around two distinct points of the income spectrum; one group being very rich and the other very poor, while containing the majority of the population (Walks, 2013). Ultimately, when the rich concentrates in rich areas and the poor in poor areas, a spatial structuring element is added to the polarisation and creates the socio-spatial polarisation in society, which in turn results in disparities in social protection (Pratschke & Morlicchio, 2012). Thus socio-spatial polarisation is the process that leads to socio-economic segregation in the city. Residential segregation and social polarisation is not related per se (Kesteloot, 1998), but if the management of socio-spatial activities in the city is ineffective or discriminatory, the residential segregation will inevitably encompass socio-spatial polarisation due to the collective consumption and bargaining power of the dominant (in terms of income, wealth, political support, education and intellectual property) population group(s). It is also evident that economic growth often leads to increased socio-spatial polarisation (Pratschke & Morlicchio, 2012) simply because an unequal distribution of income will inevitably worsen when more income is available. This process, given its spatial impact, can easily create a dual-city situation in terms of socio-economic conditions that complicates the functioning of the urban area and the social well-being of society. The abovementioned concepts are important to keep in mind throughout the rest of the discussion and should simplify the interpretation of the socio-economic inequality analysis.

4.2.2. Measures of determining the extent of socio-economic inequality

Inequality research and its measurement are a broad and diverse field of study due to the significant number of already mentioned factors determining its extent, the influence of context as well as the availability of reliable data. The statistical measurement of inequality (especially through the Gini index) is no new investigation and, with the availability of new datasets, numerous statistical methods have been adapted and developed to measure inequality from a variety of perspectives. Investigating the spatial aspects of inequality is, however, a relatively recent effort by researchers (Nel & Rogerson, 2009) and will subsequently form an integral part of the analysis in this chapter. The following section will highlight and explain statistical inequality measures that are commonly used around the world, but which have also been extensively applied to the South African context and used to

measure socio-economic inequality in the study area. The discussion also highlights the main income and material deprivations that serve as indicators of the extent of socio-economic inequality in the study area.

a) Annual median household income

One of the key indicators of inequality that is used for this study is the annual median household income per sub-place in the study area. Median household income forms the backbone of measurable inequality between sub-places in the study area. This variable provides a very good overview of the income differences in the study area and is feasible considering the availability of household income data for the study area from the 2011 national census survey. The national census survey provided the number of households per income category in the sub-place, and therefore the annual median household income per sub-place is calculated according to the following equation:

$$Me(I) = [L + C] \left[\frac{\frac{n + 1}{2} - NL}{fme} \right]$$

In the equation, L is the lower limit of the median interval; C is the range of the median interval; n is the population count in the sub-place; NL is the cumulative frequency of the class before the median interval and fme is the frequency of the median interval. This calculation can be represented spatially for the study area and allows for other spatial interpretations including an analysis of those sub-places below the median income and those above double the median income. The annual median household income also allows for some further statistical analysis of the extent of socio-economic inequality in the study area.

b) Statistical measures of the extent of socio-economic inequality

Inequality research often employs a number of statistical measures to indicate the extent of inequality and to compare different regions. This discussion will not highlight all of these statistical measures, but will focus on three of the most commonly applied measures, namely the Lorenz curve, the Gini coefficient and Theil's entropy measure. The latter will not be applied to this study because it requires individual household incomes that are not available from the census data used. The Lorenz curve and the Gini coefficient will be used in this study and are derived from the median household income per sub-place in the study area. The results from these analyses in the study area are discussed in later sections of this chapter.

The Lorenz curve provides a graphic presentation of the extent of inequality in the study area compared to an ideal level of equality. It was developed by Max Lorenz to represent the inequality of the wealth distribution in society. The index can be based on individual or household incomes and therefore provides a thorough perspective on the one dimension of inequality. In order to plot an accurate Lorenz curve, the income data for each individual person or household is required. In the cases where this is not possible, since incomes are mostly recorded in categories, some assumptions should be noted. The assumption in this case is that each household in the sub-place earns the median income of the sub-place and therefore the drawn Lorenz curve is an approximation of the real Lorenz curve, which in turn means that the Gini calculated from the curve or the same data as the curve is an underestimation of the real extent of income inequality (Whiteford & McGrath, 1994). The Lorenz curve, as done in this study, is drawn by plotting the cumulative percentage of households per sub-place on the x-axis against the cumulative percentage of median income per sub-place on the y-axis. Before drawing the graph, the sub-place median income values for the study area are arranged from lowest to highest. This line is compared to the perfect line of equality (a diagonal line of 45°) to graphically stress the severity of inequality in the study area.

The Lorenz curve can also be used as a supplement or as a precursor to calculating the Gini coefficient for the study area, which is another method of quantitatively expressing the level of inequality. The Gini coefficient is the most widely used measure of income inequality (Whiteford & McGrath, 1994; Kim, 2008) and can be described as the ratio of the area between the Lorenz curve and the line of equality to the total area under the line of equality (Ngwane, 1999). In other words, the Gini coefficient is equal to twice the area between the line of perfect equality and the Lorenz curve. The Gini coefficient not only provides a standard for interpreting inequality in different locations, but its results are also independent of scale (Glaeser *et al*, 2009). The Gini coefficient can be calculated in a variety of ways, but in this study it is calculated according to the following formula used by MacLachlan and Sawada (1997):

$$G = \frac{1}{2} \sum_{i=1}^N |X_i - Y_i|$$

In the equation, X_i and Y_i respectively represent the uncumulated percentages of households and median household incomes per sub-place for the set of N sub-places in the study area. The value obtained from this Gini calculation varies between 0 (perfect equality) and 1 (perfect inequality) and thus provides a statistical indication of the extent of inequality

compared to the desired level of equality or the line of perfect equality on the Lorenz curve (MacLachlan & Sawada, 1997). It is often regarded that highly unequal societies have values between 0.5 and 0.7, while relatively equal societies express values between 0.2 and 0.35 (Ngwane, 1999).

In addition to the Lorenz curve and the Gini coefficient, there are also numerous studies that include Theil's entropy measure (T) to provide further insight into the extent of socio-economic inequality. Theil's entropy measure is not directly derived from the Lorenz curve, like many other indices of inequality, and is therefore often used separately. The index is the most commonly used decomposable measure of inequality (Leibbrandt *et al*, 2001) and, according to Ngwane (1999), the index is defined by the following equation:

$$T = \frac{1}{N} \sum_{i=1}^N (y_i/\mu) \log(y_i/\mu)$$

In the equation, N is the total number of persons or households in the study area; y refers to individual persons or household incomes and μ is the mean income that is derived from the total income divided by the N . Similar to the Gini index, a value for Theil's entropy measure that is closer to 0 indicates greater equality.

c) Income and material deprivations as further indicators of the extent of socio-economic inequality

An analysis of annual median household income, with its spatial and statistical interpretations, provides a good indication of socio-economic inequality in the study area, but it remains limited to one dimension, namely the monetary income of the population. In order to provide a more thorough perspective on socio-economic inequality in the study area, a number of income and material deprivations can be considered both determinants of monetary income or underlying influences of overall socio-economic inequality. These indicators contribute to the social aspects of inequality, and in this study include employment status, tenure status, housing quality and highest education level. Factors like employment and education relate to human capital that constitutes a means of increasing individual welfare and thus also increases the likelihood of poverty alleviation and a more equal society (Amin *et al*, 2008). According to Warwick-Booth (2013), the use of these additional indicators provides a more accurate measure of both social exclusion and socio-economic inequality.

The *employment status* of the population (which concerns the percentage of employed population compared to the percentage of unemployed population), as well as the sectors of employment, is generally regarded as a very important determinant of household income

and poverty in the developing world (Kamgnia & Timnou, 2008) and thus a key underlying determinant of overall socio-economic inequality in the study area. The employment status aspect of inequality has some important contextual considerations to note when interpreting the results. These include the age distribution in the study area and the dependency ratio. In this type of analysis, only the economically active population (citizens above 15 years of age and below 64 years in the South Africa context) is considered in order to prevent a skewed picture of unemployment. Another very important consideration is regarding the definition of unemployment, of which there are mainly two interpretations in the South African context. The narrow definition of unemployment counts all jobless people who want to work and who have searched for work in the recent past and who are available to start working at any time, while the broad definition of unemployment counts all persons who are jobless, regardless of their efforts to search for work (Kingdon & Knight, 2001; Monnana, 2014). In order to accommodate both these definitions, the national census survey includes a category for “discouraged work seekers”. In the South African context, the narrow definition of unemployment is used most often (Kingdon & Knight, 2001; Monnana, 2014) and will therefore also be used in this study. The dependency ratio can be added here, as it provides an improved understanding of the severity of the unemployment in the study area. In other words, it describes the socio-economic impact that the unemployment of one adult has on a number of dependents. These considerations make unemployment an important dynamic to understand for an accurate interpretation of poverty or socio-economic inequality in the study area, as well as for the suitable responses to relieve the problem.

Tenure status and housing quality are not linked to monetary income in the same direct sense as the previous aspect of socio-economic inequality, but it does contribute to a condition of perceived and actual poverty in some areas as opposed to the perceived and actual wealth in other areas. Housing constitutes a basic need that many governments in developing countries have struggled to provide in sufficient quantities (Amin, *et al*, 2008) and which, if provided, would place a household in a better socio-economic position relative to the rest of the population, and therefore influence inequality. Housing quality could also influence the perceptions attached to an area that could in turn attract or deter investment and thus enforce upward or downward socio-economic changes. Perceived socio-economic inequality is also introduced by means of the operations of the housing market due to the roles and actions of real estate agents through processes such as block busting, gentrification and red lining (as explained in the previous chapter). Tenure status on the other hand, has a direct influence on the long-term wealth of a household, as property is seen as an asset that can be used in numerous instances to increase wealth or advance a household’s socio-economic position. In the South African context tenure status plays a

significant role in eradicating socio-economic inequality, as it is used as a tool to support urban land reform (Brown-Luthango, 2010) and to eradicate past deprivations and, in this way, to alleviate poverty and socio-economic inequality in cities. The various options for tenure (which include rent-free occupation, rental occupation, ownership with liabilities and ownership without liabilities) ultimately determine a household's budget priorities. Residents who, for example, rent their property tend to spend more of their income on housing than those who own their property (Hulchanski, 2011). In the same instance a household that owns property without liabilities (in the form of debt or levies) is in a more advantaged position than a household that owns property with certain liabilities. Therefore, depending on the household income, the household tenure status would determine the financial opportunities that are available to invest in other socio-economic necessities like education and efficient transport, which could contribute to uplifting their socio-economic status.

The *highest education level* of the population in a study area is also regarded as an important determinant of monetary income and a factor in reducing poverty and inequality (Amin *et al*, 2008), mainly because higher education provides a person or household with more opportunities to enter the employment market and to be competitive in this market. In other words, it allows a person or household to sell their labour at a higher value and in the process improve their socio-economic position in society. Analysing this aspect of inequality can provide important insights into the extent of inequality and the underlying factors that contribute to perpetuating inequality. A spatial representation of such an analysis can identify areas where poor skills are concentrated as opposed to higher-level skills, which can then be correlated with median household incomes. Furthermore, the analysis can also reveal the areas that have an obvious lack of education facilities or poor access to these facilities, which can be attributed to cost or distance. The highest education level in the study area should also be interpreted against the background of the age structure (as persons under the age of five years were excluded from these questions in the census) and the employment status in the study area, as these are very closely related.

There are countless more variables that can be included to provide a more thorough perspective on the real socio-economic inequality situation in the study area (these could include access to services, material deprivations, household size, distance from income opportunities, property rates and taxes), but many of these aspects require specific and often rare datasets that are not available for the particular study area in this project. Ultimately, an analysis of inequality should be done as holistically as possible and should analyse a number of aspects of the situation, as all the different elements are invariably linked to each other and contribute to overall socio-economic inequality.

4.2.3. The causes and consequences of socio-economic inequality

A question that should perhaps be asked is why do spatial inequalities exist in urban environments? It could very easily be said that inequality is a product of an enduring legacy of race relations and poverty at the bottom of the socio-economic order (Florida & Mellander, 2014), or that it is an inevitable construct of society. In most instances, however, natural and human resource availability is one of the first reasons proposed for inequality. It could, however, also be created because the market (referring to any economic operation in the urban environment with an intrinsic supply and demand relationship) “require” an ultimate level of inequality (Kim, 2008) to ensure its continuing operation. This is in order to create supply and demand, competition and even aspects such as congregation, which are all essential elements of active and efficiently functioning local and global markets or systems. The definite causes of socio-economic inequality remain diverse and are often difficult to pinpoint, but there are some known generic causes of inequality applicable to the South African context. Despite the significant influence that apartheid had on social well-being in the country, there are numerous causes of inequality that are not related to the racially discriminative effects of apartheid (Crankshaw & Parnell, 2004). These include the influence of severe intra-racial inequality caused by inequality in education (in terms of quality and attendance levels) and employment (influenced by unemployment and Broad-based Black Economic Empowerment), which have contributed to inequality among Black-Africans and that eventually affected the whole society. South Africa furthermore experiences regional inequality due to the spatial distribution of resources (mostly natural resources, but also infrastructure and financial resources), the agglomeration of business development in a few metropolitan areas as well as the local level inequality and underdevelopment of some areas created during the apartheid era (Nel & Rogerson, 2009). Socio-economic inequality is also influenced by the location of high quality education. Good quality schools and tertiary education institutions are mostly located in the metropolitan or urban areas as opposed to rural areas. In urban areas it is also evident that good quality education institutions are both physically (in terms of distance to the facility) and economically (in terms of the costs of studies) inaccessible for the majority of the population. Several other aspects also contribute to socio-economic inequality, including poor transfer of economic power as opposed to the strong transfer of political power (Christopher, 2001a), rising unemployment and decreases in the share of national wages (Gelderblom, 2006), which are linked to South Africa’s gradual return to the global economy, the labour market, access to ownership of assets, access to state welfare (Mustapha, 2011) and the lack of “real” economic empowerment for the Black-African population.

The socio-economic inequality in most areas, especially at a regional level, is also affected by a process best described as “brain drain” (figure 4.3). From a spatial perspective, it has always been the homeland areas and informal settlements in and around the urban fringes that endured very high concentrations of poverty and which are therefore at the less desirable end of socio-economic inequality. These areas generally have very poor access to employment, labour markets, the formal and informal economy and education. The facilities that provide some of these services have limited capacity and are often deemed ineffective. The perceived (and actual) underdeveloped state of these areas means that a person or household with the ability to move to better socio-economic conditions would leave the area and settle in a more suitable area. This movement is described as brain drain and reinforces socio-economic inequality between spatial entities in a city or regions.

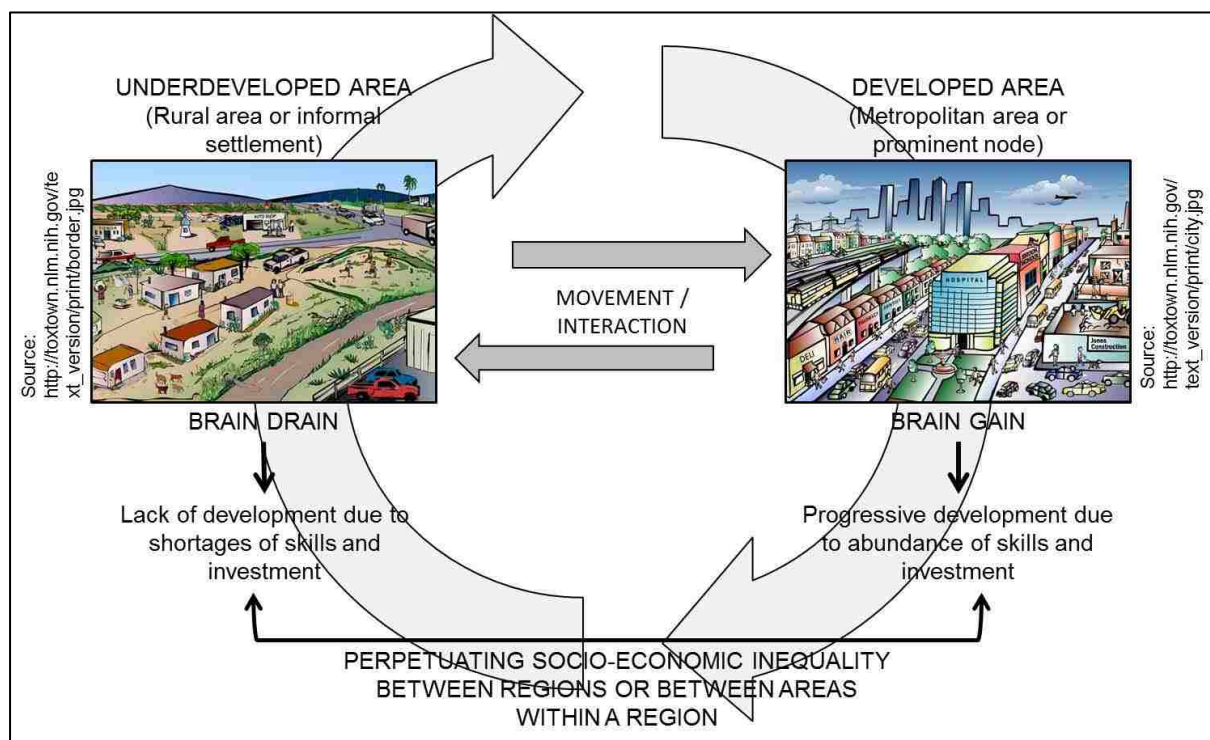


FIGURE 4.3: The process of “brain drain” as a contributor to socio-economic inequality

Another highly debated concern in South Africa that is being argued as a contributor to inequality is the desire to compete globally and to create global cities. Life in South Africa is paradoxically placed in the sense that the country comprises “two nations” – one very rich and one very poor. These realities are often spatially located very close to each other in urban environments (Lemanski, 2007). This type of socio-spatial polarisation is argued, by scholars like Lemanski (2007), to be caused by the effects of globalisation and the emphasis on promoting South African cities to global city status. Lemanski uses the case of Cape Town to argue that global competitiveness and local development goals (or poverty

alleviation and inequality reduction plans) work against each other and inevitably only increase socio-economic inequality. No city in the country is excluded from these risks and, considering that the CTMM places significant emphasis on improving its research and development market and attracting even more international investment in order to promote the city's global status, it does create concerns about increased socio-spatial polarisation and socio-economic inequality. This section highlighted some of the most common causes and consequences of inequality in urban areas, but these are all but obsolete; given the appropriate scope, it would be possible to identify and discuss numerous other causes and consequences of inequality. The following section, relating to various international perspectives on socio-economic inequality, will also touch on some causes and consequences of inequality that could be applicable to any study area, including the CTMM.

4.3. International perspectives and research on socio-economic inequality

4.3.1. Socio-economic inequality in the Americas

The diverse field of inequality research is constantly shaped by numerous international research works that bring new insights into the extent and characteristics of socio-economic inequality in a variety of human environments. International discourses have generally set out to determine possible linkages between race, gender and class in determining the extent and severity of inequality in a particular region, the impact that a declining middle class has on inequality and the impact of structural changes in national economies and markets on increasing inequality (Hoffman & Centeno, 2003; Glaeser *et al*, 2009; Hulchanski, 2011; Florida & Mellander, 2014). Based on the level of inequality seen at a global level between countries, the following section will highlight some of these perspectives from research done in the urban areas of North and South America, starting with the North America perspective. In Canadian cities it has become evident that minority groups have become increasingly more concentrated in the country's large cities at the same time that poverty is becoming more concentrated in poor neighbourhoods (Walks & Bourne, 2006). The extent of inequality is clearly noticeable in the larger metropolitan areas (such as Toronto, Vancouver and Montreal) and less clear in smaller urban localities (Prouse *et al*, 2014). Yet, even in certain locations the extent of inequality is not universal (Walks & Bourne, 2006) and therefore influenced by the context of the area. This indicates the importance of focussing on large urban areas as well as acknowledging their singularity. In the countries in the Organisation for Economic Co-operation and Development (OECD), Canada has been noted as one the countries with the fastest growing rates of inequality, with a clear concentration of wealth and poverty emerging in some cities (Hulchanski, 2011); this has a significant influence on the daily lives of citizens in both metropolitan areas and local municipalities (Prouse *et al*, 2014).

The ongoing and rapid nature of neighbourhood change in Toronto, for example, is influenced by property values and the socio-economic status of the residents, and thus has important consequences for the structure and functioning of the city, which require specific intervention to improve the situation (Hulchanski, 2011). The concern is often raised about the decline in the number of medium income neighbourhoods in cities like Toronto (Hulchanski, 2011), which suggests an increase in inequality, as the number of people in the middle are less and the gap between the rich and the poor is relatively large. In the Canadian literature, individual income, employment status, education, tenure status and immigration status are most often used as indicators for the socio-economic status of neighbourhoods in relation to the rest of the city (Hulchanski, 2011; Prouse *et al*, 2014). Inequality in terms of income is often the most significant indicator of overall inequality; it has especially been found that there is a significant (and growing) income gap between renters and homeowners in Canadian cities (Walks & Bourne, 2006). Processes such as gentrification and urban revitalisation have contributed to neighbourhood change in Canada and are subsequently ascribed as reasons for increasing inequality and the changes in the location of poverty (Prouse *et al*, 2014). Walks and Bourne (2006:279) suggest that “(i)t thus may not be residential location per se, but factors such as tenancy, poverty, family situation and racial discrimination in housing and labour markets that are most important for determining the life chances of Canada’s urban poor” and influence the severity of inequality.

The extent of inequality does pose specific spatial implications for Canadian urban areas, with the larger metropolitan areas showing the most significant structural changes. According to Hulchanski (2011), a separate city structure has been observed in the city of Toronto, where three distinct income zones can be identified. These zones are spatially separated and are growing further apart from each other. The analysis of the income characteristics in these three “cities within the city” was based on the percentage above or below the average income in the metropolitan area. In the case of Toronto, it is also evident that the location of poverty has changed from the centre of the city to the periphery of the city and subsequently influences the ability of a person or household on the periphery to access transport and other services. This scenario (which is often also the case in South African cities) creates a situation where the spatial location and associated conditions of these locations reinforce poverty and inequality in the city. The research in Canada does suggest that public policy has the ability to prevent or reverse the increasing inequality, especially by controlling housing prices and availability, by improving transport opportunities as well as renewal projects (Hulchanski, 2011). This stresses the importance and influence of the housing market in socio-economic inequality. The Canadian literature indicates that any attempts to address increasing inequality would require a certain amount of socialistic

state interference in market forces (Cunningham, 2007). Proposed policy reforms to combat the inequality situation in Canada include possibilities for employment insurance, national minimum wages, funding for social and affordable housing and redistributive taxes (Walks, 2013).

Inequality research in the United States of America (USA) has also come to focus mostly on metropolitan areas for the statistical benefits that larger areas offer, and indicates that America is relatively unequal for a developed country (Glaeser *et al*, 2009). Research has indicated that the top 1% of income earners in the USA have seen their incomes rise by 18% over 10 years, while, during the same time, the middle income groups have seen their income decline (Florida & Mellander, 2014). This sharp rise in inequality in the American society can be attributed to structural changes in the national economy, mostly related to the employment market. These changes, which are characterised by a split in the job market where one side of the market requires more skilled workers and the other requires more and more low skilled workers, have resulted in increasing income inequality in the USA (Florida & Mellander, 2014). This causes a type of social polarisation in the job market, where people are increasingly grouped in highly skilled and lower-skilled groups with a small population between these extremes. The polarisation in the employment market is furthermore associated with a specific sense of spatial clustering (Glaeser *et al*, 2009) that reinforces spatial inequality in metropolitan areas. Subsequently the relationship between inequality and the employment market poses some opportunities for eradicating the observed inequality, especially when it is possible to change the location of high- and lower-skilled employment opportunities by means of urban planning. In addition to the influence that skills have on inequality, it has also been noted that there is an important relationship between wage inequality and overall income inequality in metropolitan areas in the USA. Wage inequality has been found to account for about 16% of the geographic variation in income inequality in metropolitan areas (Florida & Mellander, 2014) and, although it is a very small part of the problem, it should still be considered in the overall response to inequality. Florida and Mellander (2014) also indicate an interesting dynamic between wage and income inequality when noting that the highest wage inequality is among larger economic regions with greater technological development, while the highest levels of income inequality are among smaller metropolitan areas. Increasing inequality in USA metropolitan areas are greatly influenced by a decline in the incomes and socio-economic conditions of those at the bottom of the spectrum rather than an increase of those at the top of the spectrum (Florida & Mellander, 2014), and thus increases the gap between the rich and the poor in society. Despite these general trends that are applicable to most metropolitan areas, the American cities also showcase significant differences between cities in terms of the experienced level

of inequality. Glaeser *et al* (2009) indicate that inequality levels between cities vary between 0.6 and 0.3 (which are considered reasonable levels of inequality, but suggest considerable regional disparities in income earnings), while lower levels of inequality is related to an increase in the number of middle-income households in suburban areas. These differences can only be attributed to contextual differences between different urban environments.

Inequality has also become an increasingly concerning topic in Latin American countries, mainly because resource distribution in Latin America has been described as the most uneven of all regions in the world; to such an extent that the region is referred to as "... the lopsided continent" by Hoffman and Centeno (2003:363). In the same publication, Hoffman and Centeno note that the top 5% of income earners in Latin America received twice the amount of income compared to the top 5% of income earners in OECD countries, while the bottom received half the income they would have in OECD countries. Given the fact that Latin American societies are generally poorer than those in the OECD, it makes the perspective on inequality even more concerning (Hoffman & Centeno, 2003). An important characteristic of Latin American inequality is that it has varied significantly over the last few decades. Gasparini and Lustig (2012) indicate that inequality rose sharply in the 1980s and then started to decline somewhat in the early 2000s. The initial (and to a large extent still) high levels of inequality in Latin America can mostly be attributed to the effects of neoliberal policies, the strong legacy that generally comes with inequality, the fact that inequality was at one point aggravated by widespread economic declines in the region, which also led to decline in the region's middle class, and finally Latin America's colonial past (Hoffman & Centeno, 2003). Furthermore, the vulnerability of the poor population to protect themselves against economic changes (like higher inflation) meant that their economic position worsened while trends in the labour market, similar to the American situation, led to a reduction in the demand for unskilled labour, which also increased inequality in cities (Gasparini & Lustig, 2012). The severe inequality in these Latin American cities has also impacted on social and infrastructure service provision in parts of cities to such an extent that access and quality of healthcare varies in cities (Hoffman & Centeno, 2003), and thus worsened the extent of overall socio-economic inequality. Just as labour market dynamics and macroeconomic situations increased inequality in Latin America, it is evident that these were also the same situations that would help to improve equality. An improved economic environment, more suitable government spending, cash transfers that decreased earning gaps and improvements to various social services eventually led to substantial decreases in socio-economic inequality (Gasparini & Lustig, 2012).

