

**A 12 YEAR REVIEW OF ROUTINE
DATA FOR DELIVERIES BY
TEENAGED WOMEN IN PUBLIC
SECTOR HEALTH CARE FACILITIES
IN THE WESTERN CAPE PROVINCE,
SOUTH AFRICA, FROM 2000 – 2012**



Thesis presented in partial fulfilment of the requirements for the degree of
Master's Degree in Public Health
Faculty of Community and Health Sciences
University of the Western Cape

“Where medical discourses dominate, the aims of sex education are defined in terms of limiting unplanned pregnancy and the spread of STDs. Where moral discourse holds ascendancy, the role of sex education is formulated in terms of the legitimacy of adolescent sexual activity and concerns of the sexual exploitation of women and children.”

R. Thomson (1994)

ACKNOWLEDGEMENTS

When I embarked on this Master's programme, I was motivated by my personal desire for advancement, for growth, by the love of learning. I failed to appreciate how much this decision would impact on my life, my work-life balance, and the lives of the people I love. The past few weeks in particular served to remind me how really blessed I am to be loved and supported by my amazing family; to have friends who know my heart and to have colleagues who have shared their knowledge and insights in the most supportive manner as I travelled this road.

First and foremost, I would like to take this opportunity to sincerely thank my supervisor, Professor Christina Zarowsky for her support. I deeply admire her knowledge, passion and curiosity about the world. I am really pleased that we had the opportunity to explore the complexities in the health environment, far beyond the scope of this mini-thesis. I truly value those conversations because they were the moments of joy that sign-posted the journey. Professor Zarowsky has gone beyond what could be expected from her. I am really grateful that I had the opportunity to work with her.

I would also like to thank my co-supervisor, Dr. Brian Van Wyk for his contribution to this document. Beyond his technical expertise, I value his easy nature and honest reflections about the world. I really appreciated Dr. Van Wyk's feedback and ability to help me navigate and avoid the potential pitfalls inherent in any research project.

The teaching faculty and administrative staff at the School of Public Health are thanked for their contribution to my learning on this programme. Janine and Corinne, thank you for all your assistance. I would also like to thank the fellow students on the programme for their friendship. My special friends:

Placidie, Ebrahim, Donovan, Amir, Sonia, Jean Paul, Johnbull, Abubakar, Madiba, and Fitsum – I feel so blessed for having met you.

I am greatly indebted to the staff at the Provincial Health Department for providing me with access to the data. A special word of thanks is extended to Chumani Maki, Mzukisi Khonono, Michelle Williams and Edna Arends for their continued support and willingness to assist. I am also very grateful to David Pienaar for sharing his knowledge and insights with me.

My colleagues in the Department of Health staff are acknowledged specifically for their friendship and kindness in recent months: Rene, DJ, Patrick, Priscilla, Linda, Alfonso, Cathleen, Annie, Pat, Karen, Nicola, Fatima, Bernadette, Michael, Karin, Tania, Sue, Lucy, Abie, James, Carol, Willem, Greg, Louise, Dirk, Marinda, Vindra, Adieba, and Tina, Charles, Donna, Breslau, Elbie, Jenny, Claudette and Granville.



I would like to take the opportunity to thank the senior departmental managers for their continued support. In particular, I wish to thank Linda Hering, Saadiq Kariem, Keith Cloete, Lawrence Bitalo, Kathy Grammer, Patti Olckers, Paul Ciapparelli and Tony Hawkrige for supporting my development as a manager in the department. I have learned so much from you and admire you greatly.

To my new friends at the studio: you ladies inspire me so much. I would like to acknowledge Marcella, Ploy, Yael, Stacy, Gretche, Bridget, Leigh-Anne, Stacy, Nomti, Jacqui, Sherry, Leanne, Jasmine, Anel, Analme, Annelle, Elle, Chanda, Jo, Karen, Zaytoun, Jeanne-Marié, Louise and Jacqui in particular.

My special friends who assisted with proof-reading this document deserve so much more than a word of thanks. I cannot describe how grateful I am for their comments, feedback and encouragement. You are all beautiful and lovely and generous of spirit and I am so thankful for our friendship. Tania, Nadine, Hedwig, Annique, Lynne, Warda, Pat and Kendall, I am so indebted to you.

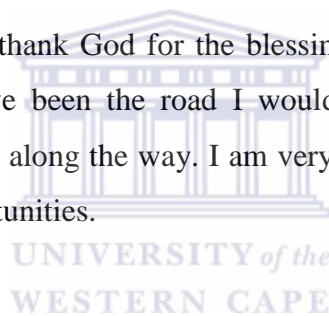
To my friends – I am reluctant to list names in the event that I omit anyone. I love you all and thank you for your love and support. Having said that, I do need to extend a special thank you to: Wendy, Megan, Kim, Nadine, Robyn, Nikki, Cheryl-Anne, Alison, Arlene and Simone. To the members of Forest Valley Lions: you have been so supportive. Thank you Oliver, Bev, Alison, Nicky, Leonard, Craig, Rodney, David. I would also like to thank Menét, Tammy, CJ, Roeshdien, Estelle, Brenda, Raille, Keeno, Heinrich, Nathan, Gary, Craig, Melony, Robbie, Justin, Petula, Claire, and Albertrum for their encouragement, especially for all the messages of support in the last few weeks. I am also deeply thankful to Carol, Lyn, Sharon and Estelle for their love and support. Ryan, I cannot say thank you enough for your unfailing love and support. Thank you for believing in me and for your words of encouragement and most importantly, for always being there.

I am once again humbled when I think about my amazing family. My mom and dad go far beyond what can reasonably be expected - without a moment's hesitation. Their loyal support and sacrifices make me feel so blessed. Stafford and Davina, thank you for carrying me through the dark patches with your love, humour and positivity. To my aunts, uncles and cousins, I can't even begin to list all the things I am grateful for – but foremost, I thank you for your unconditional love. A special loving thought and appreciation goes to my beautiful god-daughter Charlotte. My little angel, you are my sunshine and my heart.

I would like to thank the examiners for their comments and sharing their insights. I have appreciated the opportunity to revisit what has been presented in this mini-thesis and for the additional opportunity for learning. I have sought as far as possible in the limited time permitted, to respond to your recommendations. Your recommendations have assisted me to articulate gaps in the current body of research and helped to unearth areas for further research.

I wish to thank and acknowledge the staff at the Western Cape Education Department for permitting me access to their data.

Finally, I would like to thank God for the blessings I have been bestowed with. This may not have been the road I would have chosen, but I am appreciating the learning along the way. I am very grateful that I have been blessed with these opportunities.



ABSTRACT

Background

The factors that underlie teenage pregnancies are complex and multifactorial. The prevailing perception is that teenage pregnancies are increasing in South Africa. However, the empirical extent and trends in teenage births in the Western Cape Province are not well understood. A systematic analysis of routine health information for the data element *Delivery in facility to women under 18 years* for the period 1 April 2000 to 31 March 2012 is presented in order to contribute to documenting and understanding how this problem manifests in the Western Cape Province.

Objectives

The objectives of the study were to describe the trends in the number of deliveries for women under the age of 18 years in the Western Cape Province for the period 1 April 2000 until 31 March 2012, and to compare the trends within and between districts. A secondary aim was to explore the quality and usefulness of Routine Health Information in the Western Cape Province focusing on the dataset for deliveries for women under the age of 18 years.

Methods

The data for the Province extracted from the Sinjani system (the data repository for health information management in the Western Cape Department of Health) was subjected to a trend analysis at the Provincial, District and Sub-District level. The absolute numbers of all deliveries, and deliveries for women under the age of 18 years as well as proportions of deliveries for women under the age of 18 years were compared across districts, years and seasons. Results were discussed with senior managers in the Department of Health as compared to performance indicators presented in workshop settings to triangulate and help interpret findings.

Findings

The key finding is that both the absolute number of deliveries for women under the age of 18 years and the deliveries for women under the age of 18 years relative to all deliveries have declined steadily since 2007, while

absolute numbers of deliveries in 2012 were only slightly higher than in 2000-2001, despite an increase of 19.4% in the total population of the Province between 2002 and 2011. Despite the decline in the number of deliveries for women under the age of 18 years, the number of deliveries remains high. Seasonal increases in numbers of deliveries coincide with school holidays in most districts. The data analysis also revealed challenges with the quality of the data, and that it is not possible to determine the age distribution of deliveries across women under 18 years from the provincial data set. Routinely collected data do not permit analysis or comparison of births at the ward level where significant socio-economic variations are likely to influence fertility.

Conclusions and Recommendations

The data did not support widespread perceptions of rapidly increasing teen births. The declining birth rates and relatively stable proportion of under 18 births relative to all births suggest that adding new indicators throughout the entire routine information system is not justified on public health or economic grounds. However, more detailed and disaggregated evidence is needed to inform locally tailored interventions and could be obtained from alternate sources of information such as point prevalence surveys, annual surveys, or data collection at sentinel sites. While teenage birth rates are not increasing, they remain high. It is recommended that additional service delivery models be explored to ensure that sexual reproductive health services are strengthened and delivered in a manner that would be acceptable to young people. Further, it is recommended that programmatic interventions that target the sexual reproductive health choices made by young people be scaled up in partnership with intersectoral partners and communities in order to mitigate against seasonal increases in the number of deliveries for women under 18 years of age.

Key words:

teenage pregnancies, routine health information, secondary data, gender, adolescence, fertility, trend analysis, seasonal trends.

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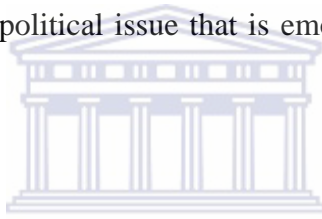
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CHAPTER 1: INTRODUCTION

Teenage pregnancy is a multifaceted public health and social issue. The media, which can both shape and simultaneously reflect public opinion about teenage pregnancy, consistently portrays a dire picture of the state of the sexual reproductive health of young women and the scourge of teenage pregnancy, suggesting that teenage pregnancy rates are out of control in South Africa (The Times: *Pregnancy Tsunami*, 20 February 2011; Cape Times: *School Pregnancies Raise Alarm*, 1 June 2012; International Business Times: *Babies Having Babies: Teenage Pregnancies Destroying Lives And Futures Of South African Girls*, 5 September 2013). It would therefore appear that as much as teenage pregnancies are a public health concern, they are also a political issue that is emotively loaded and incites moral objection.



South Africa, like many low and middle-income countries, has a high teenage pregnancy rate. Morrell, Bhana and Shefer (2012) reported that a third of all women under the age of 20 years in South Africa have experienced a pregnancy. This is an alarming statistic, and would therefore support the public outcry against the extent of teenage pregnancy. The United Nations (UN) *World Fertility Report* indicated that adolescent birth rates have declined in both developed and developing countries. The reported *adolescent birth rate* for the age group 15 to 19 years is 14 births per 1,000 women in developed countries and 50 births per 1,000 for women 15 to 19 years of age in developing countries (UN, 2011). The UN reported that South Africa has a *teenage fertility rate* of 81 births per 1000 deliveries for women 15 to 19 years of age (UN, 2009: 231) while the adolescent birth rate for South Africa for women 15 to 19 years of age is comparable with other developing countries at 54 births per 1,000 women (UN, undated). The differences in the reported adolescent birth rate and teenage fertility rate may represent the use of different data sources (for example *vital statistics* compared to *health information systems*) or the use of different data

definitions (for example live births compared to pregnancies) and different exclusionary criteria (for example the age of the mother). The specific definitions will be addressed later in the analysis. The contradictions in the reported rates illustrate why it is important to have accurate, reproducible and consistent data for decision-making. However, we can conclude that adolescent birth rates in South Africa and other low and middle-income countries are much higher than in high-income countries.

One of the most compelling arguments for global attention to teenage pregnancies, and specifically unplanned teenage pregnancies in Africa, is the high risk of Human Immunodeficiency Virus (HIV) infection associated with unprotected sexual intercourse. Sub-Saharan Africa accounted for 67% of all people living with HIV globally (The Joint United Nations Programme on HIV/AIDS (UNAIDS), 2008). Young people between 15 and 24 years of age accounted for approximately 41% of new HIV infections globally in 2007 (UNAIDS, 2010). This equates to nearly 2,5 million new HIV infections each year for people aged between 15 and 24 years of age (World Health Organisation (WHO), 2006a).

South Africa has a generalised HIV epidemic (Department of Health (DoH), 2012) with 17.8% of adults between the ages of 15 and 49 years estimated to be HIV positive. Nearly 10% of the total population is living with HIV, estimated at approximately 5,63 million adults and children (DoH, 2012). Panday, Makiwane, Ranchod, and Letsoalo (2009) asserted that HIV and Acquired Immune Deficiency Syndrome (AIDS) have now surpassed fertility as the primary concern regarding the sexual and reproductive health of young people.

These statistics raised serious concerns about young people's sexual behaviour and the use of effective protection during sexual intercourse. Stirling, Rees, Kasedde and Hankins (2008) highlighted the disproportionate

impact of HIV infections on young men and young women, where young women had a reported HIV prevalence rate between three and four times higher than young men. It has been reported that in South Africa more than 15% of women compared to 5% of men aged between 15 and 24 years were infected with HIV (Pettifor, *et al.*, 2005). More recent data confirmed a decline in the HIV prevalence for men and women aged between 15 and 24 years living with HIV, but emphasised the continued gender disparity in HIV prevalence. It was estimated that 8.7% of men and women between 15 and 24 years (men: 3.6% and women 13.9%) were living with HIV in 2010, and within that cohort, 4.4% of men and women between 15 and 19 years (men 2.5% and women: 6.7%) were living with HIV in 2010 (DoH, 2012).

The WHO (2006a) cautioned that adolescent sexuality and the sexual reproductive health needs of adolescents were only partially understood in many countries. In the South African context, the widespread public outcry against teenage pregnancies set against a backdrop of a generalised HIV epidemic suggests that teenage pregnancies should be examined in order to ensure that appropriate programmatic interventions are implemented in response to this public health problem.

There is a growing body of evidence in the literature that greater gender sensitivity is required in the discourse around teenage pregnancies. The WHO described *adolescence* as the transitional period between childhood and adulthood that occurred between the ages of 10 and 19 years (WHO, 2006a). Macleod (2011) challenged the construct of adolescence as *a period of transition* in an analysis relating to early reproduction proposing that the term *adolescence* marginalised young women. She opposed the paradox where young women were described as *girls*, unable to make responsible sexual reproductive health decisions because of a lack of emotional and social maturity, while simultaneously they fulfilled the characteristics of being *women*, possessing the physiological requirements to be able to conceive (Macleod, 2011: 5). The notion of young women being cast as

children raised thought-provoking considerations regarding the agency and power of young women to make decisions concerning their sexual reproductive health. Macleod proposed that the discourse regarding teenage pregnancies should shift to a focus on reducing unwanted pregnancies in order to impact on the social and policy environment in which young women's sexual health needs are addressed (Macleod, 2011). Willan (2013) expressed a similar perspective, arguing that not all teenage pregnancies were unplanned or unwanted, and emphasised that the assumption that all teenagers lacked agency and power was misplaced. The centrality of gender and the sexual reproductive rights of women is therefore a critical consideration in understanding the phenomenon of teenage pregnancies.

Teenage pregnancies are not a recent phenomenon and therefore further exploration regarding the reasons for the heightened concerns regarding teenage pregnancies was warranted. One consideration is that there has in recent years been a shift to sexual initiation, and subsequently teenage pregnancy, occurring outside of the context of marriage (Marteleto, Lam and Ranchhod, 2008). Macleod (2011) argued that teenage pregnancy as a social problem has been constructed around *unwed mothers* and *illegitimate children*. Macleod utilised the phrase: "*threat of degeneration of society*" to describe the construct that teenage mothers in some way are harmful to society (Macleod, 2011). This implies that a woman experiencing a teenage pregnancy, which to the young woman is an individual event that may or may not take place in the context of a relationship with a partner, with or without the support of a connected family or other people who offer her support, in some way threatens to destroy the fabric of society at large. In earlier years, the focus on unwed mothers and illegitimate children was underpinned by the threat that pregnancy outside of marriage threatened the moral fabric of society (Macleod, 2011). This threat has evolved over time with a greater emphasis currently on teenage mothers representing a threat to society because of the financial burden resulting from their financial dependence, risk of poverty and increased health costs, and through biomedical factors such as poorer obstetric outcomes, and even for societal

consequences such as population growth (Macleod, 2011). Panday, *et al.* (2009) concurred with the notion that teenage pregnancy as a social construction has come to represent among other things, moral decay and reckless and irresponsible adolescent behaviour. This gendered perspective of teenage pregnancy provides a viewpoint to consider why teenage pregnancies are so stigmatised, and why young women, and not the father of the baby, continue to carry the largest proportion of the responsibility for the pregnancy.

KEY CONCEPTS AND DEFINITIONS RELATED TO TEENAGE PREGNANCIES

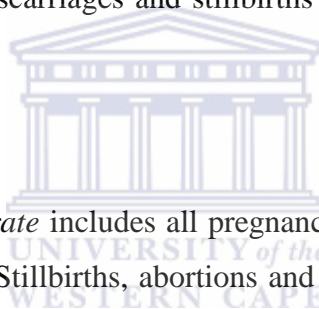
Sexual Health

The definition of sexual health has evolved over the last four decades from a relational focus on sexual behaviour with a strong values-based perspective: “*the integration of the somatic, emotional, intellectual and social aspects of sexual being in ways that are positively enriching and that enhance personality, communication and love*” (WHO, 2006b: 4); to a more holistic view of sexual health which incorporates the complex individual, and societal factors that enable the human rights of individuals in relation to sexuality to be manifested. The definition of Sexual Health presented by the WHO is therefore offered as basis for understanding sexual health: “*Sexual health is a state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. For sexual health to be attained and maintained, the sexual rights of all persons must be respected, protected and fulfilled*” (WHO, 2006b: 5). In order to make sense of sexual health, one has to recognise the complex interactions between biological, societal and cultural factors that

impact on both individuals and communities. This definition encompasses complex issues related to gender, safety, human rights and freedom of choice; values that are often difficult to protect within the cultural traditions and religious beliefs found in societies in Sub-Saharan Africa. The WHO (2005: 2) provided the Risk and Protective Factors framework as a mechanism for evaluating the risk of undesirable sexual health outcomes for young people. This framework is presented in the appendix 3.

Fertility and Pregnancy

Fertility and *pregnancy* should be clearly differentiated and cannot be used interchangeably. *Fertility* refers to live births, whereas *pregnancies* include live births, abortions, miscarriages and stillbirths (Panday, *et al.*, 2009: 26; Willan, 2013).



The *teenage pregnancy rate* includes all pregnancies, regardless of whether it results in a live birth. Stillbirths, abortions and miscarriages are included along with live births (Panday, *et al.*, 2009: 26).

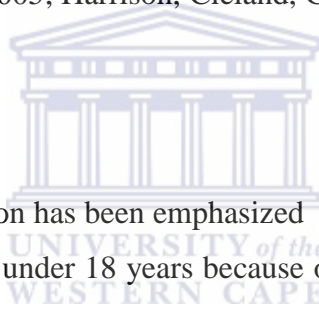
Defining “teenage” pregnancy

One of the challenges in trying to understand teenage pregnancies is that the definition of what constitutes a teenage pregnancy is not clear. The age ranges reported and the interchangeable use of terminology such as *teenage*, *adolescent* and *young woman*, make it difficult to compare and interpret findings in the literature. The age of the mother is an important consideration because the socio-economic sequelae for parenthood at 13 years (when young people are almost universally still in school), are very different to the consequences for a 19 year old who may have entered into the labour market. Mchunu, Paltzer, Tutshana and Seutlwadi (2012) defined adolescent pregnancies as pregnancies occurring between 10 and 19 years. For the purpose of this analysis, teenage pregnancies have been defined as

pregnancies occurring before the 18th birthday of the mother, in order to ensure congruence with the DoH data element for *Deliveries in facility to women under 18 years*.

Sexual Initiation

The terms *early sexual initiation*, *age of first sexual intercourse*, *coital debut* and *sexual debut* are utilised interchangeably in the literature. While there is constancy in the literature regarding the concerns of early sexual debut as a risk factor for unplanned or unwanted pregnancies, a consistent definition of early sexual initiation could not be found. Notwithstanding the above, it appeared that sexual debut at 14 years (WHO, 2006b) or under the age of 15 years (WHO, 2005; Harrison, Cleland, Gouws and Frohlich, 2005) is accepted as early.



The age of sexual initiation has been emphasized as an important risk factor for pregnancy in women under 18 years because of the association between sexual activity during adolescence and early pregnancy, and the risk of unsafe abortions (WHO, 2006a:1)

Demographic / Fertility Transition

The UN *World Fertility Report* (2011: 5) described the phases of Demographic Transition which includes the pre-transitional stage marked by high fertility, followed by a decline in fertility rates which is then followed by a period of sustained reduction in fertility rate.

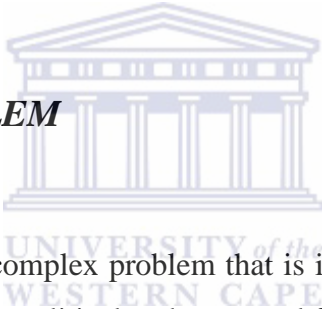
Clinical Guidelines for Obstetric care

The *Perinatal Education Programme* (PEP) which has been implemented by the Western Cape DoH prescribes that women under 15 years are considered an intermediate risk pregnancy and must be managed in a Level 2 (referral or regional) hospital (PEP, 2010).

Equity in health

Inequity in health is defined as “differences which are unnecessary and unavoidable but, in addition are also considered unfair or unjust” (Whitehead, 2000).

RESEARCH PROBLEM



Teenage pregnancy is a complex problem that is influenced by a myriad of social, cultural, economic, political and structural factors. A number of these issues directly influence how resources are allocated or services are designed. Social concerns about teenage pregnancy can relate both to health concerns and to moral objections to teenage sexual behaviour. In addition, teenage pregnancy can be wanted or unwanted, planned or unplanned, and taken to term or terminated. This thesis does not empirically assess attitudes towards teenage sexuality and pregnancy. In focusing on trends in deliveries by teenagers over a 12 year period, the thesis seeks to contribute to an empirical basis for deciding whether pregnancy, labour and delivery by teenagers is increasing, decreasing, or holding steady, as pregnancy, labour and delivery among young women is of medical and public health concern regardless of the moral aspects of teenage sexual behaviour. A critical analysis of the Western Cape Health Department Routine Health Information may help to determine the extent of and trends in teenage births in the Western Cape and inform how best to allocate resources to address

any public health problems associated with high teenage birth rates that may be identified.

The investigation that follows offers a systematic analysis of the trends for deliveries in public sector health facilities to women under the age of 18 years in the Western Cape Province over the period 1 April 2000 until 31 March 2012, as a lens to evaluate the extent to which teenage pregnancy is a problem in the Western Cape Province.

AIM AND OBJECTIVES

The aim of this study is to analyse the trends in the number of deliveries to women under 18 years of age who gave birth in public sector health care facilities in the Western Cape Province over the period 1 April 2000 until 31 March 2012. A secondary aim is to explore the quality and usefulness of Routine Health Information in the Western Cape Province focusing on the dataset for deliveries for women under 18 years of age.

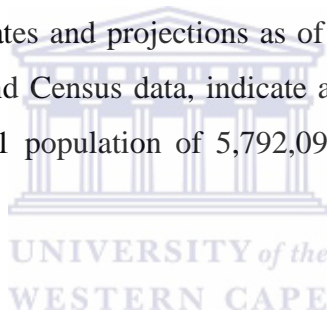
OBJECTIVES

1. To describe the trends in the number of deliveries in public sector health care facilities for women under the age of 18 years living in the Western Cape Province for the period 1 April 2000 until 31 March 2012.
2. To compare the trends between the 5 rural districts and the urban district in the Western Cape Province.

CHAPTER 2: STUDY SETTING AND CONTEXT

WESTERN CAPE PROVINCE – DEMOGRAPHIC AND HEALTH SYSTEM CONTEXT

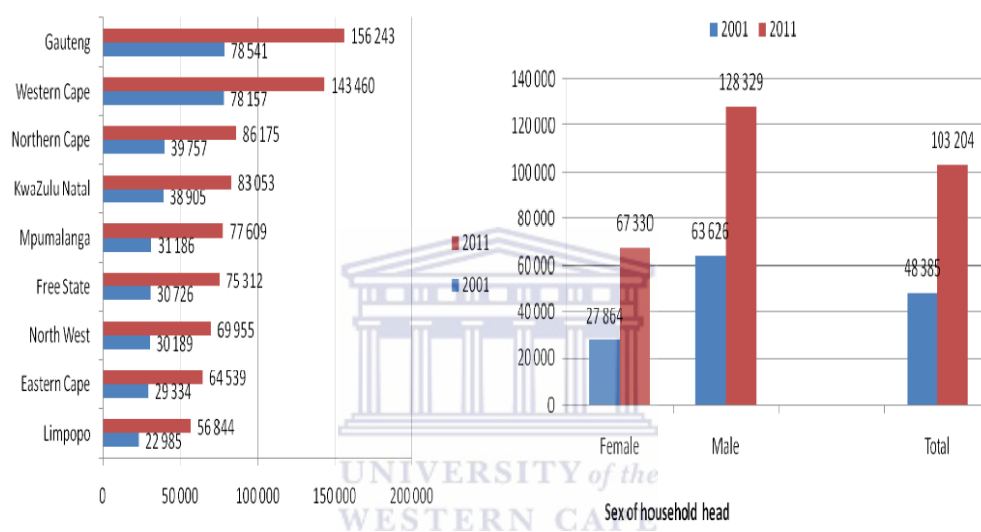
The Western Cape Province is one of the nine provinces in South Africa. The latest official census found that the population estimate of the Western Cape is 5,822,734 people accounting for 11.2% of South Africa's total population. The racial distribution of the Western Cape is: Black: 32.9%; Coloured: 48.8%; Indian/Asian: 1.0%; White: 15.7%; Other: 1.6% (Statistics South Africa (SSA), 2012a: 42). Western Cape Department of Health population estimates and projections as of February 2014, based on Department of Health and Census data, indicate a total population in 2002 of 4,850,833 and a 2011 population of 5,792,096 (WCDoH, 2013c) , an increase of 19.4%.



While a significant proportion of the population of the Western Cape lives in poverty, the Western Cape province has the second highest average household income in South Africa at R143,460 (SSA, 2012a). The HST reported that all 6 districts in the Western Cape rank among the least deprived districts in the country (HST: *District Health Barometer*, 2009). However, it must be borne in mind that there are substantial disparities between different population groups, with substantial groups of people still living in abject poverty in the Province. While the deprivation index appears to be acceptable in the Western Cape, the stark inequity which is racially skewed owing to the history of Apartheid in South Africa may be masked at the district level. The Western Cape DoH reported that approximately 78% of the population is uninsured (DoH, 2013a: 26) suggesting high levels of poverty in the region (Please refer to appendix 1). The uninsured population of a district is an important indicator for planning and resourcing as this represents the proportion of the population that does not have medical aid or

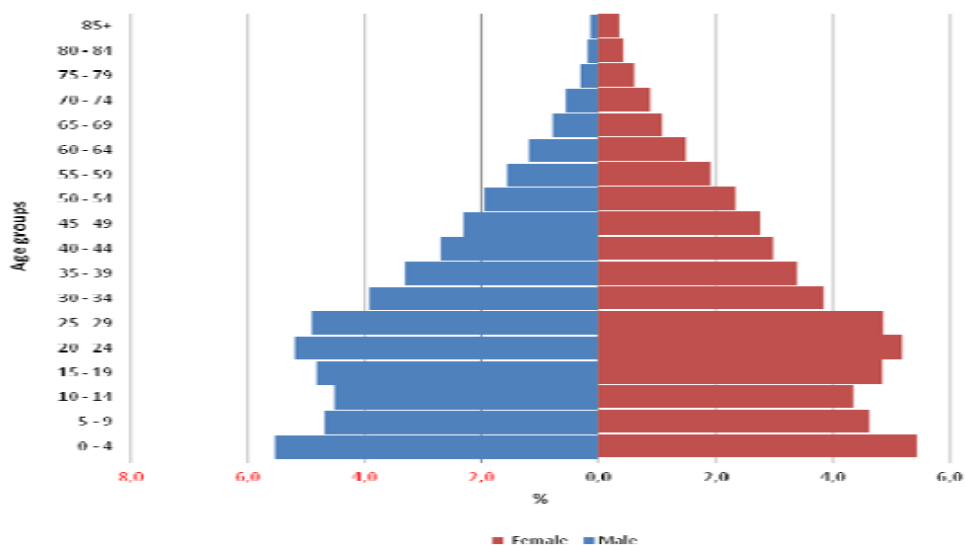
health insurance and is therefore more likely to depend on the State for the provision of health care services. The unemployment rate in the Western Cape is high at 21.6%, but is lower than the unemployment rate in other provinces (SSA, 2012a). Less than 1% of the population of the Western Cape has no access to piped water and more than 90% of the population has access to electricity for lighting.

Figure 1: SOCIO-ECONOMIC ANALYSIS



Source: SSA (2012a: 23)

Figure 2: SOUTH AFRICAN POPULATION PYRAMID



Source: SSA (2012a: 23)

The population pyramid of South Africa (figure 2) revealed that nearly 10% of the South African population is female, aged between 10 and 19 years, the age-group of interest in this analysis.

The Western Cape Province has been divided into six districts. The DoH is committed to the Primary Health Care strategy to ensure that quality health services are accessible and provided in an equitable manner (DoH, 2013). Aligned to the DoH strategic objective to strengthen the District Health System as the vehicle for implementing the Primary Health Care philosophy, Geographic Service Areas (GSA) were introduced as a functional mechanism to enhance the service coordination capacity of the six district management teams. The GSA and district boundaries are coterminous. The GSA mechanism aims to achieve service coordination and integration from the primary health care level up to sub-specialist level of care.

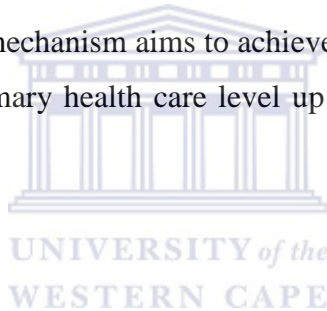
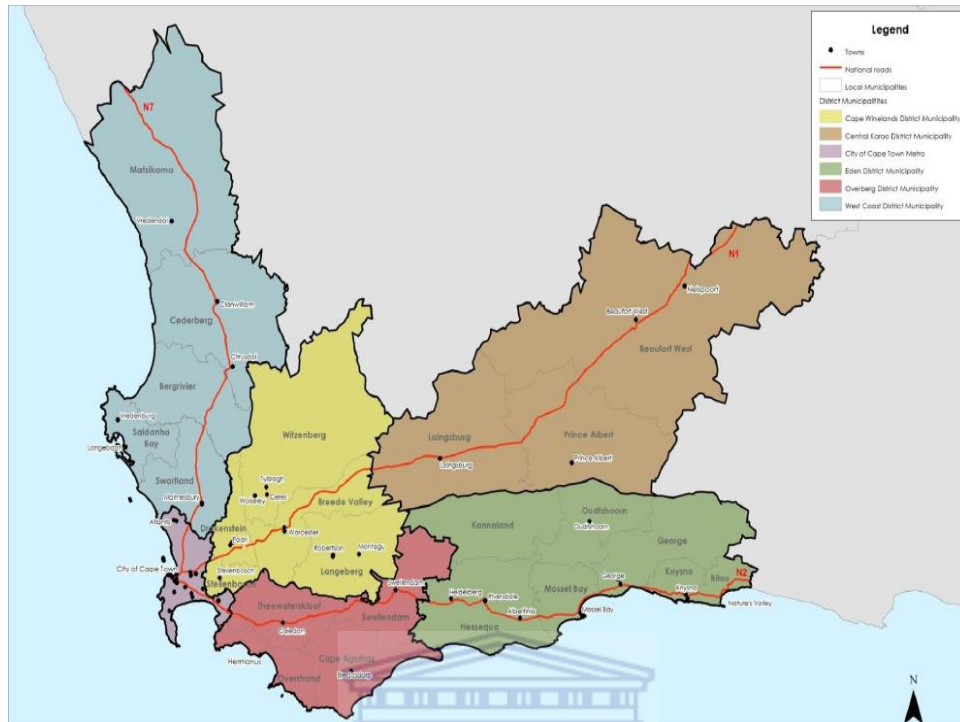
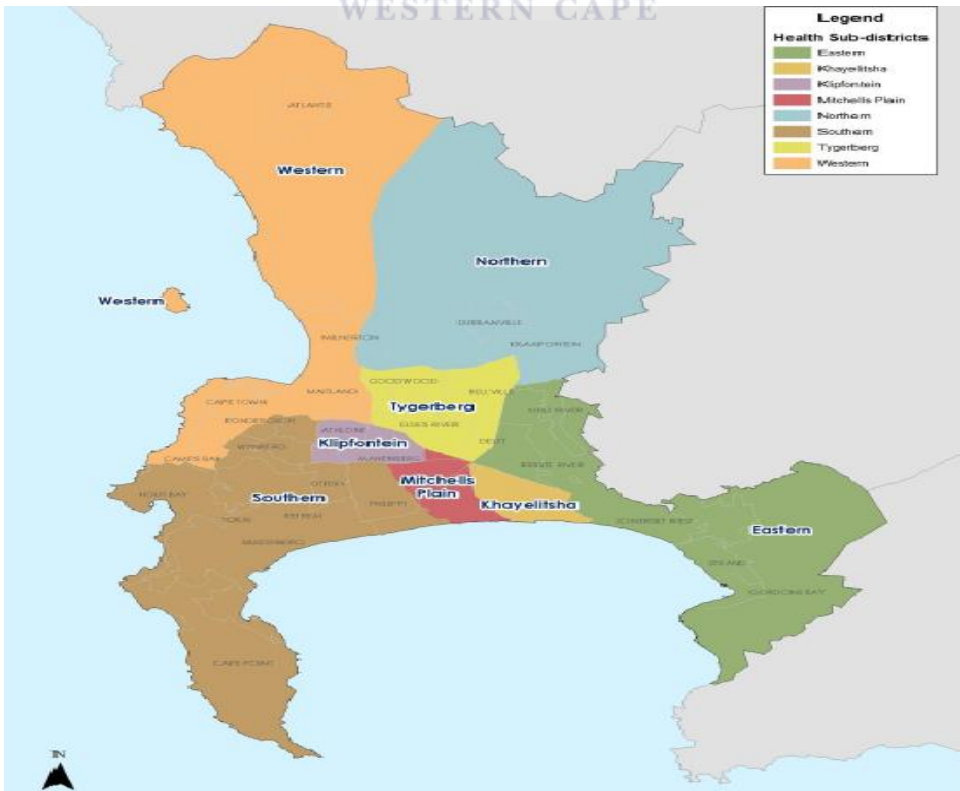


Figure 3: HEALTH DISTRICTS IN THE WESTERN CAPE



Source: Western Cape Department of Health: *Annual Performance Plan 2013 – 2014* (2013: 28)

Figure 4: HEALTH DISTRICTS OF THE CAPE METRO

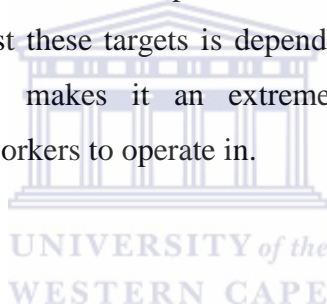


Western Cape Department of Health: *Annual Performance Plan 2013 – 2014* (2013: 29)

The Cape Metropole is the smallest district geographically, but is the most populous of the six districts. The Cape Metropole has been sub-divided into four sub-structures which in turn have been sub-divided into two sub-districts: Southern-Western Sub-Structure (Southern Sub-District and Western Sub-District); Klipfontein-Mitchells' Plain Sub-Structure (Klipfontein Sub-District and Mitchells' Plain Sub-District); Khayelitsha-Eastern Sub-Structure (Khayelitsha Sub-District and Eastern Sub-District) and Northern-Tygerberg Sub-Structure (Northern Sub-District and Tygerberg Sub-District). In the Cape Metropole, the Western Cape Department of Health Sub-Districts are coterminous with the local authority, the City of Cape Town (CoCT), health services boundaries. The distribution of the population is available in the appendix 2. The Cape Metropole is unique in the Western Cape Province as it is the only district where health services are jointly delivered by the CoCT (who provide a limited set of primary health care services) and the Provincial Department of Health. For this discussion, the primary health care services offered by the CoCT include sexual reproductive health services. The CoCT uses a separate data management system, but their data feeds into the Provincial Department of Health data. The parallel data management system has been a source of tension in the past because the data held by the CoCT does not always match the official Department of Health data. This should not however impact on this analysis because the CoCT does not provide obstetric services and therefore the data represented in this analysis are not affected.

South Africa's socio-political history, marked by differential investment in infrastructure, service delivery and development and capacity building of staff, based on historic racial lines, has resulted in structural fragmentation both between government departments and within government departments. Resource allocation, policy development and interventions to address the health needs of communities (including the wellness of the youth) have historically occurred separately in these structurally fragmented departments. This has contributed to poor communication and a lack of

integration of efforts across related departments thus resulting in duplication in some areas, and inadequate coverage in other areas. The Department of Social Development (DoSD) has a programme *Care and Support Services to Families* aimed at supporting vulnerable families. In the DoSD Annual Performance Plan 2013-2014, reference is made to developing strategic partnerships with the DoH for the provision of services to address teenage pregnancies as well as the delivery of home visitation programmes for mothers considered to be at risk and first time mothers (DoSD, 2013). Despite the critical need for programmes to reduce unintended and unwanted teenage pregnancies and the need to support teenage mothers in order to mitigate against social exclusion, the reality is that the mechanisms for joined planning, resource allocation and service delivery may be in place at a strategic level, but are less developed currently on an operational level. Any advancement against these targets is dependent on local relationships between officials. This makes it an extremely challenging political environment for health workers to operate in.



POLICY AND LEGISLATIVE CONTEXT

South Africa has been heralded as having a very progressive and liberal constitutional framework, intended to redress the pervasive structural inequality that remains the legacy of the Apartheid system. In the area of education, adolescent pregnancy is directly addressed by the *South African Schools Act* (Number 84 of 1996), which strives to address gender inequality by preventing female school learners from being expelled on account of pregnancy (Morrell *et al.*, 2012). Notwithstanding efforts to create a supportive environment for teenagers to return to school and complete their education, the anticipated gains have not been realised because of inconsistent implementation and incorrect interpretation of the Act at local level (Morrell *et al.*, 2012). The issue at the heart of the debate in the interpretation of the Schools Act is that it gives school governing bodies autonomy to decide on the matter at a local level. This creates a

tension between a *moral views* perspective rather than a *public health approach*.

The strategy for the prevention of HIV described by the DoH *HIV & AIDS and STI Strategic Plan for South Africa 2007-2011* is based on the Abstain, Be faithful, Condomise (ABC) model (DoH, 2007), with Abstinence being the principle message. The challenge with this approach is that it colours the conversation regarding safe sexual behaviour with a moral perspective. The approach does not take into account whether abstinence or monogamous relationships are acceptable to young people. Inherent in the approach is the assumption that sexually active youth have the agency to exercise choice and protect their sexual health rights or to negotiate condom use. In South Africa, high levels of sexual coercion and sexual force make this both a questionable and dangerous assumption. The risk is that it could be inferred from the ABC model that sexual behaviour, particularly in young people, is not a normal aspect of human behaviour and development and therefore it does not promote the idea of personal accountability and responsibility as the fundamental starting point for exercising one's sexual health rights.

There appears to have been a shift in the most recent DoH *National Strategic Plan on HIV, STIs and TB 2012 – 2016* (NSP) policy, with greater emphasis on *Combination Prevention* strategies focusing on the structural (examples include political and policy level), biomedical (for example increased access to treatment) and behavioural (for example the consistent and correct use of condoms) levels of intervention (DoH, 2012a). The NSP located HIV prevention within an integrated Sexual Reproductive Health service delivered in the district health system based on the Primary Health Care approach (DoH, 2012a). A more holistic perspective of fertility management was offered in the NSP (DoH, 2012a) as part of the strategy to prevent unintended pregnancies in young people. The Western Cape DoH *Provincial Strategic Plan on HIV/ AIDS, STIs and TB 2012- 2016* expanded

on the NSP by committing to improving the wellness of the youth through the provision of comprehensive health services both in and outside of schools (Western Cape DoH, 2012b).

The *Integrated School Health Policy* (2011) expressed a commitment to reintroduce school health services in schools (DoH and Department of Basic Education (DoBE), 2011) with a strong emphasis on the importance of health education to modify the medium and long-term behaviours and choices of learners. The policy makes provision for sexual reproductive health, teenage pregnancy, terminations of pregnancy and the prevention of (the vertical) transmission (of HIV) from mother to child among other matters to be addressed through *Life Orientation* and additional extra-curricular activities. It is intended that all learners should receive education about sexual reproductive health and that learners who are sexually active should be offered HIV Counselling and Testing (HCT), family planning methods, screening for Sexually Transmitted Infections (STIs) and condoms (DoH and DoBE, 2011). While the intentions of the policy are commendable, as there is a transparent attempt to normalise sexuality and sexual behaviour of young people, it is disheartening that the policy has not been implemented for a number of reasons, and that the role of Health in Schools specifically with regards to the provision of sexual health services in schools remains contested.

In considering the policy, one possible reason for this is that there is not an explicit mandate for health services to be delivered in schools: “*Where required, the school health nurse can provide these services on-site or refer the learner to a health facility where he/she should receive the service*” (DoH and DoBE, 2011: 13). This appears to have left a grey area that has made it permissible for the DoBE to deny the Health Department entry into schools as learners can be referred out rather than health services being allowed in. Further, the issue of learners’ right to consent for health services is contradictory as it is unclear whether parents would need to consent to the

direct provision of health services (including sexual reproductive health services) to learners.

The DoH *National Contraception Clinical Guidelines (2012)* expressed a commitment to provide women with safe and effective contraception in order to enable women to make empowered choices about their fertility (DoH, 2012b). This undertaking is aligned with the strategy to address gender inequity in South Africa (DoH, 2012b) and contributes positively to the advancement of progress against the Millennium Development Goals 4 (Reduce by two thirds, between 1990 and 2015, the under-five mortality rate), 5 (Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio) and 6 (Have halted by 2015 and begun to reverse the spread of HIV/AIDS), (UN, 2011). The Western Cape Province has underperformed against the South African Millennium Development Goal 5 target to reduce maternal mortality to 38 maternal deaths per 100,000 live births (DoH: *Saving Mothers, 2008 – 2010*) having increased from 73.12 deaths per 100,000 live births for the period 2005 to 2007 to 84.87 deaths per 100,000 for the Western Cape Province for the period 2008 to 2010. Further information is available in appendix 5. However, it is important to explain that the spike of maternal deaths in 2009 was associated with the H1N1 breakout, which artificially inflated the number of deaths and therefore distorted performance against this measure.

The *National Contraception Clinical Guidelines* recognised adolescents as a vulnerable group who experience high rates of unintended pregnancies. In reflecting upon the *National Contraception Clinical Guidelines*, it is noted that the policy advocated that counselling to adolescents should be offered in a non-judgemental way, but the first and primary message to young people remains abstinence.

The following extract from the *National Contraception Clinical Guidelines* is offered to illustrate how deeply, and sometimes subtly, moral reasoning permeates through policy.

“Good counselling, provided within the context of accessible ‘youth-friendly’ services, helps young people to make informed decisions regarding their fertility. No medical reason exists for denying any contraceptive method based on young age alone. However, many non-medical factors need to be considered and addressed through counselling” (DoH, 2012b: 60)

The policy appeared to see the goal of ‘youth-friendly’ sexual health services to young people as primarily offering counselling to young people intended to dissuade them from initiating sexual intercourse or delaying sexual intercourse, and, failing in this objective, contraception should be available to young people while exploring the non-medical factors associated with initiating sexual intercourse. This discussion is heavily nuanced with the values and moral perspectives that guide decision making and beliefs. A public health approach may serve to bridge the moralistic perspective with the rights perspective. It is proposed that counselling, in this revised framework, would be offered and that health workers would consider the readiness, choices, and resources available to individuals in order to support young people to make choices safely and autonomously.

Terminations of Pregnancy (TOP)

The DoH Circular H157/2010 *Provincial Policy Standardised Guidelines and Protocols on the Termination of Pregnancy Services* expressed an intention to give effect to the *Choice on Termination of Pregnancy (CTOP) Act (Number 92 of 1996)* and the *CTOP Amendment Act (Number 1 of 2008)* through the introduction of Medical Terminations of Pregnancy (MToP) in 2010 (WCDoh, 2010). Prior to the introduction of MTOPs, only Surgical TOPs were offered. The DoH recognised that access to TOP services were

severely restricted and that the DoH was failing to meet the constitutional imperative for women to have equitable access to user-friendly services for the termination of unwanted pregnancies.

Contraceptive Coverage

The SSA (undated) report *Millennium Development Goals. Country Report. 2010* indicated that the national contraceptive prevalence rate using the *Couple Year Protection Rate* as a proxy measure, has improved from 25.2% in 2001 to 33.4% in 2009. The Health Systems Trust (HST) (undated, accessed on 26/02/2014) defined the CYPR as: “The rate at which couples (specifically women) are protected against pregnancy using modern contraceptive methods (HST, undated, available at <http://indicators.hst.org.za/healthstats/231/>). The Western Cape DoH (2013a) reported that the CYPR has increased from 40.3% in 2008-2009 to 42.3% in 2011-2012. The target for 2013-2014 was 44.2%. A significant discrepancy was observed between the official WCDoH data compared to the HST (undated) report for the performance against the indicator CYPR for the same period. The HST reported the CYPR to be 59.4% in 2009 and 70.2% in 2012 (HST, undated). It is not clear what the reason for the significant variation is and this could be investigated as part of future research.

It is beyond the scope of this analysis to provide an in-depth review of other legislation relevant to improving the sexual health outcomes of young people. The summary offered by Willan (2013) highlighted some of the complexities in interpreting the multiple Acts which frequently appeared to contradict each other, particularly around the issue of the rights of young people to give consent for certain sexual health services, within a context where sexual behaviour among teenagers is considered to be illegal.

ROUTINE HEALTH INFORMATION IN THE WESTERN CAPE

The importance of accurate and timely information as the basis for decision-making, resource allocation and policy development has been stressed in recent times (AbouZahr & Boerma, 2005; WHO, 2001). Despite increased efforts globally to improve the quality of routine health information, health information systems, particularly in under-developed countries, continue to underperform (WHO, 2011).

Routine Health Information

Heywood and Rohde (2002) and Rohde, *et al.* (2008) described the benefits and potential pitfalls of using routine information for decision-making and resource allocation. Drawing on these discussions, the following factors have proven particularly valuable for use in this mini-thesis.

The Benefits of Routine Health Information

Building on the tenets of the *Comprehensive Primary Health Care Approach*, equity should be a guiding principle in decision making (Magnussen, Ehiri & Jolly, 2004). It is therefore important that routine health information assists health managers in determining the equity of resource allocation and service provision, and to reduce inequity in the health status of communities.

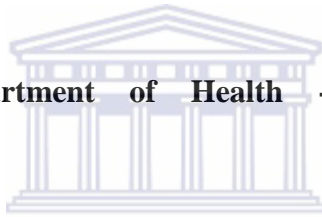
- Routine health information can form the basis for prioritisation of health needs.
- Routine health information is collected continuously, and therefore it is appropriate for both monitoring and evaluation of health services as well as for determining long-term trends.

- Routine health information is collected in a standardised way which enables one to make comparisons across regions and between facilities.

The Potential Pitfalls of Routine Health Information

- The staff responsible for data often misinterpret data definitions. This introduces variability and reduces the comparability of the data.
- The risk of data transcription errors is high because staff are either not trained sufficiently, are not supervised adequately, or are not informed about the importance of accurate data collection.

Western Cape Department of Health - Health Information Management

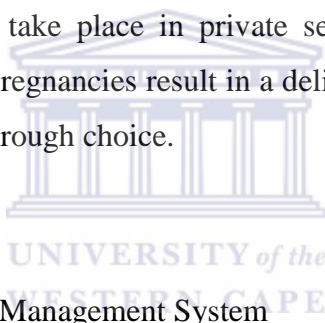


The Western Cape DoH has a wealth of data that are collected on a routine basis. Due to inadequate information management capacity, there have historically been gaps in the interrogation of routine data. As a result, the extent of the problem of teenage fertility, as illustrated through the number of deliveries in facilities to women under 18 years of age as a proxy, is not well understood.