4.3.2. Socio-economic inequality in Europe

In addition to the research efforts in the Americas, a number of researchers have also explored socio-economic inequality in European countries. These research endeavours support a number of general socio-economic inequality trends but also highlight some new insights. Inequality research in Europe has been primarily motivated by concern over increasing socio-economic inequality (European Commission, 2010), the potential negative impact of increased inequality on development (Ramos & Royeula, 2014), but also by increased public support for establishing lower levels of socio-economic inequality (Zaidi, 2009). The main characteristics of inequality in Europe are that, based on the Gini index, income inequality is very low compared to the rest of the world, ranging between 0.25 and 0.45, and that inequality is characterised by increased diversity between countries (OECD, 2011; Ramos & Royeula, 2014; Zaidi, 2009).

For the European contingent of the OECD, inequality dynamics vary significantly among the member countries, with both increases and decreases in Gini levels noted between 1985 and 2008 (table 4.1). The trends of increases during the 1980s and decreases in the late 2000s are very similar to the Latin America experience of inequality. According to a reports by the European Commission (2010) and the OECD (2011), inequality rose in 10 European countries (including Denmark, Finland, Germany, Italy and Sweden) during this period while others like France, Hungary and Belgium showed very little changes in inequality levels. Only Turkish and Greek societies were more equal in the late 2000s than they were in the 1980s (European Commission, 2010; OECD, 2011). Zaidi (2009) and Ramos and Royeula (2014) also echo the widespread diversity in levels of inequality between countries within the OECD as well as those outside of it. Even countries influenced by debt crises show different inequality trends. The United Kingdom (UK) is also not excluded from this trend. Inequality increased sharply in the 1980s but it has decreased significantly since 2007/2008 due to lower earnings and stable benefit entitlements (European Commission, 2010; Belfield *et al*, 2014). In European cases where income inequality has increased it has also coincided with the shrinking of the middle class. Although authors note that national and regional inequality trends are very similar, it is also evident that the level of income is not directly related to the level of inequality, as countries with lower average incomes have similar Gini index levels than countries with higher average incomes (Zaidi, 2009).

The main reasons for increased inequality in Europe include globalisation (specifically related to the implications of trade integration) and changes in the distribution of wages and salaries (specifically related to the implication of skills-biased industries) that have caused a widening gap between low-income earners and high-income earners (OECD, 2011). Further

reasons promoted for increased and varying income inequality levels in the European context include industrialisation and urbanisation trends, the introduction of technological innovations, increased global competition, as well as market forces and institutional failures (Ramos & Royeula, 2014).

TABLE 4.1: Gini coefficient trends in selected European countries between the mid-1980s and mid-2000s (Source: European Commission, 2010: 22)

Country	Mid-1980s	Mid-1990s	Mid-2000s
Belgium	0.27	0.28	0.27
Denmark	0.22	0.21	0.23
Finland	0.20	0.22	0.26
France	0.30	0.27	0.27
Germany	0.25	0.27	0.29
Greece	0.33	0.33	0.32
Hungary	0.27	0.29	0.29
Italy	0.30	0.34	0.35
Sweden	0.19	0.21	0.23

According to Zaidi (2009) public policy has a very important role to play in reducing inequality levels in Europe. It is evident that the redistributive roles of national tax and benefit systems are effective in stabilising socio-economic inequality. The situation in the UK also indicates the significance of benefit systems in reducing and stabilising socio-economic inequality (Belfield *et al*, 2014). Another area where public policy needs to make an impact is in the conditions of the working poor. It is evident that earning inequality has risen in Europe because labour's share of the value added has fallen because earnings do not increase (or in some cases even decrease) at the same rate as that productivity increases (European Commission, 2010).

The dynamics in Europe showcase the complexity of understanding socio-economic inequality in societies but it does signify more positive dynamics than other regions in the world. Inequality in Europe is complex considering the varying levels of inequality despite countries functioning under similar economic conditions, such as the OECD and the establishment of the Eurozone. The characteristics of economic cooperation and development in Europe also provide evidence that institutional reforms and policy interventions have made a positive impact towards eradicating (or at least stabilising) socio-economic inequality. Therefore it is evident that policy interventions could be as important as development interventions have proven to be in other regions of the world. The sharp

increase and current reversal of income inequality in Europe could provide a proving ground for effective policy interventions to counter increasing socio-economic inequality in the rest of the world, like South Africa.

The above section provided some insights into socio-economic inequality research around the world and, although inequality remains dynamic and diverse in all the regions of the world, it does provide some considerations for South Africa and socio-economic inequality in the study area. The lessons that can be learnt from these international perspectives include (1) the realisation that the legacy of inequality is more often than not stronger than the interventions aimed to create equality, (2) the dynamics in the housing and labour market play a significant role in determining the severity of inequality, (3) the economic position and size of the middle class help to stabilise equality and prevent social polarisation, (4) it is imperative to first determine and then tackle the causes of inequality, as this will lead to the most suitable response to inequality and (5) policy interventions and institutional reforms have undeniable potential to stabilise socio-economic inequality. Contextual differences do make the generalisation of inequality findings difficult, and each locality should be investigated individually. Keeping this in mind, the next section will elaborate on the socio-economic situations that impact on inequality in South Africa, in order to contextualise later interpretations of the socio-economic conditions in the study area.

4.4. The South African socio-economic inequality situation

South Africa is regarded by many as one of the most unequal societies in the world (Crankshaw & Parnell, 2004; Leibbrandt *et al*, 2007; Tregenna & Tsela, 2012) and, unlike the rise and fall of inequality in Latin America, the country showcases an ever-increasing gap between those who are regarded as rich and those described as poor (Naidoo, 2005). The initial unequal socio-economic situation in South Africa was created during many years of colonial governance and apartheid (as indicated in chapter 2 of the study), but only surfaced as a major concern since the advent of democracy. The newfound emphasis on socio-economic inequality is shaped by three prominent realisations. Firstly the focus on socio-economic inequality is shaped by the strong influence of the National Development Plan (The Presidency, 2013a, b) that aims to reduce the national Gini coefficient from 0.69 to 0.60 by 2030. Secondly, the realisation that high levels of poverty and socio-economic inequality in South Africa have always had a strong racial undertone and that this has remained part of the post-apartheid South Africa (Naidoo, 2005; Gelderblom, 2006; Leibbrandt *et al*, 2010), and that there is a desire to change this situation. Finally, it has become evident that socio-economic inequality in racial groups has always been high and is increasing, especially

among Black-African households who had a Gini coefficient of 0.62 in 1991 (Whiteford & McGrath, 1994; Naidoo, 2005). Thus the country is faced with the challenge of reducing the aggregate levels of poverty and socio-economic inequality, but also with ensuring that racial groups (referring to within and between group inequalities) remain equal. According to Statistics South Africa (2014), the Gini coefficient per population group in the country remains a concern; in 2011 it was 0.55 for Black-Africans, 0.53 for Coloureds, 0.45 for Indians/Asians and 0.42 for Whites. Considering these dynamics and developments, the focus of this section is to provide a more detailed perspective on the socio-economic development context of South Africa as well as the extent of the abovementioned challenges and how they have developed over time.

Poverty and socio-economic inequality are central themes in post-apartheid policy making in South Africa and it is evident that socio-economic inequality in the country has distinct spatial implications. The Constitution of South Africa plays an important part in combatting the poverty and socio-economic inequality situation in the country, as it caters for numerous human rights that are essential to a certain quality of life (National Treasury, 2007), and effectively mandates Government to address the situation. The government's efforts are evident considering the emphasis placed on poverty and socio-economic inequality by the National Department of Planning (NDP), as well as a recent comment by the country's president that indicated that South Africa is faced with a triple socio-economic challenge – comprising severe poverty, inequality and unemployment – and that these issues have become a central focus of the current democratic administration (The Presidency, 2014b). It has also been noted by the South African Department of Finance that it "... is important to track inequality on a very regular basis as inequality measures provide a disaggregation of poverty dynamics" (National Treasury, 2007:11). Therefore socio-economic inequality research, like the research done in this study, has the potential to identify specific areas of problems that require intervention, and to accurately inform future policy directions.

Past levels of poverty and socio-economic inequality in South Africa painted a dismal picture for the country's socio-economic well-being and provided a bleak outlook for the future. There are numerous sources that provide an empirical and statistical analysis of this picture, and many provide an alternative perspective on the overall situation. Inequality in South Africa has traditionally been measured using the level of personal or household income that has been captured in various census counts and national household surveys. The next section will discuss the abovementioned socio-economic inequality concerns in South Africa with reference to three periods in time, namely (1) pre-1993/1994, (2) 1993/1994 to 2010/2011 and (3) the situation as it is expressed in the 2011 census. The one aspect that

remains evident in all the accounts of socio-economic inequality, as well as in all three aforementioned periods, is that the country exhibits one of the most challenging socio-economic inequality situations in the world.

4.4.1. Socio-economic inequality before 1993/1994

The apartheid era not only embedded racial inequality but also empirical analysis during the apartheid era. This shows that severe socio-economic inequality also resulted from racial exclusion and discrimination. In 1991, for example, 48.9% of the persons in South Africa were considered poor, while 76.7% of the persons in TBVC¹⁴ states were considered poor (Whiteford & McGrath, 1994). It was further noted that 25.1% of the population in South Africa at this time earned less than half the minimum living level (MLL) (Whiteford & McGrath, 1994). During apartheid, it was evident that the Black-African population, with specific reference to evidence from Pretoria, was the poorest population group in the country, followed by the Coloured, Indian/Asian and White population groups (Hattingh & Horn, 1991). The extent of racial inequality at the time can furthermore be expressed by 67% of Black-African households being poor, while only 6.7% of White households were considered poor (Whiteford & McGrath, 1994). The socio-economic impact of access to resources also played a significant part in creating and perpetuating inequality in the urban environment and should therefore be a key area of the investigation. The disparity between rural and urban households was also evident in 1991, with a ratio of 74.6% rural poverty compared to 28.6% urban poverty. These disparities sparked rural-to-urban migration, fuelled by the prospect of the urban environment holding opportunities for a better life. However, in cases where the urban environment did not provide these opportunities, it simply meant that the location of poverty changed and socio-economic inequality in urban environments increased. The Gini coefficient for South African households remained high at 0.68, but at least stable between 1975 and 1991 (Whiteford & McGrath, 1994; Crankshaw & Parnell, 2004). During this same period, it was evident that the richest 20% Black-African households became richer while the rest of the Black-African population became poorer. This resulted in severe inter-racial inequality that is still evident today (Crankshaw & Parnell, 2004). Leibbrandt *et al* (2010) note that, after apartheid, the national Gini coefficient increased from 0.66 to 0.70 between 1993 and 2008, based on national household survey data from 1993, 2000 and 2008. Despite the fact that the increase can be attributed to the

¹⁴ The Transkei, Bophuthatswana, Venda and Ciskei (TBVC) states were created as homelands for Black-African residents during the apartheid era. Refer to chapter 2 for more information about these states, including their location.

availability of more accurate data, this still clearly suggests that post-apartheid South Africa is no more equal in terms of income distribution than its foregoing years.

4.4.2. Socio-economic inequality during 1993/1994 to 2010/2011

After the apartheid era, the new democratic government of South Africa was faced with severe (and increasing) levels of inequality, which they intended to change along with the levels of poverty in the country. The government can be accredited for their valiant efforts to reduce poverty, especially in terms of basic service delivery, which can be regarded as successful (Naidoo, 2005). Empirical studies on levels of socio-economic inequality after 1994 did, however, not indicate significant improvements. According to Leibbrandt *et al* (2010), it is evident that the aggregate level of income inequality in South Africa increased between 1993 and 2008, while poverty in urban areas also increased; especially the Black-African and Coloured population groups continue to be associated with acute poverty levels. Based on Gini coefficient calculations, the inequality levels for the four main population groups in South Africa, and the country as a whole, have always been very high compared to international standards, but have not seen significant upward or downward movement between 1975 and 1996 (table 4.2). In 2001, however, there are major increases visible. A relatively unchanging Gini index does not go by without concern, as Leibbrandt *et al* (2001) noted. It could hide the fact that the rich are growing richer and the poor are growing poorer. If the income of both the poor and the rich increases by the same amount or percentage, it would not show in the Gini coefficient (Glaeser *et al*, 2009) calculations, but in reality it does worsen the situation in the particular area. Therefore the lack of change remains a concern until further investigation is possible. The national Gini coefficient for 2009 has been calculated at 0.63 by Goldman Sachs (2013).

TABLE 4.2: Comparisons of inequality in South Africa from 1975 to 2001 using the Gini coefficient (Source: Leibbrandt *et al*, 2007:5; Statistics South Africa, 2014:35)

	1975	1991	1996	2001
Black-African	0.47	0.62	0.62	0.66
Coloured	0.51	0.52	0.53	0.60
Indian/Asian	0.45	0.49	0.48	0.56
White	0.36	0.46	0.44	0.51
National	0.68	0.68	0.68	0.73

When comparing the total share of a population group in South Africa with their share of the total income in the country (table 4.3), the severe levels of socio-economic (and racial)

inequality during this time period is affirmed. It is noted that in 2000 (and evident in table 4.3), the Black-African population group was still the poorest in the country, followed by the Coloured and Indian/Asian population groups. The poverty among the White population of the time remained virtually zero (Mustapha, 2011).

TABLE 4.3: Income and population shares in South Africa for 1996 and 2001 (Source: Leibbrandt *et al*, 2007:6)

	Share of total population		Share of total income	
	1996	2001	1996	2001
Black-African	78%	80%	38%	38%
Coloured	9%	9%	9%	9%
Indian/Asian	3%	3%	5%	6%
White	11%	9%	47%	48%

These high levels of socio-economic inequality are also echoed by Tregenna and Tsela (2012) in their summary of income and expenditure inequality in South Africa. Their analysis, based on data from 2005 and 2006, reveals that inequality (in terms of the Gini coefficient) based on calculations using data for work income, work income and grants, gross income and disposable income per capita, varied between 0.799, 0.732, 0.716 and 0.711 respectively. All these values contribute to the severe overall level of inequality experienced in the country. One relieving finding is that, according to a report by Goldman Sachs (2013) entitled *Two decades of freedom – A 20 year review of South Africa*, there has been a considerable improvement in the Living Standard Measure (LSM)¹⁵ profile of the country. The report indicates that the number of people in the LSM categories 5 and 6 increased by 5 million people between 2001 and 2010, while the number of people in the LSM categories 7 to 10 increased by 4.7 million people during the same period (Goldman Sachs, 2013). The middle class contains the largest proportion of the population whose circumstances have improved. It thus suggests an improvement in the socio-economic conditions in the country. The report also highlights that the Black-African middle class has doubled between 1993 and 2008. This is especially a relieving dynamic considering that most other countries in the world showcase a declining middle class. It is this growing middle-income class that have become a key focus area for both Government and academia when evaluating socio-economic inequality in South Africa. Numerous surveys have provided a more detailed perspective on the abovementioned middle class, which have gradually been rising in South

¹⁵ The LSM is a standard method used to describe the socio-economic distribution of the population based on 10 income categories. Categories 1 to 4 are considered lower-income groups, 5 and 6 are medium-income groups and categories 7 to 10 are considered high-income groups.

Africa (*Sake Beeld*, 2006; Goldman Sachs, 2013) and which creates the impression that South Africans now have the ability to pick themselves up out of poverty, even at a faster rate than most countries in the world (*Sunday Times*, 2007a). The characteristics and trends of the middle class were highlighted in newspapers and described as a socio-economic class that:

- is still predominantly White, but also as a socio-economic class in which the number of Black-Africans has increased by between 20% and 27% during the first 10 years of democracy (*Beeld*, 2006b),
- has a positive representation of the four main racial groups in the country, with the Black-African population and Indian/Asian population being regarded as the most mobile racial groups (*Sunday Times*, 2007a),
- has seen the economic mobility of the Black-African population also translate into spatial movements. It was estimated that between 2006 and 2007, nearly 200 000 households relocated from townships to suburbs in South African metropolitan areas (*Sunday Times*, 2007b). This indicates the value assigned to owning property as a tool for, or consequence of, increased socio-economic status and well-being, but it also influences the spatial aspects of inequality in cities, and
- is expected to continue to grow due to more favourable economic conditions in the country (*Sake Beeld*, 2006).

4.4.3. The current socio-economic inequality situation in South Africa (based on the 2011 national census and other surveys)

Twenty years after democracy and numerous concerted efforts to reduce socio-economic inequality in South Africa, the country is still faced with a remarkable challenge. The 2011 national census and various national and regional household surveys have allowed for new empirical studies (including this study) to shed light on the current situation. On an individual level, national inequality is measured as 0.65 on the Gini index while the values for different population groups is at 0.55 for Black-African, 0.53 for Coloureds, 0.45 for Indians/Asians and 0.42 for Whites (Statistics South Africa, 2014). According to Goldman Sachs (2013), their research found that the national broad unemployment rate in 2013 was at 36.5% (which included discouraged work seekers) and that the number of people living below \$2 per day (which is on average between R20 and R25), decreased from 16 million in 1994 to 15 million in 2013 (Goldman Sachs, 2013). Considering the significant population growth between 1994 and 2013, the latter statement can be viewed as a significant improvement, but in reality poverty remains a significant challenge in both urban and rural areas.

The current state of socio-economic inequality in South Africa is influenced by the national space economy and is very important to consider as part of this discussion, as it provides some context for the interpretation and understanding of spatial inequality in the study area. The South African spatial economy provides important insights into the regional economic characteristics surrounding the study area, which have an inevitable impact on the socio-economic dynamics in the study area. This is important due to the interrelated nature of regional and urban inequalities (Kim, 2008). Based on the data from the 2011 national census, the Gauteng and Western Cape provinces of South Africa are considered the wealthiest. It is also evident, however, that these provinces have the fastest growing concentrations of poverty (Mustapha, 2011; The Presidency, 2007; Statistics South Africa, 2011a). This is evident from an analysis of the median household incomes per metropolitan area in South Africa in 2011 (figure 4.4). Subsequently the metropolitan areas in the two abovementioned provinces express very high levels of inequality and create a certain prelude to any socio-economic analysis in South African metropolitan areas.

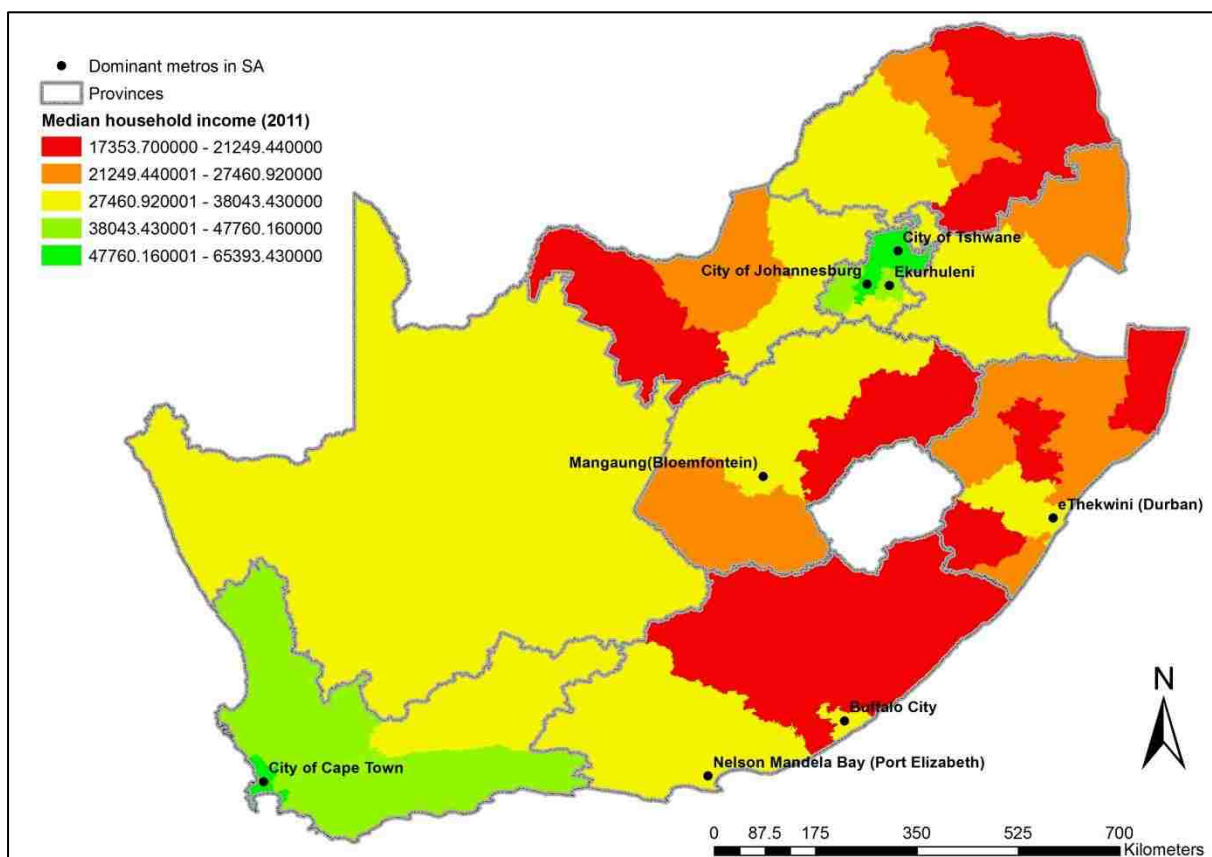


FIGURE 4.4: Median household income in metropolitan areas of South Africa (Statistics South Africa, 2011a)

The analysis of median household incomes in metropolitan areas of South Africa in 2011 clearly indicates that the City of Cape Town and the CTMM have the highest household incomes. Other dominant metropolitan municipalities in the country (Buffalo City, Ekurhuleni, eThekweni, Mangaung, Nelson Mandela Bay and the West Rand) are also among the “richer” areas in the country compared to their neighbouring metropolitan municipalities. The position of the CTMM in this national context already alludes to possible inequalities in the municipality when considering the extent of poverty noted in the previous chapters.

The numerous efforts related to monitoring socio-economic inequality in South Africa have also been able to shed new light on the extent of racial inequality, especially related to the middle class. Recent work conducted separately by the University of Stellenbosch and the University of Cape Town indicates that the number of Black-Africans in the middle class (people with a monthly income of more than R4 100) is ever increasing (*Beeld*, 2013a; 2013b). The percentage of Black-Africans in the middle class has increased from 11% in 1993 to 41% in 2012 (*Beeld*, 2013a). These percentages do not mean that socio-economic inequality and its racial connotations are eradicated, but it does indicate that the racial undertone of inequality is undergoing some positive changes. Despite these successes, any attempts to improve the inequality situation in the country are hindered by the large group of marginalised and poor rural population inherited from the apartheid era (*Leibbrandt et al*, 2007).

Considering the various changes (or lack of changes) in the socio-economic inequality situation of the South African society over the last two decades, it is now possible to use this context to inform the analysis of socio-economic inequality in the study area. The next section will focus on the study area, discuss the analysis related to socio-economic inequality in the study area and bring the study closer to its final objective – determining the extent of socio-spatial change since apartheid and providing an improved understanding of socio-spatial relationships in South African urban areas.

4.5. The City of Tshwane Metropolitan Municipality socio-economic inequality situation

In the CTMM context (derived from the South African context), it is essential to determine whether the inherent racial inequalities created by the apartheid era have persisted in the metropolitan area and whether racial distinctions have been replaced by socio-economic divides. It has already been determined in chapter 3 that racial distinctions are still evident in the CTMM, but in different locations and in less obvious concentrations. Thus it becomes

important to determine the possibility of socio-economic segregation. If the continuation of poverty and inequality is true, it also becomes essential to determine the drivers of changes in poverty and inequality (Leibbrandt *et al*, 2010) in order to conceptualise suitable responses to the situation. The analysis in the following section is approached with a reduced statistical focus and an increased spatial focus by investigating the spatial distribution of various socio-economic indicators per sub-place in the study area. The reason is to allow for a spatial comparison with the racial-residential segregation analysis from the previous chapter in order to accurately describe the socio-spatial conditions in the study area, and to ultimately compare the observed spatial characteristics with those of urban areas during the apartheid era. The study area refers to the functional urban core of the CTMM, as described in chapter 1 of the study. The functional urban core was chosen because the full extent of the amalgamated CTMM includes some rural and peri-urban areas in which socio-economic inequality dynamics are expected to be different; especially compared to the spatial structure of the early post-apartheid city. The study area comprises 549 sub-places (which are neighbourhoods or spatial entities demarcated for census enumeration and administrative purposes), but excludes the sub-place “Tshwane NU” due to its skewed impact on the spatial analysis.

In order to understand and accurately interpret the findings from the socio-economic inequality analysis, it is important to highlight the economic development context of the CTMM. According to the Integrated Development Plan (IDP) for the CTMM (City of Tshwane, 2013), the following circumstances accurately describe the socio-economic conditions in the municipality:

- the CTMM’s contribution to the Gross Domestic Product (GDP) of the Gauteng province is R151 Billion and the overall unemployment rate in 2010 was 24.2%;
- improvements have been made to overall unemployment and youth unemployment levels in the city, with reductions of 7.4% and 7.9% respectively between 2001 and 2011;
- the dependency ratio in the municipality is 1:4 – which means for every one person between the ages of 15 and 64 years, there are four people who depend on them;
- since 1996, the income inequality has fluctuated between 0.58 and a maximum of 0.63, while poverty has fluctuated between 17.6% of the population and a maximum of 26.3%; and
- poverty in the CTMM is mostly located in the previously disadvantaged areas – that is, the townships close to former homelands and informal settlements.

These circumstances are specifically related to the economic environment in the study area, but it is important to consider all the demographic and contextual information about the study area that have been highlighted throughout the study (figure 1.1, p. 15; table 2.2, p. 61; figure 2.11, p. 62; table 3.5, p. 94) in order to allow for an accurate interpretation of the ensuing socio-economic analysis. The abovementioned situations indicate that the CTMM has a diverse socio-economic environment in which wealth and poverty are located in close proximity to each other, and where socio-economic inequality has always been high. It is this legacy that shapes a significant part of the socio-spatial dynamics in the study area.

4.5.1. Annual median household income distribution

The first indication of socio-economic inequality in the study area is provided using the annual median household incomes per sub-place. This is done by using statistical indications as well as providing the spatial distribution of median household incomes. Firstly, the Gini coefficient in the study area, based on the median household incomes from the national census, was calculated as 0.598. This value indicates severe income inequality among households. Compared to international standards it indicates very high inequality, but compared to South African trends, it is very reasonable. Due to the use of median household income values for each sub-place in the study area, this value is not the most accurate of true income inequality in the study area, and therefore other indicators must also be used. The Lorenz curve (figure 4.5) provides a further graphic representation of the median income distribution per sub-place in the study area. This representation confirms the high levels of income inequality in the study area that was anticipated from the broader South African and metropolitan development context. A more detailed income distribution is also provided in table 4.4. On reviewing the Lorenz curve, it became evident that the poorest 20% of the households in the study area receive only 2% of the income, while the richest 20% of the households receive 64% of the income in the study area. The severe income inequality is also visible from the amount of the annual median household incomes associated with the 20th, 40th, 60th and 80th percentile of the households in the study area (table 4.4).