In order to prevent unintended adolescent pregnancies, it is important to evaluate how adolescent pregnancies manifest in the Western Cape Province by systematically analysing the available routine data. The focus of this study is to examine trends in the number of deliveries to women under 18 age of years in the Western Cape Province because (unintended) teenage pregnancies are generally considered to be indicative of failing sexual reproductive health services. The indicator that has been selected as a proxy for teenage fertility is: “Delivery in facility to women under 18 years”.

Deliveries in Facility to Women under 18 Years

The Western Cape DoH (2012) has defined the data element for deliveries in a facility for women under 18 years of age as the number of deliveries in a facility under the supervision of a trained health worker where the mother is under 18 years on the day of the delivery (up to 17 years and 11 months). Multiple births (for example twins) are counted as one delivery, but the number of births is counted as the number of babies delivered. Mothers delivering on their 18th birthday are excluded from this element, as are miscarriages and terminations of pregnancy. The current practice is that data from the maternity registers are transcribed onto a monthly data input form. A limitation of this study in using this dataset is that not all deliveries take place in public sector facilities – some take place in non-health settings and a small proportion may take place in private sector hospitals. A further limitation is that not all pregnancies result in a delivery in that some may be terminated naturally or through choice.

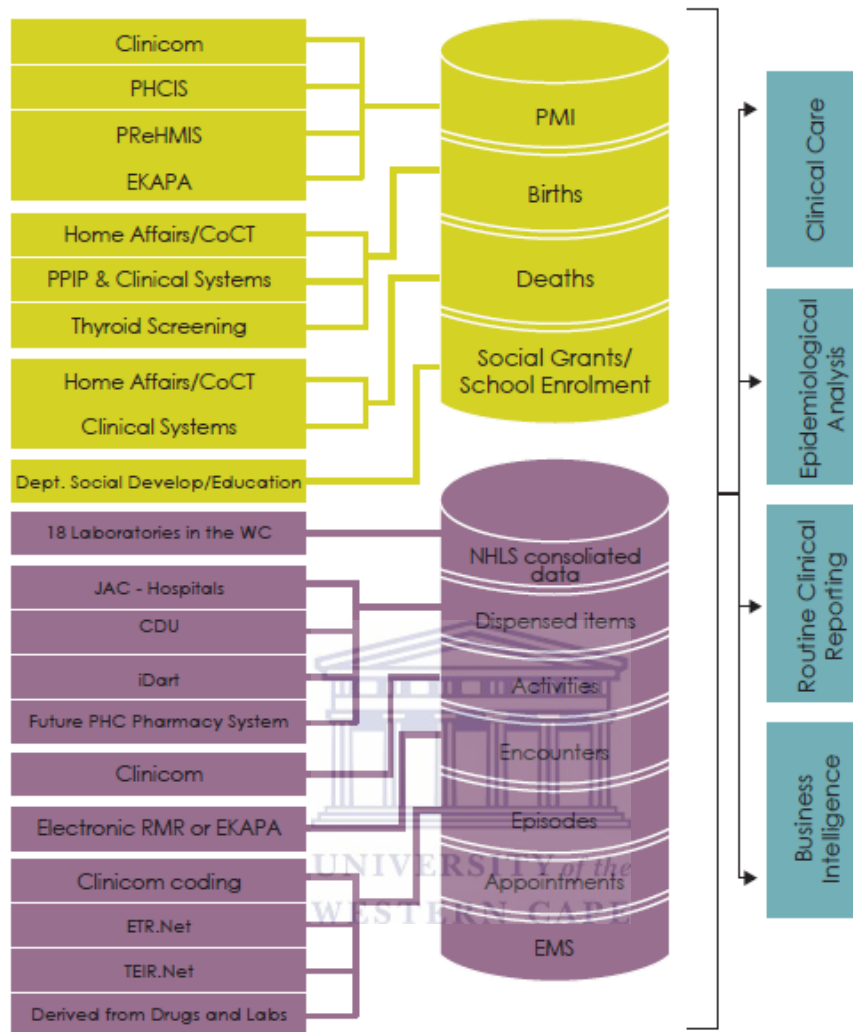


DoH Health Information Management System

A complex matrix of information management tools and systems exist in the Western Cape DoH. Currently district, regional and tertiary hospitals use Clinicom, an electronic programme for capturing patient level information. Community Health Centres and Community Day Centres at the District Health Services level managed by the Provincial Health Department use a combination of paper-based and electronic data capturing systems. These data systems differ from those used by the Local Health Authority which manages clinic facilities.

In addition, there has been a significant investment to strengthen data management specifically in the HIV AIDS STI and TB (HAST) programme, which has resulted in significant disparities in data quality in the health system. The health information system is depicted below.

Figure 5: DATA HARMONISATION IN THE WESTERN CAPE DEPARTMENT OF HEALTH



Source: Western Cape Department of Health (2013). *Healthcare 2030*: 99

The data reviewed in this document was drawn from the Sinjani data repository which acts as a single repository for all aggregated data, from the range of systems in the Province, focussing specifically on the Clinicom and PCHIS systems. A caveat to any conclusions drawn from this analysis is that the Western Cape DoH has acknowledged that there have historically been considerable challenges with the completeness and accuracy of the data contained in the Departmental data repository.

Two internal DoH reports: *Rationalization of the Minimum Set of Performance Indicators for 2012/2013* (undated) and *Rationalization of the Minimum Set of Performance Indicators for 2013/2014* (undated) described the extent of the challenges with the quality of the health information system and indicated the systemic factors that contributed to these challenges. The key findings are summarised below.

1. Large volumes of data were collected that may not have been analysed and did not necessarily contribute to decision-making;
2. The administrative burden of data collection was significant, and rested heavily on clinicians at the point of care.
3. Data elements were interpreted inaccurately and collected inconsistently
4. The majority of the indicators were collected on aggregated tick-sheets and the accuracy of the data was therefore difficult to verify.
5. Very few data elements were collected in a manner that presents population-based information. In order to make sense of the data, one would thus need to go to facility level as disaggregation of data higher up the system was not possible.
6. Data elements were poorly constructed and defined.

The DoH has made significant investments in recent years in order to address these short-comings. To this effect, a systems approach has been adopted to improve the quality of data. Considerable funding has been allocated for the creation of posts and developing appropriate skills mix and career-pathing in information management in order to improve data collection. Information management tools and systems have been rationalised in order to create greater alignment between different divisions in the DoH and the development of indicators has been centralised to avoid unnecessary indicators being introduced in a disorganized way. Greater emphasis has been placed on using appropriate information technology to improve the efficiency of data collection and data verification. There have been significant efforts to rationalise the indicators that are collected on a routine basis in order to ensure greater consistency in the application of data

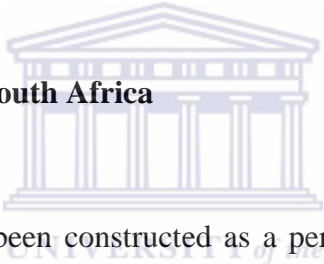
definitions and in the implementation of data management processes. The WCDoH adopted the AAA (*Accurate, Actionable and Auditable*) framework in an effort to rationalise indicators. The WCDoH recognised that data should be easy to collect, complete; the data should trigger a decision on some level; and data collection processes ought to safeguard against duplication. Emphasis has been placed on developing data collection tools that produce data that stand up to the scrutiny of compliance audits. The Department of Health has formalised these efforts, as described in the Department of Health Circulars H184/2012 and H74/2013, which described the processes and provided the tools for insuring greater data integrity, and further instructed health managers to monitor and discuss data quality and completeness on a regular basis in management meetings. Further, training was provided to field workers to ensure that the data quality would improve.



CHAPTER 3: LITERATURE REVIEW

In order to understand the risk factors associated with teenage pregnancies and to determine how teenage pregnancies manifest in South Africa and other countries, a literature review was conducted using the following key words: teenage pregnancy, adolescent sexual health, teenage pregnancy and gender, teenage pregnancy and developing country, health seeking behaviour and teenage pregnancy, and risk factors for teenage pregnancies. The literature search was conducted on PubMed and internet databases. Electronic journal articles were reviewed. Only English papers were selected with preference for full papers published after 2000.

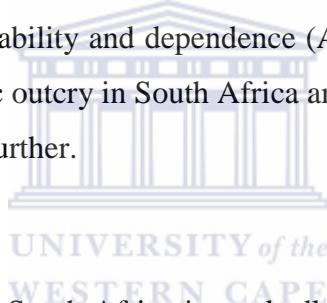
Fertility Transition in South Africa



Teenage pregnancy has been constructed as a pervasive social problem in South Africa despite recent evidence that there has been a decline in teen fertility rates. Morrell *et al.* (2012:8) reported that fertility rates in South Africa have been declining since the 1960s and that adolescent fertility rates have been declining since the 1980s, suggesting that South Africa is in a phase of *demographic transition*. While it is encouraging that adolescent fertility rates have been decreasing, it is distressing that the differential risk of experiencing adolescent pregnancies manifests in a classist and racist manner in South Africa, with young women living in rural areas, women with lower levels of educational attainment, and Coloured and Black women experiencing a much higher risk of becoming pregnant than White women (Morrell *et al.*, 2012). The discourse around teenage pregnancies stands in stark contradiction to what is known about fertility rates in South Africa. This poses a vexed dilemma for health service managers. In order for health programmes managers to respond appropriately to the sexual reproductive health needs of young women in the Western Cape, it is important to

understand the extent of teenage pregnancies, and to implement strategies to address the public health problem, if indeed it is found to exist.

The public outcry against rising teenage pregnancy rates is not unique to South Africa. Alldred and David (2007) described a similar phenomenon in the United Kingdom where rising concerns regarding teenage fertility coincided with fairly static teenage pregnancy rates. They contextualised the paradox between the realities of teenage pregnancy rates compared to the extent of public concern in the light of political shifts in the United Kingdom. Their analysis argued that New Labour had placed increased emphasis on all adults becoming economically active and contributing members of society. Teenage mothers therefore posed a conundrum because of their economic vulnerability and dependence (Alldred and David, 2007). The drivers for the public outcry in South Africa are probably very different, and should be explored further.



The fertility transition in South Africa is markedly different for each of the various racial groups. Makiwane and Kwizera (2009) reported that the White population have completed the transition from high to low fertility, the Indian and Coloured population are approaching the completion of the transition and the Black population is still in a phase of declining fertility. When comparing the age specific fertility rates for the Black population, it is alarming that while the overall fertility rate for the Black population is decreasing, there has been a substantial increase in the fertility rates for 15 to 19 year olds from 45 to 65 births per year per 1,000 women in 1995 and 2000 respectively (Makiwane *et al.*, 2006). It is also concerning that for the White population, where the risk of adolescent pregnancy is perceived to be lower, there is an increase in the fertility rate for age group 15 to 19 years increased from 6 to 20 births per 1,000 women in 1995 and 2000 respectively (Makiwane *et al.*, 2006). Panday *et al.* (2009) cautioned that as a result of the demographic transition, there could be an increasing shift of fertility towards younger women in terms of the proportion of deliveries.

These sentiments appeared to be borne out in this study. Makiwane and Kwizera (2009) explained that this phenomenon is consistent with worldwide trends that where fertility rates drop, an increasing proportion of births is observed in young women.

Rates of Teenage Pregnancies

Panday *et al.* (2009) indicated that multiple definitions for adolescent pregnancy rates were found in the literature, reducing the comparability of data across studies given that in some cases, only live births were included, while in other studies, still-births, abortions and miscarriages were also included.



It has been reported that nearly 30% of women between 15 and 19 years in South Africa reported ever having been pregnant, with most occurring among teenagers 18 years and older (Willan, 2013). Willan argued that the reason for the attention on teenage pregnancies was not to question the legitimacy of sexual behaviour in teenagers, but because the majority of the reported pregnancies were unplanned.

Mchunu *et al.* (2012) conducted a cross sectional population based household survey to determine the prevalence of adolescent pregnancies and the risk factors for adolescent pregnancies in four provinces in South Africa. Households with youth aged between 18 and 24 years were included in the study yielding a sample of 3,123 participants. In this study, an adolescent pregnancy was deemed to be a pregnancy occurring before 20 years of age. In females, this included all pregnancies for women aged between 12 and 19 years regardless of whether the pregnancy resulted in a live birth, and for males, it included all males who impregnated a woman while the male was aged between 12 and 19 years. It was reported that 19.2% of the female

participants experienced an adolescent pregnancy while only 5.8% of the male participants reported impregnating a woman (Mchunu *et al.*, 2012). The substantial difference between female and male subjects may indicate under-reporting from male subjects or it may reflect that the young women in this study had older partners at the time of falling pregnant. The findings reported in the study suggested that most of the subjects wanted the pregnancy with only 16.2% indicating that the pregnancy was unwanted (although the same article also indicated that 74.1% of the pregnancies were unwanted although this appeared to be erroneously reported). It was found that 6.7% of the participants had ever terminated a pregnancy (Mchunu *et al.*, 2012).

(Mchunu *et al.*, 2012) indicated that the majority of the respondents (55.5%) reported that they became pregnant because of inadequate sexual health knowledge. Many of the respondents (19%) became pregnant in order to prove their sexual maturity (Mchunu *et al.*, 2012).

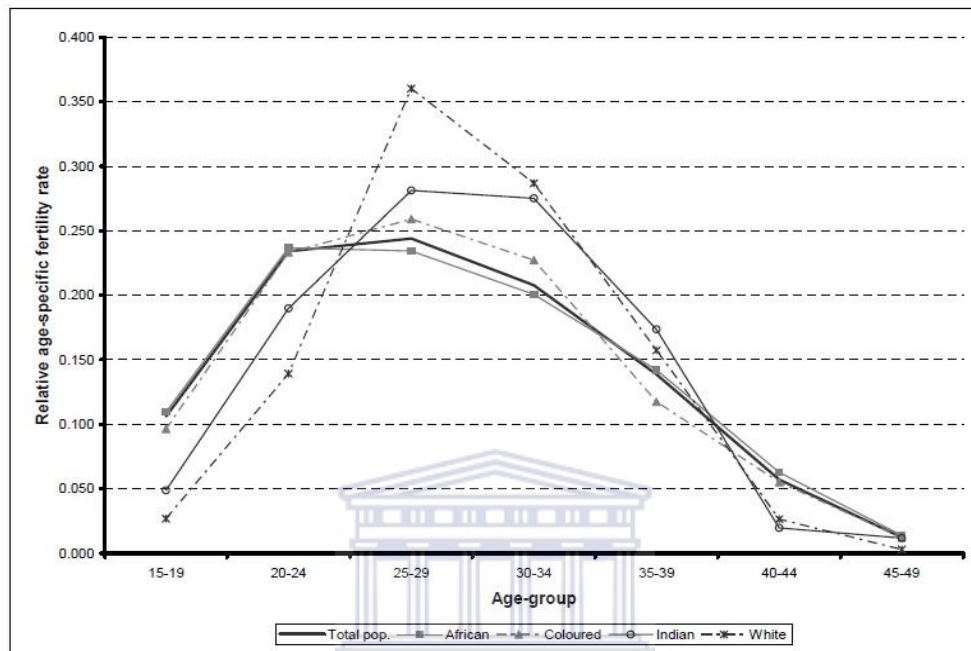


Age-Specific Fertility Rate (ASFR) and Total Fertility Rate (TFR)

Makiwane, Desmond, Richter and Udjo (2006: 7) defined Age-Specific Fertility Rates as the number of births in a specified year per thousand women in specified reproductive groups, collected at mid-year. It is thus a measure of *incidence*, the rate that new events – in this case births, occurs in the population (Bonita, Beaglehole and Kjellström, 2006) It is difficult to accurately determine the teenage fertility rate in South Africa as comprehensive vital statistics on pregnancy, abortion and fertility are not kept (Panday, *et al.*, 2009: 26; Willan, 2013). The Statistics South Africa report *Estimation of fertility from the 2007 Community Survey of South Africa* noted that due to gaps in the collection of vital statistics such as births, fertility rates are estimated through indirect demographic estimation techniques, including the use of census data (Statistics South Africa, 2010).

One of the considerations in the South African context is that the different population groups present with dissimilar fertility profiles.

Figure 6: OBSERVED RELATIVE ASFR BY POPULATION GROUP (2006)



Statistics South Africa (2010): 13

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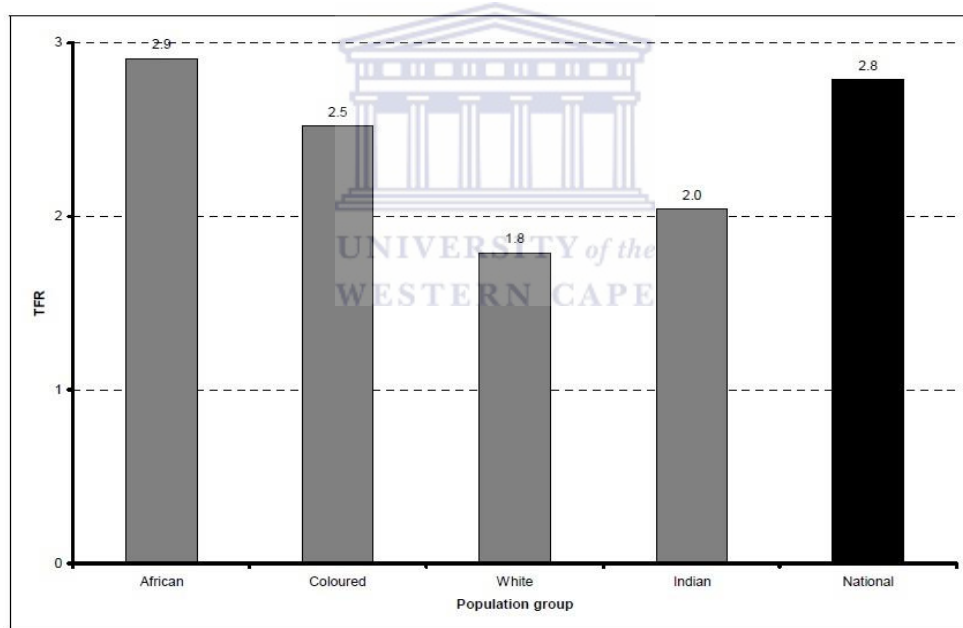
The UN defined Total Fertility as a summary measure of fertility representing the average number of births a woman would have experienced by the end of her reproductive life (spanning 15 to 45 years of age), if she were to experience the prevailing age-specific fertility rates throughout her reproductive life (UN, 2013: 3). The most recent *World Fertility Report 2012/13* estimated the Total Fertility rate in South Africa at 2.5 children per woman, with South Africa thus ranking as an intermediate fertility country (UN, 2013).

The Health Systems Trust (HST) report *South African Health Review 2012/13* illustrated a steady decrease in the *Total Fertility Rate* in South Africa over time from 2.9 in 1998 to 2.4 in 2011 (HST, 2013: 214). However, the reference notes contained concerns regarding under-reporting in the total fertility rates for 1998, and also drew attention to concerns

regarding the fertility data for the 2011 Census. The lack of confidence in the fertility data would appear to provide evidence in support of the concerns described by Panday *et al.*, (2009) and Willan (2013) regarding the difficulty in calculating fertility rates accurately in South Africa.

The Total Fertility Rate presented below was selected because it illustrated the variation between population groups in South Africa. A more recent analysis could not be found by the time the mini-thesis was submitted and therefore it is acknowledged that this information may be dated.

Figure 7: TOTAL FERTILITY RATE BY POPULATION GROUP (2006)



Statistics South Africa (2010: 17)

The final consideration is that the Provincial Department of Health does not currently measure the ASFR nor is it possible to infer this indicator from the routine health information because the age of the mother (which would be required to stratify the data by age bands) is not recorded in the routine data. This data is available in the birth registers, but it would be a monumental task to go to each facility across the Province to determine the ages of the mother. A recommendation for future projects focussing on delivery rates in

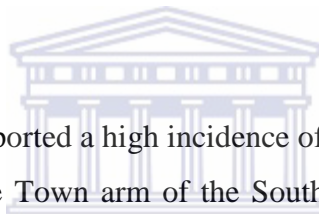
the Province may be to address this short-coming in the data in one of two ways. The ASFR could be calculated either from the birth records held by the Department of Home Affairs, or a survey could be conducted at selected sites in order to infer a Provincial ASFR. Unfortunately, this data was not requested for this mini-thesis, which served as an exploratory exercise in order to review trends in the Department of Health data.

Age of Sexual Initiation

Tripp and Viner (2005) stressed that having sex for the first time at a young age was associated with unsafe sex. Early sexual initiation is associated with an increased vulnerability for pregnancy as well as sexually transmitted infections (Marteleto, Lam and Ranchhod, 2008). In addition to the health risks, early sexual initiation occurs in a context of increased risk for experiencing unsafe abortions, sexual coercion and violence (WHO, 2006a; UN, 2013b).

Trip and Viner (2005) reported that the median age for sexual debut in the United Kingdom was 16 years of age for young men and women. The median age reported by Tripp and Viner is much higher than the findings of a case control study conducted in the Western Cape by Vundule *et al.* (2001) who found that participants reported an early sexual debut approximately 3 – 6 months after first menstruation, where the mean age for first menstruation was 13.7 years. The study findings supported the notion that early sexual debut is associated with unprotected sex, with many of the participants reporting inadequate use of contraception (Vundule *et al.*, 2001). The findings reported by Vundule *et al.* (2001) are consistent with findings in Nigeria reported by Slap *et al.* (2003) where the mean age of sexual debut was 14.8 years. Glasier *et al.* (2006) suggested that the younger age of sexual initiation in Sub-Saharan Africa compared to developed countries is associated with gender based violence and social coercion.

Richter, Norris, Pettifor, Yach and Cameron (2007) conducted a longitudinal study in South Africa using a life-cycle approach. The risk of unwanted pregnancies was reported to increase as subjects entered their late teens. The study found that 5% of subjects aged 13 years had experienced their first sexual intercourse, with an equal distribution between boys and girls. The prevalence of first sexual intercourse for 14 and 15 year olds showed a marked gender difference with 17% of boys and 6% of girls at 14 years, and 27% of boys and 11% of girls respectively at 15 years having experienced sexual intercourse (Richter *et al.*, 2007). The reported findings indicate that a large proportion of youth are vulnerable to experiencing early sexual debut.



Mathews *et al.* (2009) reported a high incidence of first sexual intercourse in 13 year olds in the Cape Town arm of the South Africa Tanzania project. The study demonstrated that early sexual debut was frequently associated with high levels of intimate partner violence, and further, that boys and girls were vulnerable for experiencing violence in interpersonal relationships. A disconcerting finding reported in the study was that youth who experienced physical violence in intimate relationships were also vulnerable for coerced sex (Mathews *et al.*, 2009).

Marteleto, Lam and Ranched (2008) conducted a longitudinal survey of young people in the Western Cape as part of the Cape Area Panel Study (CAPS). The study focused on scholastic enrolment, sexual initiation and pregnancy, recognising that these realms frequently overlap and that it is difficult to assign causality for exiting school prematurely and pregnancy, because the sequencing of these events are not well understood. The study findings are relevant to this discussion because it highlighted the continued vulnerability of Black and Coloured youth as a remnant of the Apartheid legacy. The study demonstrated that Coloured and Black youth face

complex and catastrophic consequences scholastically that are intimately linked to teen pregnancies. The crucial findings regarding Coloured and Black learners for the purpose of this analysis are that many young people experience sexual debut while still at school; many learners who experienced a pregnancy by age 17 years were not enrolled in school at age 16; repetition of grades at an earlier age was associated with a greater likelihood of experiencing a teen pregnancy; Black learners were more likely to return to school following a pregnancy than Coloured learners (Marteleto *et al.*, 2008). The study found that while young Coloured women experienced delayed sexual initiation compared to young Black women, sexually active young Coloured women were more 35% more likely to experience pregnancy (Marteleto *et al.*, 2008) .

A more recent study conducted by Pettifor *et al.* (2011) compared the sexual behaviour of teenagers in the United States to teenagers in South Africa. One of the aims of the study was to try to establish whether the widespread belief that HIV transmission in under-developed countries is fuelled by risky sexual behaviour was supported by evidence. The study found that the proportion of youth in the United States reporting risky sexual behaviour was higher than was reported for South African subjects. The young women in the American arm of the study reported an earlier age of sexual debut compared to the subjects in the South African cohort (16.5 years: US vs. 17.4 years: SA), with many more subjects in the United States reporting that their first sexual experience was under 14 years (19.4%: US vs. 4.6%: SA). Early sexual debut has been identified in the literature as a risk factor for HIV (Mathews *et al.*, 2009). The finding that sexual debut was delayed in subjects from the South African arm of the study compared to subjects in the American arm of the study supported the assertion by Pettifor and colleagues that the drivers of HIV in the African context were more complex than risky sexual behaviours, as has previously been assumed. Similarly, the mean number of lifetime sexual partners for the subjects in the United States was higher compared to the subjects from South Africa, while condom use at last sex was lower for subjects in the

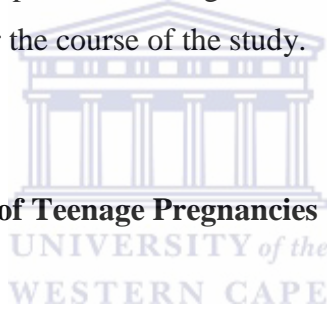
United States arm of the study compared to South African subjects (Pettifor *et al.*, 2011). Pettifor *et al.* (2011) advised that further research was required to make sense of the findings, but proposed that other factors, including sexual coercion, gender and power-based factors, and cross-generational sexual practices were possible causes for the higher transmission of HIV in the African context – in addition to the major difference that the background prevalence of HIV in South Africa is much higher than in the USA.

The DoH *Global AIDS Response Progress Report 2012* confirmed that a high proportion of youth experience early sexual debut in South Africa with 13.1% of men and women aged 15-19 years reporting that they experienced first sexual intercourse before the age of 15 years, with more men (15.1%) than women (10.4%) having experienced early sexual debut.

In summary, the literature regarding the vulnerability of South African youth in terms of the risk for early sexual debut shows a wide range in the age of coital debut.

One explanation for the variability in the findings could relate to the sampling methods utilised and the representivity of the study samples. Pettifor *et al.* (2011) conducted a nationally representative cross-sectional household survey, sampling a large number of young people aged 18 to 24 years. Vundule *et al.* (2001) utilised a case control study where cases under the age of 19 years were identified at two antenatal clinics and cases were asked to identify peers from their schools who were not pregnant so that these subjects could be recruited as controls. The sampling method focussed on black adolescents from the same community in a small urban setting in the Western Cape. The cases and controls were to some extent known to each other, and therefore there is a strong likelihood that they shared similar values and socio-cultural environments. This would influence the generalizability of the findings and could explain the variation in the

findings of the studies. A second explanation could relate to recall bias, as the subjects in the study reported by Pettifor *et al.* (2011) were older at the time of the interview compared to when they experienced their first sexual experience. Mathews *et al.* (2009) conducted a cluster-randomised control trial where participating schools were randomly allocated to either the intervention or control arm of the study. The sample consisted of learners from schools in the control arm of the study. The incidence of early sexual debut could be explained by the sampling of urban learners only. Furthermore, the sample consisted of learners from a few schools which could reflect a high degree of homogeneity in the sample in terms of socio-cultural and economic factors. Similarly, the study by Richter *et al.* (2007) focused on a sample from a fairly homogenous community at the start of the study, although it was reported that migration of the cohort impacted on retention of subjects over the course of the study.



Adverse Consequences of Teenage Pregnancies

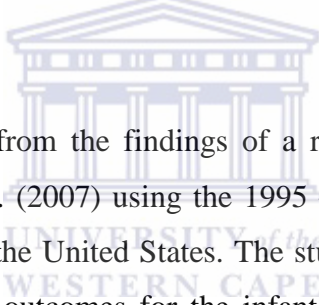
The literature revealed a variety of risks for the children of teenage mothers and for the teenage mothers themselves. The adverse outcomes for the children will be described first.

Adverse Outcomes for Infants Born to Teenage Mothers

Tripp and Viner (2005) presented a clinical review of adolescent sexual health. The risk of infant mortality was reported to be 60% higher for children of teenage mothers than for children of adult mothers. In addition, the children of adolescent mothers were found to be at a greater risk for lower birth weights, childhood accidents and childhood hospital admissions.

Smith and Pell (2001) conducted a retrospective cohort study in Scotland using the Scottish morbidity record to review the outcomes of teenage

pregnancies between 1992 and 1998. Their study indicated that increasing parity increased the risk of adverse birth outcomes in teenage mothers. The study showed no significant risk of an adverse birth outcome for mothers aged between 15 and 19 for their first birth compared to non-smoking mothers aged 20 – 29 years. The risk for very premature deliveries [OR 2.5 Confidence Interval (1.5 – 4.3)] and moderate premature deliveries [OR 1.6 Confidence Interval (1.2 – 2.1)] and still births [OR 2.6 Confidence Interval (1.3 – 5.3)] increased significantly when comparing mothers aged between 15 and 19 for their second birth with non-smoking mothers aged 20 – 29 years. Because the study design relied on secondary data, the authors were unable to suggest a relationship between either social or biological factors that might explain why mothers with increased parity were at greater risk of experiencing births with adverse outcomes.



These findings differed from the findings of a retrospective cohort study conducted by Chen *et al.* (2007) using the 1995 – 2000 national birth and infant death set data for the United States. The study demonstrated that the relative risk for adverse outcomes for the infant were consistently higher with decreasing maternal age compared to outcomes for infants born to mothers aged 20 – 24 years. The differences reported in the study were statistically significant. One plausible explanation for the differences in the study described previously is that this study included teenage mothers younger than 15 years, whereas the study by Smith and Pell (2001) focussed on mothers older than 15 years. The biological and psychosocial factors for mothers between 10 and 15 years may account for differences in the findings. A second issue is that the population in Scotland is much more homogeneous than the population in the United States. For example, poverty and access to prenatal care could influence outcomes for the infant in the American context.

Cunnington (2001) conducted a systematic literature review on the negative outcomes for the infant as a result of a teenage pregnancy. He explained that

the findings of studies needed to be interpreted with caution as he found serious methodological flaws in many of the studies and found that because of methodological variations, comparability between studies was poor. The systematic literature review showed an increased risk of premature birth in mothers younger than 16 years. Cunnington (2001) proposed that the most socially disadvantaged young people were at the greatest risk for early pregnancies, and also were at a disproportionately high risk for adverse birth outcomes. Adverse birth outcomes were attributed to biological factors as well as complex social risk factors (Cunnington, 2001).

Adverse Outcomes for the Teenage Mother

Glasier *et al.* (2006) published a WHO journal paper that reported that teenage mothers under the age of 15 years were four times more likely to die from pregnancy related causes than adult mothers.

Tripp and Viner (2005) reported that the daughters of teenage mothers were more likely to become teenage mothers themselves, in a clinical review of adolescent sexual health.

Mkhwanazi (2009) emphasised that early childbearing was associated with poorer health and economic consequences and, in Sub-Saharan Africa, with an increased risk of contracting HIV.

Pregnancy in School Learners

The Department of Basic Education (DoBE) reported that nationally, 45,276 learners experienced a pregnancy in 2009 and 36,702 learners experienced a pregnancy in 2010 (DoBE, 2013), with the Western Cape ranking 6th nationally by province for the number of learners who experienced a pregnancy. The full comparison by province can be obtained in appendix 101. In 2009, there were 1,212 learners in the Western Cape who experienced a pregnancy. This figure rose to 2,133 learners in 2010. The majority of the learners were between grades 9 and 12.

Access to and Uptake of Sexual and Reproductive Health Services

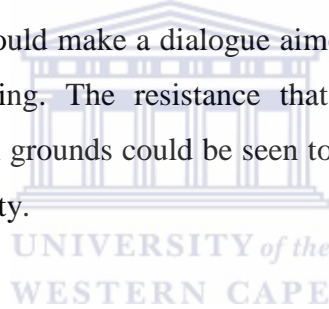
Access to Sexual Reproductive Health Services

Vundule, Maforah, Jewkes and Jordaan (2001) asserted that a high teenage pregnancy rate is indicative of inadequate sexual reproductive health services for youth. This view is supported by the United Nations *Millennium Development Goals Report* that indicated that contraception use among adolescents in Sub-Saharan Africa is low and the unmet need for contraception for adolescents is very high approaching 25% (UN, 2011). The lack of youth-friendly sexual reproductive health services is a recognised barrier to young people accessing existing sexual reproductive health services (UN, 2013b).

In the Western Cape, there is a high level of coverage for primary health care services (HST, 2009). The inference would be that the youth should not have difficulty accessing sexual reproductive service close to where they live, and by extension, the rate of unintended teenage pregnancies should be low. If these services are not been accessed, resulting in a high rate of teenage pregnancies, it would be important to understand why.

Santelli and Schalet (2009) compared the sexual behaviour and contraceptive use of teenagers in the USA with teenagers in Holland. They reported that teenagers in Holland were more likely to use hormonal contraceptive methods more consistently than American teenagers. This was explained by reflecting on the psychosocial factors that supported teenagers in the consistent use of contraceptive methods. In Holland, contraceptive use is supported by a policy framework that permits advocacy for contraception use and sex education in homes and in schools. Santelli and Schalet (2009) observed that Dutch teenagers were less likely to be poor and had greater access to sexual reproductive health services. Although this aspect was not explained further in the report, it is inferred that a potential barrier to the uptake of sexual reproductive health services by teenagers in the United States may be linked to the model of fee for services at the point of care which may act as a deterrent to young people. Santelli and Schalet (2009) highlighted that the structural aspects of access to sexual reproductive health services were important, but emphasised that the attitudes of Dutch parents and society towards teenage sexuality was one of the most important factors that influenced the consistent use of contraceptive methods in Dutch teenagers. According to Santelli and Schalet (2009) there has been a sexual revolution in Holland that has resulted in a shift from stigmatising teenage sexuality to an acceptance that teenage sexuality is a normal aspect of adolescent behaviour. Dutch parents were reported to view teenagers as capable of making decisions regarding their readiness to engage in sexual activity; believe that teenagers had the ability to regulate their behaviour, and to trust that teenagers were responsible in the use of contraceptive methods. In this report, Dutch parents had a permissive attitude towards teenagers openly engaging in sexual activity. Dutch parents were reported to allow teenaged couples to sleep over provided that conditions were met. For example, teenagers had to demonstrate that they were engaged in a steady and emotionally healthy relationship. The emphasis on the relational aspect of the sexual behaviour is interesting, as it helps to contextualise the permissive attitudes of Dutch

parents described by Santelli and Schalet because it shifts the notion of teenage sexuality away from a discourse of promiscuity and reinforces the notion of the normality of teenage sexual behaviour. Part of the contract between parents and teenagers was that appropriate contraceptive methods were used. Parents were also reported to discuss the teenagers' readiness to be in sexually active relationship with the teenager (Santelli and Schalet, 2009: 5). This sexually permissive attitude stood in stark difference to the views held by parents in the United States, where Santelli and Schalet (2009) reported that teenage sexuality was "dramatized" and seen in a very negative light. As a health care practitioner, one would like to emulate the gains seen in Holland in the low rate of teenage pregnancy and the low rate of terminations of pregnancy as a measure of effective contraceptive use among teenagers. In the South African context, the multiple cultural and religious perspectives would make a dialogue aimed at normalising teenage sexuality very challenging. The resistance that adults hold to teenage sexuality based on moral grounds could be seen to reinforce the stigmatised nature of teenage sexuality.



Darroch, Frost and Singh (2001) reported that teenagers are more likely to access sexual reproductive health care in a timely manner if they have access to youth-friendly sexual reproductive health services. It was found that up-take of services increased if services were available at a time that is convenient to teenagers, if staff were perceived to be sensitive to the needs of young people, and where services were considered to be confidential. It was reported that the way youth are informed about the availability of services was critical in supporting consistent use of services and schools were identified as key point for youth to get information about services in their community (Darroch *et al.*, 2001).

Parkes, Wight and Henderson (2004) conducted a controlled trial in schools in Scotland. The study found that young women were more likely to utilise sexual reproductive health services, with distinct gender differences in

knowledge about sexual reproductive health services (Parkes *et al.*, 2004). From a public health perspective, it is concerning that the study found that teenagers delayed accessing sexual reproductive health services until their sexual activity was more established (Parkes *et al.*, 2004). In the context of this dissertation, the importance of youth-friendly sexual reproductive health services poses serious concerns as there is a paucity of youth-friendly sexual reproductive health services in the Western Cape. In addition, systemic fragmentation between the Health and Education Departments offer limited opportunities to improve the availability of youth-friendly sexual reproductive health services.

Marteletto *et al.* (2008) described racial disparities in the use of contraception at last sexual intercourse as reported by youth in Cape Town, South Africa. White participants reported almost universal use of a contraceptive method across males and females at 96% and 95% respectively. Black participants reported lower levels of use of contraceptive methods at last intercourse at 85% for male and female participants. The lowest reported used of contraceptive methods was the Coloured cohort of participants with 72% for male and only 52% for female participants (Marteletto *et al.*, 2008). For the purpose of this study, it would be critical for health care providers to investigate what the barriers for the uptake of contraceptive methods for Coloured youth are – especially as the Coloured community are the largest population group in the Province.

Panday *et al.* (2009) asserted that despite advances in improving the policy environment and increasing the accessibility and availability of health services, the uptake of these services have been poor because the services have been found to be unacceptable to young people.

More recently, Willan (2013) described numerous barriers to the effective use of contraceptive methods identified by young women who experienced

a pregnancy as a teenager. These perceived barriers included inadequate health seeking behaviour because the study participants did not have money; participants reported that they could not talk to their parents about sex; participants reported incomplete and inaccurate knowledge about contraception before they fell pregnant; fear of stigma, fear of a lack of confidentiality and negative health staff attitudes were considered a significant barrier to accessing contraceptive methods; the fear of judgement when teachers at schools had strong moral views and finally, restricted access to health services outside of school hours (Willan, 2013).

Condom Use

Hendriksen, Pettifor, Lee, Coates and Rees (2007) presented findings from a nationally representative household survey in South Africa which identified factors that influenced the condom use behaviours of young people. The study found that young people who used a condom at their first sexual experience were more likely to use condoms during their most recent sexual intercourse; and young people who spoke to their first sexual partner about condom use were more likely to use condoms during their most recent sexual intercourse (Hendriksen *et al.*, 2007). The study identified the need for non-judgemental, youth-friendly sexual reproductive health services as well as the promotion of HIV counselling and testing in young people.

In order to prevent unwanted pregnancies, and to reduce the transmission of STIs including HIV among young sexually active people, it is important to encourage consistent use of barrier methods such as condoms. Makiwane and Kwizera asserted that 50% of South African sexually active youth did not report the use of a condom at first sexual intercourse; with a distinct racial vulnerability in Black and Coloured youth who were less likely to report the use of condoms at first sexual intercourse than White or Indian youth (Makiwane and Kwizera, 2009).

Mchunu *et al.* (2012) reported a disconnect between young women feeling that they would be able to negotiate condom use every time they engaged in sexual intercourse (69% of participants), compared to the percentage of women who reported that they used a condom the last time they engaged in sexual activity with a non-regular partner (9.5%). Findings of a study reported by Willan (2013) offered an explanation that could clarify the incongruence between what young women espouse compared to their behaviour. Willan (2013) found that while study participants felt that they should be able to carry condoms, they acknowledged that this could create an impression of promiscuity. In this study, young women opted for injectable family planning methods that were easier to conceal (Willan, 2013).

Socio-Cultural Context for Teenage Pregnancies in South Africa

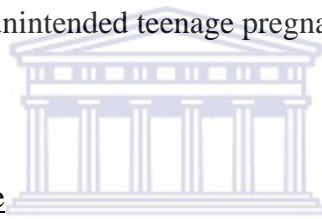


Transactional Sex

Transactional sex has been shown to increase the risk of adverse sexual reproductive health outcomes including unintended pregnancies and STIs and HIV (Wamoyi, Fenwick, Urassa, Zaba & Stones, 2011). Wamoyi *et al.* (2011) conducted a qualitative study in rural Tanzania to explore how transactional sex was understood by young people and their parents. Wamoyi *et al.* (2011) described the relationship between gender and power in the context of transactional sex, highlighting concerns that young women might not be able to negotiate condom use and prevent unintended pregnancies. While the study conducted by Wamoyi *et al.* (2011) was set in rural Tanzania, the cultural issues regarding transactional sex may be relevant in the South African context.

Cross-Generational Sex

Gomez, Speizer, Reynolds, Murray and Beauvais (2008) proposed that young women with older male sexual partners were at an increased risk for poorer sexual health outcomes due to imbalances in power and gender-based violence. Gomez *et al.* (2008) conducted a study to examine the sexual reproductive health outcomes of young women accessing sexual reproductive health services in Haiti, where cross-generational sex is prevalent. It was reported that young women with a male partner between 5 and 9 years older at their sexual debut were less likely (OR: 0.67, 95% CI: 0.46 – 0.98) to use a family planning method at last sexual intercourse. The close relationship between transactional sex and cross-generational sex (Wamoyi *et al.*, 2011) is an important consideration when developing interventions to prevent unintended teenage pregnancies.



Intimate Partner Violence

The discussions regarding transactional sex and cross-generational sex highlights the vulnerability of young women in becoming victims of intimate partner violence. O'Donnell, Agronick, Duran, Myint-U and Stueve (2009) reported that the risk for intimate partner violence (IPV) was highest in late adolescence and young adulthood. O'Donnell *et al.* (2009) reported that there was a strong association between unintended pregnancies and intimate partner violence. This belief is supported by Morrel *et al.* (2012) who reported that adolescent pregnancy is frequently associated with coercive sexual practices including rape, and in difficulties with negotiating condom use. In South Africa, where the generalised level of violence in society is high and transactional sex and cross-generational sex may be culturally acceptable, young women face a multitude of socio-cultural factors that may increase the risk of unintended teenage pregnancies.

There appears to be a sub-culture in the South African context that appears to be tolerated and accepted, yet highly stigmatised. The phenomenon of the *Taxi Queen*, where young women enter into relationships with older male taxi drivers (Shefer, Strebel, Potgieter and Wagner, 2011) encapsulates many of the risk factors described previously in terms of cross-generational sexual relationships, transactional sexual relationships, coercive sexual practices and gender based violence. Shefer *et al.* (2011) highlighted that in South Africa, a normative culture exists regarding transactional relationships because it is an acceptable belief that love is demonstrated through material exchanges. Shefer *et al.* (2011) conducted a qualitative analysis of the experiences of young women who were either known to be a *taxi queen*, or associated with *taxi queens* through individual interviews and focus group discussions. The study demonstrated the transactional nature of relationships between young women and older taxi drivers (Shefer *et al.*, 2011) and brought the centrality of the misuse and abuse of alcohol and drugs as a common aspect of relationships between *taxi queens* and taxi drivers to the fore. The paradox between the perceived status of being associated with a taxi driver, coupled with the stigma of being seen to be a prostitute; and the complex and nuanced interpretation of the locus of power in the relationships and the agency of these young women who simultaneously could be vulnerable to coercive sexual practices, could have limited authority to negotiate condom use, and therefore be vulnerable to experiencing unintended pregnancies and contracting HIV, compared to their experience of control in their relationships, poses a particular challenge for policy developers and public health practitioner in terms of responding to the risk of unintended adolescent pregnancies.

The Construction of Adolescent Sexual Behaviour

Morrell, Bhana and Shefer (2012) highlighted that adolescent parenthood impacts on three of the Millennium Development Goals and therefore should be considered an issue of gender equality. In this light, the issues

related to gender equality underpin the need to address the sexual reproductive health needs of adolescent women.

The gendered discourse regarding teenage pregnancies remains a highly contested area. An emerging body of work by feminists such as Catriona Macleod challenges the normative assumptions regarding normal sexual development and adolescent sexual behaviour (Shefer, 2011). Shefer (2011) provided an insightful critique of the work by Macleod on adolescent pregnancy. Most notably, the contestation of the discourse of *adolescence* as an ill-defined period between childhood and adulthood, where teenagers contribute to social degeneration through pregnancy challenges the notion that teenage pregnancy is a problem. Shefer contends that it is important to acknowledge that the expression of sexual behaviour is an important aspect of normal human sexual development. One of the complexities in making sense of adolescent fertility is the issue of understanding agency and autonomy from the perspective of the adolescent. South Africa has a pro-natalist culture where fertility is considered very positively, and early marriage and child-bearing may be acceptable in some cultures. In this context, women may be socialised to consider child-bearing as a source of gaining status and respect (Morrell *et al.*, 2012). Public health practitioners and health managers are therefore challenged to avoid constructing teenage sexuality as social problem and rather to reframe the discourse from a dialogue focussed on teenage pregnancies to a focus on unintended adolescent pregnancies as an area of intervention.

Mkhwanazi (2009) described the reactions reported by teenage mothers in Nyanga in the Western Cape to learning they were pregnant as part of an Ethnographic study. The participants reported feelings of shock and fear. Mkhwanazi attributed these reactions to the normative gendered views held by the study participants in the context of the communities where they lived. Mkhwanazi described conservative values held by the Nyanga community in relation to the sexual health of youth, where it would be considered

improper for parents and children to talk about sex (Mkhwanazi, 2009). In this environment, the stigma associated with a teenage pregnancy was inflicted both on the teenage mother, who was deemed to not have conducted herself properly, and the mother, who would be seen to have failed to educate her daughter about how to behave in an acceptable manner (Mkhwanazi, 2009). Beyond the social isolation for the teenage mother, teenage pregnancies impacted negatively on the economic resources of households. This was partly due to the absence of fathers in the lives and the community's tolerance for the denial of paternity (Mkhwanazi, 2009).

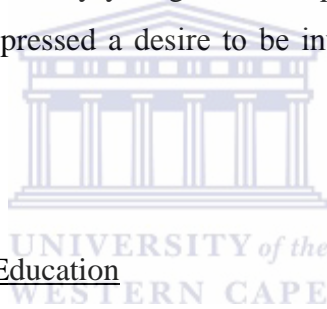
Alcohol Use in Pregnancy

Alcohol use is considered to be a risk factor for unintended pregnancies. In the context of the Western Cape Province, there are additional concerns regarding the high prevalence of prenatal exposure to alcohol in certain population groups. O' Connor *et al*, (2011) reported that 1 in 4 women in a study on alcohol use in pregnant women residing in townships in Cape Town used alcohol post-conception and before recognition of their pregnancies. This study found that the risk factors associated with prenatal alcohol exposure included younger women, single women, women with a history of sexually transmitted infections, tobacco use and women who had experienced recent intimate partner violence. While the sample in this study is older than population focussed on in the current analysis, these findings are relevant in this discussion as many women under 18 years who fall pregnant may face similar risk factors.

Adolescent Fathers

One of the difficulties facing adolescent mothers is the phenomenon of absent fathers and single parenting. There is a paucity of literature that describes the experience of adolescent fathers. Swartz and Bhana (2009) conducted a study to determine how young men living in poverty experience

fatherhood and what factors either support or hinder involvement in the lives of their children's lives. The study identifies some of the risk factors that contributed to the (unintended) pregnancy. The findings highlight the impact of alcohol, which frequently led to having unprotected sexual intercourse; a lack of knowledge regarding the consistent and correct use of contraceptive methods including condoms; and the perceived lack of social and parental support to make informed sexual behaviour choices (Swartz and Bhana, 2009). As with the literature on young mothers, Swartz and Bhana (2009) found that not all the fathers reported that the pregnancies were unintended. While the circumstances for young fathers varied considerably, Swartz and Bhana (2009) found that the most significant barrier to young fathers' involvement with their children was financial pressures. Encouragingly, many young fathers reported feeling responsible for their children and expressed a desire to be involved in their children's lives.

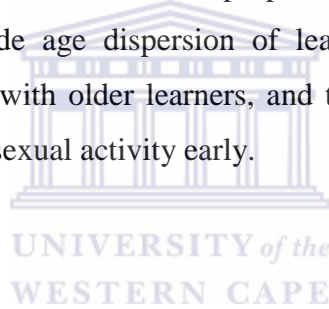


Teenage Pregnancy and Education

A major concern for policy planners is addressing the impact of unwanted adolescent pregnancies on the scholastic attainment of young mothers. Makiwane and Kwizera (2009) reported that while gains in school enrolment have been achieved across all race groups, the educational system is still fraught with challenges. The quality of education remains a concern, many learners experience repetition of grades, and retention in school remains a significant challenge (Makiwane and Kwizera, 2009). Black South African learners are disproportionately disadvantaged with repetition of grades; interrupted schooling and not progressing at an appropriate rate of age-for-grade (Makiwane and Kwizera, 2009).