The final, and probably most significant part of this household median income analysis, is the spatial distribution of median incomes per sub-place in the study area (figure 4.6, p. 139). The analysis clearly indicates that the central areas of the study area have a higher annual income than those sub-places located on the periphery of the study area. It is also evident that in some areas of the city there are differences between the median incomes of adjacent sub-places; such differences are especially visible in lower income areas, for example in Eersterust (in the east) and Soshanguve (in the north-west) of the study area.

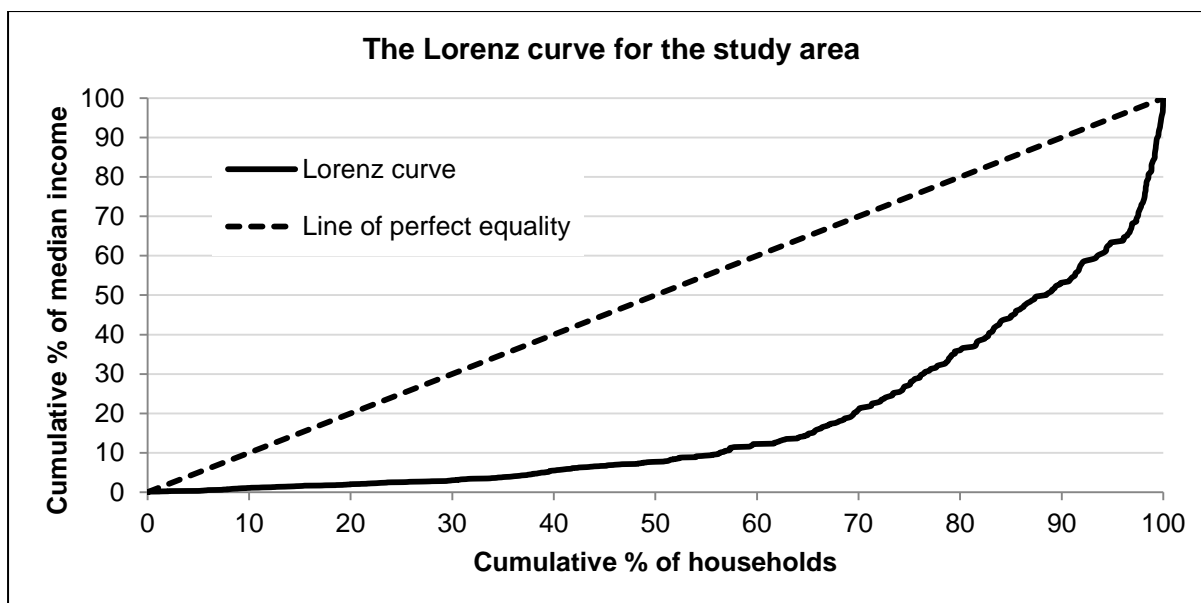


FIGURE 4.5: The Lorenz curve for the study area based on median household income values in 2011.

TABLE 4.4: Income distribution in the study area (2011)

Socio-economic variable	Household-income relationship			
Cumulative household share	20%	40%	60%	80%
Annual median income	R 29 281	R 39 943	R 98 835	R 258 007
Cumulative income share	2%	5.5%	12.25%	36%

There are, however, less significant differences visible between adjacent sub-places in higher income areas like in Centurion, Eldoraigine and Garsfontein. The different dynamics in lower- and higher-income areas can possibly be attributed to people in lower-income groups moving through income categories faster than those people settled in a higher income category, like the rising Black-African middle class described earlier. The aforementioned differences can also be linked to the household size (which is often higher in low-income areas) and due to the dependency ratio in the study area. However, the income differences between adjacent sub-places do suggest significant inter-racial inequality considering the racial group distribution in the study area. Pockets of wealth are situated in Black-African dominated sub-places in the north-western parts of the study area (Soshanguve and Akasia) and can be contrasted to other Black-African dominated sub-places in the study area. More detailed investigations will be able to confirm the extent of this perceived intra-racial income inequality. The analysis also importantly indicates that the poorest sub-places and the richest sub-place are maximally spatially separated from each other. There is a very clear north-south divide between these two general income class limits.

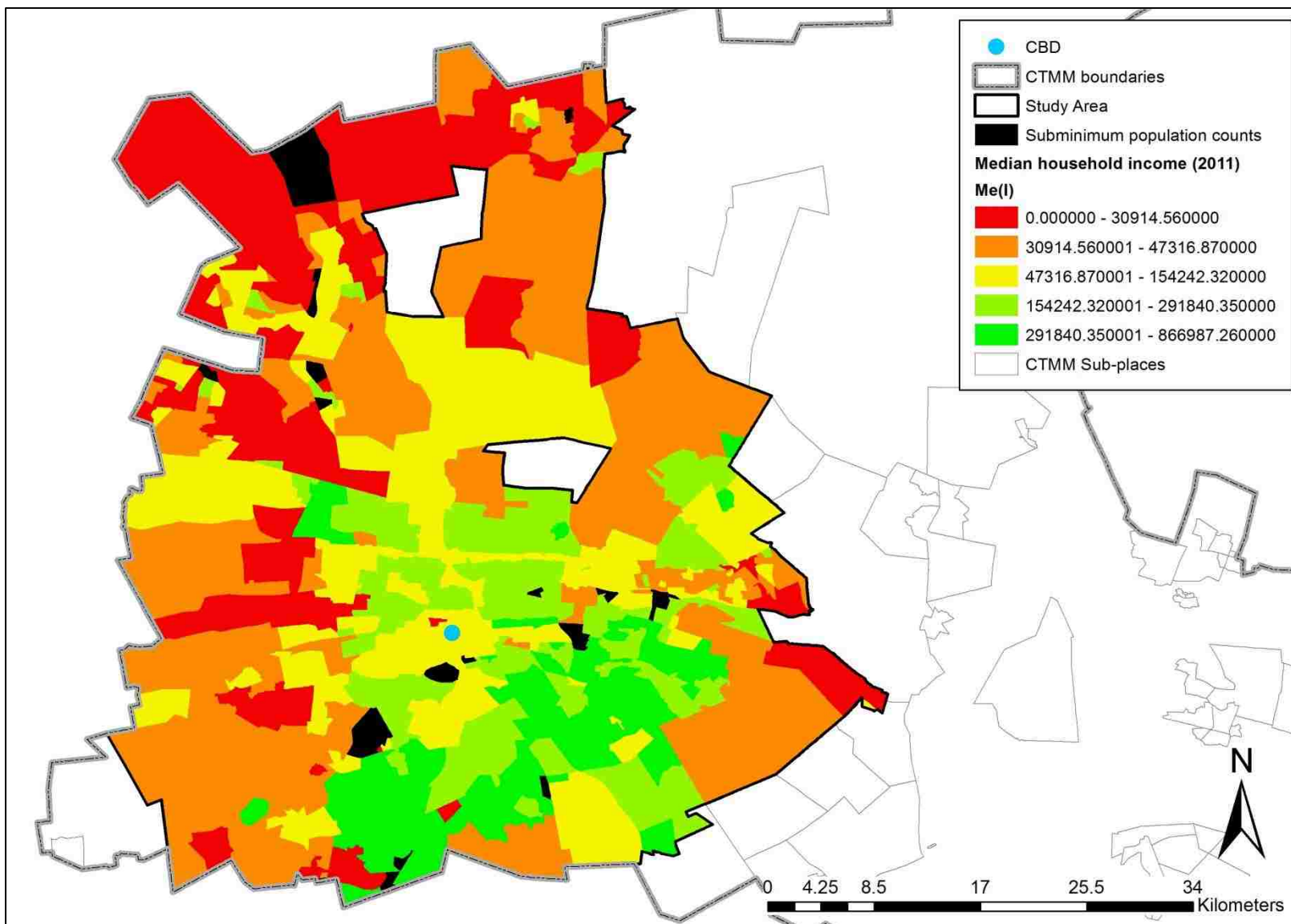


FIGURE 4.6: Annual median household incomes in the study area per sub-place in 2011

A crucial concern associated with this divide and the city's clear income zones is that the locations of higher- and lower-income zones have not changed significantly. They still resemble those of the Segregated City, The Apartheid City and the Separate City. This means that income zones have a significantly stronger legacy and attachment to specific areas of the city that are difficult to change. The rigorous spatial income distribution in the study area poses the biggest challenge for future progressive socio-spatial change in the study area. The spatial distribution of the median income in the study area also suggests that some elements of a dual-city dynamic have been embedded in the city structure, which can be explored in further detail. The dual-city dynamic will ultimately require focussed interventions in these different areas to ensure progress towards a more equal city.

4.5.2. Unemployment distribution

The second view of socio-economic inequality in the study area is provided by using the spatial distribution of unemployment. The percentage of unemployment per sub-place was mapped (figure 4.7) by using the unemployment numbers from the 2011 national census. The counts only included the population in the sub-place between the ages of 15 and 64 years old and used the narrow definition of unemployment, as explained earlier in the chapter. The choice of the unemployment definition was made according to the norm used by Statistics South Africa (Kingdon & Knight, 2001), but also because the broad definition did not seem to influence unemployment dynamics in the study area significantly. The unemployment data for the study area indicated an average unemployment difference per sub-place of 1.61% between the narrow and the broad definitions of unemployment for each sub-place, and a difference of 2.16% for the whole study area between the two definitions. Therefore, the statistical insignificance of these differences made it more sensible to use the more common narrow definition of unemployment for the study area. The analysis revealed that although unemployment is not extraordinary high in most sub-places (evident from the unemployment numbers discussed earlier), it is concentrated in the sub-places on the periphery of the study area. These sub-places are located far from the main employment market and notably among those sub-places dominated by the Black-African population group. This dynamic provides further evidence of socio-economic inequality among racial groups in the study area. Furthermore, considering the dependency ratio in the study area of 1:4 noted earlier, it is evident that sub-places close to former homeland areas are more unequal than other areas due to their dependency ratio combined with higher levels of unemployment. It is also evident that unemployment in former White sub-places in the western parts of the study is very low compared to other areas, and therefore further suggests a definite level of intra-racial inequality in the society.

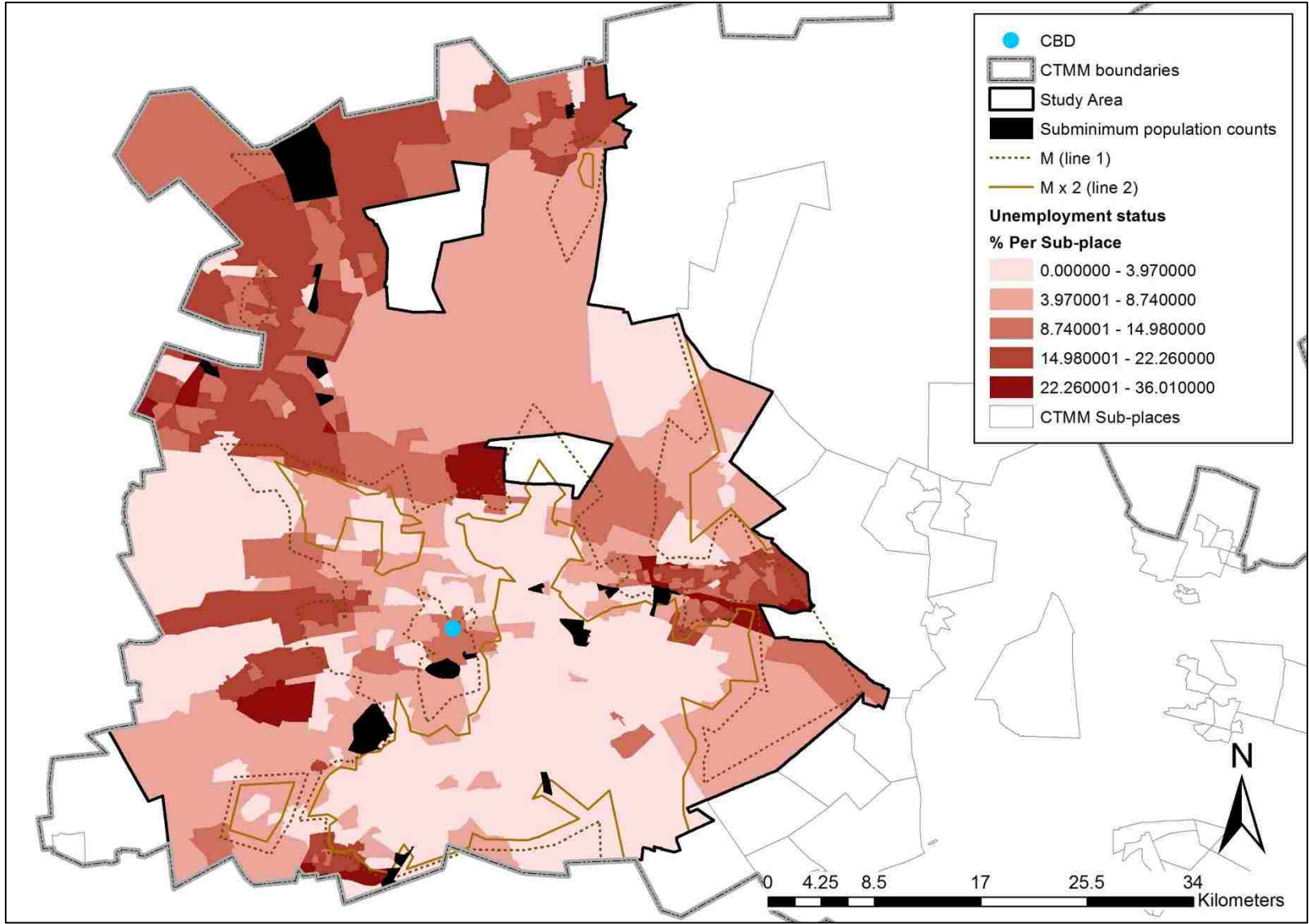


FIGURE 4.7: Unemployment percentages in the study area per sub-place in 2011

The unemployment distribution map also indicates the distribution of median household income by means of two lines. Median (M) household incomes for 2011 are shown with $M = R99\ 121.00$ per annum (represented by line 1) and $M \times 2 = R198\ 243.00$ per annum (represented by line 2). The median household income lines divide the study area into three zones that represent below median, median and above median income circumstances. These two median household income lines are also included in the map to provide some perspective on the impact that unemployment has on the median household income distribution of the study area. It is striking to note that areas that receive twice the median income have virtually zero unemployment. The analysis shows a clear two-way relationship between median household income and unemployment levels, and therefore suggests that access to employment is a key determinant of income (and its spatial distribution) and socio-economic inequality in the study area.

4.5.3. Tenure status and housing quality distribution

The picture of socio-economic inequality in the study area is further influenced by tenure status and housing quality of those occupying property in the city. These two factors are considered an important part of the analysis because (1) property is known to be a valuable asset to one's current and future wealth opportunities and (2) the apartheid era prevented "minority" groups from acquiring property (which had a significant impact on the inequality evident in the South African society). The analysis of tenure status considered the percentage of properties per sub-place in the study area that are (a) occupied on rental, (b) owned with liabilities, (c) owned without any liabilities and (d) occupied rent-free (figure 4.8). These categories refer to the agreement under which the property is held by its occupants (Statistics South Africa, 2011b). The analysis revealed some expected patterns, but also some new insights into these dynamics in the study area. Rental property is dominant in the inner city area, where a greater supply of apartments are available for rent, while those properties that are occupied rent-free, are located on the periphery of the study area (often in informal settlements). It is, however, interesting to note that a significant percentage of properties in sub-places with low annual median incomes and higher unemployment are owned and already paid off by their owners. These households are therefore placed in a relative "better" socio-economic position compared to households who rent and own their property. This can be attributed to the size and value of the properties in these locations, but do emphasise that a suitable response to improve the social well-being of these locations would not have housing delivery as a first priority. When comparing the tenure status distribution and the median income distribution, it seems that rental housing is affordable in the study area and does not seem to aggravate socio-economic inequality by taking away

large parts of households' income, and that property ownership is a more significant contributor to socio-economic inequality in the study area.



FIGURE 4.8: Tenure status in the study area per sub-place in 2011

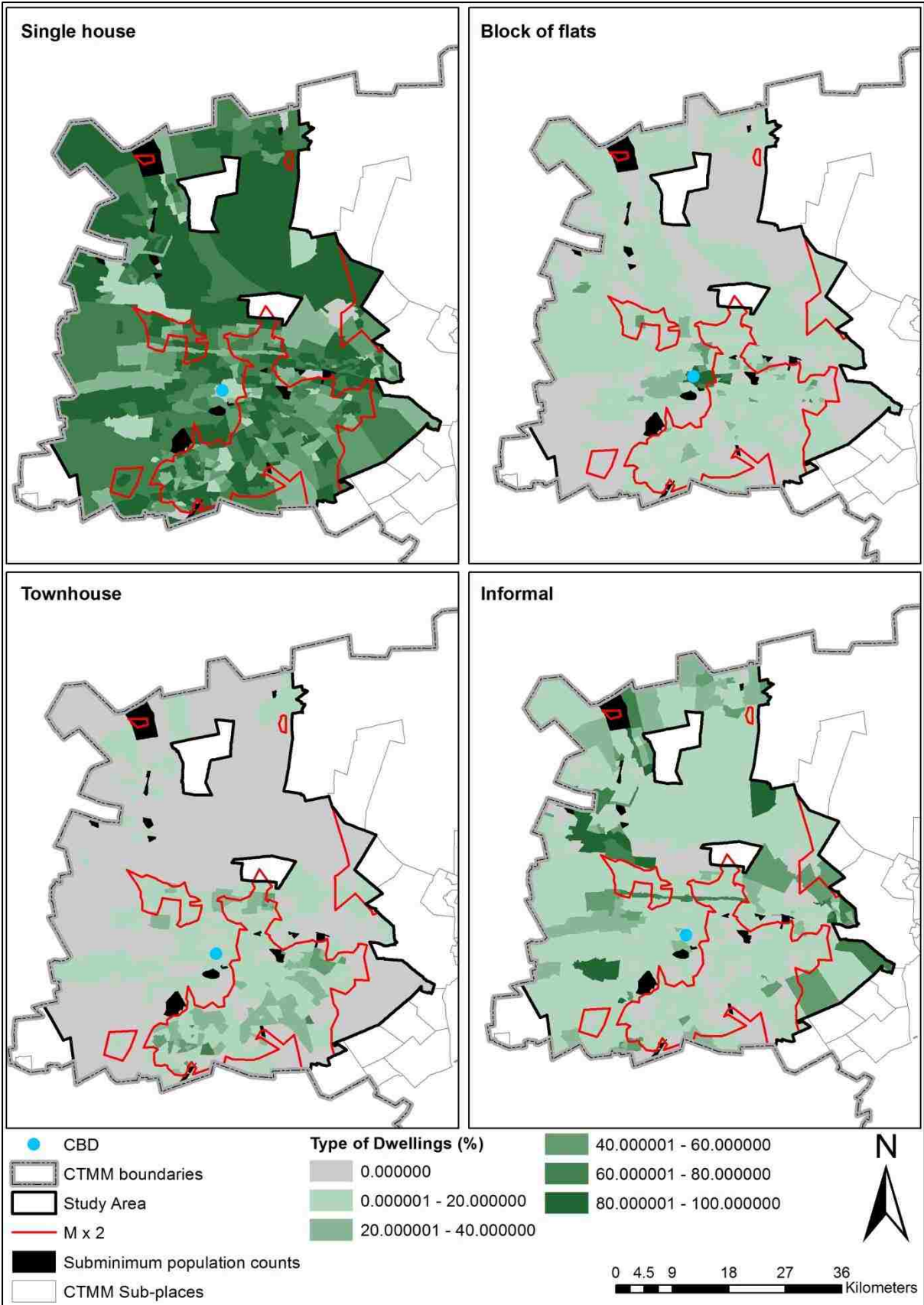


FIGURE 4.9: Dwelling types in the study area per sub-place in 2011

The housing quality analysis for the study area (figure 4.9) did not reveal significant insights into the socio-economic inequality situation, but confirmed the position of some households across the inequality spectrum. The study area is dominated by formal housing, with the most significant differences in housing quality being between the inner city and the outlying parts of the study area, close to former homelands and in informal settlements. Lower quality housing (classified as informal housing) does not place a household in a detrimental position per se, but higher quality housing (like formal housing) does increase a household's welfare and opportunities for further welfare growth. It is for this reason that housing quality can worsen the socio-economic inequality situation in the study area, even if it would not necessarily improve the situation in other circumstances. Housing, being a symbol of social status, can also cause various social tensions in society if there are discrepancies in terms of housing quality between areas, and especially when little improvement is possible for the households themselves and little is being achieved by local government.

4.5.4. Highest education distribution

The national census survey of 2011 also provided a perspective on the highest level of education for people in the study area. The census survey differentiated between various levels of highest education and included categories for no formal education, secondary school (grades 9, 10, 11 and 12), grade 12 without a higher diploma or certificate, grade 12 with a higher diploma or certificate and various differentiations of tertiary qualifications (Statistics South Africa, 2011b). The number of education categories (referring to the various levels of education that a person can complete) is too many for the analysis in this study, and the difference between some of the classes is insignificant for the purposes of the analysis. It was therefore decided to use only four classes that would give the best indication of the education differences per sub-place in the study area. The various counts for tertiary qualifications (which differentiate between bachelor's degrees, honours degrees, master's degrees and doctoral degrees) were for example combined into one count for all tertiary qualifications in the sub-place. The choice of four simplified categories were also influenced by the fact that in the South African context, a person is allowed to leave school after the age of 16, or in education terms, after completing grade 9 education, as well as the fact that a higher level of education would mean a household can sell their skills for a higher "price" in the labour market. Using these contextual indicators, the four education categories that provide the most accurate indication of education differences in the study area (and which have a significant influence on potential income) include (1) no formal education, (2) grade 9 education, (3) grade 12 education and (4) tertiary qualifications.

The spatial implication of the highest level of education distribution per sub-place was expected to be significant considering that only 34% of the total population in the whole CTMM have obtained matric in 2011 (City of Tshwane, 2013). On mapping the highest education level per sub-place (figure 4.10, p. 147), the expected spatial disparity became clear. The study area does indicate that very few people have no formal education (only 5% of sub-places in the study area have more than 10% population with no formal education), as well as very few people who have only completed grade 9 education (less than 2% of sub-places in the study area have more than 10% population with only grade 9 education). The spatial distribution of these two levels of education is therefore insignificant, as seen on the maps. This does indicate that most people have access to basic education and use their access to continue their education to at least the middle of their secondary schooling. The spatial distribution of people with grade 12 as their highest education qualification also indicates that the prevalence of grade 12 education is good in the study area. The spatial distribution, however, shows some disparities, with evidence of more people in the southern parts of the study area having completed grade 12 than in the northern parts of the study area, which suggests some inequality in terms of access to higher levels of education. The biggest concern regarding unequal education levels is found at the tertiary level of education and its associated spatial distribution. Although there is a relatively large number of people in the study area with tertiary qualifications (280 024 people, or about 10% of the population, according to the national census [Statistics South Africa, 2011a]), it is clear that the spatial distribution of tertiary qualifications is unequal. The spatial analysis indicates that tertiary qualifications are concentrated in the south-eastern sub-places of the study area. Considering the relative equal distribution of other levels of education, it is clear that inequality in education arises after secondary school and, assuming that a person with a tertiary qualification also completed grade 12, it is clear that a tertiary qualification puts a person well ahead in terms of education and the related increase in relative socio-economic status. The reasons for the spatial concentrations of higher qualifications could include a person's ability to pass higher levels of education, but also the cost of tertiary education and the number of people who can be accommodated in tertiary education institutions.

Considering the previous analyses, there is a very clear visual correlation between the spatial patterns of higher median incomes, low levels of unemployment and tertiary education qualifications. This further suggests that a lack of income is a significant barrier to accessing higher education, but also that it correlates with unemployment and therefore overall socio-economic inequality in the study area. The combination of higher education in south-eastern parts of the study area compared to lower education levels in all other areas, as well as the correlation with household income and unemployment, indicates that higher

education should form a crucial part of the suitable response to combatting socio-economic inequality in the study area, as it influences such a variety of aspects related to a person's quality of life.

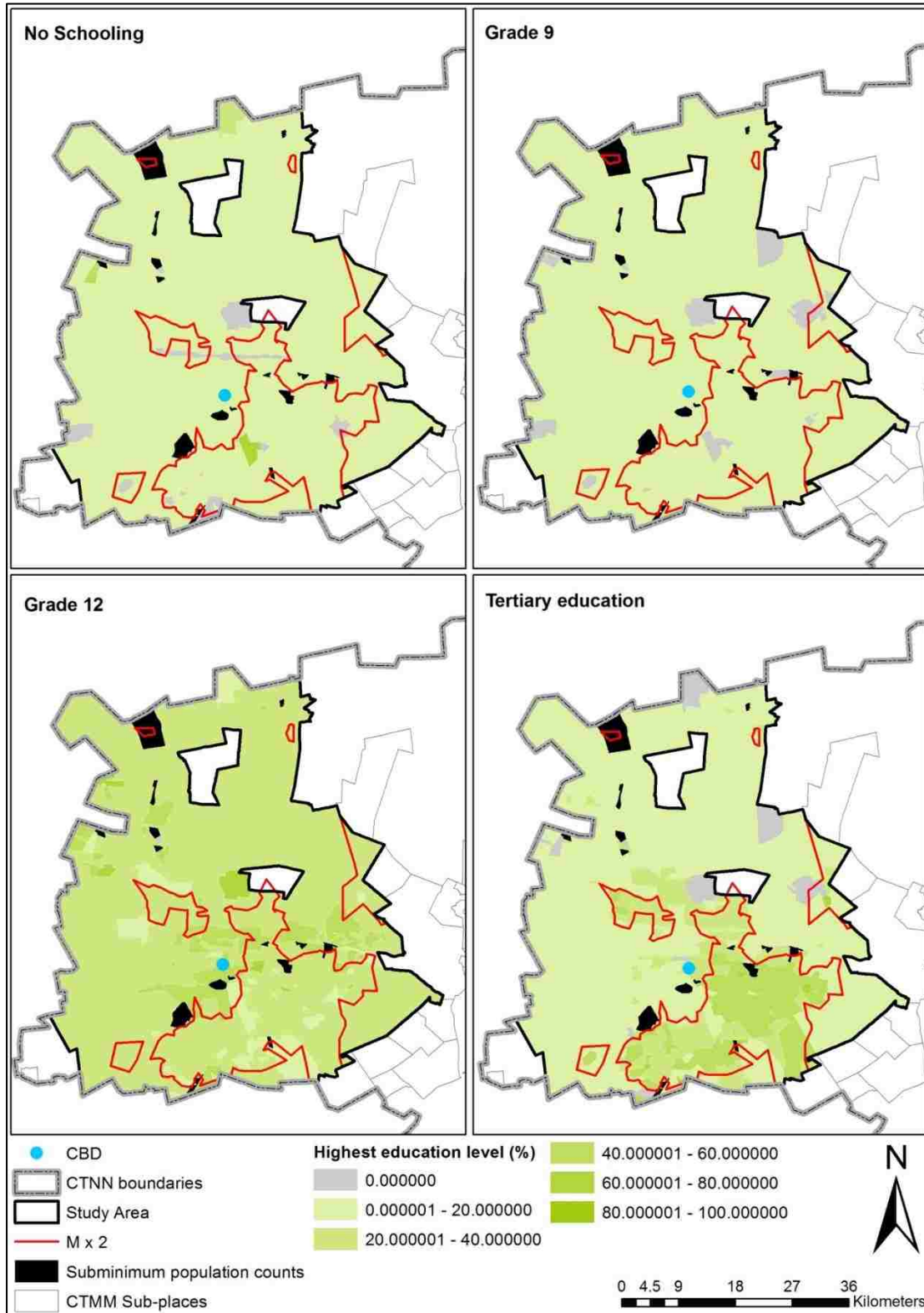


FIGURE 4.10: Highest education level in the study area per sub-place in 2011

The direction of the relationship between these socio-economic variables is still unclear, as it could be that higher education leads to employment and higher income, or it could be that higher income and employment provides the opportunities for higher education. Considering that all these options are probably equally relevant in the study area, this relationship has important implications for a suitable response to inequality in the study area and suggests that higher education is a key determinant of socio-economic well-being in society. Housing, in terms of housing quality and tenure status, has a less significant influence on socio-economic differentiation in the study area than the aforementioned aspects, but still shapes the character of the study area. Rental housing remains most prominent in the study area and is accompanied with an interesting (albeit not surprising) dynamic where higher income areas are associated with more housing debt than lower income areas. In terms of housing quality, the study area is dominated by single houses. It is, however, evident that townhouses provide an opportunity for residents to live in areas characterised by above median household income, while informal housing is directly associated with the poorest areas in the city. Therefore, these two housing dynamics do not show the same visual significance as other socio-economic variables in the study area, but the correlation that is visible suggests that it is very important to create a variety of tenure options and housing types in order to create opportunities for socio-economic integration in the study area. These dynamics and the approaches that are required to achieve them will need to be explored by means of a specific investigation into property market dynamics in order to determine the impact of land valuations and the functioning of the real estate industry.

4.5.5. Other socio-economic inequality determinants

An analysis of socio-economic inequality can also include numerous other dimensions and variables to improve the overall picture of the extent of inequality. The national census conducted in 2011, as well as secondary data sources, provides data about many of these other determinants, although many did not indicate significant spatial implications and were therefore not included here. The determinants that remain worth mentioning, because they provide context to the overall socio-economic inequality situation and could be applied to other contexts, include the following:

- *access to water*: In 2011, almost 90% of households in the CTMM had access to potable water in their yards or from a water source within 200 m from their stands (City of Tshwane, 2013), and therefore this does not make a significant, or measureable, contribution to socio-economic inequality in the study area; and

- *access to electricity*: In 2011, 88% of households in the CTMM had access to electricity, and therefore this does not make a significant, or measurable, contribution to socio-economic inequality in the study area (City of Tshwane, 2013).

It should also be noted that the abovementioned figures from the CTMM IDP are for the entire extent of the municipal area, which includes large portions of semi-rural locations and communities. Thus, considering that the study area is highly urbanised and developed, it can be expected that access to water and electricity would be even higher in the study area and does therefore not contribute negatively to socio-economic inequality. These determinants do, however, remain important when considering the rapid growth rate in the municipality and the province, and access to these basic services could become problematic and contribute to socio-economic inequality if not planned and monitored properly.

4.6. Socio-economic status classification

The preceding analysis of socio-economic conditions in the City of Tshwane included a variety of variables from the national census survey that relate to the socio-economic status of the sub-places in the study area. These variables were all represented spatially and already indicated a certain level of socio-economic inequality among sub-places which, in turn, contribute to the overall socio-economic inequality perceived in the study area. The study's objective of describing the patterns of socio-economic inequality in the study area can be best achieved by classifying each sub-place in relation to other sub-places based on their specific socio-economic characteristics derived from the variables analysed above. The socio-economic classification provides an indication of the relative position of sub-places above or below the median socio-economic level in the study area, similar to research done in large Canadian cities mentioned earlier, which has proven to provide a valuable indication of the socio-economic conditions in the study area. The following section explains how this relative classification for the socio-economic status of a sub-place was created, and also shows the application of this classification to the study area.

The socio-economic classification proposed here is principally based on an overall score per sub-place that is derived from the sum of scores given to each census-acquired socio-economic variable analysed in the sub-place. The scores per socio-economic variable provide an indication of where the particular sub-place is in relation to the median level of the particular census-acquired socio-economic variable in the study area. In this classification, a lower score indicates a socio-economically deprived position in relation to the study area median, while a higher score indicates a socio-economically privileged position. In other

words, the overall socio-economic classification score for the sub-place gives an indication of whether the socio-economic status of the sub-place is slightly or significantly above or below the study area median value. The tables below (tables 4.5, 4.6, 4.7, 4.8 and 4.9, p. 150 – 153) provide more details on the application of these scores for each of the socio-economic variables analysed in the study area. In each instance, the first column indicates the percentage value with which a sub-place could vary from the median socio-economic variable value for the study area; the second column indicates the score assigned to each category and the third column provides a qualitative description of the sub-place’s position in relation to the median value, as well as indicates the median value of the socio-economic variable for the study area.

Median income and unemployment status can be classified fairly easily, considering that any normal classification (like the spatial or statistical ones used earlier), based on its respective values, already indicates a certain level of disparity between sub-places. In order to standardise the initial classification for a comparison with other socio-economic variables, it is required to calculate the variation from the median income or median level of unemployment per sub-place. The classification for these two variables and the meaning thereof are indicated in table 4.5 and table 4.6 respectively.

TABLE 4.5: Classifying the annual median household income per sub-place

Percentage variation from median household income	Median income score	Relation to the study area median household income
-70 % to -100 %	1	Severely below median
-40 % to -70 %	2	Below median
-10 % to -40 %	3	Slightly below median
-10 % to 10 %	4	Median (R99 121.00)
10 % to 40 %	5	Slightly above median
40 % to 70 %	6	Above median
70% to 100%+	7	Significantly above median

TABLE 4.6: Classifying the unemployment percentage per sub-place

Percentage variation from unemployment median	Unemployment percentage core	Relation to the study area unemployment percentage
-70 % to -100 %	7	Severely below median
-40 % to -70 %	6	Below median
-10 % to -40 %	5	Slightly below median
-10 % to 10 %	4	Median (6.46 %)
10 % to 40 %	3	Slightly above median
40 % to 70 %	2	Above median
70% to 100%+	1	Severely above median

In order to derive a score for the tenure status variable in the national census, it is required to differentiate between a “desired” and an “undesired” tenure status variable in order to have one single median reference rather than four median references. For the purpose of this classification, the differentiation is made based on whether a property owner can use the property as an asset or not. The “available as an asset” category used here includes the tenure status variables of “owned with liabilities” and “owned without any liabilities”. The variables for “occupied on rental” and “occupied rent-free” were regarded as situations in which the property owner cannot use the property as an asset. Sub-places with a high percentage of properties in these categories are considered to be at a less desirable socio-economic level than other sub-places. Hence a high score is given to a sub-place that has a relative high percentage of properties that are available as an asset in comparison to the study area median of the same variable. Table 4.7 provides more clarity on the application of this classification.

TABLE 4.7: Classifying the tenure status per sub-place

Percentage variation from tenure status variable (“Available as an asset”)	Tenure status percentage score	Relation to the study area tenure status percentage
-70 % to -100 %	1	Severely below median
-40 % to -70 %	2	Below median
-10 % to -40 %	3	Slightly below median
-10 % to 10 %	4	Median (57.02 %)
10 % to 40 %	5	Slightly above median
40 % to 70 %	6	Above median
70% to 100%+	7	Significantly above median

Similarly to the classification of tenure status in the study area, it is also required to differentiate between a “desired” and an “undesired” housing quality variable in order to have one single median reference rather than four median references for housing quality per sub-place in the study area. For the purpose of this classification, a differentiation is made between the percentage of formal housing and the percentage of informal housing in the sub-place. The national census counted informal housing (as indicated in the analysis above) as well as the number of caravans and tents in each sub-place. Both these housing types were combined in the informal housing category, while all the other housing quality variables were included in the formal housing category. Hence a high score in the housing quality classification is regarded as undesirable, as it indicates that the sub-place contains a relatively high percentage of informal housing compared to the median percentage of informal housing per sub-place in the study area. Table 4.8 below provides more clarity on the application of this classification.

TABLE 4.8: Classifying housing quality per sub-place

Percentage variation from housing quality variable (“Informal housing”)	Housing quality percentage score	Relation to the study area housing quality percentage
-70 % to -100 %	7	Significantly below median
-40 % to -70 %	6	Below median
-10 % to -40 %	5	Slightly below median
-10 % to 10 %	4	Median (1.59 %)
10 % to 40 %	3	Slightly above median
40 % to 70 %	2	Above median
70% to 100%+	1	Severely above median

The classification of the highest education level per sub-place in the study area was simple and similar to the classification of median household income and unemployment in the sense that this classification only uses one category from the original analysis. Due to the insignificant extent and spatial distribution of no formal education and grade 9 education, these did not form part of the classification. Considering the perceived socio-economic value of tertiary qualification and the fact that a person needs to have grade 12 to obtain a tertiary qualification, it was decided to only use the tertiary education variable per sub-place in the study area as an indicator of relative socio-economic inequality. Subsequently, a high score indicates that a high percentage of the population in the sub-place has tertiary qualifications and is therefore in a better relative socio-economic position than other sub-places. Table 4.9 below provides more clarity on the application of this classification.

TABLE 4.9: Classifying highest education level per sub-place

Percentage variation from highest education level variable (“Tertiary education”)	Highest education level percentage score	Relation to the study area highest education percentage
-70 % to -100 %	1	Severely below median
-40 % to -70 %	2	Below median
-10 % to -40 %	3	Slightly below median
-10 % to 10 %	4	Median (10.42 %)
10 % to 40 %	5	Slightly above median
40 % to 70 %	6	Above median
70% to 100%+	7	Significantly above median

After the abovementioned socio-economic classification was applied, the total socio-economic score for each sub-place in the study area was determined and mapped (figure 4.11) to provide a spatial perspective on the relative socio-economic inequality in the study area. The spatial analysis indicates a clustered pattern of sub-places with a high socio-economic status compared to the dispersed pattern of sub-places with a lower socio-economic status. The most striking indication is that sub-places that scored very well in all the socio-economic variables are concentrated in south-eastern parts of the city, with only a few in the central suburban parts of the study area. This creates a clear divide between the “richer” south-east and the “poorer” north-west of the study area, which creates a situation where two socio-economic worlds are juxtaposed in the same administrative boundaries. The area occupied by the “wealthy” sub-places is also very small compared to the rest of the study area. This suggests that the number of people at the top end of the socio-economic perspective is few compared to the masses of people at the lower ends of the socio-economic spectrum. A positive indication from the analysis is that there seems to be a limited number of sub-places associated with the two lowest socio-economic classes, according to this classification. This suggests that on the combined conditions in sub-places, there is a certain type of “middle class” that is growing and which extends throughout the socio-spatial structure of the study area. Although this middle class is very broad, based on this socio-economic classification, it does provide some positive indication of the direction in which socio-economic equality is moving – there is some gradual improvement in the socio-economic conditions of the city, although it remains limited.

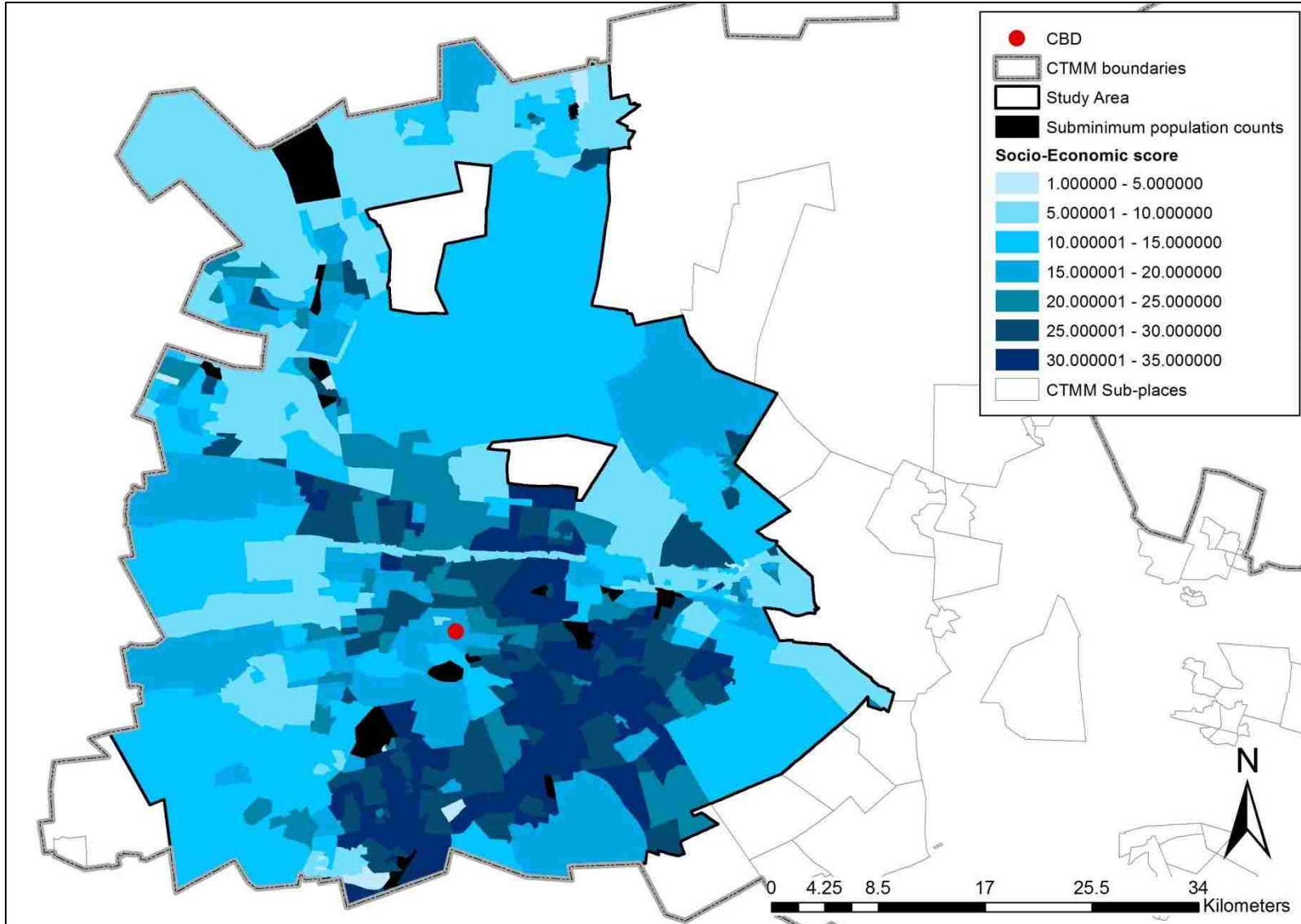


FIGURE 4.11: The study area socio-economic classification

The analysis also makes it clear that the median household income, unemployment and tertiary education distributions have the best visual correspondence to the overall socio-economic classification of the study area. It is clear that sub-places with a socio-economic classification score of more than 20 are concentrated in the south-east part of the study area and within the “boundaries” created by the above median household income line (M x 2 line), the areas with less than 4% unemployment and among sub-places where more than 40% of the population have a tertiary education qualification – thus suggesting that these areas are the areas that need the most significant interventions in order to improve the socio-economic inequality situation in the study area.

There is also a close correlation between the abovementioned analysis and findings for multidimensional poverty in the Gauteng province. Although the socio-economic classification of this study and multidimensional poverty are very different methods of viewing socio-economic inequality the results do resemble similar situations of relative deprivation in the City of Tshwane. According to Mushongera *et al* (2015) the areas in the City of Tshwane that have a high multidimensional poverty index value include areas such as Soshanguve, Winterveld, Temba and Mamelodi while areas with a low or no multidimensional poverty index value include most of the central and south-eastern sub-places of the City of Tshwane. Mushongera *et al* (2015) used a set of 11 indicators to analyse multidimensional poverty including communication, energy, food, housing, sanitation, school attendance, unemployment and water. It is therefore clear that the extent of socio-economic inequality and the associated north-south divide is supported by other research initiatives in the GCR and extends beyond the variables used in the classification of this study.

4.7. Concluding remarks

Inequality is a broad, yet dynamic topic with many perspectives, trends, measurements, influences and responses, as discussed in this chapter, which all affirm the diversity of the concept. The discussion in the first half of the chapter indicated that inequality has been found (through a variety of measurement tools and indicators) to be a concern at all spatial levels in society and in many spatial locations around the world. The observed inequality throughout the world is caused by a myriad of conditions and situations, most of which remain context-specific conditions and situations. Despite the variations in context, there remain common lessons, or at least future warning signs, that can be taken from various situations around the world. In many situations, the rise in inequality has been ascribed to increased social polarisation in society, along with influences from the national economic context and dynamics in the labour market. These major causes of inequality have also been identified as the key areas for intervention to create more equitable societies. The chapter

also provided a detailed discussion on inequality trends in South Africa. The one realisation that remains prominent throughout, is that South Africa has a very unequal distribution of income (considering the broader definition of income), which is unequal in relation to the rest of the world, between metropolitan areas in the country and also at the local level between sub-places and racial groups in both urban and rural areas. These indications are evident from various time periods, data sources and analysis methods. There is furthermore convincing evidence that inequality exists along various social determinants including employment, housing quality and tenure, education and service delivery. These determinants are not regarded as factors that would directly eradicate inequality if they are improved, but they do place households who are deprived of these needs and services in a more disadvantaged position than other households. Also, due to the interrelated nature of all these socio-economic determinants, it is clear that access to one will always impact on the other determinants and overall socio-economic well-being of a person or household. A positive aspect that remains in the South African context is the growth of the middle class, especially the growth that has been noted of the Black-African middle class. It will become increasingly important to monitor the dynamics in this middle class to promote equality in the country in future.

The context-specific analysis of socio-economic inequality in the study area revealed that there is a significant monetary and spatial divide in the distribution of annual median household income per sub-place in the study area. This level of income inequality in the study area (in terms of the Lorenz curve and Gini coefficient) is regarded as severe and requires focussed interventions. Inequalities in terms of social determinants are also evident throughout the study area and, when mapped, show an important spatial distribution where there is contrasting situations between the peripheral sub-places and the inner city sub-places, as well as a clear separation between socio-economic conditions in the north-west and the south-east. All the social determinants of inequality that were included in the analysis should be considered important for creating a holistic suitable response to inequality in the study area, especially the differences in unemployment, tenure status and education, as these dynamics can, to some extent, be influenced in an easier way than some of the other dynamics related to socio-economic inequality. Socio-economic determinants such as unemployment and highest education also show a very clear connection to the median household income distribution in the study area. These relationships can be explored further in future to determine the direction of influence, as well as to determine suitable responses to these individual socio-economic determinants.

The perceived socio-economic inequality in the study area and the apparent divide between the “rich” south-east and the “poor” north-west parts of the city is clearly visible from the

socio-economic classification used in this study. It is also evident from this pattern and the city's historical context that the spatial distribution of inequality in the city closely follows the patterns of income that were engraved in the city structure during the city's segregationist past. In other words, it is evident that the locations of relative poverty and wealth have not changed significantly since the advent of democracy. According to the spatial analysis (figure 4.6, p. 139; and figure 4.11, p. 154) the richest area of the city remains to the south-east of the CBD and has experienced very little racial change compared to other areas in the study area. Thus, the evidence presented in this chapter about the socio-economic conditions in the study area, clearly supports the connected-continuity hypothesis. The South African context, as well as conditions in the study area, does not suggest that income polarisation is a concern at the moment (mainly because there is little evidence to suggest that the middle-income class is declining and the population is being concentrated around the two extremes of the income distribution), but the income distribution is spatially polarised in the study area and does suggest the possibility of a unique dual-city situation emerging. Various other dynamics should be considered in order to confirm such a city structure, but the spatial separation between the "rich" and the "poor", with the middle-incomes classes in the middle, creates distinct urban spaces that feel disconnected from each other despite their common metropolitan boundaries. This separation, which was also experienced during apartheid, further supports the connected-continuity hypothesis. This being said, the analysis also indicates that one of the biggest challenges in the study area is to find a balance between creating a globally competitive city (that would improve the quality of life in the study area) and reducing poverty and socio-economic inequality. The creation of a suitable response to the observed levels of socio-economic inequality would require increased attention from governing authorities, but the areas where the most significant intervention is required, are probably the structure and operation (including the policy goals) of the national, regional and local spatial economy where local interventions need to be more suited to the socio-spatial development context of the city. Although inequality still remains an elusive and challenging concept, this chapter has highlighted some very important dynamics in the study area that can be taken forward to improve the situation.

CHAPTER 5

THE URBAN SOCIO-SPATIAL STRUCTURE OF THE CITY OF TSHWANE

“If you do not know where you come from, then you don't know where you are, and if you don't know where you are, then you don't know where you're going. And if you don't know where you're going, you're probably going wrong.”

- *Terry Pratchett*



5.1. Introduction

The importance, complexity, singularity and dynamic nature of modern urban areas have been emphasised throughout this study and supported by a plethora of research works and analyses. The emphasis has been placed on urban areas, since urban areas have a significant and undeniable impact on the quality of life of modern society. Furthermore, the dynamics and changes in urban areas require such rigorous attention in order to understand their impact on society and their role for society's future existence and progressive development. It remains evident that by striving to become global cities and through many urban development processes, urban areas are shaping crucial aspects of social and cultural life. The spatial implications of cities being both centres of employment and innovation, as well as spaces that exclude and reproduce inequality, means that strong negative spatial legacies often arise in cities that hinder progressive urban development and increase social tension in societies, and ultimately reduce the liveability of urban environments. However, these complexities and risks associated with urban areas do not reduce their importance, as urban areas remain the core drivers of the national economy and are nodes of vital service delivery for any modern society. Because urban areas play such a vital role in the functioning of modern society, it inevitably means that more and more people are drawn to urban areas which, in turn, emphasises the importance of developing urban areas that are well governed as well as socially, economically and ecologically sustainable (The Presidency, 2007; Wray *et al*, 2013). These principles and realisations have also become important principles for development in one of South Africa's most influential regions – the Gauteng City Region (GCR). The GCR employs the expertise of the Gauteng City Regional Observatory (GCRO) (a research partnership between Universities and local governments) to establish a knowledge base that would guide, among others, the conceptual framework for development set out in the Gauteng 2055 discussion document. This document proposes equitable growth, social inclusivity and cohesion, good governance as well as sustainable development and infrastructure as key developmental goals for the GCR, which they aim to achieve by 2055 (Gauteng Planning Commission, 2012; Wray *et al*, 2013). The first essential step towards achieving these goals is to establish a status quo in individual localities of the GCR that can inform the knowledge base for planning decisions. The socio-economic inequality situation in a city relates very closely to the equitable growth objective, while the racial-residential segregation situation in a city indicates the progress towards social inclusivity and cohesion in the city. The relationship between racial-residential segregation and socio-economic inequality has previously been noted by Massey and Denton (1993:109), when it was found that in the American context "...segregation itself has important feedback effects on socio-economic status. Not only does discrimination lead to segregation, but segregation, by restricting economic opportunities for blacks, produces

interracial economic disparities that incite further discrimination and more segregation". It is thus evident from the South African context and these comments that numerous linkages exist between socio-economic status and racial-residential segregation that need to be explored. Therefore, in this chapter of the study, the intension is to combine these dynamics, describe the current socio-spatial structure of the study area as well as the changes that have taken place in the study area, and to determine how this contributes to the knowledge base for progressive development in the GCR. In addition to analysing the equity and inclusivity of urban transformation in the study area since apartheid, the combined socio-spatial structure of the study area can also be positioned on the continuity-discontinuity continuum in order to provide a relative description of the current socio-spatial structure of the study area in comparison to its past socio-spatial structure and to determine which hypothesis is true for the study area.

The fifth chapter of the study is thus presented at a point where the focus of the study returns to a description of the combined socio-spatial structure of the study area, while still being framed by the debate surrounding the existence of the post-apartheid city, the continuity-discontinuity hypotheses and the need for an increased knowledge base surrounding urban dynamics in the GCR. Thus far in the study, the first chapter introduced the complexity and role of urban areas, the debate that formed the foundation of the study as well as the importance of the research. The second chapter, relating to the development context of South Africa, expanded on this foundation by introducing the significant influence that racial-residential segregation and socio-economic inequality have had on the development context of urban areas and how these have been shaped by demographics, policy developments and spatial legacies. The ensuing two chapters explored the background to racial-residential segregation and socio-economic inequality dynamics in much more detail and were complemented with both statistical and spatial analyses of the respective situations in the study area. The purpose of this chapter is then to use these respective discussions and findings and to take one step closer to comparing the current socio-spatial structure of the study area to the segregationist and unequal structure of the past, in order to provide a holistic understanding of the socio-spatial structure and relationships in the study area. This was done by correlating the spatial dimensions of racial-residential segregation with the spatial dimensions of socio-economic inequality in the City of Tshwane, determining how these have changed over time and how these dynamics shape the current socio-spatial structure of the study area.

The rest of this chapter is divided into six main sub-sections. In the first section, some consideration is given to additional theories related to urban systems, urban modelling and

socio-spatial change in order to provide a basic theoretical framework for the socio-spatial analysis in the study area. Secondly, the chapter provides an overview of the historic socio-spatial context of the study area against which the current socio-spatial analysis was compared. These two aforementioned sections set the tone for the socio-spatial analysis of the study area, of which the first point of inquiry is an overlay of racial-residential segregation and socio-economic inequality using the data from the two previous chapters. Thereafter, in the fourth section, the abovementioned overlay is investigated in more detail by viewing various segregation-inequality dynamics and relationships in various functional entities in the study area. The functional entities (which are described in more detail later) provide the foundation for the discussion of the general socio-spatial structure and its changes. All the theories, perspectives, combinations and simplifications culminate in the fifth section in a general description of the current socio-spatial structure of the study area, before the final section highlights some important conclusions relating to the current and future characteristics of the study area's socio-spatial structure.