The CAPS study presented by Marteleto, Lam and Ranchhod demonstrated similar findings to Makiwane and Kwizera. Black and Coloured youth experienced higher rates of premature exit of school in terms of grade

attainment, although not necessarily for their age, compared to White learners. In particular, the scholastic attainment for Black learners indicated a pervasive mal-alignment of age for grade progression, for both male and female learners (Marteleto, Lam and Ranchhod, 2008). Of interest, this study suggested that this deviant situation enabled Black learners who experienced motherhood to return to school, because a context for a wide dispersion of ages in each grade already exists. This situation is not true for Coloured learners, which may account for why pregnancy while at school is associated with permanent exit from school for Coloured learners (Marteleto, Lam and Rancchod, 2008). One of the surprising findings in the CAPS study was that Black learners who advanced appropriately through grades for their age did not experience an expected delay in sexual initiation. Marteleto, Lam and Ranchhod proposed that this anomaly could be attributed to the wide age dispersion of learners in a grade, where younger learners mixed with older learners, and therefore were influenced by their peers to initiate sexual activity early.



CHAPTER 4: METHODS

Study Design

A *Non-Intervention (Observational) Analytical Time Series (longitudinal) study design* was selected for this study. Brink *et al.* (2012: 112-113) provided an algorithm for determining the study design. *Non-experimental* study designs are described as studies where no intervention is applied to the independent variable (Brink *et al.*, 2012) and statistical manipulation is applied to the data rather than sequencing the independent variable or manipulating the independent variable through its presence or absence in the sample (DePoy and Gitlin, 2011). In this study, the independent variable: deliveries for women under 18 years of age, provides the opportunity to describe the phenomena of birth rates for teenage women as it occurs naturally in public sector facilities in the Western Cape Province. Since the data cannot be manipulated, this study represents an *Ex Post Facto study design* (DePoy and Gitlin, 2011). The design is located within the classification of quantitative research designs.

A time series study involves the collection of data for a variable over several time points (Wegner, 2007). Wegner (2007) described the use of *time series data* in plotting and tracking trends. A time series study enables the identification of recurring trends in a time series and to quantify these trends through statistical modelling.

The study fits the criteria for a time series study in that it offers a retrospective perspective of data captured in a chronological sequence over time. The following strengths of a time series analysis are proposed as it relates to this study:

- 1) One can observe and describe variations in the data over time.
- 2) It is possible to identify systematic patterns in the data, (upward and downward trends, seasonal changes and cyclical patterns for example) compared to random variations.
- 3) The data are collected using a consistent methodology over time.
As a result, one is able to make comparisons over time, from one year to the next.

Population and Sampling

Sampling processes have not been employed in this study because the data includes the entire population of women who delivered babies in public sector facilities in the Western Cape Province including those for women under 18 years of age.

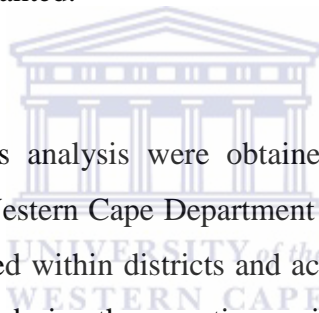


Data Collection

The present study involved a review of the Routine Monthly Reporting (RMR) elements for deliveries in public sector health care facilities for women under 18 years in the Western Cape. The use of secondary data, defined by Brink, *et al.* (2012: 74) as data that has not been obtained by the researcher but obtained from an existing data source, has been selected because the routine health information system is considered to contain rich data that could be harnessed for the purpose of informing programmatic interventions and policy to address unintended adolescent pregnancies.

The primary data collection and transcription processes were not under my control in this study because secondary data which aggregated the original primary records of public sector facilities were utilised. Very little data

cleaning or validation was possible because existing data were analysed: this project purposively analysed partially aggregated data from across the entire province, rather than the individual birth registers of selected facilities. Accessing, collating and analysing the entire primary birth registry data from every facility in the entire province over a 12 year period was far beyond the scope of this mini-thesis, and a feasible subsample would not have permitted a review of trends across the entire province over this long a time period. Any incomplete or implausible data were identified and described in this mini thesis, but could not be retrospectively addressed. It is acknowledged that a risk factor in this study is that incomplete or inaccurate data contained in the Routine Health Information Management System could compromise the research findings. Caution in the interpretation of the findings is therefore warranted.



The data utilised in this analysis were obtained from Sinjani, the data repository used by the Western Cape Department of Health. Many different systems have been utilised within districts and across, district, regional and tertiary service platforms during the reporting period. In order to standardise the process, a central data repository was introduced. The impact of multiple data collection systems and the risk of discrepancies should therefore have decreased over time.

The reporting period utilised in the Western Cape Department of Health is aligned with the financial cycle of 1 April to 31 March. Data were extracted for the reporting periods 2000-2001 until 2011-2012, where a reporting period represents the data from 1 April to 31 March.

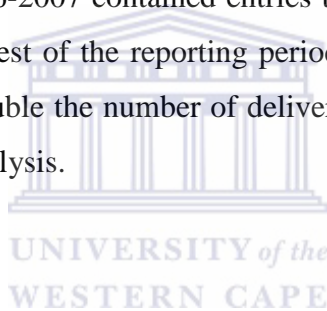
The Provincial Department of Health Information Directorate assisted with extracting the data from the Sinjani system and provided the data in the form of Excel pivot tables.

Data Cleaning

Given that this analysis was based on historic data, and that primary data collection was not conducted, it was not possible to clean the data optimally, as this would have required validating the aggregate data against the original birth registers in each of the health facilities delivering obstetric services.

The following gaps in the data were found:

- 1) The reports for the reporting periods 2000 – 2001 to 2002 – 2003 contained missing data. Attention is drawn to the Northern Sub-District as an example, where no data were captured for the period 2000-2001 until 2001-2002.
- 2) The data for 2006-2007 contained entries that did not compare with the data for the rest of the reporting period. Eastern Sub-District in particular has double the number of deliveries compared to all other periods in the analysis.



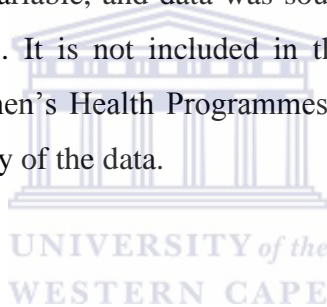
Data Analysis Methods

The time series study design has been selected because the Western Cape Department of Health's Health Information System contains a wealth of information that has not been subjected to a systematic analysis. Secondary data retrieved from the routinely reported dataset in the Health Information System has been analysed for the period 2000-2001 to 2011-2012. The dataset offers information on a broad range of indicators in the Women's Health Programme and Sexual Reproductive Health Services. Only one indicator, the *Delivery in facility to women under 18 years* was examined in this study.

A number of factors influenced the selection of the indicator for this time series study. The first consideration related to the availability and

comparability of the data from one year to the next. The data rationalisation process that the WCDoH embarked upon resulted in an interruption in the collection of data for many indicators. There are also indicators where the confidence in the accuracy of the data is low.

A richer picture of pregnancy in the Province could be obtained by collecting and analysing a number of additional data elements, including age specific fertility, reported pregnancy rates among learners in schools, teenage HIV rates, termination of pregnancy rates, total contraceptive coverage, and other. During the analysis of the numbers and trends of deliveries, termination of pregnancy was identified as potentially a particularly significant variable, and data was sought for this variable. It is reported in appendix 67. It is not included in the analysis of this thesis because Provincial Women's Health Programmes managers had expressed concerns about the quality of the data.



The analysis consisted of descriptive statistics of the data by year, district and sub-district and by month. Trends in the total number of deliveries were plotted in order to enable visual analysis and trends and outliers were identified. In order to calculate the proportions of deliveries for women under 18 years of age, the total number of deliveries was used as the denominator for all districts and sub-districts. The analysis did not include estimates of the age-specific fertility or birth rates disaggregated geographically because the corresponding age and district-specific populations were not available in the routine data and collecting them was beyond the scope of this exploratory mini-thesis.

The analysis was further informed by my professional knowledge of the context and the Health Programmes environment. Finally, the draft thesis was shared with senior managers in the Department of Health for comment.

The feedback of these key stakeholders supported the interpretation of findings and offered a way of triangulating the results. They are presented in the discussion, rather than in the results chapter.

Rigour – Validity and Reliability

Brink, Van der Walt and Van Rensburg (2012: 97) described *Rigour* as the principle of truth achieved in the research outcome. They indicated that the accuracy of the research would be enhanced by adopting a methodical, objective and systematic approach that would mitigate the risk that the outcome of the research is influenced by contamination (Brink *et al.*, 2012).

Validity and reliability of the time series analysis were enhanced in this analysis by using a single, clearly defined and unambiguous indicator, and by seeking and analysing all available routine data sources. Rigour in interpretation of the time series was enhanced by locating the data in the policy context within the DoH and by considering the existing knowledge relating to adolescent fertility as described in current literature. Where additional data sources were available that supported the analysis of the routine data, triangulation, including possible changes in routine health information systems or policy over the study period were included.

Ethical Considerations

Studies involving human subjects should be conducted in a respectful manner, protecting the dignity and confidentiality of the study participants. The principles that were identified by DePoy and Gitlin (2011) to guide the utilisation of human including voluntary participation, full disclosure regarding the purpose of the study, and the maintenance of confidentiality,

were not applicable in this study because the study involved the review of secondary data, and not human subjects. No identifiable information about the women who utilised Obstetric services offered by the Western Cape DoH is discernible in the analysis as the Sinjani data warehouse only contains summary data, not individualised personal data. No risk of harm to the women who utilised Obstetric services in the Department of Health during the study period could be determined. The sexuality and sexual behaviour of young people is considered to be an emotive topic. Care has been taken to throughout this discussion to approach the subject matter in a non-judgemental manner. Prior approval had been obtained to utilise the Western Cape DoH data.



CHAPTER 5: RESULTS

The number of Deliveries in facilities for women under 18 years of age ranged from 5,385 (2000 to 2001) to 7,988 (2006 to 2007) deliveries per year. This equated to 79 710 deliveries from 1 April 2000 to 31 March 2012, with an average of 6,643 deliveries occurring each year.

The full analysis of the data is available in the Appendices. Selected graphs will be presented for each district in order to focus attention on specific findings.

Analysis for the Western Cape Province

Trend Analysis

A summary of the number of deliveries to women under 18 years of age for the period under review follows:

Figure 8: TREND FOR DELIVERIES FOR WOMEN UNDER 18 YEARS

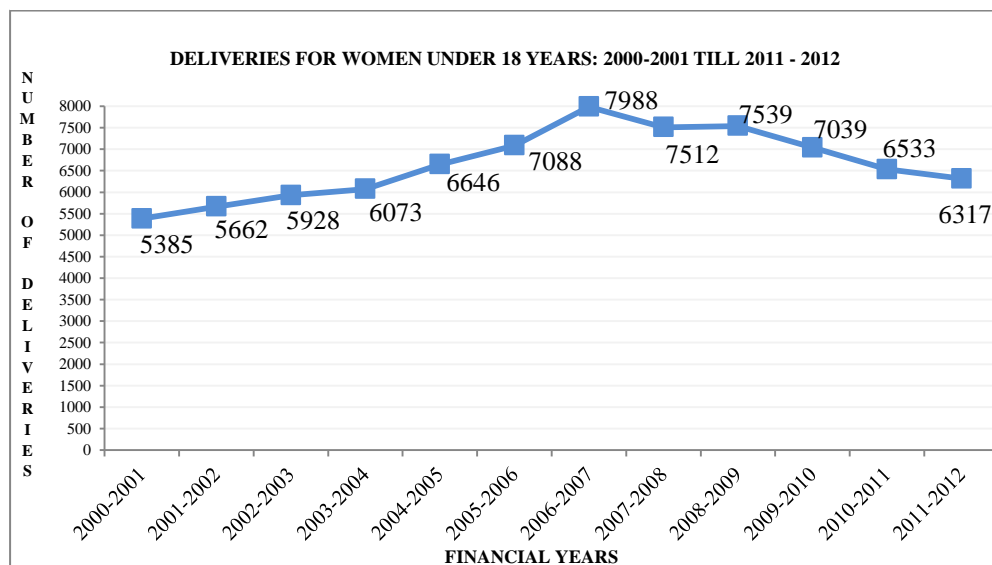
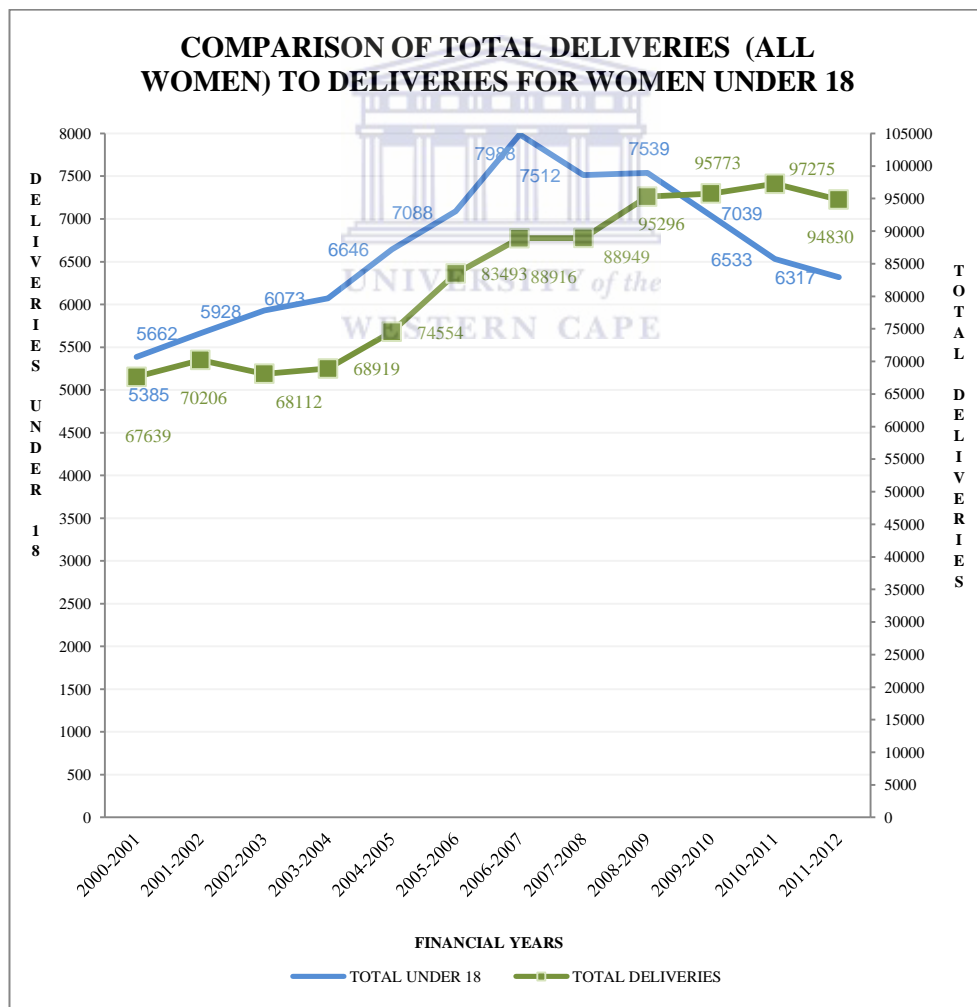


Figure 8 demonstrated that from 2000 – 2001 until 2008 – 2009, there was a steady increase in the number of deliveries for women under 18 years, peaking at 7988 deliveries in 2006 - 2007. From 2009 – 2010 until 2010 – 2012, there was a decrease in the absolute number of deliveries.

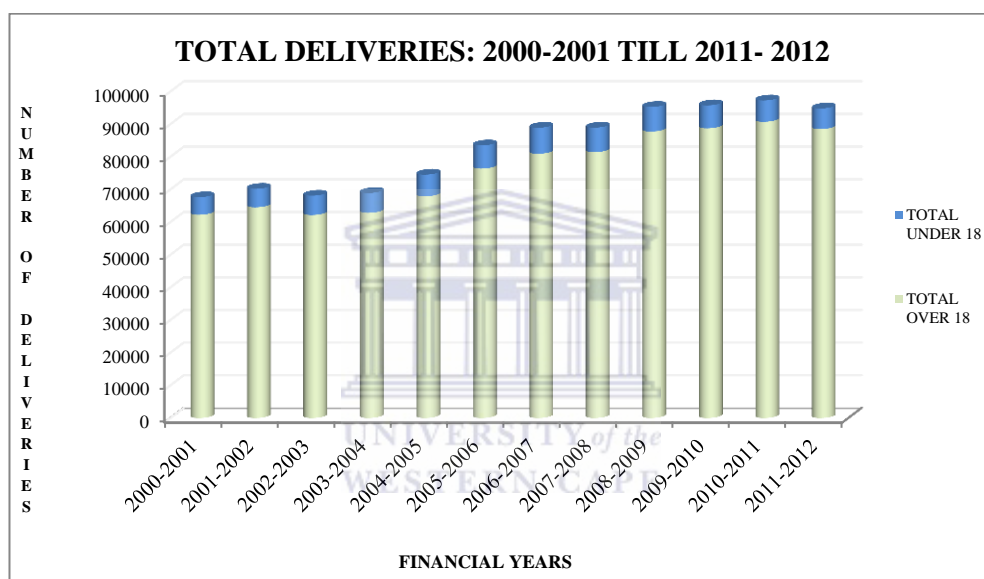
In order to make sense of this trend, it is useful to compare the deliveries for women under 18 years, with the total number of deliveries to see if any similarities can be detected.

Figure 9: TOTAL DELIVERIES FOR ALL WOMEN COMPARED TO DELIVERIES FOR WOMEN UNDER 18: 2000-2001 TO 2011-2012



The progression for the total number of deliveries showed an upward trend over the total reporting period. The peak for the total deliveries occurred later in the dataset for the total deliveries, having reached a plateau between 2008-2009 and 2011-2012. It is observed that the peak for women under 18 years occurred earlier than for the number of deliveries for all women, in 2006-2007, and the decrease has been sustained over time.

Figure 10: TOTAL DELIVERIES IN THE WESTERN CAPE PROVINCE INCLUDING DELIVERIES FOR WOMEN UNDER 18 YEARS



The data revealed that the total deliveries increased until 2008-2009, before reaching a plateau. The deliveries for women under 18 as a proportion of the total deliveries have shown incremental decreases over time.

The next section will reflect any seasonal fluctuations in the data.

Figure 11: TOTAL DELIVERIES FOR WOMEN UNDER 18 FROM 2000-2001 – 2011-2012 ANALYSED BY MONTH

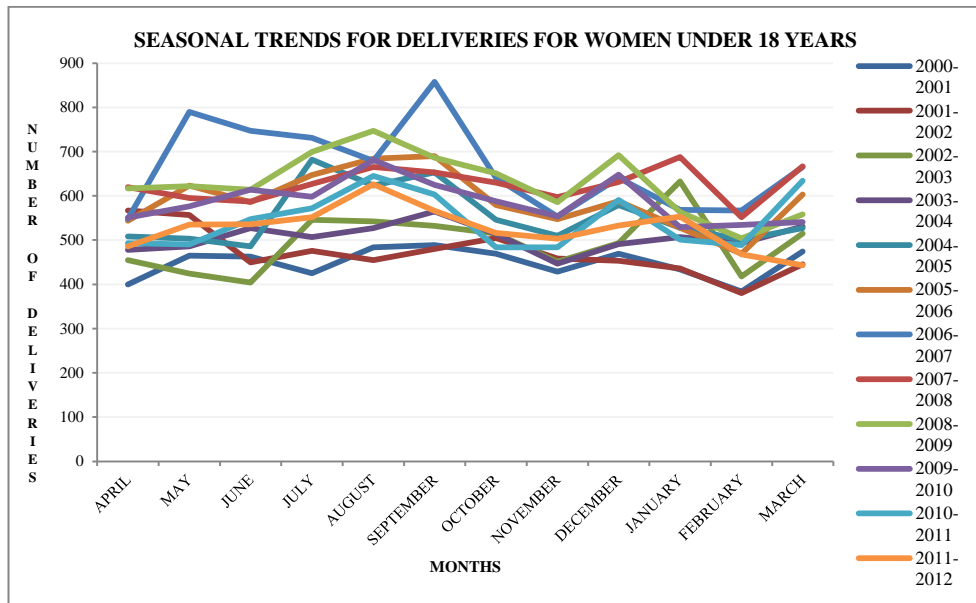
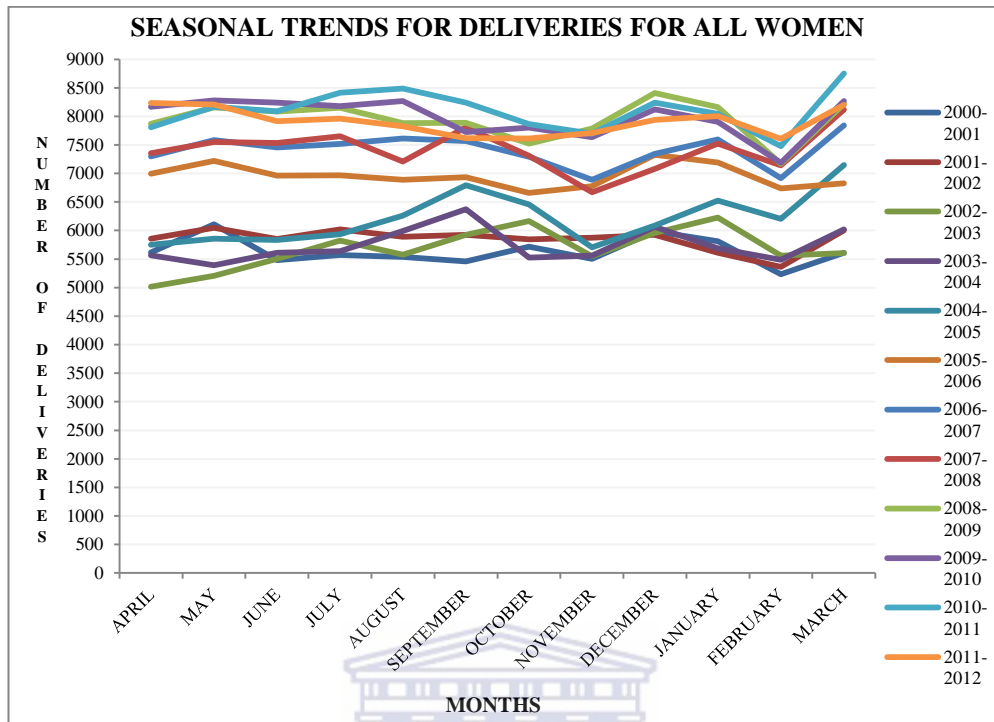


Figure 11 illustrated the trends in deliveries for women under 18 years. Considerable gaps were noted in the data for 2000-2001 until 2002-2003. Unfortunately, it was beyond the scope of this analysis to return to the raw data as this would have required visits to each of the facilities delivering obstetric services in order to review the original birth registers.

The data illustrated three distinct peaks, one occurring between August and September, one occurring between November and January and one in March. In 2006-2007, there was an additional peak in May that is not consistent with the rest of the dataset.

The data for total deliveries will now be examined to determine if any seasonal trends can be detected.

Figure 12: TOTAL DELIVERIES FOR ALL WOMEN FROM 2000-2001 – 2011-2012 ANALYSED BY MONTH



The data for the total deliveries showed a less distinct pattern. There appeared to be a decrease in the number of deliveries in November – December, and again in February. This seasonal variation is not similar or as pronounced as what was observed in the analysis of deliveries for women under 18 years.

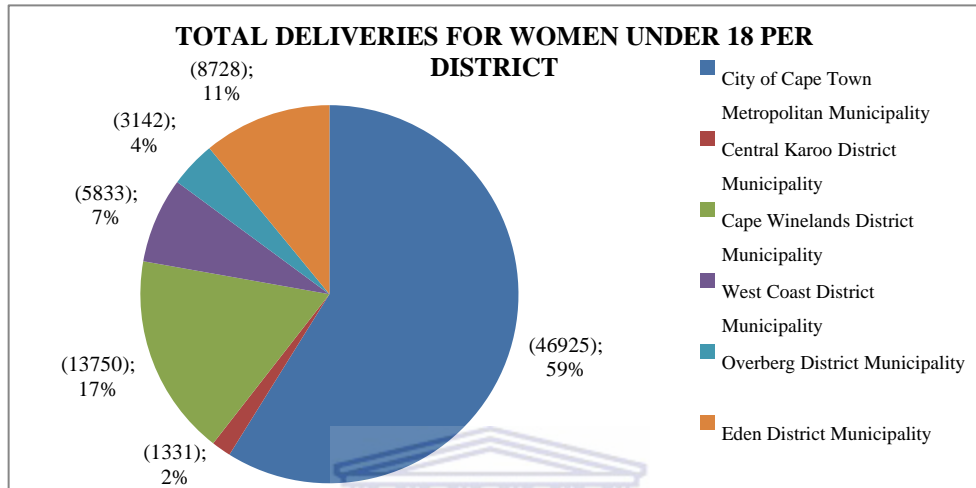
The analysis will now shift to the Districts.

District Analysis

As expected, the Cape Metropole had the largest proportion of the deliveries for women under 18 years at approximately 60% as illustrated in Figure 13. The number of deliveries for women under 18 years in Cape Winelands,

Eden, West Coast, Overberg and Central Karoo mirrored the proportions of the total population in each district.

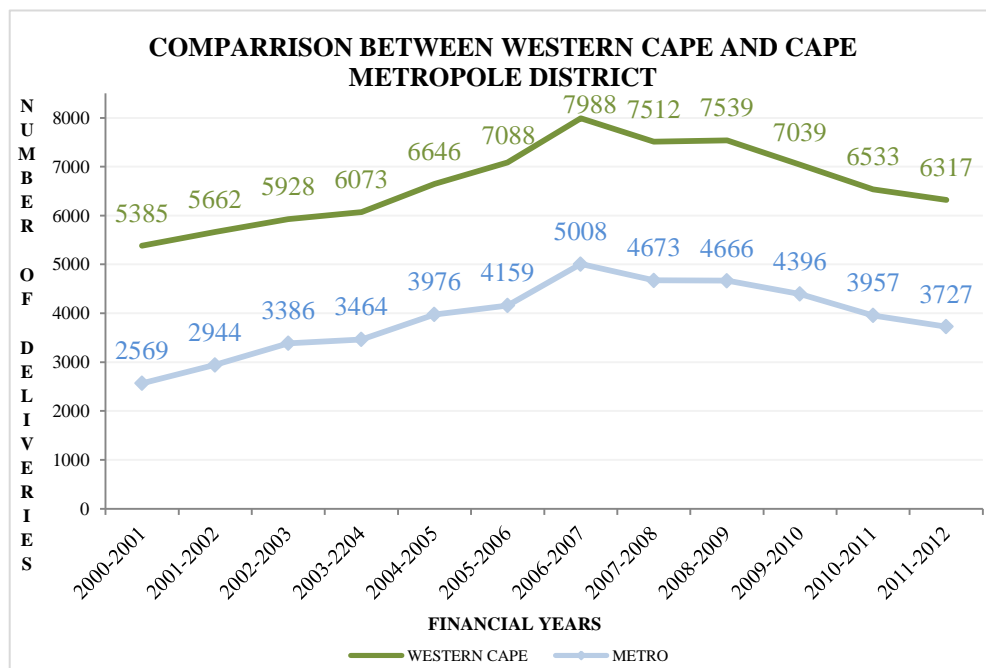
Figure 13: PROPORTION DELIVERIES PER DISTRICT FOR WOMEN UNDER 18 YEARS



Cape Metropole

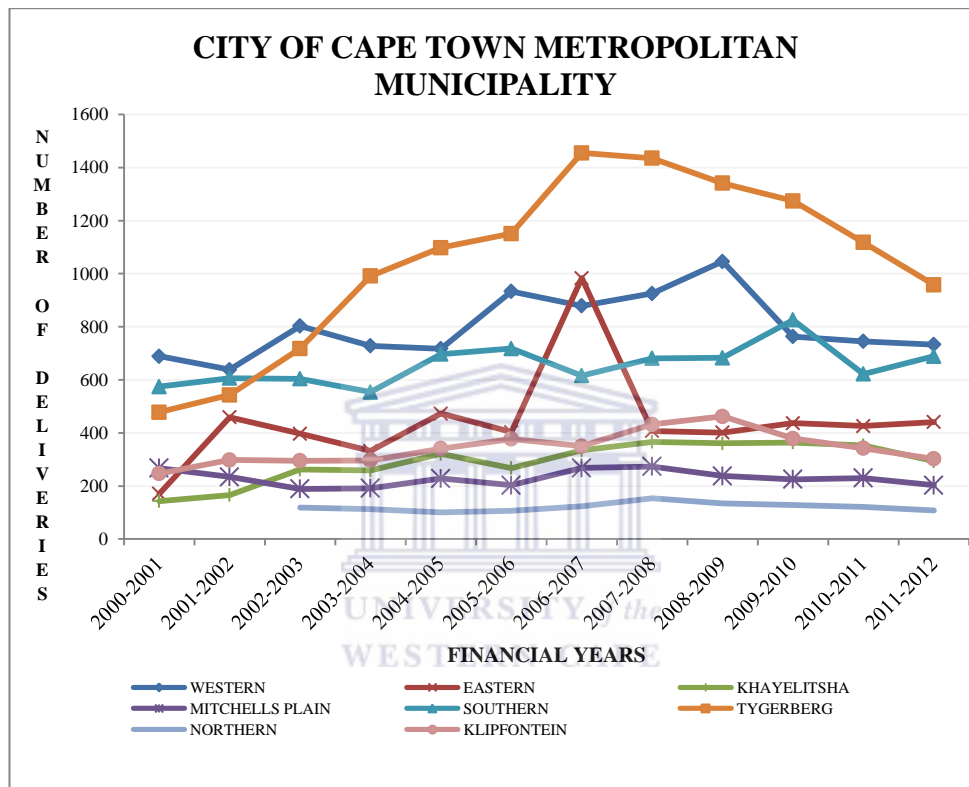


Figure 14: DISTRICT ANALYSIS FOR WOMEN UNDER 18 YEARS: CAPE METROPOLE COMPARED TO THE WESTERN CAPE



The trend line for the Cape Metropolitan District mimicked the pattern of the Western Cape trend line very closely. However, within the Cape Metropole, the pattern was not as consistent.

Figure 15: CAPE METROPOLE: SUB-DISTRICT ANALYSIS FOR DELIVERIES FOR WOMEN UNDER 18 YEARS



There were substantial variations between Sub-Districts within the Cape Metropole District. Tygerberg Sub-District emerged as an area with a high burden of deliveries to women under 18 years compared to other Sub-Districts in the Cape Metropole, although the number of deliveries for women under 18 years had decreased since 2006-2007. The rate of decrease in the number of deliveries for women under 18 years in the Tygerberg Sub-District appeared to be much more rapid in comparison with the other Sub-Districts.

The analysis shows that Northern Sub-District had the lowest number of deliveries for women under 18 years. The number of deliveries for women under 18 years appeared to be fairly stable. It is noteworthy that no data were available for 2000-2001 to 2002-2003. The issue about the reliability of routine data will be explored further in the discussion.

There was an upward trend in the number of deliveries for women under 18 years in Western Sub-District from 2000-2001 until 2008-2009. There was a sudden decrease in the number of deliveries for women under 18 years in 2009-2010, followed by a more gradual decrease in the number of deliveries for women under 18 years.

In Southern Sub-District, the number of deliveries for women under 18 years increased until 2009- 2010. Thereafter, a sudden decrease in the number of deliveries was 2010-2011, followed by an increase in 2011-2012.



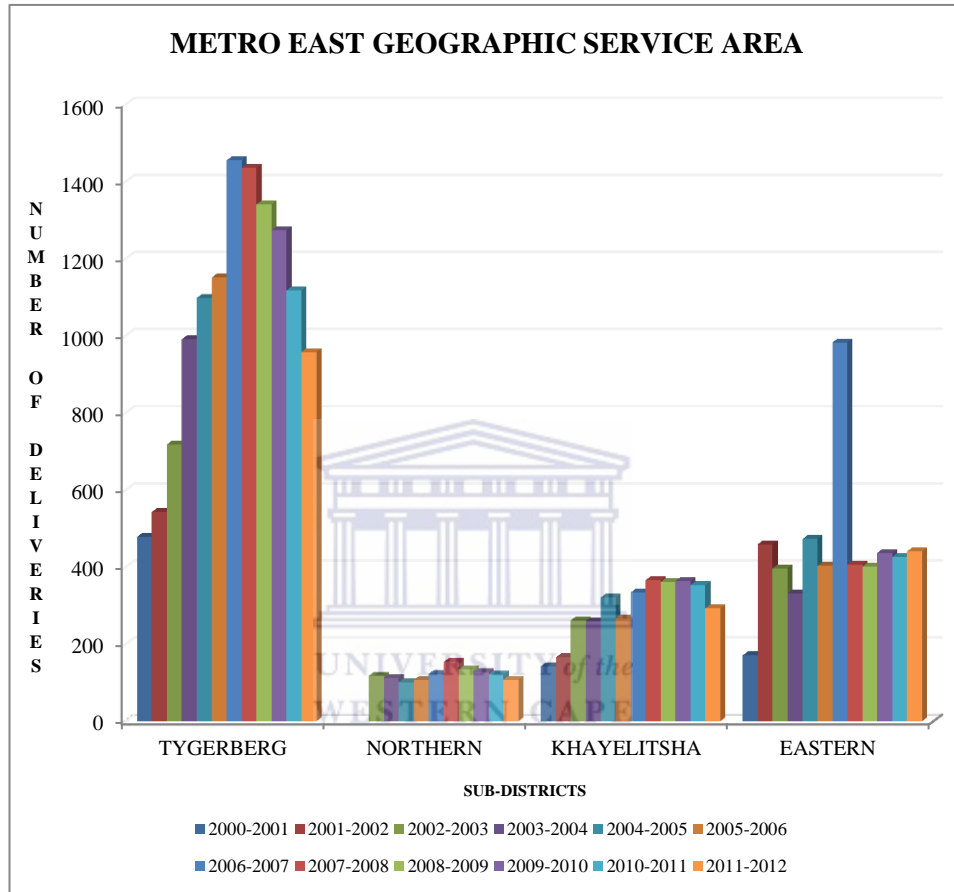
There appeared to be an upward trend in the number of deliveries to women under 18 years in the Eastern Sub-District. The peak in 2006 – 2007 was striking and not consistent with the overall trend in the Sub-District. This may represent a data error, for example the age categories may have been incorrectly captured, which may account for the disproportionate increase.

A gentle upward trend was noted in the deliveries for women under 18 years in the Khayelitsha Sub-District until 2007 – 2008. The data seemed to plateau until 2010-2011 where after there was a decrease in 2011–2012.

The data showed that the number of deliveries for women under 18 years in Mitchells' Plain has been decreasing since 2007-2008.

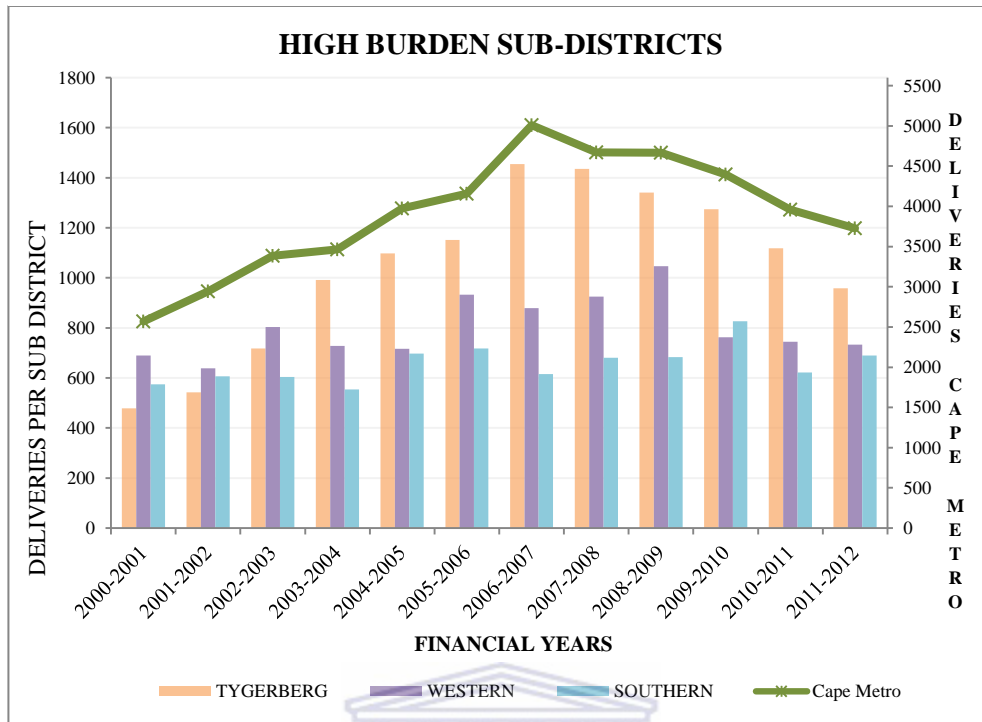
In order to make sense of the burden of deliveries in the Tygerberg Sub-District, the data for the Metro East Geographic Service Area was explored.

Figure 16: CITY OF CAPE TOWN METROPOLITAN MUNICIPALITY ANALYSIS – METRO EAST FOR DELIVERIES FOR WOMEN UNDER 18 YEARS



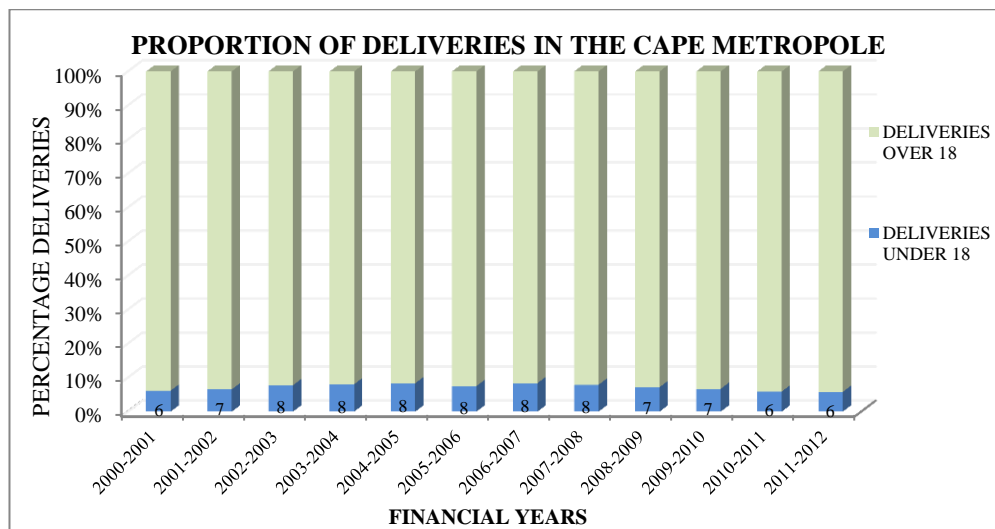
A substantial decrease in the number of deliveries for women under 18 years was observed in the Tygerberg Sub-District. The rapid decrease in the Tygerberg Sub-District was not mirrored in the other Sub-Districts. This issue will be explored further in the discussion.

Figure 17: SUB-DISTRICTS AVERAGING MORE THAN 600 DELIVERIES PER MONTH



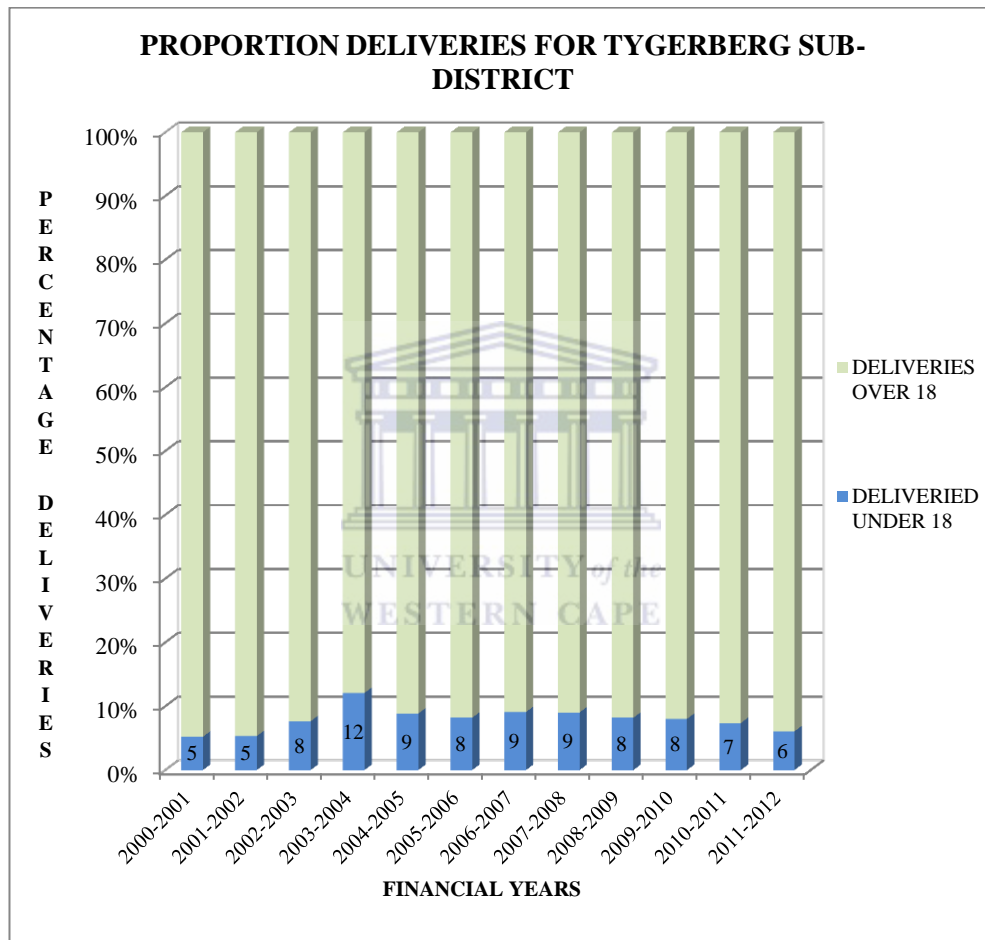
Tygerberg Sub-Districts bears a disproportionate burden of deliveries to women under 18 years. The decrease in the number of deliveries in the Tygerberg Sub-District appeared to be the biggest contributor to the decrease in the number of deliveries for women under 18 years in the Cape Metropole.

Figure 18: PROPORTION OF DELIVERIES IN THE CAPE METROPOLE



The data revealed that Tygerberg Sub-District had the highest burden in terms of numbers of deliveries for women under 18 years. It is therefore important to investigate how this correlates with the total number of deliveries in the Tygerberg Sub-District.

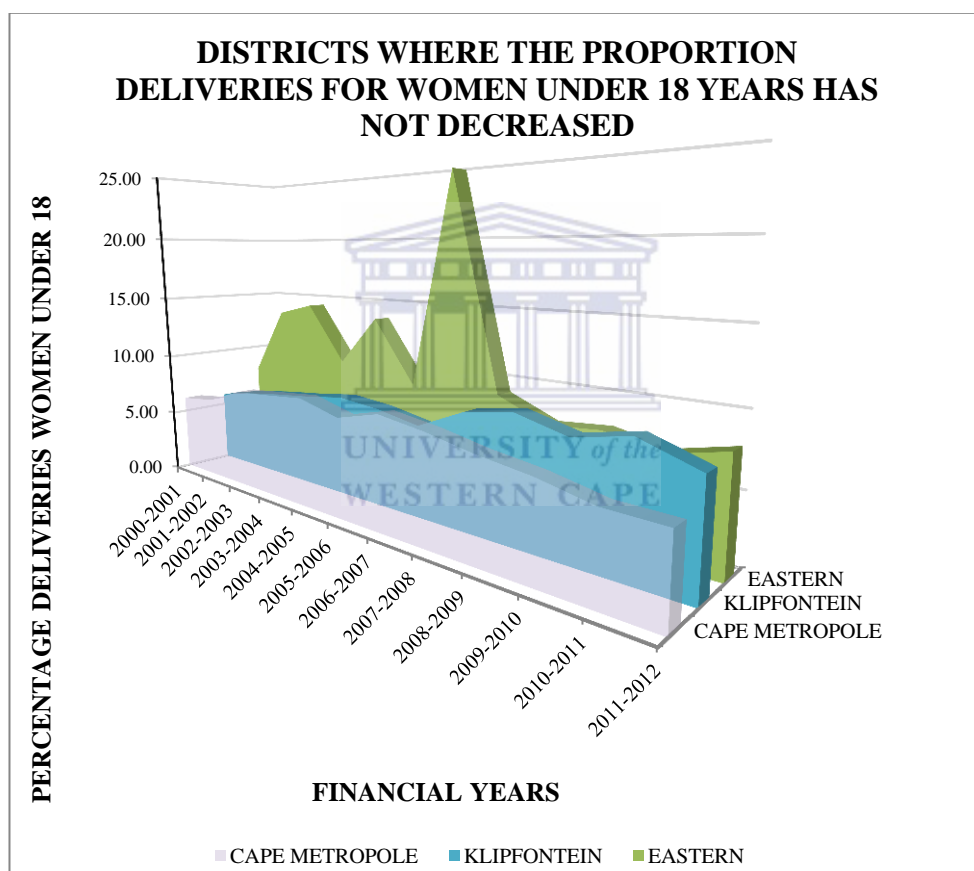
Figure 19: PROPORTION OF DELIVERIES IN TYGERBERG SUB-DISTRICT



The data indicated that despite the high quantities of deliveries for women under 18 years in the Tygerberg Sub-District, the proportion of deliveries in comparison with the total number of deliveries was fairly low, and has been decreasing since 2006 – 2007.

A concerning trend that has been identified in the data was that there are two Sub-Districts that were both higher than the average delivery rate for women under 18 years in the Cape Metropole, and were increasing as a proportion relative to the total number of deliveries. The two sub-Districts are Klipfontein Sub-District and Eastern Sub-District. This will be addressed in the discussion.

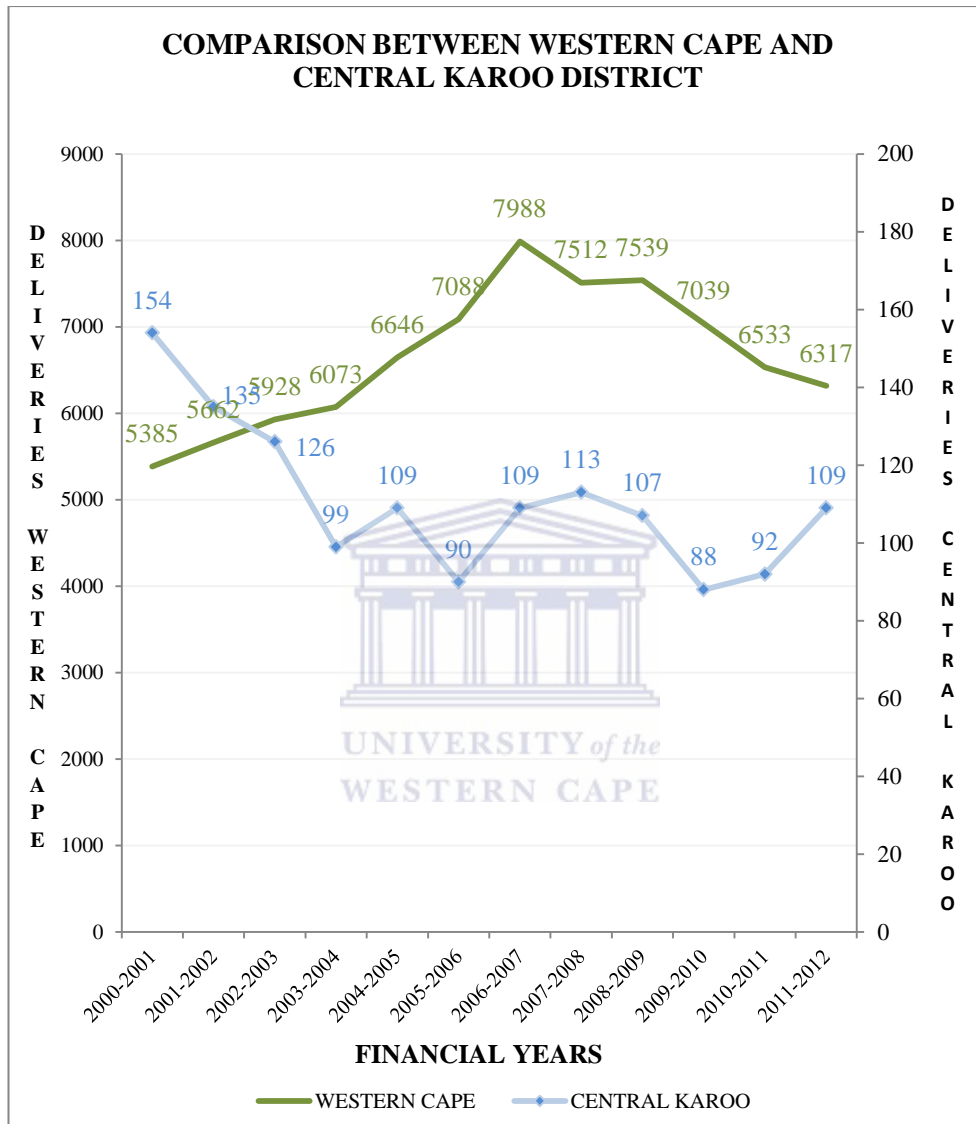
Figure 20: SUB-DISTRICTS WITH A RISING DELIVERY RATE FOR WOMEN UNDER 18 YEARS



The outlier in the Eastern Sub-District in 2006-2007 has already been described earlier. In addition to this outlier, the data indicated that the general trend was that proportion of deliveries in the Eastern Sub-District remained higher than the rest of the Cape Metropole for the reporting period. Klipfontein Sub-District also demonstrated an increase in the proportion of deliveries for women under 18 years in recent years.