5.2. Theoretical considerations to analysing socio-spatial change in urban areas

The purpose of this chapter (and the study) is to contribute to the development of socio-spatial theory or new urban models by describing the socio-spatial changes that have taken place in the study area since the demise of apartheid and relate them to the continuity-discontinuity hypotheses. The pragmatic paradigm that frames this study demands that some consideration is given to theoretical notions and hypothesis elaboration about the topic in order to effectively contribute to the eventual development of theories and hypotheses, future policy decisions and knowledge-based suitable responses (Frazier, 1981). Even though a theoretical discussion would support the pragmatism paradigm that frames this study, a very extensive and in-depth theoretical discussion on socio-spatial theory would reduce the values of realism that also frame this study. Therefore the following discussion does not, for example, delve into notions of territory, scale, place and networks, as would be suggested by socio-spatial theorists (Jessop *et al*, 2008). Instead of critiquing, testing or applying socio-spatial theories to the study area, the socio-spatial analysis in this chapter remains both realistic and pragmatic by seeking to explain the observed changes in the context of some theoretical notions, as well as the study area's history and certain urban change processes that are active in all urban areas, in order to inform an improved understanding of the dimensions of socio-spatial change in South African urban areas and support the study's continuity-discontinuity hypotheses. The relationship between past and present socio-spatial conditions is particularly important because the past provides the best indication of how the urban system might behave in future (Portugali *et al*, 1994), and

because possibilities of prediction are reduced when theories of urban systems disregard the origins of the system and the changes that have already taken place (Pumain, 2000). Socio-spatial theory does provide some assistance in this regard, but it is also important to consider notions from regional urban systems research and urban modelling initiatives.

Urban areas, despite their complexity and singularity, remain connected to each other as part of a system of cities – regardless of the size of the system. Urban systems research and urban modelling investigate this interconnectedness, the changes that take place in urban areas as well as any attempts to anticipate future changes. The link between local socio-spatial change and regional urban systems and urban modelling initiatives might not be clear at first, but these spheres of research are related in the sense that there are lessons from regional urban systems research that can provide important insights into local socio-spatial change. In essence, when people shape spaces according to their attachments to the place, the scale at which it happens is irrelevant, as the principles of shaping a place and influencing its relationship to other places remain the same. There is, for example, a clear spatial distribution of dominant home languages per municipal area in South Africa that shapes both the regional and local cultural environments in the country, and these have remained largely the same over the last ten years (Statistics South Africa, 2011c). Similarly to growth dynamics in the regional urban system, socio-spatial change also has a certain sense of predictability to it, especially in terms of the initial direction of change (Portugali *et al*, 1994). Granting some initial consideration to urban systems research and urban modelling initiatives is also valuable because the analysis in this study could potentially contribute to future urban models in the region.

Urban systems research is defined by Davies (1998:349) as “... the study of the spatial and temporal variations in the character of urban nodes ... in any area, and the interactions between them, as impacted by the influences of the surrounding society”. This definition indicates that urban systems are concerned with the relationship between urban centres (which can be at a national, regional or provincial level), how their characteristics change over time due to certain influences, as well as the consequences of these changes. In even more simple terms, an urban system is a series of interacting points that are inhabited by groups of people and that provide certain essential services to its inhabitants. An urban system is characterised by interaction between points but also by growth, its constantly changing nature, points of centrality, a specific hierarchy and, according to Davies (1998), various societal forces that affect the characteristics of the nodes. The analysis of this study operates at a local level and is therefore not directly related to the discourses of urban systems. This description, however, resembles some elements that are applicable to the

local spatial system. For example, the multi-nodal structures of most modern cities (like the CTMM) are also built on points that interact with each other and are influenced by societal forces and attributes, while local areas also pose their own processes of growth and neighbourhood hierarchies. In urban systems research and socio-spatial theory, the notions of relational space and proximity are also often used to account for certain situations and relationships in the urban system. In such cases, relational space refers to the fact that the proximity of other spaces and their respective conditions have an impact on the space being investigated (Pumain, 2000), while the actual proximity will determine the extent of the impact (Jessop *et al*, 2008). Proximity relates to the place dimension of socio-spatial relations and the accompanying theories to explain socio-spatial relations. This notion of proximity often provides a useful explanation of horizontal spatial divisions in an urban area, like socio-economic differences between core and peripheral areas (Jessop *et al*, 2008). The impact can vary between being positive or negative and will manifest in many different ways, but this relationship is important to remember and consider when describing change in the urban system as well as local socio-spatial change. In the case of the study area, the proximity of the metropolitan areas of Johannesburg and Ekurhuleni (with their individual socio-spatial conditions and dynamics) will undoubtedly have some impact on the socio-spatial conditions and dynamics observed in the CTMM and vice versa. However, relational space is also applicable to the metropolitan area or study area where the dynamics and changes in nodes and sub-places have an impact on the dynamics and changes in other sub-places. The severity of the impact varies according to distance (or geography) between the spaces, and it is for this reason that relational space is a crucial consideration in the local urban environment, as all the spatial entities are significantly closer to each other. Just as change in one spatial entity would influence change in the next, it can also be argued that very little change in certain spatial entities would not initiate change in other spatial entities.

Urban modelling is defined by Batty (2009:51) as a "... process of identifying appropriate theory, translating this into a mathematical or formal model, developing relevant computer programs, and then confronting the model with data so that it might be calibrated, validated, and verified prior to its use in prediction". In a similar vein, the same author continues to define an urban model as a "... representation of functions and processes which generate urban spatial structure in terms of land use, population, employment, and transportation, usually embodied in computer programs that enable location theories to be tested against data and predictions of future locational patterns to be generated". Considering these two definitions, it is clear that urban modelling initiatives are concerned with representing change processes by applying theoretical hypotheses through mathematics and computer software in order to shed light on possible future changes in the urban environment, including

possible socio-spatial changes. When investigating socio-spatial changes over time, it would only seem logical to employ a model that would then allow future predications; however, the simplifications of a rigorous software-generated mathematical model mean that the singularity of a city is disregarded (Pumain, 2000), which would reduce its applicability to other urban areas in South Africa. Some of the realities related to urban modelling are, however, important to consider when analysing the socio-spatial change that has taken place in the study area. Urban modelling initiatives have very simplistic origins and were initially based on general land use and income distributions in a city. The three classic and most well-known urban land use models include Burgess's concentric urban model (1923), Hoyt's sector model (1939) and Harris and Ullman's multiple nuclei model (1945). According to Cilliers (2010), these models (figure 5.1) were all based on empirical research as well as certain assumptions, and subsequently aimed to describe and explain, among others, land use distributions, market forces, growth directions and processes, real estate dynamics as well as the local urban hierarchy. Despite these intensions, the models remained idealistic representations of the realities in cities. Improved research and the critiques against these models eventually led to the development of numerous other more realistic and complicated urban land use models, including some context-specific models of South African cities like the apartheid city model proposed by Davies in 1981 and the modernised apartheid city model proposed by Simons in 1989 (Cilliers, 2010).

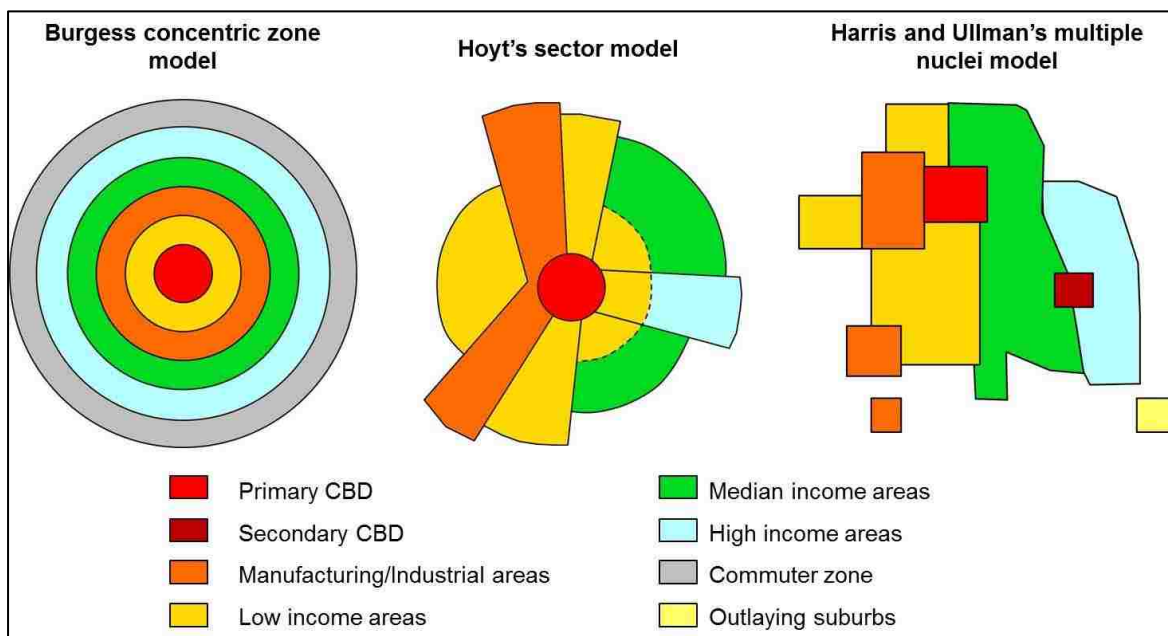


FIGURE 5.1: Classic urban land use models (Source: Adapted from Cilliers, 2010)

Although these urban land use models remain rather rigorous, there are, as mentioned before, certain aspects in these models that remain applicable when analysing socio-spatial

change in the study area. Many South African cities, including the CTMM, exhibit similar income and land use characteristics as those presented in these classical urban models, with specific reference to Harris and Ullman's multiple nuclei model. One of the most obvious similarities between urban models and socio-spatial change are the data requirements, the similar analysis methods as well as the use of extensive background knowledge of the study area. It is, for example, important in both cases to realise that the resources (natural or human) in a particular location limit the development possibilities of the population in the location (Pumain, 2000). Furthermore, it is evident from the classic land use models mentioned above that differences and similarities in land use and/or social grouping reflect how urban areas have evolved socially and economically in response to changing conditions over time (Cilliers, 2010). In the South African case, such changing conditions would be the advent of democracy, and all urban areas have responded to these new conditions in certain ways; it is these responses that are reflected in the socio-spatial structure of the city. The models presented here, as well as numerous others, also indicate that the wealthier population tend to move towards the periphery of the original urban area over time (Cilliers, 2010). This phenomenon is particularly applicable to South African cities and is often accompanied with a redistribution of resources and income opportunities. Finally, it is evident that land use in the city is invariably linked to certain societal attributes – in most instances to the income distribution among functional entities, but also, in some cases, to the racial or ethnic distributions of the population.

Another important theoretical consideration to note is that of the demographic context of a society (in terms of the population size, growth and migration), which, according to Pumain (2000), provides the most appropriate perspective on a wide range of functional properties of urban systems and cities. The demographic context is therefore the main dimension used to describe both the current and the future spatial characteristics and functioning of urban systems. It has become evident throughout the study that local level environments have a much more dynamic nature (with influences that extend beyond the population size, growth and migration) than environments in the regional and international analysis sphere; therefore the demographic context mentioned above would not suffice to describe the socio-spatial structure of the study area and how it changes over time. In order to accommodate this local level complexity and the variables analysed in the forgoing chapters of the study, this chapter will refer to societal attributes as the variables that shape the socio-spatial structure of the study area in a similar way the demographic context would shape the urban system. These societal attributes express the various functional properties of the city in the same way as demographics would in an urban system and, when investigated from a spatial perspective, provide valuable insights into the socio-spatial structure of the study area. This

is also important because any modern description of a city needs to take into account the living standards (or socio-economic context) of the city (Pumain, 2000) and because societal and cultural differences have a significant influence on both regional disparities and the gap between the “rich” and the “poor” (Malul *et al*, 2011).

The final theoretical discussion point to consider, a prominent reality in many modern cities, is that of the dual city. The dual city is a phenomenon that was made applicable to colonial cities for centuries and resulted from the spatial boundaries drawn to divide society. This dual nature of cities is a result of the enduring influence of colonial regimes, forces of globalisation, processes of social polarisation and dynamics in the local real estate market (Reichl, 2007; Garrido, 2013). Throughout many case studies, the dual city notion has come to describe numerous wealthy-deprived relationships in the city, including those between the inner city and suburbs, whites and non-whites and most commonly the “rich” and the “poor”. Mentions of the dual city have also been met with strong criticism for simplifying relationships among social groups and being a political agenda rather than a research inquiry that could easily result in ineffective policy decisions (Reichl, 2007). The dynamics in an urban environment should therefore be carefully considered before being labelled as characteristic of a dual city. Although the most common interpretations of the dual city have been focussed on two parts, it is essentially any situation where the “rich” and the “poor” (based on any given variable) live side by side under the same urban government, but are at the same time worlds apart in terms of their urban experience and access to opportunities. All the theoretical considerations discussed in this section are kept in mind throughout the socio-spatial analysis in the study area in order to determine which theoretical considerations are applicable to the study area and to what extent some of these aspects can be used to improve the overall understanding of the study area’s socio-spatial structure.

5.3. A qualitative description of the past socio-spatial structure of the study area

In order to manage urban areas in such a way that it would maximise the liveability for society, it is important to understand the current dynamics in the urban area as well as the effects that the past has had on the present urban reality. The insights gained from these two perspectives should improve urban administrator’s ability to manage the urban space and implement suitable responses to the various challenges posed by the process of urbanisation and other dynamic societal attributes. The previous chapters effectively illustrated the value of qualitative descriptions of the extent and character of racial-residential segregation and socio-economic inequality in the study area. These qualitative descriptions are especially valuable when there are possibilities for its application to other study areas, as

they make comparisons between time periods, different administrative regions and census enumeration techniques easier and more relevant, while also accommodating future changes that might take place in the methods for capturing data. This chapter continues along this vein and also provides a well-informed qualitative description of the socio-spatial changes that have taken place in the study area since the advent of democracy. However, in order to describe socio-spatial changes in the study area, it is first required to define the conditions to which the current urban reality is compared. Without repeating the results of the previous chapters, the following section will highlight the most important indicators (in terms of the societal attributes and spatial structures) of the past socio-spatial structure of the study area that served as the comparative beacon for the rest of the analysis.

The discussions in the foregoing chapters indicated that the contexts from which South African urban areas developed were very similar, mainly because urban environments operated under the same legislative influences. Since 1994, cities have continued on their own individual development paths, which resulted in numerous present-day contextual differences. However, due to their shared legacy, they remain structured in very similar ways. Therefore the national societal attributes of the past also inform the past socio-spatial structure of the study area. It is especially the metropolitan areas in South Africa that exhibit both very similar demographic conditions and spatial challenges, even though the spatial structures remain unique in each locality. A significant part of the socio-spatial structure of the city is determined by the racial composition of sub-places. Under apartheid it was assumed that the various Group Areas in the city were characterised by absolute segregation (except for most of the White Group Areas that were home to employees from other racial groups). This inevitably resulted in a rigid racial structure that would create an enduring spatial legacy in urban areas. Since the biggest proportion of the population was confined to very small areas, it soon became evident that it was the Black-African population group who mostly infiltrated the other parts of the city (Badenhorst *et al*, 2005). This population group is therefore considered the most mobile population group who initiated desegregation and has a significant influence on the socio-economic conditions of the study area. In terms of societal attributes, it has also become evident that during apartheid, certain socio-economic characteristics could be associated with the four main racial groups in the society. These characteristics include the income hierarchy between racial groups (where the minority White population was at the top and the majority Black-African population was at the bottom), as well as a similar hierarchy for various other socio-economic variables. The previous chapters also indicated that this socio-economic hierarchy has been much more resilient to change than the racial structure in the study area. These general socio-economic characteristics make it possible to assume the socio-economic conditions (and the

associated inequality) in the various Group Areas of the study area under apartheid. The closest and most accurate visual representation of these characteristics in the study area, along with their spatial relationships, was provided by Olivier & Hattingh (1985) in their representation of the Pretoria spatial structure since the late 1950s (figure 2.11, p. 62) and the descriptions of initial changes in the study area provided by Badenhorst *et al* (2005). All these well-informed qualitative descriptions of South African urban areas and the study area comprise the socio-spatial structure (mainly characterised by absolute segregation and a clear socio-economic hierarchy) to which the current socio-spatial structure of the study area will be compared in the rest of this chapter.

5.4. Racial composition changes compared to socio-economic inequality in the study area

The first point to consider in order to describe the current socio-spatial structure of the study area, in comparison to its past socio-spatial structure, is to combine the two main elements of the study, namely the spatial dimensions of racial-residential segregation and the spatial dimensions of socio-economic inequality. This is done by overlaying three lines of the overall socio-economic scores with the racial change analysis (between 1991 and 2011) in the study area (figure 5.2, p. 170). In the figure, the three socio-economic score lines connect sub-places with a score of 7, 14 and 21 (derived from the analysis in figure 4.11, p. 154) respectively, and in such a way indicate the various socio-economic zones in the study area compared to the amount of racial change in each sub-place. A sub-place can have a maximum socio-economic score of 35; the aforementioned three lines were chosen for their ability to accurately represent the relative socio-economic conditions in the study area. Values below 7 indicate absolute deprivation; values between 7 and 14 indicate less significant deprivation; values between 14 and 21 represent the “middle class”, which is described as sub-places with adequate socio-economic opportunities in relation to the rest of the study area, while values above 21 represent sub-places in above average wealthy positions relative to the rest of the study area.

The abovementioned spatial representation of the data does not indicate a uniform spatial relationship between certain levels of racial change and certain levels of socio-economic well-being. The analysis does, however, indicate that certain parts of the study area exhibit low levels of racial change along with high socio-economic values, while other parts exhibit low or very high levels of racial change along with low socio-economic values. Sub-places in the central and south-eastern parts of the study area (formerly White Group Areas) generally have higher socio-economic scores (greater than 21) and show only limited desegregation

(between 20% and 60% racial change) while sub-places in and around former Black-African Group Areas have significantly lower socio-economic scores (lower than 14 with pockets lower than 7), but show high levels of racial-residential segregation (less than 20% or more than 80% racial change). The analysis indicates that the inner city, which is one of the most prominent areas that experienced significant racial composition change, is currently associated with relatively low socio-economic scores despite the favourable socio-economic conditions that the inner city provided in the past. These trends are an immediate indication that (1) a certain level of racial inequality is still present in the study area, (2) that the socio-economic hierarchy of the study area is still linked to most of their former locations, and (3) in the instances where the location of socio-economic wealth has changed, it remains linked to the original conditions of the racial group. One very clear exception to the last point mentioned is the area surrounding Akasia (in the north-west of the study area between former Black-African Group Areas and the central sub-places), which exhibits significant racial composition change along with high socio-economic scores. This area provides evidence of socio-economic changes among the Black-African population and thus represents the spatial location of the Black-African middle class in the study area.

The fact that lower levels of racial composition change (in the central and south-east areas) are found “within the boundaries of higher socio-economic scores”, further suggests that the majority of the study area’s population are still unable to access these areas due to their relative socio-economic status. Considering that the housing market has been mentioned as a prominent contributor to both the level of racial-residential segregation and socio-economic inequality, the lack of racial change could be attributed to the available options in the housing market that prevent population groups from entering certain sub-places in the study area. In other words, the sub-places surrounding the socio-economically wealthy areas (peripheral sub-places) have probably experienced higher levels of racial composition change because the housing market accommodated people’s relocation since apartheid, but the higher socio-economic characteristics (and the associated costs of living and available housing options) in other sub-places hinder continuous racial composition change and preserve the socio-economic status quo. The lack of racial change in areas with lower socio-economic values can possibly be attributed to the same housing market dynamics in the sense that the minority population are reluctant to relocate to these areas that are further away from their current locations and that do not offer the same housing options in terms of quality, style and types. Specific reasons related to the housing market would need to be investigated individually (from both a quantitative and qualitative perspective) in each area, but its significance in shaping the socio-spatial structure does not go unnoticed.

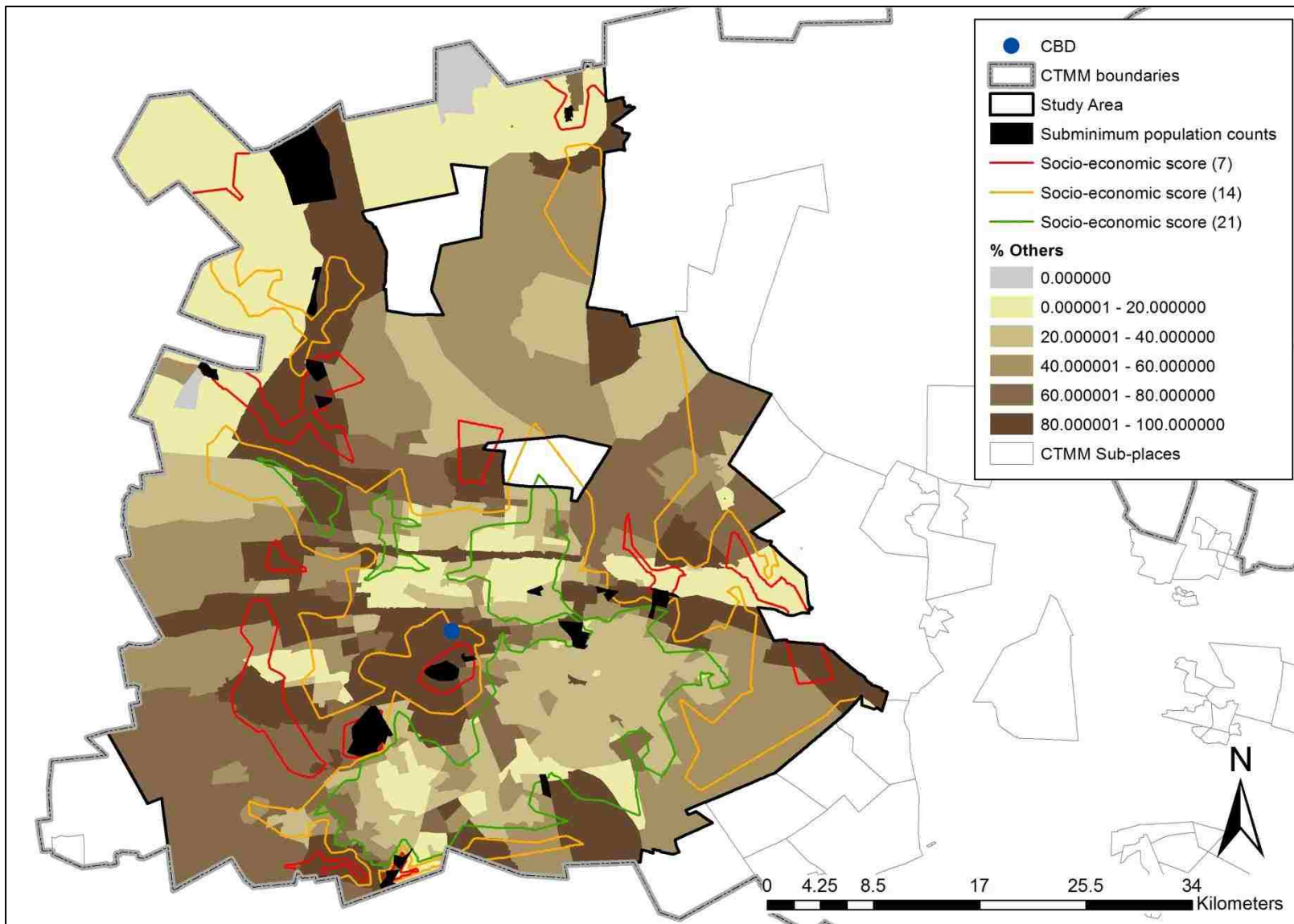


FIGURE 5.2: Combining racial change (1991 to 2011) and socio-economic scores (2011) in the study area

All the abovementioned dynamics indicate that since apartheid, any significant racial composition change in a sub-place, even in areas that were previously considered relatively wealthy, is less likely to be associated with the continuation of favourable socio-economic conditions and more likely to be associated with the historic socio-economic conditions of the population group residing in the area. In the study area, it is evident that the most severe levels of segregation are also associated with some of the worst levels of socio-economic conditions. This relationship supports the general notion found in segregation literature that severe segregation is associated with certain levels of socio-economic deprivation. This is, however, not cast in stone, considering the positive changes in the study area, and therefore suggests that suitable responses should be able to replicate the positive changes seen in some parts of the study area. There is also some indication that the spatial gap between socio-economic deprivation and wealth is very small in some parts of the study area (specifically the central sub-places and the south-western parts), but remains big in most other parts of the study area. Due to the lack of a uniform segregation and inequality correlation, it is important to investigate the individual conditions in the different parts of the study area in order to improve the understanding of the socio-spatial structure and character of the study area, as well as the factors that influence the observed changes and characteristics. Therefore these initial insights are explored in more detail in the rest of the chapter by combining various other aspects of the completed racial-residential segregation and socio-economic inequality analyses with reference to specific functional entities.

5.5. Detailed insights into the current socio-spatial structure of the study area

It has become evident that the study area's socio-spatial responses to the advent of democracy are not uniform throughout, and therefore it is important to investigate some changes in specific areas in order to accurately sketch the current socio-spatial structure of the study area and to describe the characteristics of socio-spatial change. In order to do this, the study area was divided into numerous functional entities, as described in table 5.1 and depicted in figure 5.3 (p. 173). The functional entities were selected based on the original character of the study area during the apartheid era and in such a way that it corresponds to some extent with previous representations of the study area's socio-spatial structure. Due to the number of sub-places in the study area and in each former Group Area, it was necessary to make a distinction between areas based on their relative bearing in relation to the inner city. Subminimum population counts were excluded from the functional entity classification because they result in a skewed indication of the trends in each entity.

TABLE 5.1: The socio-spatial composition of the functional entities in the study area

Functional entity	Amount of sub-places	Population total	Population share (%)
Inner city¹⁶	11	135 255	4.9
Central sub-places	71	315 331	11.42
F Indian/Asian Group Areas¹⁷	4	20 606	0.75
F Coloured Group Areas	4	22 696	0.82
F Northern Black-African Group Areas	80	575 017	20.83
F Eastern Black-African Group Areas	52	334 436	12.12
F Western Black-African Group Areas	2	79 814	2.89
F North-East White Group Areas	58	220 199	7.98
F South-East White Group Areas	66	217 988	7.90
F South-West White Group Areas	88	350 951	12.71
F North-West White Group Areas	89	487 859	17.68

5.5.1. Racial change compared to median household income in the study area

The more detailed perspective of the socio-spatial structure of the study area firstly considers the relationship between racial change, racial composition and median household income scores per sub-place in each functional entity of the study area (figures 5.4, 5.5, 5.6 and 5.7, p. 175 – 176). The sub-places in each functional entity were arranged according to the percentage other population in the sub-place (from smallest to largest) and then placed on the graphs along with the respective median household income scores for each sub-place. The x-axis of the graphs is labelled with the names of the functional entities represented on the graphs. The abovementioned arrangement of sub-places in each functional entity means that the start of a new functional entity on the x-axis is indicated when the percentage others value is at its lowest directly after it was at its highest for another functional entity. The percentage other population is divided by 10 to improve the legibility of the graphs. In addition to these variables, the racial composition of each sub-place is also indicated on the graphs in order to provide a further indication of the nature and extent of racial inequality in the study area. Median household income scores, as opposed to the socio-economic scores, were added to this representation, as it supports the aforementioned investigation into racial inequality and also due to the emphasis placed on household income dynamics in segregation literature.

¹⁶ The inner city and central sub-places were both former White Group Areas.

¹⁷ “F” refers to “Former”.