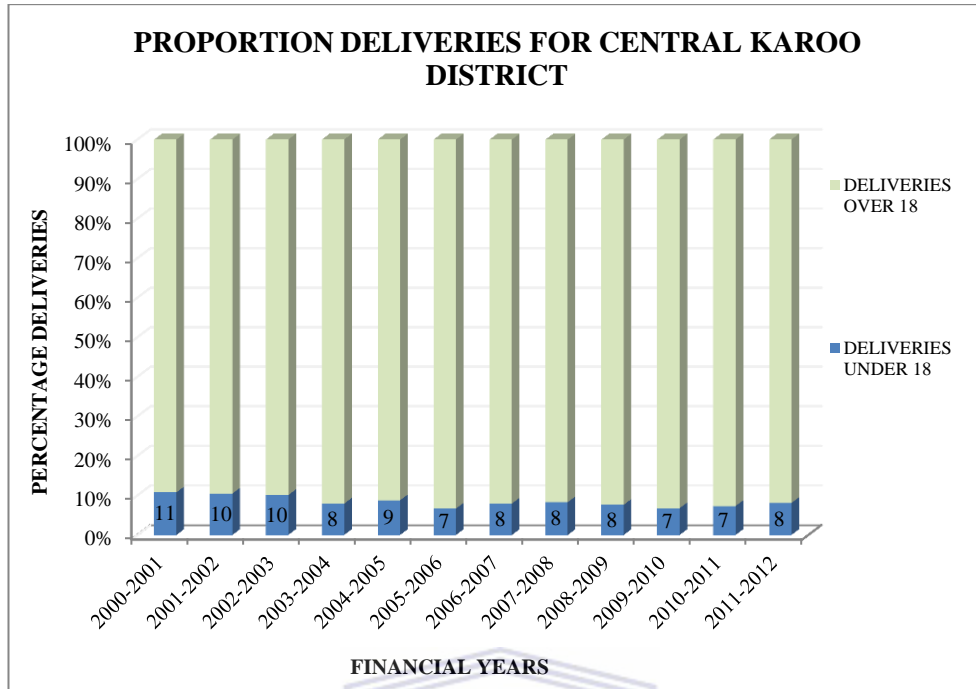
Central Karoo

Figure 21: DISTRICT ANALYSIS FOR WOMEN UNDER 18 YEARS: CENTRAL KAROO COMPARED TO THE WESTERN CAPE



The data revealed that Central Karoo had a low number of deliveries for women under 18 years. The fluctuations in the total number of deliveries per year had a different pattern compared to the Western Cape trend line. Figure 21 showed that the number of deliveries for women under 18 years decreased from 2000-2001 until 2005-2006. Thereafter, considerable fluctuation was observed.

Figure 22: PROPORTION DELIVERIES FOR CENTRAL KAROO DISTRICT



The proportion of deliveries for women under 18 years in the Central Karoo is notably higher than was observed in the Cape Metropole. However, the number of deliveries in the Central Karoo District is so low, that the absolute number of deliveries equates to less than 10 deliveries per year.

Even in the Prince Albert Sub-District where the proportion of deliveries to women under 18 years is relatively high, the data appeared skewed because of the small denominator of total deliveries in that Sub-District (Please see Figure 23).

Figure 23: PRINCE ALBERT SUB-DISTRICT

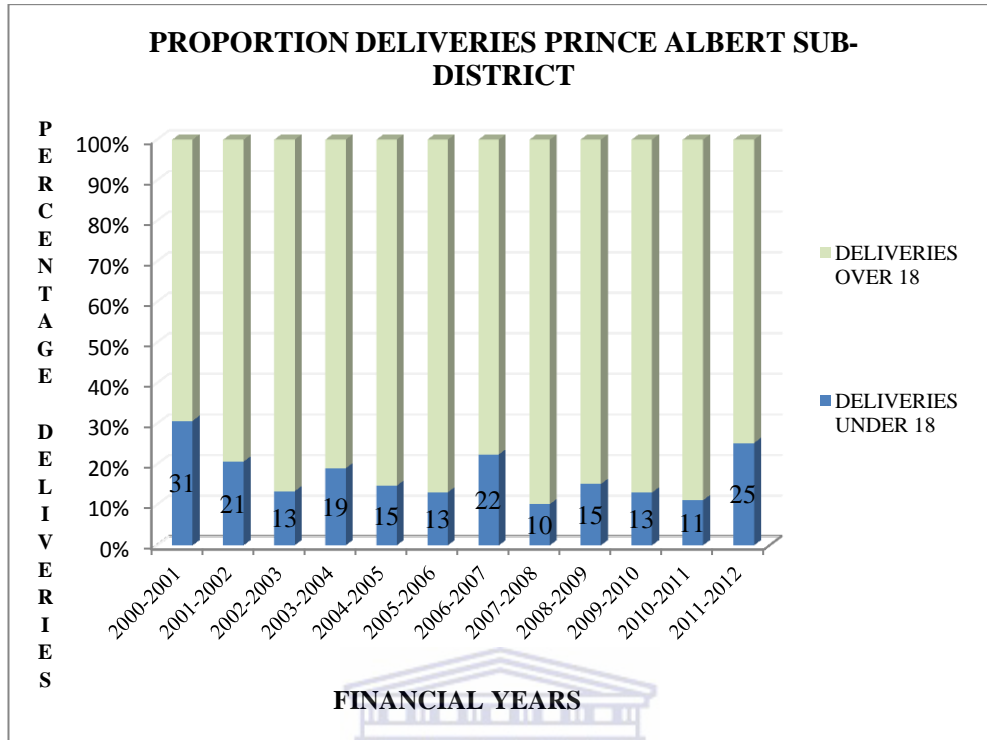


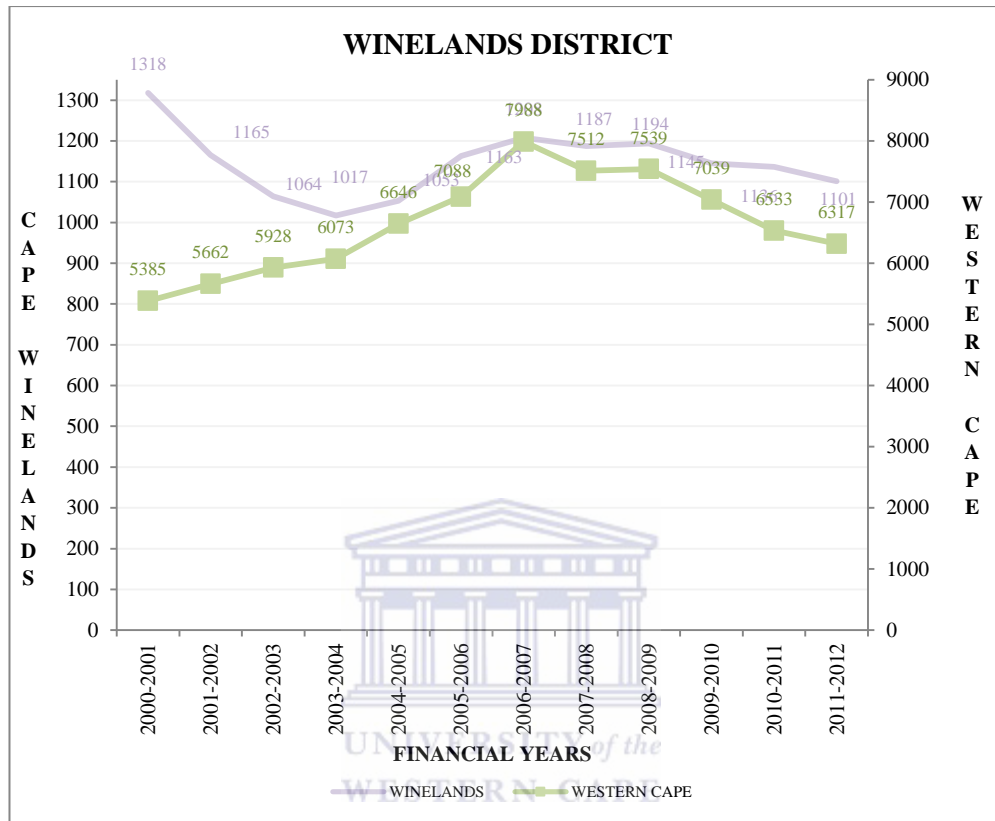
Table 1: DELIVERIES FOR PRINCE ALBERT SUB-DISTRICT

| | 2000-2001 | 2001-2002 | 2002-2003 | 2003-2004 | 2004-2005 | 2005-2006 | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 |
|----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Total Deliveries | 88 | 92 | 105 | 100 | 136 | 107 | 116 | 118 | 119 | 123 | 108 | 107 |
| Deliveries Under 18 | 27 | 19 | 14 | 19 | 20 | 14 | 26 | 12 | 18 | 16 | 12 | 27 |

Table 1 reveals that in 2011-2012 there were 27 deliveries for women under 18 years in Prince Albert equating to an average of less than 3 a month.

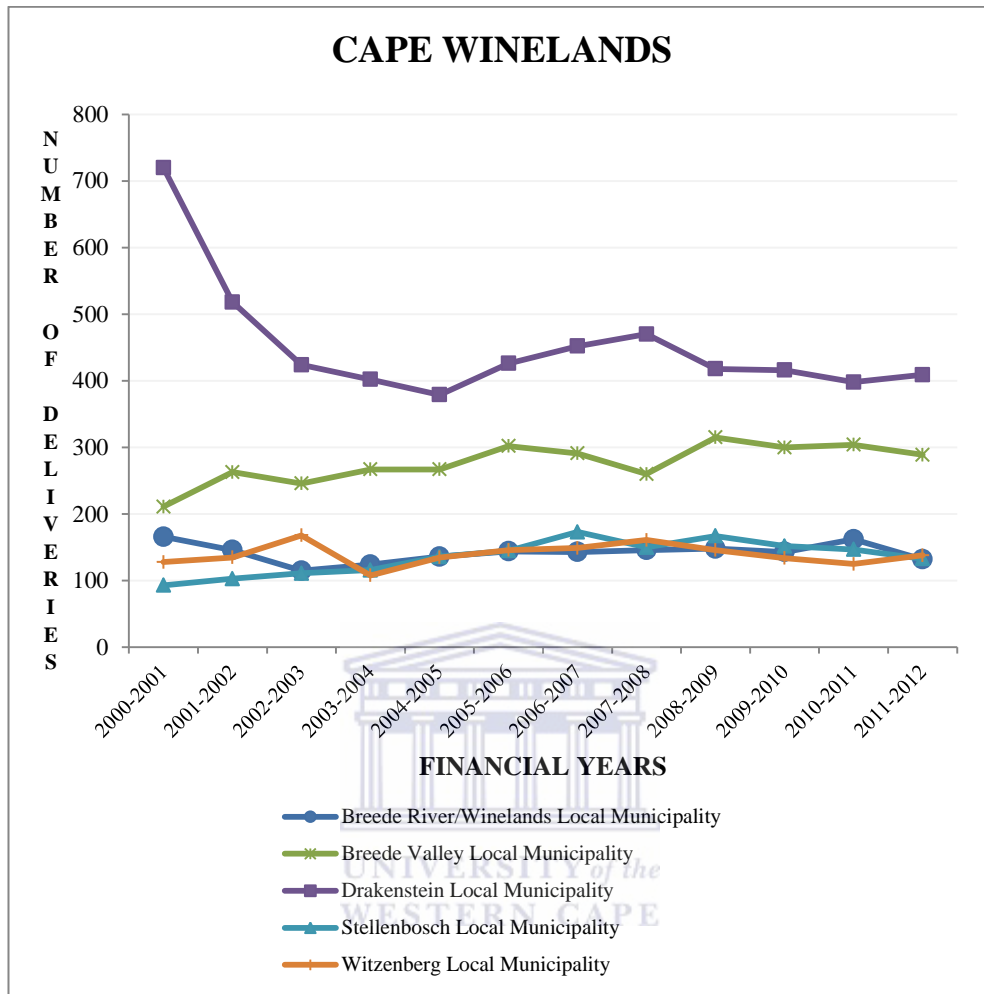
Cape Winelands

Figure 24: DISTRICT ANALYSIS FOR WOMEN UNDER 18 YEARS: CAPE WINELANDS COMPARED TO THE WESTERN CAPE



The analysis of the Cape Winelands District displayed in Figure 24 showed that there was a steep decline from 1318 deliveries to women under 18 years in 2000-2001 to 1017 in 2003-2004. From 2003-2004, the number of deliveries for women under 18 years plateaus.

Figure 25: CAPE METROPOLE: SUB-DISTRICT ANALYSIS FOR DELIVERIES FOR WOMEN UNDER 18 YEARS

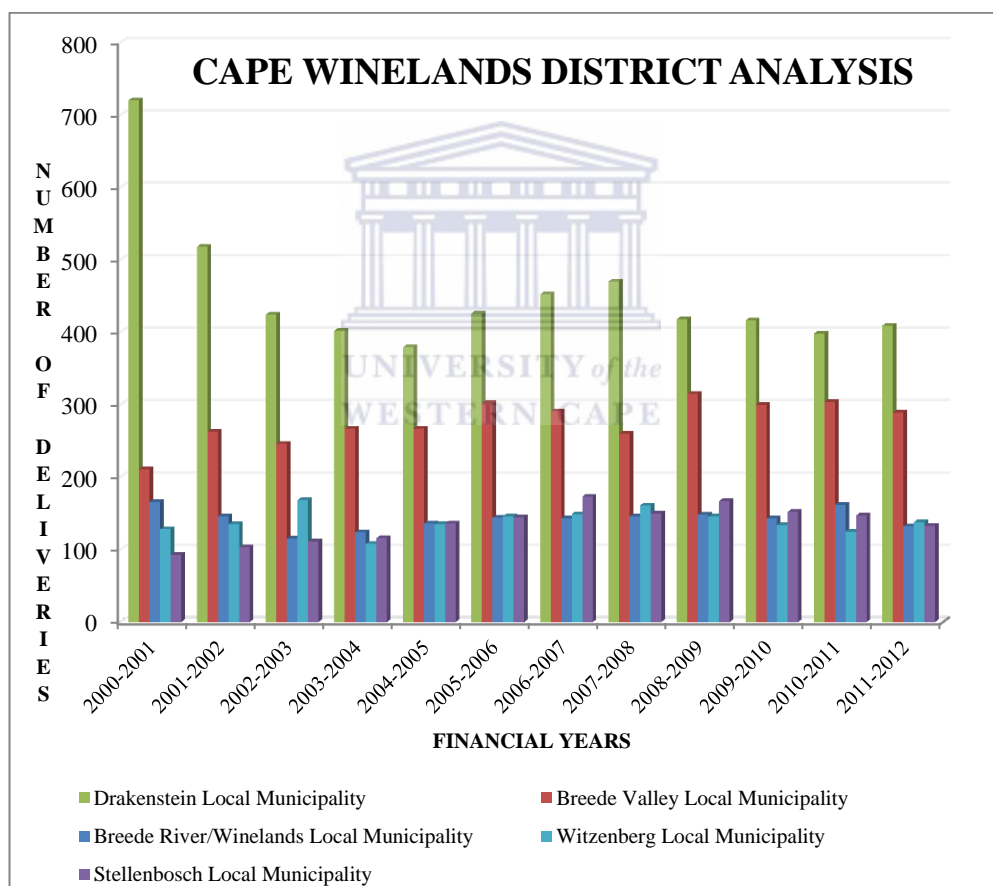


The Sub-District analysis demonstrated that the decline in deliveries for women under 18 years from 2000-2001 to 2004-2005 resulted from the decline in deliveries in the Drakenstein Local Municipality Sub-District. There was a slight increase in the number of deliveries between 2005-2005 and 2007-2008. The number of deliveries for women under 18 years plateaued between 2008-2009 and 2011-2012.

The trend in the Breede Valley Municipality indicated an increase from 2000-2001 to 2008-2009. From 2008-2009 to 2011-2012 the number of deliveries for women under 18 years plateaued.

The trend for Stellenbosch, Witzenberg and Breede River Municipalities showed an increase from 2003-2004 to 2005-2006 where after the number of deliveries for women under 18 years appeared to plateau.

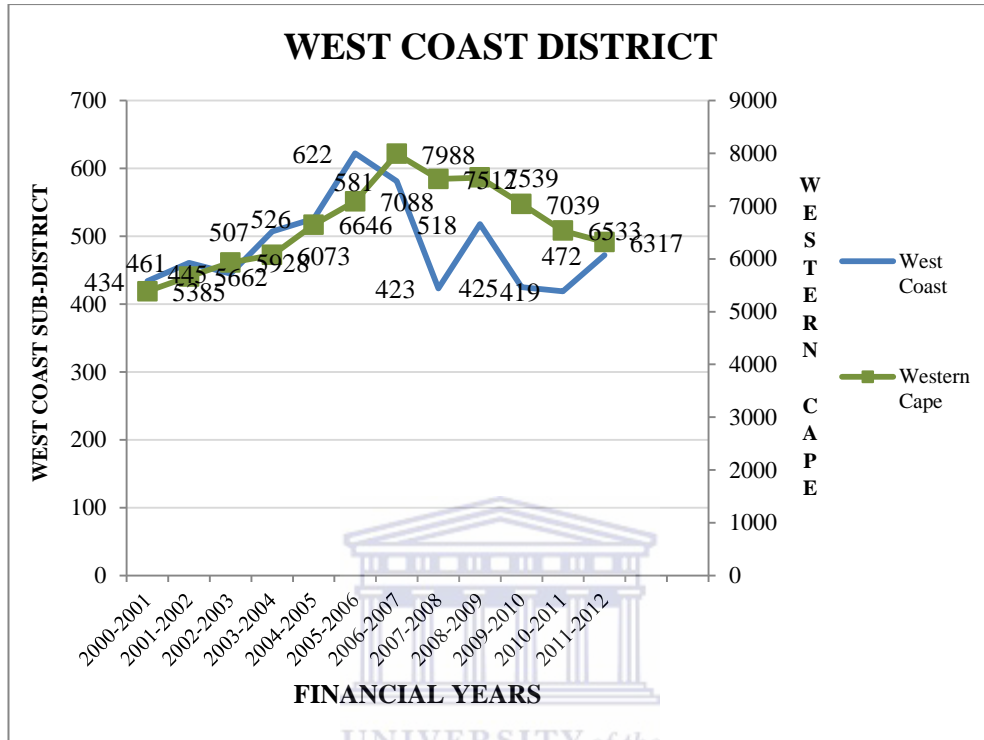
Figure 26: CAPE WINELANDS SUB-DISTRICT ANALYSIS



The burden for deliveries for women under 18 years of age were located in the Drakenstein and Breede Valley Sub-Districts.

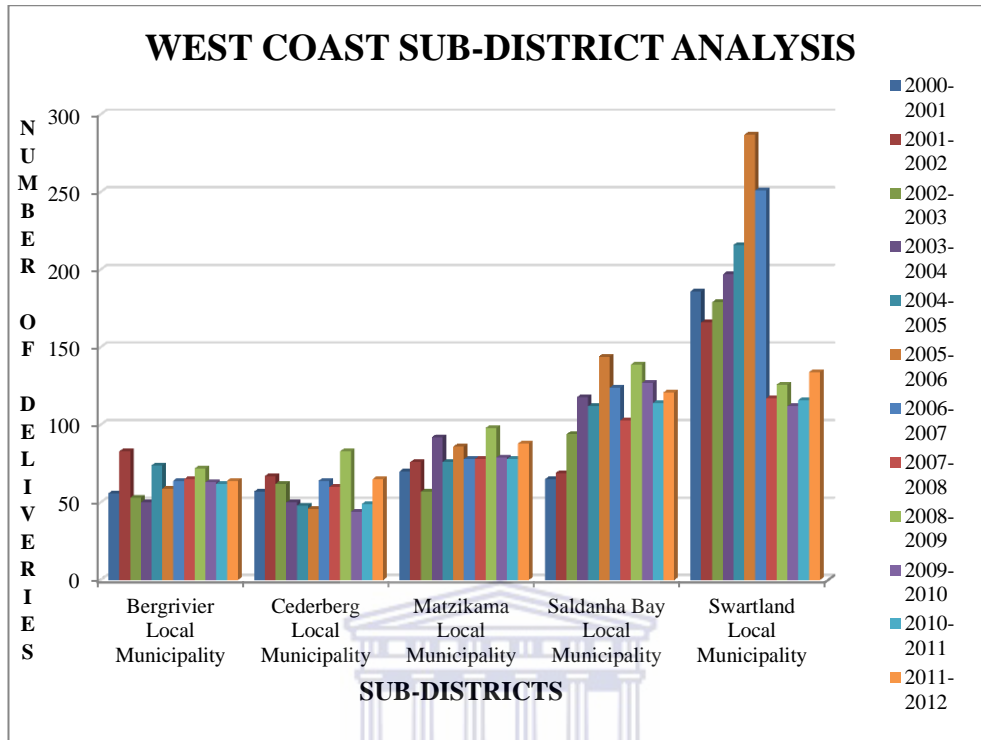
West Coast

Figure 27: DISTRICT ANALYSIS FOR WOMEN UNDER 18 YEARS: WEST COAST COMPARED TO THE WESTERN CAPE



An increase in the number of deliveries for women under 18 years in the West Coast District from 2000-2001 mirrored the pattern for the Western Cape. The peak in the West Coast Sub-District occurred in 2005-2006 at 622 deliveries for women under 18 years compared to the Western Cape Province which peaked in 2007-2008. The trends in the West Coast and Western Cape then diverged. In the West Coast, there was a steep decline between 2005-2006 and 2007-2008. The number of deliveries for women under 18 years of age then spikes in 2008-2009 where after it decreased in 2009-2010. The number of deliveries for women under 18 years increased between 2010-2011 and 2011-2012.

Figure 28: WEST COAST SUB-DISTRICT ANALYSIS



In the Saldanha Sub-District, the number of deliveries for women under 18 years of age increased from 2000-2001 until 2005-2006. From 2006-2007 to 2011-2012, there is fluctuation in the number of deliveries for women under 18 years. This observation will be addressed in the discussion.