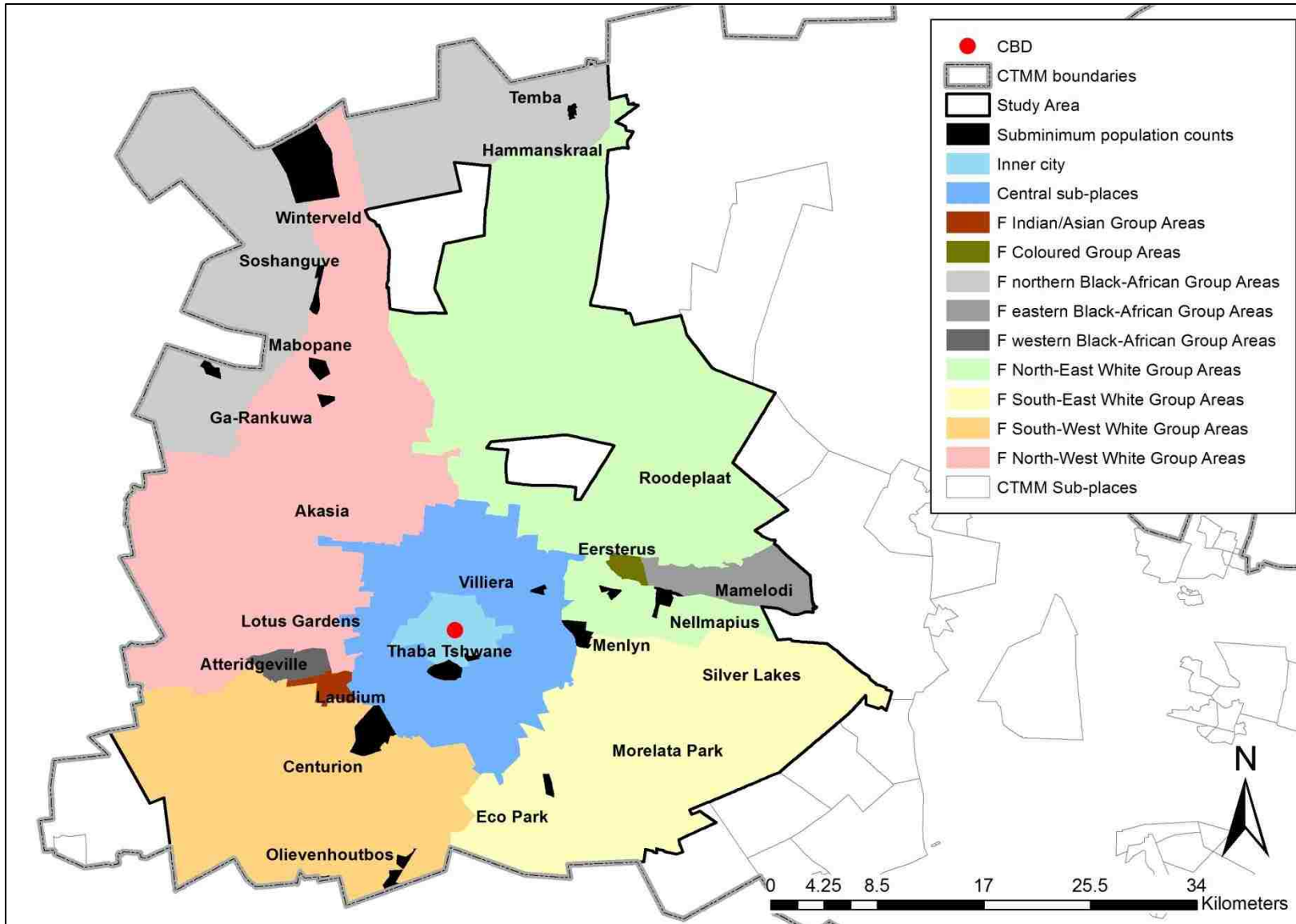


FIGURE 5.3: Functional entities in the study area

Although only a few sub-places are considered part of the inner city (figure 5.4), the analysis still indicates a negative relationship between racial change and median household income – median household income scores are at their highest when racial change is at its lowest; when racial change is at its highest, the household median income scores are at their lowest. It is also evident that the inner city has relatively low median household income scores compared to the majority of sub-places in the central parts of the study area. The central sub-places (figure 5.4) also support the negative relationship between racial change and median household incomes; it is evident that median income scores fall lower more frequently as the percentage other population rises in these sub-places. However, in the former Indian/Asian and Coloured Group Areas (figure 5.4), the relationship between these variables are less concerning, as the inclusion of new population groups is associated with both an increase and a decrease in median household income scores. The household median income values are, however, also very low in these areas. This dynamic can be attributed to the racial composition of these sub-places, which includes an insignificant number of the White population. It therefore supports the historic income hierarchy of the study area and thus do not cause any significant change in the racial-income relationship in these sub-places. The analysis in all four of these functional entities provides strong early support for the notion of racial inequality, considering that sub-places with a higher percentage of White population (in both the inner city and central sub-places) have higher median household income scores, and because the inclusion of larger proportions Black-African population are associated with sharp declines in household median income scores in the sub-places.

All the former Black-African Group Areas (figure 5.5), except for three sub-places, indicate that no significant racial changes have taken place since 1994. The lack of racial change is clearly associated with low median household income scores in most of the sub-places that were considered as part of these functional entities. Some positive changes in the median household incomes are visible from the spikes in the relative median household income scores. These spikes can be correlated with the pockets of socio-economic wealth found in both the median income and overall socio-economic analysis of the previous chapter, but also signify a trend of inter-racial inequality when considering the lack of racial change in these sub-places. The inclusion of Indian/Asian and Coloured population groups in sub-places close to areas that offer industrial employment does not seem to improve median household income scores, despite their proximity to employment opportunities, and thus emphasises the positions occupied by these three population groups in the study area's income hierarchy.

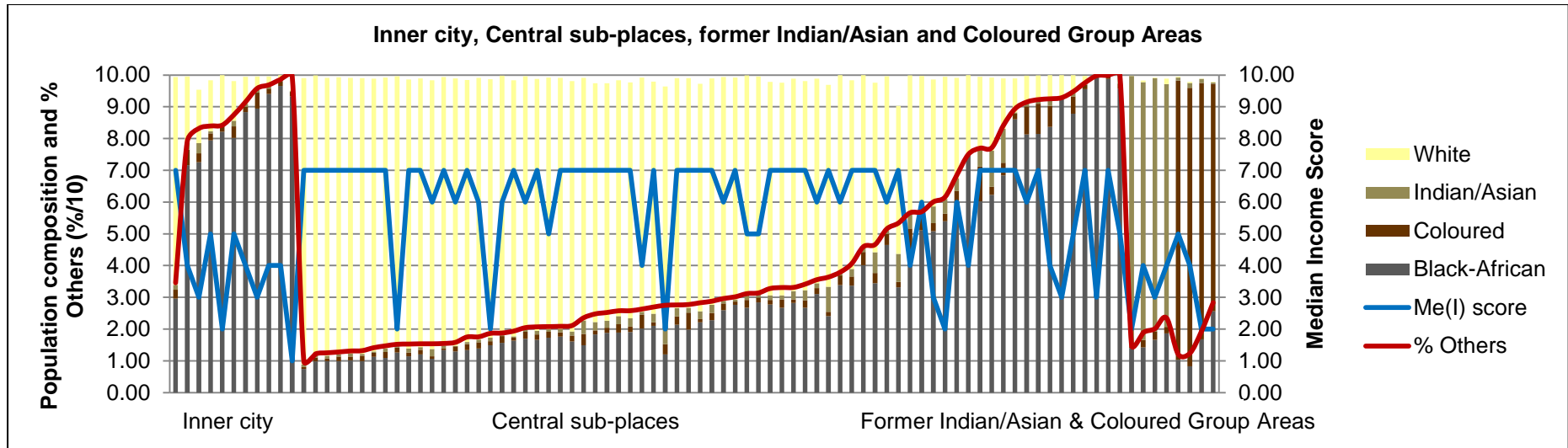


FIGURE 5.4: Racial change (1991 to 2011) and median household income scores (2011) for central areas and former Indian/Asian, Coloured Group Areas

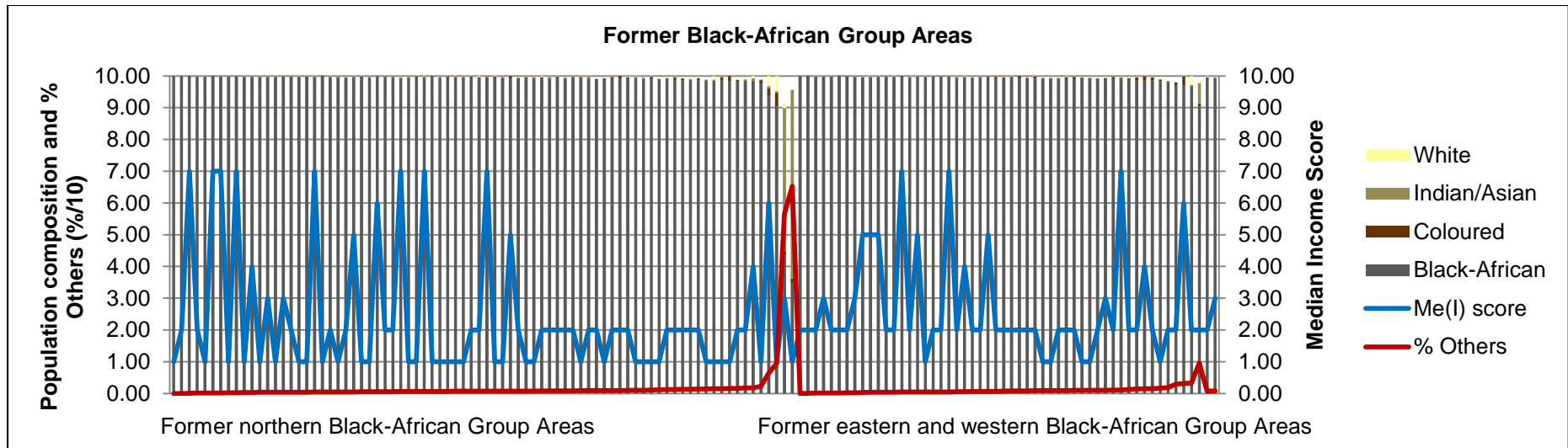


FIGURE 5.5: Racial change (1991 to 2011) and median household income scores (2011) for the former Black-African Group Areas

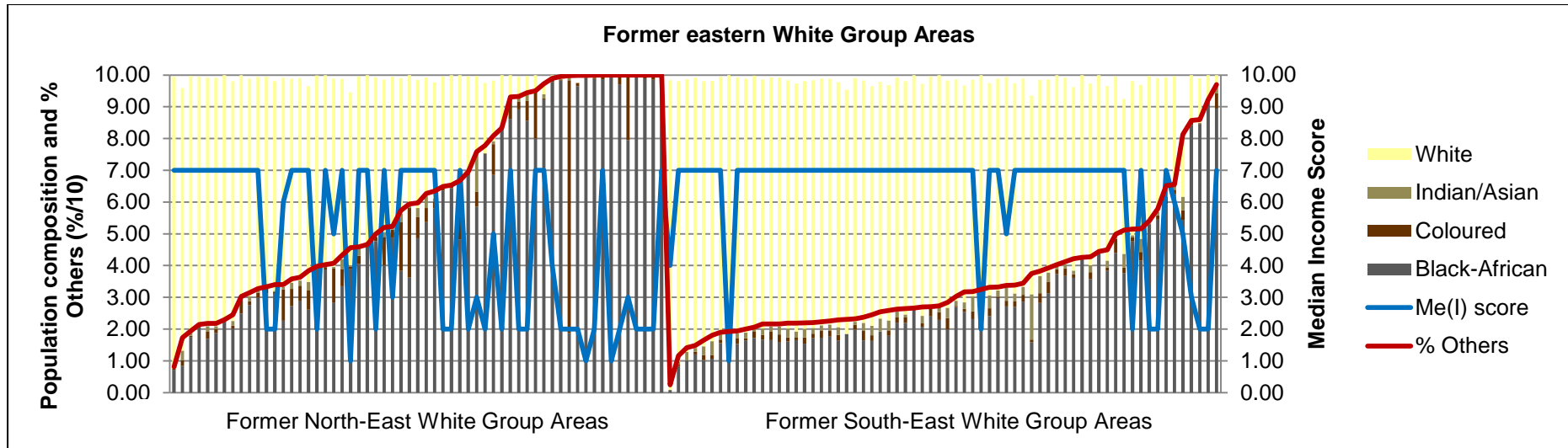


FIGURE 5.6: Racial change (1991 to 2011) and median household income scores (2011) for the former eastern White Group Areas

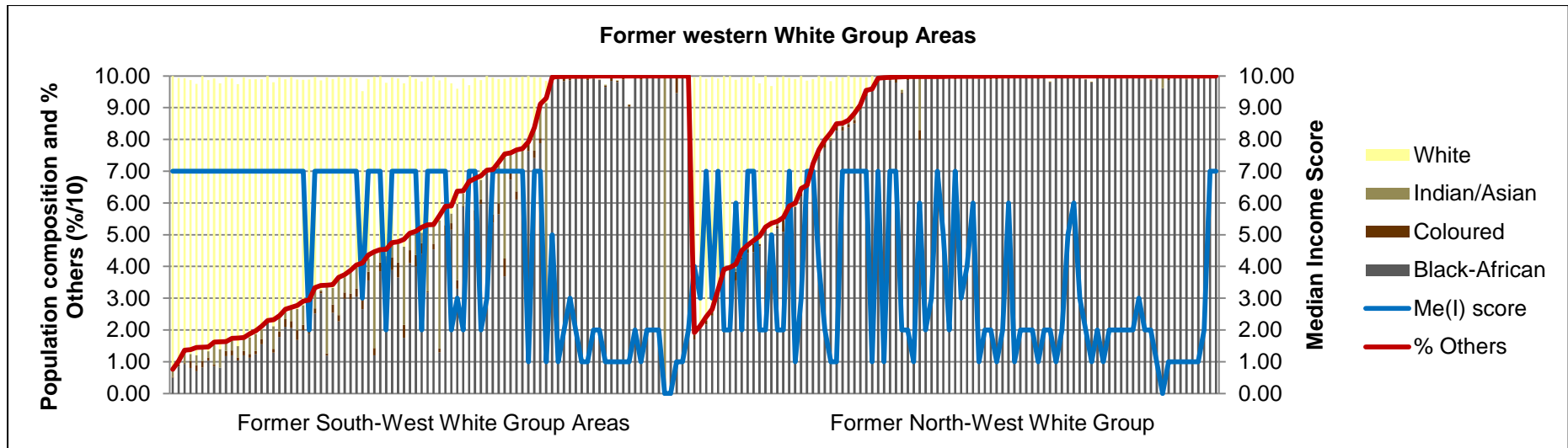


FIGURE 5.7: Racial change (1991 to 2011) and median household income scores (2011) for the former western White Group Areas

The racial change and median household income dynamics in the former White Group Areas (figures 5.6 and 5.7) are very similar to the dynamics discussed for the inner city and especially the central sub-places. There are still some notable differences that shape the societal attributes in these functional entities, but the similarities exist because the aforementioned functional areas were also part of the White Group Areas during apartheid. One notable aspect, in contrast to the Black-African Group Areas, is that there are more drops in the median household income distribution in former White Group Areas. This can be attributed to the fact that most sub-places have a significantly higher initial median household income score, and that most changes are likely to be downward. However, these drops are also associated with sub-places that were historically also poorer White areas (especially in the western parts of the study area). This suggests that the historic locations of relative poverty and wealth in the study area have not changed significantly. The analysis of all four functional entities provides evidence of both racial inequality (where a greater percentage of other population groups are associated with lower median household income scores) and inter-racial inequality (still mostly among the Black-African population, but also to some extent among the White population). It is evident that sub-places in the north-east and north-west former White Group Areas have seen the biggest proportion of racial change, indicating that this is the location from which racial change is taking place and that these are also the areas that easily accommodate racial change. This is mainly due to the northern parts of the study area being home to the largest proportion of the Black-African population (table 5.1, p. 172). Nonetheless it is also clear that the spatial separation from the rest of the study area seems to influence the extent of racial change. In contrast, the south-east functional entity has experienced very little racial change and is associated with consistently high median household income scores. The spatial distance between the former northern Black-African Group Areas and the south-east of the study area means that racial change takes a lot longer to reach these areas and is also hindered by the higher incomes and socio-economic conditions in the south-east. The south-western parts have also seen less significant racial change and are also associated with higher median household income scores. The drop in median household incomes in the south-western parts of the study area, in the same sub-places that experienced a significant rise in other population groups, is one of the most significant in the study area and thus signifies severe racial inequality in this functional entity. The south-eastern former White Group Areas, and to a similar extent those in the south-western parts of the study area, provide a very clear indication that median household income is hindering the inclusion of other population groups in these areas. The income dynamics in the former White Group Areas also indicate that income is not linked to the location of the sub-places, but rather to the population, and that changing the location of a deprived population group would not necessarily increase their socio-economic wealth.

The dynamics in the former White Group Areas also provide a significant indication that the current socio-spatial structure of the study area has two distinct parts that are both socially and spatially separated from each other and represent two very different urban realities for the post-apartheid city.

5.5.2. Segregation-desegregation typologies compared to socio-economic scores in the study area

After considering the relationship between racial change and median household incomes, the attention of this section turns to comparing the final analysis in each of the previous two chapters, that is, the segregation-desegregation classification and the socio-economic scores per sub-place in the study area (figure 5.8, p. 181). The segregation-desegregation classification described six possible typologies of racial change in a sub-place, which included *continued segregation* (a previously established sub-place exhibiting very little racial change), *new segregation* (a new sub-place exhibiting racial monotony different to the apartheid era), *resegregation* (a previously established sub-place exhibiting significant racial change), *hindered desegregation* (a previously established sub-place exhibiting very little racial change due to undetermined underlying factors), *false desegregation* (a previously established sub-place exhibiting significant racial change initiated by known accommodation benefits linked to employment) and *active desegregation* (a sub-place that exhibits significant racial change). The socio-economic scores for the sub-places are determined from the scores of five socio-economic variables including median household income, unemployment, tenure status, housing quality and highest education, and provide a relative indication of the position of a sub-place in the study area's socio-economic hierarchy. The most notable conclusions from this representation, which inform the current socio-spatial structure of the study area, can be explained per functional entity.

- The comparison for the *inner city* indicates that resegregation and active desegregation are associated with average socio-economic scores and, as expected, hindered desegregation takes place in association with the highest socio-economic scores. This indicates that the inner city still holds some of its original income and lifestyle value to residents, even though it is reduced in comparison to its historical characteristics.
- The *central sub-places* are characterised by a greater variety of segregation-desegregation typologies in which hindered desegregation remains the most prominent, and is associated with high socio-economic scores. Active desegregation and resegregation are associated with average socio-economic scores and thus indicate that the central sub-places offer some more favourable circumstances for

new population groups. False desegregation, however, does not offer the same benefits to the new population groups. It is therefore evident that the employment opportunities in these areas, which also provide housing, are not likely to be high paying and highly beneficial employment opportunities that will easily uplift a household's socio-economic status. Continued segregation is also associated with high socio-economic scores that support the notion that this hinders further desegregation and that these scores are associated to the White population in the functional entity.

- Among *former Indian/Asian* and *Coloured Group Areas*, continued segregation is the most prominent, but the relationship to socio-economic scores varies between the two areas. Despite their relative median household income scores not being significantly different, the Indian/Asian population is in a significantly better socio-economic position than the Coloured population. This suggests a difference in terms of access to socio-economic opportunities besides income opportunities, which can be linked to cultural networks or morphological and proximity benefits available in former Indian/Asian Group Areas.
- The *former Black-African Group Areas* are mostly characterised by continued segregation and associated with the lowest socio-economic scores among all the functional entities that exhibit continued segregation. This confirms the Black-African population's socially deprived position in the study area and provides evidence for the negative effects associated with segregation, especially if the segregated population remains located in distant and historically disadvantaged locations.
- The *former eastern White Group Areas* exhibit a good combination of the various segregation-desegregation typologies, with hindered desegregation overshadowing some active desegregation in the south-east while new segregation and active desegregation is more prominent in the north-east, closer to the former Black-African Group Areas. In each instance new segregation is associated with relatively low socio-economic scores, while socio-economic scores for resegregation improve between the north-east and the south-east functional entities. It is reassuring to see that active desegregation is associated with average socio-economic scores, even though the highest socio-economic scores are in areas that exhibit continued segregation or hindered desegregation. In both these functional entities, false desegregation is also associated with the lowest socio-economic scores which indicate that employer-provided housing has limited benefits for a household's socio-economic position in the society.

- The *former western White Group Areas* also exhibit a good combination of the various segregation-desegregation typologies, but in this case it is new segregation and active desegregation that are most prominent. It is evident that socio-economic scores for hindered desegregation and continued segregation in the south-west remain higher than in the north-west. This supports all the previous evidence relating to the direction of desegregation in the study area, as well as the vastly different socio-spatial characteristic in the (south) east and the (north) west of the study area. Despite this, active desegregation in the south-west and resegregation in the north-west are associated with very good socio-economic scores and thus support the notion that these are the areas in which the Black-African middle class tend to locate. In contrast to previous observations, false desegregation in the north-western White Group Areas is associated with relatively high socio-economic scores. The same cannot, however, be said of the south-west functional entity. This socio-economic variation among sub-places, which are associated with false desegregation, can be ascribed to the type of institution that employs residents in these areas. For example, employment opportunities in the military (south-west) provide less socio-economic benefits than employment opportunities from a tertiary education institution (north-west).

There is a great deal of disparity among the functional entities in the study area in terms of the relationship between segregation-desegregation typologies and socio-economic scores, but in most areas it is evident that continued segregation or hindered desegregation is associated with higher socio-economic scores where the White population is dominant, and with lower socio-economic scores where the Black-African population is dominant.

It is also clear that false desegregation is consistently associated with very low socio-economic scores and indicates that some intervention might be required to improve the situation. The analysis further signifies that areas that had relatively low median household income scores have relatively better socio-economic scores (Indian/Asian Group Areas). It therefore suggests that other socio-economic variables have the ability to lift the socio-economic conditions of a sub-place. In other words, median household income does not necessarily have the most significant influence on the overall socio-economic conditions in a sub-place. A more detailed investigation into the relationship between the socio-economic variables in each functional entity will be able to improve the understanding of this dynamic.

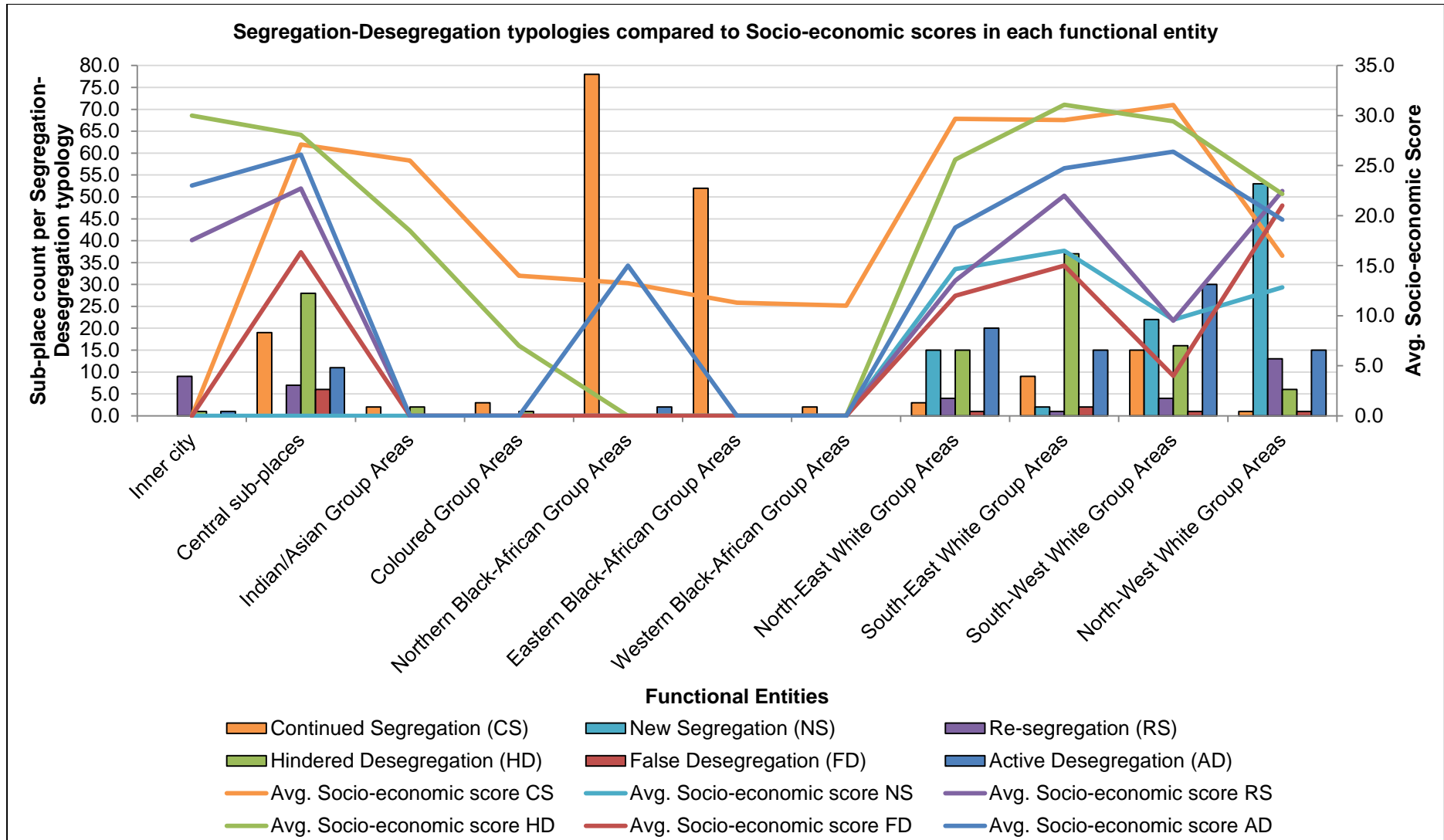


FIGURE 5.8: Segregation-Desegregation typologies compared to Socio-economic Scores in each functional entity (2011)

5.5.3. Comparing the socio-economic variables in the study area

The motivation for the final graphic representation in this section, before being able to describe the general socio-spatial structure of the study area, stems from the realities observed in the previous two data representations and relates directly to the societal attributes in each functional entity. The disparity between the median household income characteristics and the overall socio-economic scores in sub-places (identified in the previous sections) creates a need to describe how the different socio-economic variables influence the overall socio-economic score in each sub-place. Therefore the following section relates all the socio-economic variables per sub-place from the previous chapter (that is, median household income, unemployment, housing quality, tenure status and highest education) to the various functional entities in the study area. The sub-places are arranged according to their overall socio-economic score (from lowest to highest) and then placed on the graph along with the scores of the individual socio-economic variables (figures 5.9, 5.10, 5.11 and 5.12, p. 184 – 185). The x-axis of the graphs is labelled with the names of the functional entities represented on the graphs. The abovementioned arrangement of sub-places in each functional entity means that the start of a new functional entity on the x-axis is indicated when the socio-economic score is at its lowest directly after it was at its highest for another functional entity. This data representation demonstrates the relationship between the socio-economic variables and provides insights into the individual socio-economic conditions that require attention in the various functional entities of the study area.

One of the first realisations from the socio-economic conditions in the inner city, central sub-places and the former Indian/Asian and Coloured Group Areas (figure 5.9, p. 184) is that in sub-places where the overall socio-economic score is very low or very high, all the individual scores for the socio-economic variables are also very low or very high. This is mostly true for the sub-places with the lowest and highest socio-economic scores, but it does indicate that no socio-economic variable is more or less accessible to the sub-places at the upper and lower end of the perspective in each functional entity. The sub-places with socio-economic scores in between these ends do, however, experience some variation in terms of access to the various socio-economic variables. It is also evident from these functional entities that when most of the socio-economic variables are strong, one weaker variable does not considerably reduce the sub-place's overall socio-economic score. For example, in the central sub-places, it is evident that lower tenure status scores do not reduce the overall socio-economic score of the sub-places. The significant variation among socio-economic scores in especially the central sub-places indicates significant variation in the accessibility of certain aspects of socio-economic wealth and also that sub-places that are located relatively close to each other vary in terms of access to certain aspects of socio-economic

wealth. This also suggests that there are numerous other determinants to the socio-economic well-being of a sub-place that need to be investigated from a qualitative perspective. In general it seems that housing quality has the most consistent influence on the socio-economic scores of the sub-places in these functional entities, and that this variable remains relatively high throughout all the sub-places.

Among the former Black-African Group Areas (figure 5.10), it is again very clear that most of the socio-economic variables are low when the overall socio-economic score for the sub-place is low. However, in contrast to the inner city and central sub-places, it is evident that tenure status has a much more significant positive influence on the overall socio-economic score in a sub-place. Furthermore, as the overall and individual socio-economic scores slowly rise, it becomes evident that the unemployment score remains low, indicating that employment is a concern in these parts of the study area and generally keeps the socio-economic status of these sub-places low. It is also evident from the representation that only a few sub-places have high scores for the highest education variable (even though there are more sub-places with a relatively high overall socio-economic score), which support the notion that further education, along with employment, are some of the socio-economic aspects that require significant attention in these functional entities and their associated dominant population groups. The median household income variable does present a relatively direct relationship with the overall socio-economic score, which indicates that income is one socio-economic aspect that “easily” uplifts the overall socio-economic wealth of a sub-place if the socio-economic conditions are generally low. This also signifies the population’s need to first acquire monetary income before pursuing, or being able to pursue, numerous other social provisions.

There are a couple of important realisations to note when glancing at the socio-economic variable distribution in the former White Group Areas (figures 5.11 and 5.12, p. 185). In comparison to the previous functional entities, it is evident that former White Group Areas (including the central city sub-places) generally have a larger proportion of the sub-places with above average socio-economic scores.

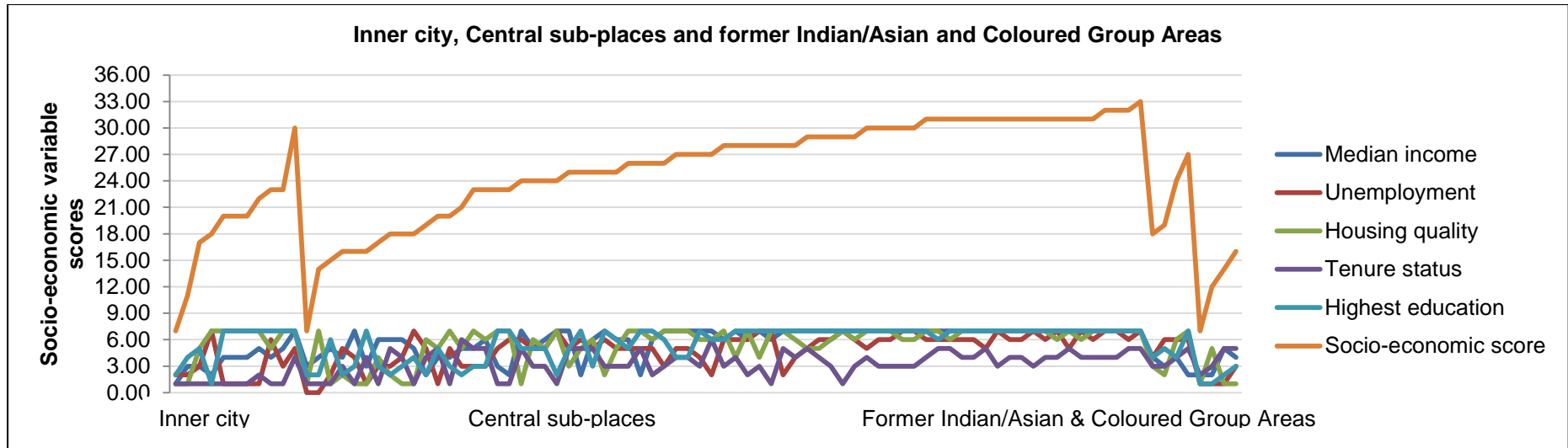


FIGURE 5.9: Socio-economic variables for central areas and former Indian/Asian, Coloured Group Areas (2011)

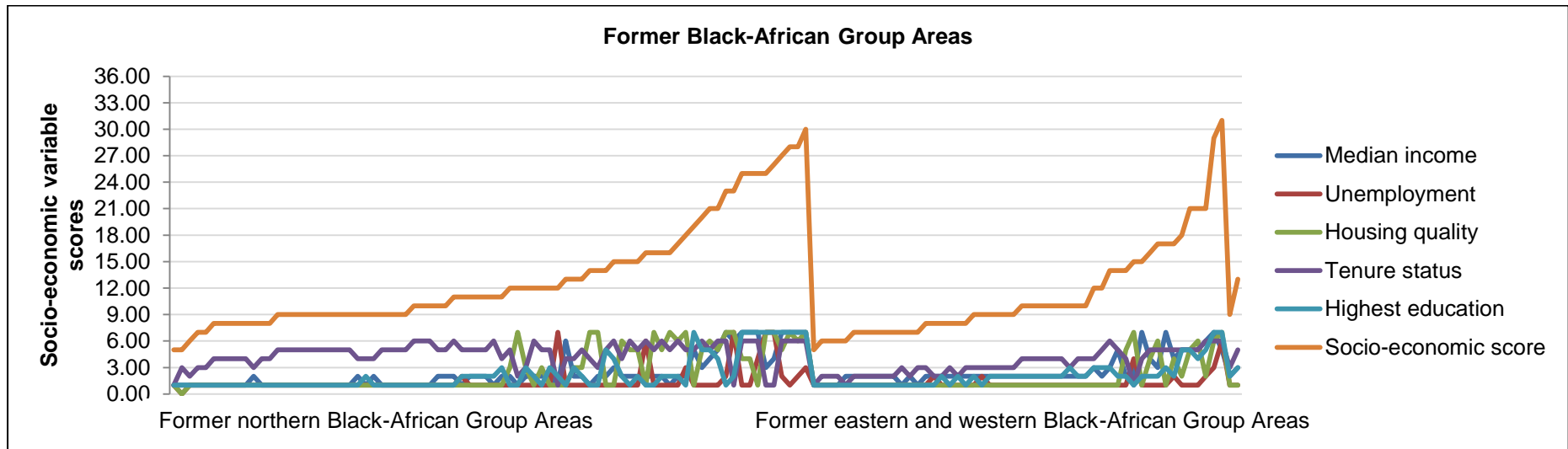


FIGURE 5.10: Socio-economic variables for the former Black-African Group Areas (2011)

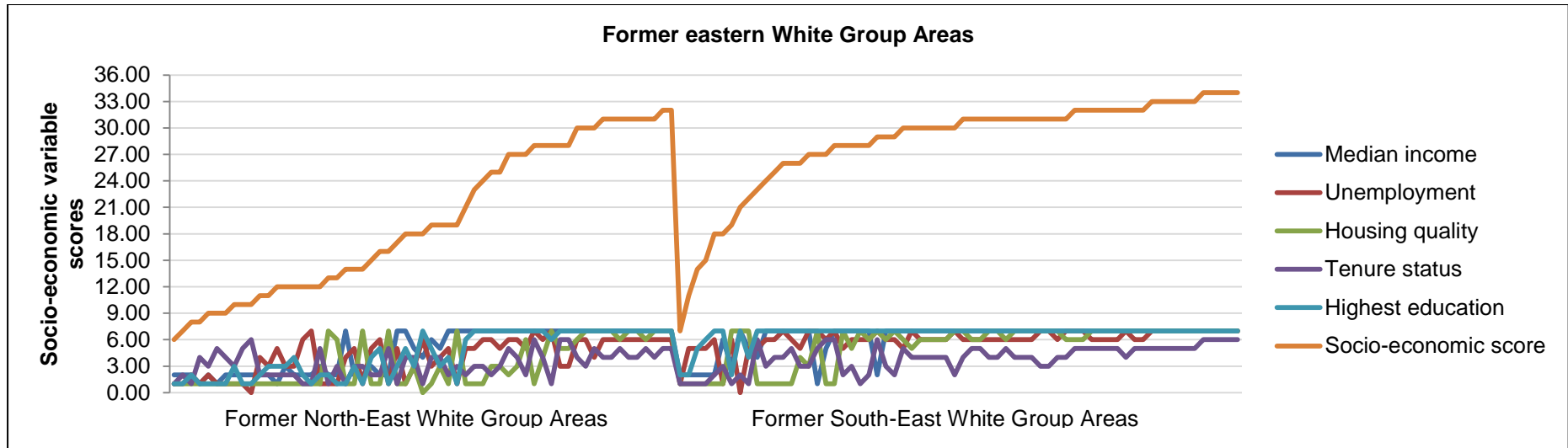


FIGURE 5.11: Socio-economic variables for the former eastern White Group Areas (2011)

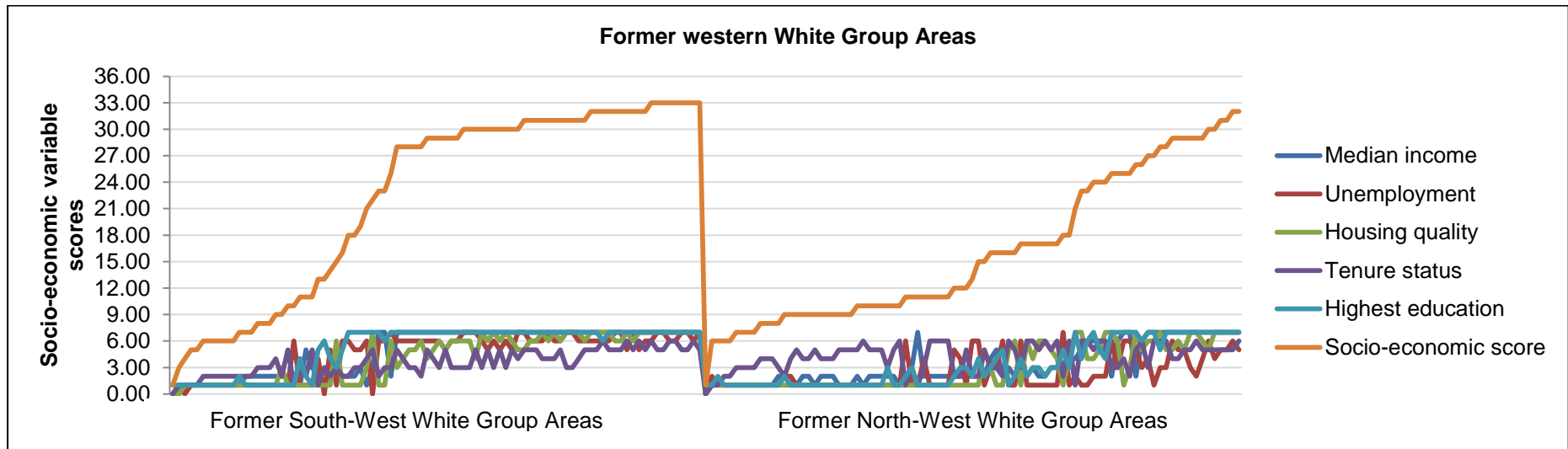


FIGURE 5.12: Socio-economic variables for the former western White Group Areas (2011)

Among the four functional entities there is also a variation in the consistency of socio-economic scores. The south-east and the south-west functional entities show much less variation between the sub-place's socio-economic scores, while the north-west functional entities show the most variation of the four functional entities. The consistency in the southern areas indicates improved access to all aspects of socio-economic wealth, while the same cannot be said of the northern areas. This relationship between the individual socio-economic variables leads to another important realisation, which is that overall socio-economic scores in the southern areas rise very quickly and then remain high, while overall socio-economic scores in the northern areas rise much slower and have fewer sub-places with very high socio-economic scores. All these dynamics support the notions of racial inequality, the fact that racial inequality extends beyond monetary income as well as the south-north divide in the study area. The data representation indicates that the South-East has the highest socio-economic score in the study area (34 points) and signifies an important characteristic of this functional entity – that is, being the top of the socio-economic wealth hierarchy. It is evident in most of these four functional areas that unemployment and median household income are much less of a concern than in the previously discussed functional entities, with only some exceptions in the northern areas.

Overall, the graphs indicate that in each functional entity where there is a rather sharp rise in the overall socio-economic score of a sub-place, it corresponds to a rise in the score for the highest education level as well as a rise in the unemployment score (indicating lower percentages of relative unemployment). Median household income holds a consistent relationship to overall socio-economic scores, while housing quality seems to have a relatively insignificant influence on socio-economic status in sub-places. Furthermore, the relatively lower tenure status scores in some sub-places do not reduce the overall socio-economic score of the sub-places as much as the higher tenure status scores in the former Black-African areas increased the overall socio-economic score. This can be attributed to property market dynamics in each of these functional entities, and can be investigated in more detail on acquiring property valuation or real estate valuation data for the study area. These trends indicate that among all the socio-economic variables analysed, employment and education have the most significant influence (contributing to both very high and very low socio-economic scores) on the current socio-economic conditions in the study area, and therefore also are key areas of intervention. Also, these socio-economic conditions indicate that racial inequality exists in the study area and that it extends beyond monetary income. A qualitative investigation into these conditions in selected sub-places in each functional entity will be able to provide infinitely more valuable insights into the neighbourhood conditions and the key areas that require suitable responses.

5.6. The central-south citadel and its dynamic periphery: A simplified description of the socio-spatial structure of the study area

Following the extensive discussion on the racial distribution and the distribution of socio-economic conditions in the study area, the current socio-spatial structure of the study area can be described in more simple terms and highlight the socio-spatial changes that have taken place since the advent of democracy. Table 5.2 brings together the combined analyses of this chapter in a few words in order to describe the racial characteristics (in the grey cells) and socio-economic traits (in the white cells) of each functional entity for the early post-apartheid city as well as the city of today (as analysed in 2011). Some more general socio-spatial characteristics and changes are noted later.

TABLE 5.2: The changing socio-spatial structure of the study area

Functional entity	Early post-apartheid city	City of today (2011)
Inner city	Rapid desegregation through the inclusion of mostly Black-African population. Average socio-economic status characterised by median-income sub-places.	Re-segregation through the continued inclusion of mostly Black-African population. Average socio-economic status but varies and is characterised by an increase in lower-income sub-places and reduced socio-economic benefits.
Central sub-places	Continued segregation and hindered desegregation (White dominance) with very limited false desegregation. Above average socio-economic status characterised by some median- and predominantly high-income sub-places.	Continued segregation and hindered desegregation (White dominance) with very limited resegregation and false desegregation. Above average socio-economic status, but reduced for Black-African population and characterised by high-income sub-places and some drops in income levels.
Former Indian/Asian Group Areas	Continued segregation and hindered desegregation (some inclusion of Black-African population). Below average socio-economic status characterised by low-	Continued segregation and hindered desegregation (some inclusion of Black-African population). Average socio-economic status characterised by income variations

Functional entity	Early post-apartheid city	City of today (2011)
	income sub-places.	and consistent access to socio-economic variables.
Former Coloured Group Areas	Continued segregation and hindered desegregation (some inclusion of Black-African population).	Continued segregation and hindered desegregation (some inclusion of Black-African population).
	Below average socio-economic status characterised by low-income sub-places.	Below average socio-economic status characterised by low-income sub-places and inconsistent access to socio-economic variables.
Former Black-African Group Areas (North, East and West)	Continued segregation.	Continued segregation and limited active desegregation (inclusion of Indian/Asian population).
	Below average socio-economic status characterised by low-income sub-places.	Below average socio-economic status characterised by low-income sub-places with concerns about unemployment and education levels, but also an increase in median-income sub-places.
Former North-East White Group Areas	Continued segregation and hindered desegregation (inclusion of Black-African population).	Active desegregation, new segregation and some hindered desegregation (inclusion of Black-African population).
	Average socio-economic status characterised by median-income sub-places.	Average socio-economic status characterised by median- and low-income sub-places with variations in access to socio-economic variables.
Former South-East White Group Areas	Continued segregation and hindered desegregation (very limited inclusion of Black-African population).	Continued segregation and hindered desegregation (very limited inclusion of Black-African population).
	Above average socio-economic status characterised by high-income sub-places.	Well-above average socio-economic status characterised by high-income sub-places, the

Functional entity	Early post-apartheid city	City of today (2011)
		highest socio-economic status and a sharp disparity between deprivation and wealth.
Former South-West White Group Areas	Active desegregation and false desegregation (inclusion of Black-African population).	Active desegregation, hindered desegregation and resegregation (inclusion of Black-African population).
	Average socio-economic status characterised by median- and low-income sub-places.	Average socio-economic status characterised by low- and high-income sub-places and a very sharp disparity between deprivation and wealth.
Former North-West White Group Areas	New segregation and resegregation (inclusion of Black-African population).	New segregation, resegregation and cases of hindered desegregation (inclusion of Black-African population).
	Average socio-economic status characterised by median- and low-income sub-places.	Average socio-economic status characterised by median and low-income sub-places and represents the location of the Black-African middle class.

In addition to the abovementioned characteristics in each functional entity, there are some general socio-spatial characteristics that are applicable to most, if not all, functional entities in the study area, which include the following:

- historical spatial influences still form the backbone of the socio-spatial structure of the study area;
- the past trends in the demographic composition and growth of the study area have persisted and can be regarded as a significant contributing factor to the continuation of socio-economic inequality;
- in terms of racial change, it remains evident that desegregation is a one directional process and that the Black-African population remains the most mobile population group in the study area that has infiltrated all the sub-places in the study area to some extent;
- the former Indian/Asian and Coloured Group Areas are the “quiet” areas in the study area in terms of changes that have taken places in them. These areas do not exhibit

drastic racial or socio-economic changes, which could be attributed to their relatively small size;

- the racial change in the study area presents a negative relationship to socio-economic status. This is evident from the decline in the socio-economic status of a sub-place on the inclusion of other population groups in a former White Group Areas. This is an indication of severe racial inequality in the study area, but also signifies that inequality extends beyond monetary income and that wealth remains “attached” to population groups and not locations in the study area;
- the population totals for each functional entity indicate that socio-economic wealth (which is concentrated in the South-East) is available to a very small part of the population. This dynamic results in an elite enclave that is substantially separated from the lived experience in other parts of the study area;
- in a similar vein as the aforementioned dynamics, it is evident that former White Group Areas constantly have a higher socio-economic status than other former Black-African Group Areas. The respective socio-economic conditions in the spatially separated and concentrated areas also have a distinct influence on the level of segregation in the study area in the sense that it forms a clear barrier to desegregation;
- the location of wealth and deprivation has remained mostly the same in the study area, with some subtle changes. These subtle changes include (1) improved socio-economic conditions among the Black-African dominated sub-places, (2) a strong presence of middle income sub-places throughout the study area and (3) the spatial retreat (in terms of size) of the areas with a very high socio-economic status;
- the “spatial growth” of median income areas signifies the growth of the middle class and also accounts for the pockets of wealth found in lower income areas, while the “spatial retreat” of high income areas signifies continuous socio-economic polarisation;
- in terms of socio-economic status, there is almost a direct contrast between the north-western and south-eastern parts of the study area, and these areas show very little socio-spatial change. These areas are spatially separated from each other, are dominated by different population groups and exhibit contrasting socio-economic conditions. This situation supports notions in segregation literature that ethnic enclaves are very often areas of severe socio-economic segregation. Therefore, these two areas are stark reminders of apartheid conditions and an indication of the lack of change that has taken place since 1994. Drawing these two areas closer to each other will remain a significant challenge for urban managers;

- in contrast to the abovementioned dynamic, it is the inner city, central sub-places, north-eastern and south-western areas that exhibit much more positive socio-spatial changes in some or other way, which represent more equal residential environments;
- the central sub-places make a very good case for the effects of proximity mentioned in the theoretical considerations. It is evident that those sub-places in the central parts of the study area that are closer to the south-east also have improved socio-economic conditions as opposed to those sub-places in the same functional entity that are located closer to the north-west of the study area;
- in the local urban system, it seems evident that the local processes of growth and interaction between sub-places have retained much of the study area's original neighbourhood hierarchy and support notions that these hierarchies are difficult to change;
- the differences between individual socio-economic variables indicate that education and employment are the key focus areas that will improve the general socio-economic conditions in most functional entities in their respective sub-places. The potential effects that residential segregation could have on education disparities have also been noted extensively in segregation literature and, according to this analysis, seem to be a significant contributor to the socio-spatial structure of the study area; and
- finally, the overall socio-economic condition in the study area indicates that the housing market plays (and could play) a significant role in shaping the socio-spatial structure of the study area. The housing market can have an equally positive or negative influence on racial change and maintains relative socio-economic status.

These abovementioned dynamics shape the socio-spatial structure of the study area and are also expected to continue to shape the socio-spatial structure of the study area in very similar ways in the future. In one sentence, the socio-spatial structure of the study area can be summarised as one with a central-south citadel (reserved for the small elite) surrounded by the dynamic periphery that is experiencing improved racial and socio-economic integration that is driven by a growing middle class.

5.7. Concluding remarks

Throughout this chapter the objective has been to use the contextual discussions and analysis methods of the preceding chapters to describe the current socio-spatial structure of the study area and to determine the extent to which it has changed from the segregationist and unequal structure created during the apartheid era. In the context of rapid urban growth, the perspective that was given on various societal attributes (including racial composition and

change, median household income, unemployment, housing quality, tenure status and highest education levels) also provided a valuable indication of the extent to which equitable growth and social inclusivity and cohesion have been attained in sub-places in the study area. The analysis indicated that the racial composition of sub-places in the study area is more likely and easier to change than the socio-economic morphology of the study area. The demographic (figure 1.1, p. 15 and table 2.2, p. 61) and socio-economic (table 4.4, p. 138 and figures 4.5 and 4.6, p. 138-139) context of the study area also suggests that in areas where racial-residential desegregation is very slow, it is due to the economic position of non-whites (despite improving slowly) that does not allow them to acquire housing in more affluent areas of the city. Despite this, a person or household is still more likely to be able change their residential location and integrate into other population groups than to change their relative socio-economic position in the society, as it is evident that socio-economic characteristics are more firmly linked to population groups than to locations. Thus the analysis proves that there are stronger and clearer divisions of socio-economic circumstances than the spatial divisions between racial groups, although some historic correlation seems evident between racial segregation and socio-economic inequality. These divisions are most notable between the north-western (consisting of predominantly deprived Black-African sub-places and a significant part of the population) and south-eastern (consisting predominantly of wealthy White sub-places and a minority of the population) parts of the study area. In other words, it seems that the apartheid era embedded socio-economic polarisation into specific locations and the overall structure of the study area and that this legacy has persisted. Therefore, even though socio-economic conditions have significantly improved since apartheid, the study area provides evidence of “class apartheid” or “new segregation”. The socio-economic determinants that easily separate the deprived and wealthy sub-places include employment opportunities and higher education. Consequently it is inequality that poses the greatest threat to equitable growth, social inclusivity and cohesion, and provides a constant reminder of apartheid socio-spatial conditions.

From a theoretical perspective, the current socio-spatial structure of the study area does provide evidence to support the effects of proximity as well as the legacy of certain urban land use models. The former Group Areas and historic land uses in the study area have remained largely unchanged (except for former White Group Areas in terms of racial composition) and are still associated with historic socio-economic conditions, thus providing some validity to classic urban land use models. The apparent link between land use and socio-economic conditions does suggest that changes in the mix of land uses in some parts of the study area could induce some changes in the socio-economic structure of the study area. The current socio-spatial structure of the study area also emphasises the importance of investigating the historic context of the study area, as this has a significant influence on

current urban realities. The description of a dual city does not accurately account for the conditions in the study area, mostly due to the existence of the middle class, but there remains a clear distinction between wealth and deprivation in the study area.

Ultimately the socio-spatial structure of the study area, and presumably that of many South African urban areas, is shaped by a delicate and reinforcing relationship between spatial differentiation and social polarisation. Historic political circumstances induced spatial differentiation into urban environments with a long-lasting legacy. Despite spatial freedom, there are now processes of social polarisation that continue to separate sub-places (at a socio-economic level) from each other. Yet, because spatial separation legacies remain, there is a certain sense of spatial differentiation that reinforce socio-economic polarisation. It seems evident that this reinforcing relationship would be most easily reversed if the socio-economic inequality between sub-places can be reduced.

CHAPTER 6

CONCLUSION

**“In time, we shall be in a position to bestow on South Africa the greatest possible gift
- a more human face.”**

- *Stephen (Steve) Biko*



6.1. Introduction

Urban areas in the democratic South Africa have, since 1994, been romanticised by images of voting lines that instil a proud sense of collaboration and integration among the South African society as they exercise their newfound social and political “freedom”. More than 20 years since the triumphant struggle against apartheid, these images have been met in the most recent democratic elections with suggestions that residential environments in South African cities exhibit very few of the integrated and equal democratic characteristics that people expect to see in the country. Although residential spaces are key determinants of social, political and economic relations in a country, they are also safe spaces where culture and identity are groomed and preserved and thus represent highly contested social spaces that have a significant influence on the democratic well-being of society. It is these suggestions of contrasting images that sparked questions related to the true existence of the post-apartheid South African city. The existence of the post-apartheid city has been debated on numerous fronts and with equally strong arguments for and against its existence, but has been tentative and supported with little empirical evidence. In order to provide both pragmatic and realistic insights into this debate and socio-spatial dynamics in South African urban areas, the study set out to analyse and describe the current socio-spatial structure (in terms of racial-residential segregation and socio-economic inequality) of the functional core of the ever dynamic City of Tshwane Metropolitan Municipality (CTMM) in the globally renowned Gauteng province of South Africa. Thus far the qualitative and quantitative analysis methods, as well as the numerous spatial representations of the data, have been successful in highlighting various dynamics related to racial-residential segregation and socio-economic inequality in sub-places in the study area, and how these have changed since the advent of democracy in South Africa to shape the current socio-spatial structure of the study area. The study also aimed to analyse the socio-spatial structure of the study area with the eventual intension of suggesting suitable responses to the continued socio-spatial challenges faced in South African urban areas. As a final contribution to these objectives, this chapter, the sixth and final chapter of the study, concludes the study by drawing all the preceding chapters together and explaining the conclusions regarding the state of racial-residential segregation and socio-economic inequality in the study area, and how these have shaped the current socio-spatial structure of the study area. These conclusions also emphasise the unique and valuable contribution that the study has made to monitoring segregation and inequality in South African urban areas, as well as the contribution it has made to urban geography and understanding socio-spatial relationships in modern cities. The chapter first considers some general urban geographic themes that have become evident in the preceding chapters of the study, and thus helps to frame the study in general urban geography discourses as well as shows the interrelatedness of various urban dynamics. Secondly the chapter answers the main research question and describes the current socio-spatial structure of the study area in

terms of the continuity-discontinuity hypotheses. The third section of the chapter elaborates on the contribution that the research has made to understanding socio-spatial structures in South Africa, as well as the research's contribution to the abovementioned urban geography discourses before finally considering some future socio-spatial research initiatives.

6.2. Urban geography themes throughout the study

Changes in the socio-spatial structure of urban areas are the result of numerous other processes of urban change that are in turn influenced by a multitude of public and private economic, social, cultural and political forces on a global and a local scale. In order to frame this study and its findings in urban geography, it is worthwhile to consider some general urban geography themes that have emerged throughout the study, which also summarise many of the findings related to the study area's socio-spatial structure. In the following section, the analyses and findings of the preceding chapters in the study are related to the following themes in urban geography: (1) spatial forces, (2) societal attributes, (3) the urban housing market and residential mobility, (4) social polarisation and new segregation and (5) urban governance.

6.2.1. Spatial forces: legacies and urban change

Providing a spatial perspective on any phenomena or situation under investigation (in terms of spatial patterns, spatial associations and spatial relationships) is a key trait of geography research and one that has been specifically employed throughout the study to investigate the socio-spatial structure of the study area. A thorough spatial perspective is essential to understand the current structure of the city, but it is also evident that past spatial situations have equally significant influences on the current socio-spatial structure of the study area. Early in the study it became clear that spatial legacies, also noted by Mabin (2005a), (created during the various stages of the apartheid regime) constitute a significant part of the urban challenge in South Africa and that the political-economic ideologies of the past had distinct spatial implications that have persisted in South African urban areas. One of the most important spatial legacies that have remained in the study area is the spatial fragmentation of land uses and the spatial separation of population groups. The prominent influence of the separate city structure means that various nodes (created as independent settlements under apartheid, which are now in the same administrative boundaries) exist throughout the study area and are spatially separated from each other. Although the study did not investigate each individual node separately, it is evident that the "separate cities" in the study area have different racial compositions and socio-economic characteristics that add to the socially divided structure of the study area. The separate city structure has also been identified as a

concern by Hulchanski (2011) within the Canadian context. On comparing this structure to the past, it is evident that the spatial location of racial concentrations (and their associated socio-economic conditions) has remained in the same relative locations since the advent of democracy and remains characterised by the peripheral settlement of the majority of the population. The study also indicated that wealth is confined to a relatively small area of the city, while significantly larger parts of the study area are characterised by relative deprivation. This spatial relationship also serves as a prelude to the levels of socio-economic inequality in the study area.

Despite these spatial legacies, it is evident that from a racial-residential segregation perspective, it has been the spatial entities in the study area that exhibit more significant racial composition changes than racial entities in the study area. In other words, it is areas like the inner city and the periphery of the study area that have undergone significant racial composition changes, as opposed to the relative lack of racial composition change in areas that are identified according to their original racial composition (like the former Black-African Group Areas). On the other hand, the socio-economic inequality analysis showed much less significant changes in the spatial distribution of relative socio-economic conditions in the study area. The most notable changes include the emergence of a middle class in some areas, as well as the relative decline (in terms of size) of wealth in the study area. Therefore it is evident that peripheral areas (except former Black-African Group Areas) are much more conducive to racial and socio-economic change than central sub-places (except the inner city) that were previously dominated by the White population and characterised by medium- to high-income groups.

The extent and significance of spatial legacies might vary between different urban areas, but in the case of the study area, certain processes of urban change (such as urbanisation, suburbanisation and decentralisation) have not eradicated the abovementioned spatial legacies. Significant amounts of urban growth have taken place in the study area over the last two decades, mostly driven by residential expansion, but also the development of some business nodes throughout the study area. The aforementioned residential expansion mostly took pace adjacent to existing residential areas and has thus not changed the spatial structure of the study area significantly. Since housing development takes up the most significant part of land uses in the study area, it is evident that residential environments will play a key role in determining the future socio-spatial structure of the study area and whether the current spatial legacies will remain or whether new spatial legacies will be created. It is clear that spatial forces and legacies (especially in the form of racial-residential segregation) have important feedback effects on socio-economic inequality, but spatial forces are not the sole determinants of the socio-spatial structure of the study area – thus indicating the

importance of societal attributes and also the next prominent theme that emerged throughout the study.

6.2.2. Societal attributes: legacies and demographic change

The main objective of the study can only be attained by investigating the spatial as well as the social dynamics in the study area. Social dynamics provide some insights into the lived experience of the spatial structure, as well as a certain sense of place that is created by the spatial structure of the study area. Societal attributes in this study referred to the demographic characteristics (size, distribution and racial composition) as well as the socio-economic attributes (income, employment, housing quality, tenure status and education) of the population in the study area. One of the first and also very significant observations from the study with regard to societal attributes is that societal attributes have undergone much less significant changes compared to the spatial changes discussed in the study area. South African urban areas, including the study area, have seen significant population growth since 1994 (due to natural population growth and urbanisation), but the racial composition of the urban societies have remained very similar. Furthermore it is evident that the relative distribution of income and other socio-economic variables analysed in the study still resemble “minority-wealth” and “majority-deprivation” relationships that are similar to those during the apartheid era. The societal attributes of the study area indicate that the minority population have retained certain benefits in terms of residential mobility and socio-economic superiority, and it is therefore evident (especially when referring back to the previous theme) that spatial legacies and the current societal attributes are mutually reinforcing and severely hamper any progress towards inclusivity and equality. The insights gained into the spatial patterns of racial-residential segregation and socio-economic inequality, as well as the combination of these two situations, also indicated that societal attributes are very strong determinants of spatial separation in the study area. The risk associated with the legacy and disparity between societal attributes in the same urban area is that it has the potential to aggravate social tensions that could lead to various forms of unrest and an atmosphere of exclusion and inequality in the city. The struggle against apartheid was primarily a struggle for social freedom and residential equality, and evidence of any of the abovementioned social tensions would nullify the progress that South Africa has made toward democracy.

Various perspectives from past and more recent census counts indicate that the population of the study area remain a young and mobile population that is characterised by a reduced ability to uplift their own living conditions without sufficient education and employment opportunities (Badenhorst *et al*, 2005). Both spatial forces and societal attributes are to a large extent determined by the dynamics in the residential areas of the city (especially in the

context of this study where the focus remained on residential areas), and therefore indicate the significance of the next theme that emerged throughout the study – the urban housing market and residential mobility.

6.2.3. The urban housing market and residential mobility

The urban housing market and residential mobility have emerged as a very strong theme throughout the study for its significant impact on the socio-spatial structure of the city. The role of the housing market has also been identified by Amin *et al* (2008) and Hulchanski (2011). The significance of housing has been identified in the two previous themes, but is further supported by the significant impacts of ongoing rapid urbanisation, suburbanisation and decentralisation that are evident in South African urban areas, as well as the fact that it is in residential environments that people's social and cultural circumstances find their strongest expression. Although some of the dynamics in the urban housing market and residential mobility require qualitative investigations, the significance thereof in the conclusion of the study lies in the fact that these dynamics play an important role in determining the socio-spatial structure of the study area, and because the housing market is a common link between racial-residential segregation and socio-economic inequality. In both the aforementioned instances the characteristics of the housing market either drive or inhibit further desegregation and equality by either providing new affordable housing or excluding certain socio-economic groups from areas due to the high cost of housing. The study determined that residential expansion and densification are the strongest drivers of desegregation (and in some sub-places resegregation), and that the emergence of the middle class is associated with new residential developments close to former Black-African Group Areas. Furthermore, it has become evident that spatial separation based on income is a natural separation process that is directly related to the supply of affordable housing in the city, and one that will always take place in a capitalist society. Therefore, this separation is not inherently negative, although the societal attributes of the study area are such that a household associated with low income and a less desirable housing area is more often than not also associated with unemployment, weak tenure status and lower quality education. Subsequently these dynamics make the spatial separation in the study area particularly negative and challenging to improve. The link between segregation and inequality in the housing market was also highlighted in inequality literature from various Canadian researchers, and is expected to remain significant in all South African urban areas. The analysis of societal attributes in the study area also indicated that tenure status has an important role to play in uplifting a household's quality of life, since a permanent home is a valuable asset that provides numerous pathways for acquiring various other social services like, for example, education.

The case for the importance of an accommodating housing market and increased residential mobility is further supported by the simple fact that a greater racial and socio-economic mix in neighbourhoods can only be achieved by means of the relocation of households. This is, however, only possible if the housing market answers to the demand for affordable housing options throughout the study area. All these dynamics provide an overwhelming indication that the housing market (and public policy to control it) is one of the key interventions that could have a positive impact on both racial-residential segregation and socio-economic inequality in the study area and could create a socio-spatial structure that would truly resemble a democratic society. As indicated throughout this discussion, the housing market and residential mobility are directly related to neighbourhood dynamics and, because neighbourhoods are the foundations for the expression of societal attributes, these are also the spaces that allow social polarisation and various forms of new segregation – thus highlighting another prominent theme that emerged in the study.

6.2.4. Social polarisation and new segregation

The various findings from the study that have been discussed indicate that racial segregation and socio-economic inequality do not follow the same trends; that the population in the study area remains separated along various lines and that there are definite underlying influences that contribute to the lack of socio-spatial transformation in the study area. Social polarisation and new segregation are two dynamics that have emerged throughout the study that have a significant (underlying) impact on the socio-spatial character of the study area, and are therefore considered an integral part of the study's conclusion.

Social polarisation was described in the study as a process whereby the society is divided and concentrated among two distinct poles of a set of social variables. In such a case, a distinct "rich" group and a distinct "poor" group are established, but without the creation of a distinct middle group. The study area clearly resembles the characteristics of social polarisation when considering the results from the socio-economic inequality analysis. The "rich" and the "poor" in the study area are worlds apart (spatially and socially) in terms of their assets and their lived experience of the city, with a very small middle class in between these realities. This sense of social polarisation is also supported by evidence of the "spatial retreat" of wealth in the study area. The emergence of the middle class does serve as a counter-argument for social polarisation, but its extent is still very limited (the "rich" and the "poor" still live relatively close to each other) and it is clear that the "middle" remains very small in the study area.

While social polarisation relates to a somewhat subtle division in society compared to the definite influence of segregation and its associated spatial patterns, it undoubtedly still represents a new form of segregation, as anticipated by Freund (2010). The study determined that, despite the removal of segregationist legislation and racial classification as the single determinant of residential separation, certain levels of segregation and spatial separation still exist in the study area and, along with evidence of social polarisation, lead to the notion that a new form of segregation is applicable to the study area. Through the analysis of societal attributes, it is clear that income, employment and education are currently the most significant determinants of racial and spatial separation in the study area. Divisions among these attributes do not find spatial expression in many forms of urban development, and it is therefore regarded that various market forces and urban developments such as upmarket residential developments, gated communities and leisure estates are spatial embodiments of the new segregation phenomena and provides very little assistance to greater inclusivity and equality in the study area.

Both social polarisation and the new forms of segregation emphasise notions of “us” versus “them” or “minority” versus “majority” relationships in the study area and are therefore two dynamics that hold cause for concern for the future socio-spatial structure of the study area. The presence and effect of these dynamics, along with dynamics such as the barriers in the housing market, mean that local urban spaces’ ability to offer opportunities for restructuring apartheid urban spaces is reduced and replaced by these new forms of social division and therefore embodies a threat that would undermine the principles on which the South African democracy has been built. The current activists, politicians and urban managers that help to build South Africa’s democracy now carry this weight on their shoulders and have the responsibility of managing urban areas in such a way that it strengthens the nation’s democratic characteristics. Subsequently it is urban governance that has emerged as the final significant theme in the study.

6.2.5. Urban governance: responding to democracy

The final and possibly one of the most significant themes to recognise and take from the study, is the theme of urban governance. This theme is specifically related to government’s response to democracy and the changes that they have been able to make in order to create the true post-apartheid city. The scene for a true post-apartheid city was set when the country’s government was radically reshaped and apartheid legislation repealed, but it remained uncertain what the outcome would be for the voting citizens. The second chapter of the study devoted a great deal of attention to the policy influences that attempted to relieve

the country from its apartheid bounds and to improve the lives of people, but these paper-based changes could still not reassure the success of the democratic transition.

The study indicated on numerous occasions that policy developments, such as the Reconstruction and Development Programme (RDP), the Growth, Employment and Redistribution (GEAR) strategy and Integrated Development Plans (IDP), were significant on paper but had limited impact in practice (Oranje, 2010). The limited impact of policies can be ascribed to numerous flawed characteristics that were not discussed in detail in the study, but remain rather obvious. The general indication from the study's various analyses is that this relative lack of suitable policies can serve as a reason for the lack of socio-spatial change in the study area. One of the flawed characteristics of policies – integrated government support – is expected to be fulfilled by the National Development Plan (NDP) for 2030, and subsequently believed to hold more potential for eradicating socio-economic inequality than any other policy has had to date. Its true impact remains to be seen for the time being, but it is clear that policies will remain an important tool to materialise the nation's post-apartheid socio-spatial goals.

Given South Africa's long history of racial segregation, economic inequality and exclusion, it is important that all policies that are implemented to guide urban development be measured against their ability to effectively distribute resources among the population and in such a way decrease the gaps in society that are based on income and location. The findings from the study area and other case studies emphasise that policies should shift their focus from redressing racial discrepancies to redressing socio-economic disparities. Considering this, the study identified housing, employment and education as key areas in which policies should make an impact towards achieving equality and inclusivity. These ideals can only be achieved by means of focussed urban planning and urban management that are guided by a need to (1) redress past imbalances while also having an equal impact on all population groups and spatial locations and (2) balance progressive economic development and the needs of the society, (3) promote public participation and (4) be adapted to the local context. A combination of these characteristics would ensure that the same policy challenges of the past do not return and that current spatial and societal legacies do not remain part of the future South African urban society.

All the abovementioned themes have emerged strongly throughout the study and serve as a summary of the main findings related to the socio-spatial structure of the study area. These themes also place the arguments and findings of the study in general urban geography discourses and debates and help to frame the relevance of the study. In addition to these

themes, the need to answer the main research question remains. These answers are provided in the next section of the chapter.

6.3. Answering the research questions

In addition to the general aim of the study, the various research questions discussed in the first chapter of the study guided the content and analyses in the preceding chapters of the study. Each chapter provided a detailed answer or perspective to the various sub-research questions, but a reminder of the most important findings related to each sub-research question is provided here. Chapter 2 of the study highlighted the numerous demographic, policy and spatial influences that shape the current socio-spatial structure of South African urban areas. The chapter made it clear that population growth, significant levels of urbanisation, ineffective policy implementation and spatial legacies are the main determinants that shape the socio-spatial structure of South African urban areas. The third chapter investigated the extent and spatial pattern of racial-residential segregation in the study area and determined that structural segregation still persists even though the spatial patterns have changed (it was particularly the inner city and peripheral areas that showed some positive changes in terms of desegregation). The fourth chapter investigated the extent and spatial pattern of socio-economic inequality in the study area and determined that socio-economic inequality has undergone much less significant changes than racial-residential segregation, and that a large gap (both statistically and spatially) remains between the “rich” and the “poor” in the study area, while the spatial patterns of inequality still resemble those of the apartheid era. The fifth chapter of the study combined the work of the aforementioned chapters to sketch the study area’s socio-spatial structure and to determine the characteristics of the process of socio-spatial change in the study area. Socio-spatial change was found to be driven by racial composition change in sub-places rather than socio-economic change, while it is evident that there are clear divisions of socio-economic circumstances among population groups in the study area. In addition to these questions, the main research question, as well as the sub-research question for the final chapter of the study, is answered in the following section.

6.3.1. The main research question

The current socio-spatial structure of the functional core of the CTMM (the City of Tshwane) can best be described as a separated and fragmented structure where, on the one hand, most racial relations are continually improving while, on the other hand, the city endures severe forms of socio-economic inequality at the hand of prominent spatial legacies and ineffective policy interventions. The socio-spatial structure of the study area offers more

residential freedom than past socio-spatial structures, but where past socio-spatial structures limited access to residential opportunities to certain racial groups, the current socio-spatial structure prevents certain socio-economic groups from accessing certain residential areas in the city. Subsequently, residential segregation is no longer the principle organisational feature in South Africa responsible for creating the urban underclass. However, there are more subtle and underlying socio-spatial influences that inhibit true inclusivity and equality in the post-apartheid city. The study also provided a clear indication that socio-spatial relationships in South African urban areas cannot be fully understood by simply investigating racial distributions and monetary income inequality, but should also consider the impact of unemployment, education distributions and housing availability. The dynamics in the housing market is particularly important to understand socio-spatial relationships in South African urban areas and remains a key area in which suitable interventions can improve socio-spatial relations in cities. These aforementioned dynamics have become key determinants for socio-spatial separation in urban areas and supersede past racial classifications.

6.3.2. Continuity or discontinuity?

The fundamental question that this study and chapter aimed to answer (given all the preceding discussions and analyses) is whether there is evidence to support the connected-continuity hypothesis, the disconnected-continuity hypothesis or the discontinuity hypothesis in terms of the socio-spatial structure of the “post-apartheid” City of Tshwane. Considering the racial-residential segregation and socio-economic inequality analyses in the study area, it is evident that two different conclusions have been reached for these situations in the study area. These different conclusions arose due to the different characteristics and trends that were analysed for each situation, and make the description of the current socio-spatial structure of the study area somewhat more complicated than initially anticipated. The evidence indicating the extent of racial-residential segregation in the study area supports the disconnected-continuity hypothesis, as racial-residential segregation still persists in the study area; the four main racial groups (Black-Africans, Indian/Asians, Coloureds and Whites) remain spatially separated from each other to a large extent, but there have been numerous positive changes in the racial composition of sub-places and in the spatial pattern of segregation, and it is evident that racial change is ongoing. The evidence indicating the extent of socio-economic inequality is, however, supports the connected-continuity hypothesis, since the income structures in the study area have undergone very limited change and a significant gap (based on numerous socio-economic variables) remains between the “rich” and the “poor” in the study area. The gap between income groups is also spatially expressed in the disparities between the south-east and the north-west of the study area and it is directly linked to past locations of wealth and deprivation, respectively.

The continuity-discontinuity continuum does not describe a hypothesis where the abovementioned two situations can be combined to provide a relative description of the current socio-spatial structure of the study area. However, considering the significant impact that lasting socio-economic conditions have on the liveability of society, as well as the prominent racial connections between wealthy and deprived sub-places in the study area, this study considers the position of socio-economic inequality on the continuum as the most prominent influence on the current description of the socio-spatial structure study area. Furthermore it is evident that spatial fragmentation still plagues the study area, and the amount of racial change that has taken place has limited value for the overall socio-spatial structure of the study area if spatial fragmentation persists. Therefore it does not represent a spatial structure that is sufficiently disconnected from the study area's past spatial structure. Subsequently, and due to the lack of radical racial transformation in sub-places, the evidence presented in this study that describes the current socio-spatial structure of the study area supports the connected-continuity hypothesis in relation to the structure of the early post-apartheid city.

The continuity-discontinuity continuum is helpful in understanding socio-spatial change the study area but it also poses some limitations. One of the limitations that are most notable is that the current continuum only provides three perspectives to describe the relationship between past and present socio-spatial conditions in the study area. The research highlighted the need for a greater variety of perspectives, especially because segregation and inequality dynamics compare differently to past socio-spatial characteristics and socio-spatial changes are still taking place. Future research would be able to refine the continuity-discontinuity continuum to provide descriptions for these varying conditions. Another limitation, especially in this study, is that the perspective relies on the interpretation of past conditions because past data is not readily available and in the same formats as present data in all study areas to calculate or accurately determine past conditions. Future research projects, based on future datasets would however provide the opportunity for a more robust comparison of past and present conditions and an empirical determination of the position on the continuum.

6.4. The contribution of the study

The aim of the study was framed with both the local and the general urban context in mind and thus, through various theories, concepts, methods and findings, has made a unique contribution towards solutions for improved socio-spatial integration in South African urban areas, as well as the interpretation of socio-spatial structures around the world. The study

provided particularly valuable insights into current socio-spatial relationships in South African urban areas and how these have been influenced by the past socio-spatial conditions in the country, as well as current processes of urban change. The study's description of city-wide socio-spatial change is particularly valuable to urban scholars in South Africa and has not been provided in many previous research works. This perspective, as well as the variety of analysis methods employed in the study, also makes a unique contribution to monitoring segregation and inequality in South African urban areas, and simultaneously contributes to understanding the status quo with regard to various development goals in the larger urban region of the Gauteng province. The study also provided a general improved understanding of various racial-residential segregation and socio-economic inequality analysis methods and their application for all urban contexts, as well as in the unique South African urban context. The contributions made through the debates and findings in this study are especially valuable to the youthful character of the South African democracy, as they provided an indication of important directions that need to be taken by future research initiatives in order to provide a more refined perspective on socio-spatial conditions in South African urban areas.

The study made another very important contribution to socio-spatial research through the conceptual framework and relative classifications proposed for interpreting socio-spatial dynamics on the city-wide scale. It has become evident in many cases that contextual differences between cities make statistical generalisation impossible in a diverse country such as South Africa, and therefore the study's conceptual framework and relative classifications are more suitable to analysing racial-residential segregation and socio-economic inequality in a variety of urban contexts. The continuity-discontinuity hypotheses, the six segregation-desegregation situations, as well as the method to provide a relative classification of socio-economic conditions in sub-places in the study area, were all applied to provide a realistic and practical interpretation of the socio-spatial character and changes in the study area. These could also be applied to many other study areas in order to provide similar insights and to serve as a comparative reference for future research initiatives.

6.5. Future socio-spatial research initiatives

Research is an ongoing process and it is especially important that the dynamic nature of modern urban environments be continually explored to improve the understanding of processes of urban change and their impact on the socio-spatial structure of the city. Therefore all the aspects that were analysed and discussed in the study can and should be revisited in future when new datasets become available, in order to monitor further changes (positive or negative) in the socio-spatial structure of the study area. Along with monitoring

the study area, it is also possible and required to apply the approach of this study to numerous other cities in order to provide similar insights into the socio-spatial structure of South African urban areas.

Apart from replicating this study in future time periods and different areas, some perspectives and methods could also be refined and explored in more detail. These aspects include the further testing and refinement of the continuity-discontinuity hypotheses, the relative segregation-desegregation classification and the relative socio-economic status classification for sub-places. Any future socio-spatial research initiatives should also consider a greater variety of variables to inform a relative socio-economic classification and to accurately describe the socio-spatial structure of the city as well as the underlying influences to the observed conditions. The housing market is one very specific theme from the study that should be explored in more detail in future (through specific analysis methods and new datasets) to uncover the dynamics and influences that the housing market has on the socio-spatial structure and functioning of urban areas. Finally, and from a qualitative perspective, future racial-residential segregation research initiatives should attempt to provide clarity on the extent to which segregation takes place on a social voluntary basis, or to which degree desegregation is hindered by socio-economic disparities in South African urban areas. All the abovementioned research initiatives will improve the understanding of the socio-spatial structure of the city and highlight the interrelationships between individual parts of the urban system. Regardless of the location and the approach employed by researchers, it is expected that scholars in the field of urban transformation, urban management and social well-being will remain focussed on the racial-residential segregation and socio-economic inequality distribution patterns in South African urban areas for many years to come.

6.6. Conclusion

The study has taken a long and in-depth look at the past and present socio-spatial structure of the functional urban core of the CTMM. The study identified numerous characteristics and answered various questions that should guide future socio-spatial development in the study area. The study considered demographic, policy and spatial influences from South Africa's urban history, individually analysed both racial-residential segregation and socio-economic inequality with a unique spatial perspective and relative classifications, before combining the findings from these respective situations to describe the current socio-spatial structure of the study area in relation to its past socio-spatial structure. The socio-spatial changes that were exhibited by the study area do not meet the expectations placed on a country and a city that shed its apartheid bounds more than two decades ago. The limited amount of socio-spatial change experienced by the study area is mostly driven by changes in the racial composition

of sub-places (desegregation) rather than by changes in the socio-economic hierarchy of society. This situation ultimately (and unfortunately) means that the numerical majority population remains in socio-spatially disadvantaged locations in the study area (and the associated relatively disadvantaged positions in society), while the numerically minority population has maintained certain benefits in terms of residential mobility and socio-economic superiority. Although each end of the minority-majority relationship can also be associated with certain racial groups to support racial inequality, the fact of the matter remains that a small segment of the population (comprising all four of the main racial groups) reside in good locations in the city and in relatively wealthy socio-economic circumstances, while a very large segment of the population (also comprising all four of the main racial groups) reside in spatially disadvantaged locations in the city and in relatively poor socio-economic circumstances. Therefore the study area corresponds to dynamics in most other South African urban areas in the sense that the socio-spatial legacies of apartheid continue to pose a threat to equality and inclusivity, since socio-economic status, as opposed to racial classifications, constitutes a new form of segregation. The correspondence to other urban areas in the country can be ascribed to the fact that a few government strategies, political attitudes and societal attributes remain rooted in the urban society and are so fiercely expressed in residential areas that it prevents the emergence of the true post-apartheid city across all urban areas.

The destructive effects of the apartheid era did not spare any spatial entity or level of social hierarchy in South Africa from fragmentation; it is therefore important to realise that a contribution from all levels of the social hierarchy will be required to improve the unequal and exclusory nature of residential environments in South African urban areas. The findings from this study, and those that investigate similar dynamics, require urgent consideration and support from both politicians and urban managers in order to create suitable responses to the dismal situation in which South African urban areas find themselves. These suitable responses should have the capacity to address socio-economic disparities in urban areas and provide all citizens with equal opportunities to access socio-economic benefits and use them to improve their own circumstances. This study has taken the first steps towards suitable responses by identifying some of the dynamics that prevent equality and inclusivity in the study area, as well as some key areas for intervention. Although this is an immense task that lies before politicians and urban managers, it is not an impossible task; by employing focussed interventions and time it will be possible to bestow on South African urban areas the more human face that so many social activists dreamt of providing.

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