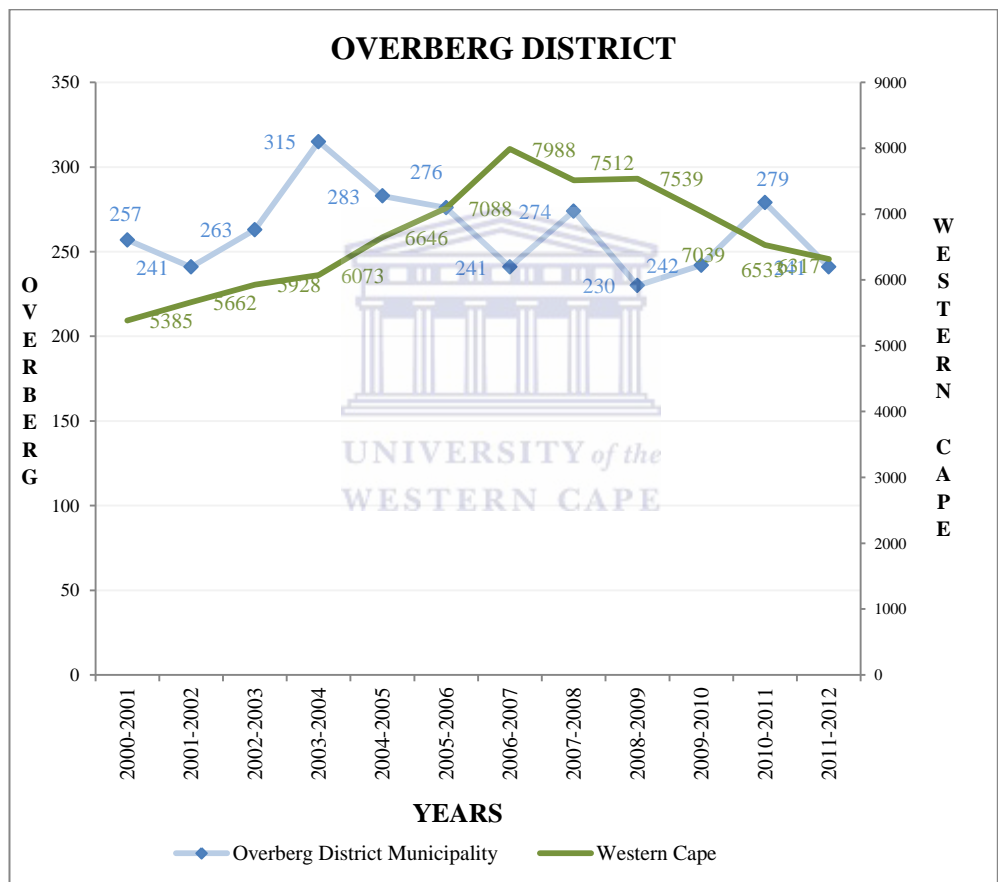
A striking decrease was observed in the Swartland Sub-District in 2007-2008. The decrease is both dramatic, and sustained from 2007-2008 until 2011-2012.

In the Cederberg Sub-District, there was a spike in 2008-2009, but this may have been exaggerated by the low number of deliveries for women under 18 years.

The dip in the Matzikama Sub-District 2002-2003 may also have appeared to be exaggerated due the low number of deliveries for women under 18 years.

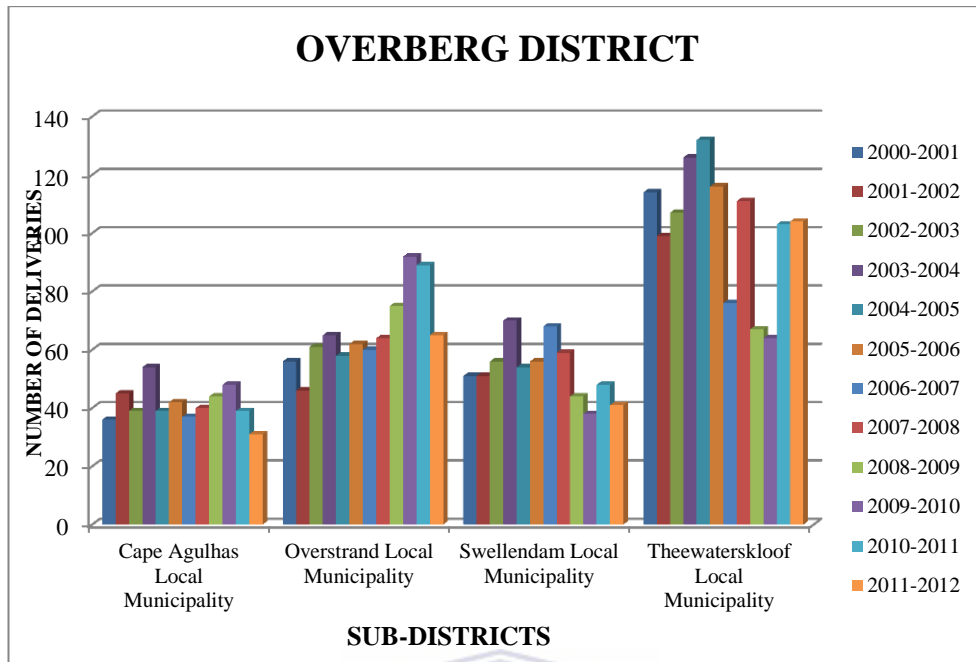
Overberg

Figure 29: DISTRICT ANALYSIS FOR WOMEN UNDER 18 YEARS: OVERBERG COMPARED TO THE WESTERN CAPE

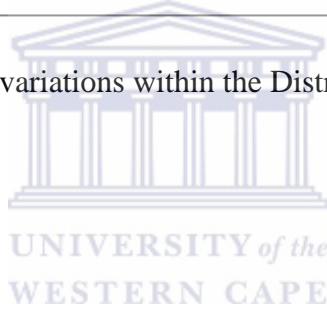


In the Overberg District, there were considerable fluctuations in the number of deliveries for women under 18 years over the reporting period. Three distinct peaks are observed. The highest of the peaks occurred in 2003-2004. The lowest of the peaks occurs in 2007-2008, followed by a peak in 2010-2011.

Figure 30: OVERBERG SUB-DISTRICT ANALYSIS

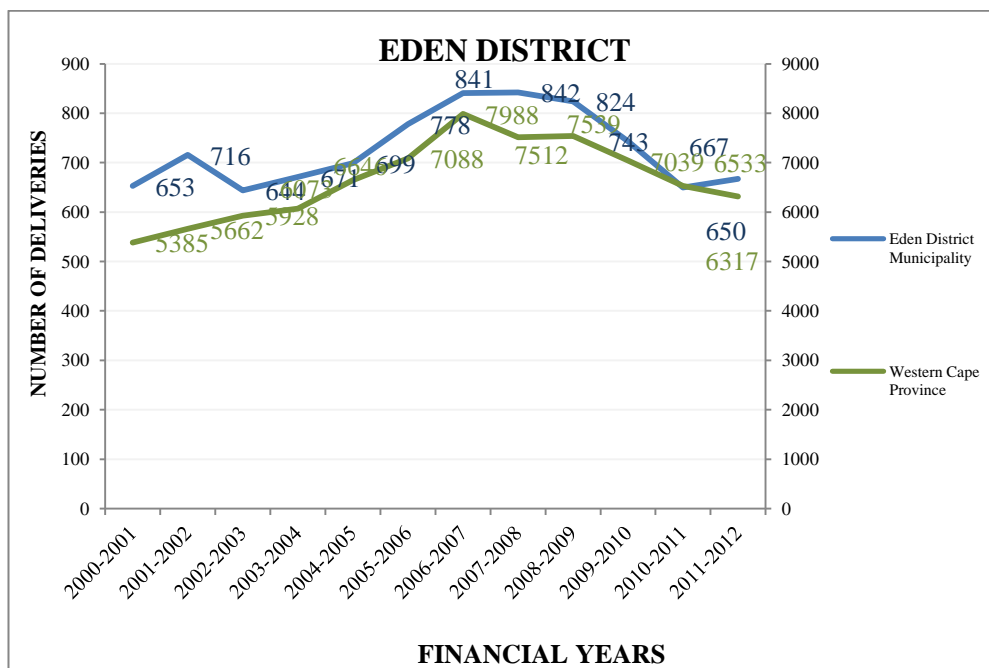


There were considerable variations within the District in terms of trends.



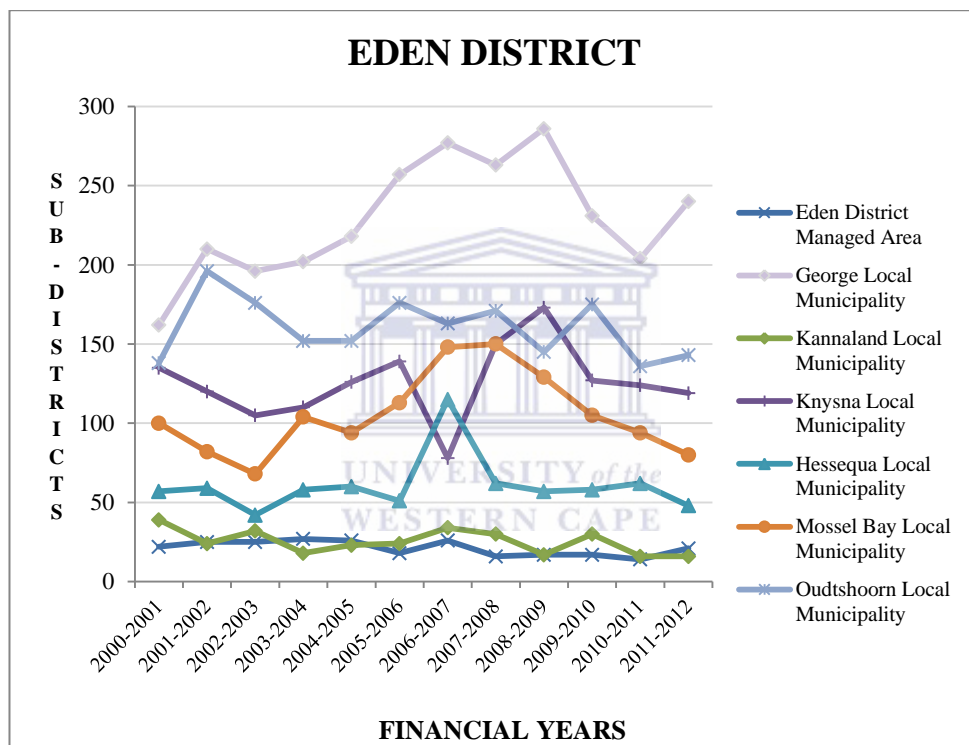
Eden

Figure 31: DISTRICT ANALYSIS FOR WOMEN UNDER 18 YEARS: EDEN COMPARED TO THE WESTERN CAPE



The analysis revealed two distinct peaks in the Eden District. The smaller of the peaks occurred in 2001-2002. There was a steep increase in the number of deliveries for women under 18 years between 2002-2003 and 2006-2007. There was a larger peak between 2006-2007 and 2008-2009. Figure 31 showed a decline in the number of deliveries for women under 18 years from 2008-2009 and 2010-2011.

Figure 32: EDEN DISTRICT - SUB-DISTRICT ANALYSIS



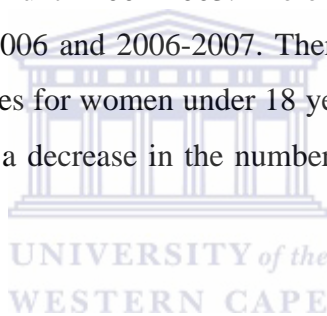
In the Eden District, there was considerable variability between Sub-Districts.

George Sub-District carried the highest burden for deliveries for women under 18 years. The pattern in the trend for George Sub-District most closely approximated the pattern for the Eden District. An upward trend was noted from 2000-2001 to 2008-2009, with three peaks over the course of the

reporting period. There was a noticeable decrease in the number of deliveries for women under 18 years from 2008-2009 to 2010-2011.

The overall trend for Oudtshoorn Sub-District showed one distinct peak in the number of deliveries for women under 18 years in 2001-2002, followed by a fluctuating pattern in the number of deliveries for women under 18 years.

In Knysna Sub-District, there were marked fluctuations in the data. A decrease in the number of deliveries for women under 18 years was observed from 2000-2001 until 2002-2003. There was a distinct decrease in the data between 2005-2006 and 2006-2007. There was a marked increase in the number of deliveries for women under 18 years from 2006-2007 until 2008-2009, followed by a decrease in the number of deliveries for women under 18 years.



The data for Hessequa Sub-District shows a fairly stable trend, except for a peak in 2005-2006 which appeared to be an outlier in the data.

Kannaland Sub-District had a pattern of mild fluctuations in the number of deliveries for women under 18 years.

Hessequa Sub-District had a low burden of deliveries for women under 18 years. The trend was fairly stable with marginal fluctuations from year to year.

Table 2: EXAMPLE OF DATA INTEGRITY QUESTIONS – SWARTLAND SUB-DISTRICT

| SWARTLAND MUNICIPALITY | 2000-2001 | 2001-2002 | 2002-2003 | 2003-2004 | 2004-2005 | 2005-2006 | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 |
|-------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| TOTAL DELIVERIES | 1181 | 1116 | 1106 | 1182 | 1221 | 1248 | 1307 | 1206 | 1194 | 1267 | 1287 | 1294 |
| DELIVERIES FOR WOMEN UNDER 18 | 186 | 166 | 179 | 197 | 216 | 287 | 251 | 117 | 126 | 112 | 116 | 134 |

The data for 2004-2006 to 2006-2007 raised concerns about the data integrity. One would question whether the number of deliveries represented outliers, or whether they were indicative of data reporting errors. This will be explored further in the discussion.

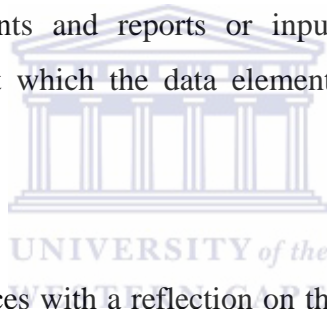
Table 3: DATA INTEGRITY FOR DRAKENSTEIN

| DRAKENSTEIN MUNICIPALITY | 2000-2001 | 2001-2002 | 2002-2003 | 2003-2004 | 2004-2005 | 2005-2006 | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 |
|-------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| TOTAL DELIVERIES | 3426 | 3413 | 3295 | 3606 | 3626 | 3845 | 3977 | 4209 | 4170 | 4393 | 4308 | 4368 |
| DELIVERIES FOR WOMEN UNDER 18 | 720 | 518 | 424 | 402 | 379 | 426 | 452 | 470 | 418 | 416 | 398 | 409 |

The 2000-2001 data for the Drakenstein represents a significant outlier when considering the rest of the data range. From a health information management perspective, it would be important to determine if this was a data recording error or a true spike in the number of births to women under 18 years. Such an investigation is beyond the scope of this mini-thesis but the broader issue of data quality will be addressed in the discussion.

CHAPTER 6: DISCUSSION

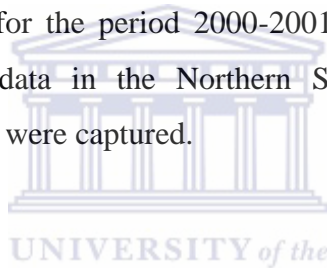
The analysis of the data for deliveries revealed several matters for consideration. The discussion and interpretation of the findings are informed by my experiences as a programmes manager at Sub-Structure level and a manager of a health facility in the Western Cape DoH. These experiences have afforded me the opportunity to have insights into the service realities and pressures currently experienced within the DoH and to have participated in or observed the decision-making and priority setting processes within the department. The discussion also reflects input from other managers within the DoH on earlier drafts of the thesis. In addition, the findings have been interpreted in relation to the literature – including grey literature in the form of government documents and reports or inputs from monitoring and evaluation workshops at which the data element for deliveries under 18 years has been discussed.



The discussion commences with a reflection on the quality of the data. The trends for the deliveries for women under 18 years will then be examined. Health service managers have held a suspicion that seasonal trends in the births to women under 18 years existed, and the discussion will highlight any seasonality in the data. Because of the pervasive nature of the structural inequity inherited through the apartheid system, and the unfair and disproportionate impact of this inequity on the health outcomes of communities in the Western Cape, the DoH is committed to improving access to health services. This issue is not only explicitly addressed in the DoH *APP* and *Healthcare 2030* (DoH, 2013a, DoH, 2013b) but is regularly discussed in management meetings in the department. Careful consideration has therefore been given to exploring what insights this data shows about access to health services in the province. The discussion will then shift to a reflection on the health seeking behaviour. The discussion will be concluded with a reflection on the limitations of the study.

Data Quality

One of the primary shortfalls of secondary data analysis centres on concerns regarding the validity and the reliability of the data. The validity of the data would be affected by systematic errors in the way data are captured and collated. The data presented in this study represents all deliveries to women under 18 years in the Western Cape, thereby ensuring high validity of the data. The caveat to this would be that not all women under 18 years would deliver in public sector facilities. For example, women who delivered in non-health facilities such as their homes or women who delivered in private hospitals would not be represented in this data. The analysis of the dataset for deliveries for women under 18 years indicated that the validity of the data was compromised for the period 2000-2001 and 2001-2002. This is evidenced by missing data in the Northern Sub-District in the Cape Metropole where no data were captured.



One could argue that the missing data for Northern Sub-District was indicative of weak health information management systems. From a systems perspective, the data validation rules should have alerted Sub-District managers that data had not been submitted or captured for 2 consecutive financial years, or that the data in the data repository had become corrupted for that period. In this respect, the research findings resonate with the literature regarding the shortcomings of routinised data.

It was not possible to accurately assess the validity of the data for the remaining period from 2002-2003 until 2011-2012 without having compared the source documents to the data reported on Sinjani. By comparing the reported data to the source documents, it would have been possible to understand the extent of duplicated records, data omissions and inaccurate transcription of data. However, this type of analysis was not possible within the time frame and resources available for this mini-thesis.

The only way to accurately determine the quality of the data, or to clean the data by correcting data capturing errors or to capture missing data, would be to go to each facility in the Province and to study the registers in each facility. While this exercise may enrich the analysis of deliveries for women under 18 years in the Province, the trade-off in time and person power would not warrant any improvement in the data quality gained through such an exercise. Further motivation for not checking the facility data would be that the data drawn from the Department's official data repository directly represents what has been signed off by the Department of Health. As such, it reflects that the Department has accepted the data for the purpose of decision-making and resource allocation.

The data analysis for this mini-thesis has unearthed gaps in the data quality. It is acknowledged that it would be a monumental task to retrospectively address these gaps. What would be required, in terms of the current data sign-off policy, is that the Provincial Information Management office should bring the queries to the attention of the District Offices. The District offices should then engage the facilities in a process of investigating the queries, explaining any outliers, or correcting the data on the official data collection system. It is important to note that the process to improve data quality in the Province was only introduced in 2012. The data used in this analysis precedes the introduction of strategies to improve data quality. An area for future research would therefore be a study to review changes in the quality of data over time, to determine the impact of the data improvement process in the Department.

Fluctuations are considered a normal phenomenon in trend series analysis. The analysis for all districts and sub-districts illustrated that time series were marked with fluctuations. In sub-districts with smaller populations, the impact of the fluctuations on the proportions of deliveries for women under 18 years of age relative to the total number of deliveries was greater than for sub-districts with larger populations.

The review of the data for all districts for the number of deliveries for women under 18 years suggested consistency in the range of the data within most Sub-Districts. During the analysis of the data at Sub-District level a few outliers were observed. Without access to the source documents – in this case the paper-based registers, or any additional relevant information that could inform an understanding of the local context or any external factors that may have influenced the situation at the specific points in time in question, it would be difficult to determine whether or not these cases reflect true outliers, or whether there were significant problems with the capturing of the data. Because secondary data does not provide an opportunity to interrogate the data further, the opportunity to understand what the outliers represent is lost. There is therefore uncertainty regarding the veracity of the data. Two examples are presented to illustrate this point. Since the examples in Northern and Eastern Sub-Districts were discussed previously, this section will focus on examples from the rural districts.



Focussing on the data for the deliveries for women under 18 years in the Swartland Sub-District (please refer to table 2), the average number of deliveries per year (excluding 2005-2006) is 164, with a range from 112 to 216. The number of deliveries for 2005-2006 at 287 deliveries represents an increase of 75% (acknowledging the wide dispersion in the number of deliveries from the mean for the rest of the reporting period). Further analysis would be required to understand what the cause of the increase was for 2005-2006. Using the average as the locus of analysis provided a different perspective compared to when the data were viewed visually as a trend line. From the perspective of the trend analysis, the data showed that the number of deliveries increased at a steady rate until 2005-2006, reaching a plateau in 2005-2006 and 2006-2007 and 2007-2008. A sudden and dramatic decrease was observed from 2007-2008 that was sustained over time. It is not possible to determine whether the high number of deliveries in 2005-2006, 2006-2007 and 2007-2008 reflected an actual increase in the

number of deliveries, or whether there were problems with the data collection.

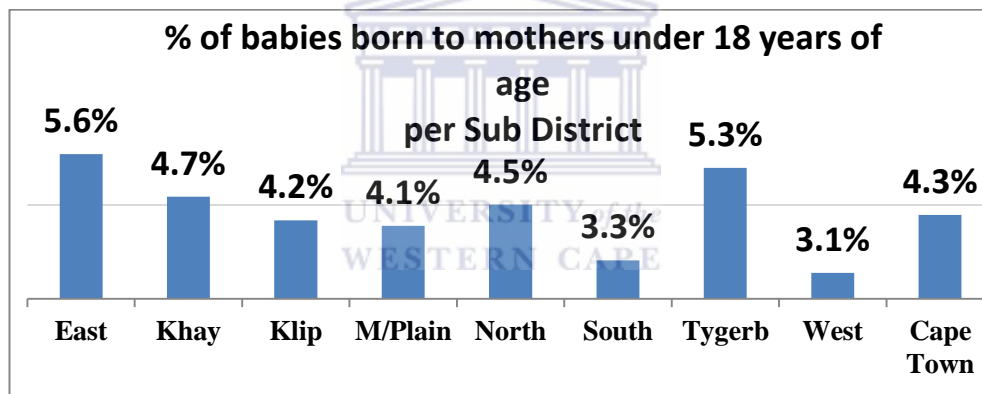
Similarly, the data for the Drakenstein Sub-District for 2000-2001 would need to be investigated. It must be noted though that even if it was discovered that there was a problem with the data, the data could not be retrospectively corrected as the information management system in place in the Western Cape involves that data are “locked down” after a period of time.

Health managers, clinicians and programme managers lose confidence in the data when concerns about the data accuracy are identified. Previously, it was not uncommon for contradictory data for the same indicators to be presented in different fora, which provided the context for the DoH to rationalise data elements in order to improve the accuracy of available data. These examples corroborate the findings in the literature regarding the administrative burden of maintaining accurate health information. A complex web of interactions is required to ensure that data are trustworthy. One would need to adopt a systematic approach to ensure that the staff capturing the data are trained to understand the data elements, the data collection tools and the validation rules in order to ensure that data are captured and transcribed correctly. The data collection tools should also be user-friendly to facilitate accurate data recording. In the context of the Western Cape Province, the benefits and risks associated with the widespread use of paper-based registers, especially in the district health sphere, and the transition period to full implementation of electronic-based systems, are issues that need to be carefully managed. The final consideration is that data validation has to happen at every tier of the information management system, in real time, in order to ensure that the data that has been locked-down is accurate and complete.

The reliability of the data refers to the repeatability of the data. Because sampling was not used in this study, and the cohort in the time series analysis should reflect the total population of women under 18 years who delivered babies, the reliability of the data should be reasonably high.

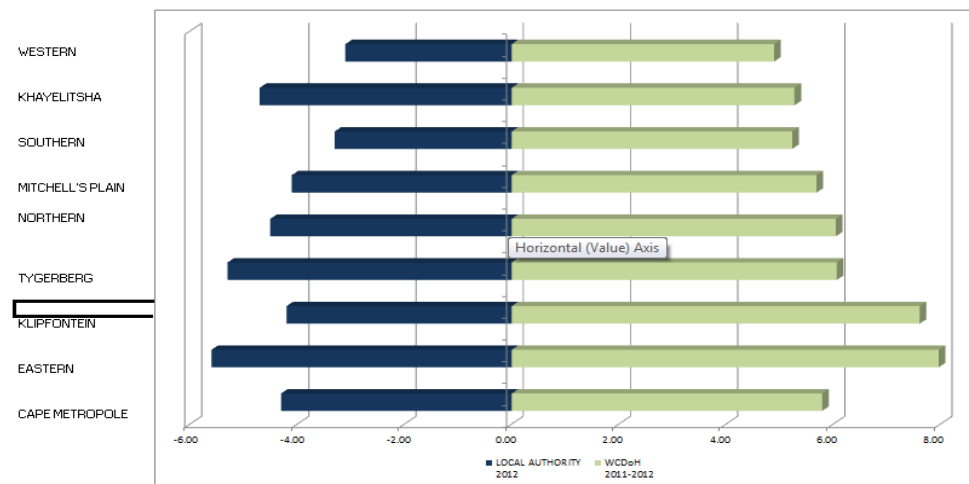
One of the areas of concern in analysing the data is possible over-reporting of the proportion of deliveries to women under 18 years on the Western Cape DoH data drawn from the Sinjani information management system compared to the data reported by the CoCT in its report to the Health Portfolio Committee.

Figure 33: CoCT ANALYSIS OF BABIES BORN TO MOTHERS UNDER 18 YEARS



Source: City Of Cape Town. Directorate: *City Health (2013): Report to the Health Portfolio Committee*

Figure 34: COMPARRISON BETWEEN THE LOCAL AUTHORITY AND WCDoH DATA



The 2013 report to the Health Portfolio Committee indicated that the percentage deliveries to women under 18 of age were considerably lower than was found for the Western Cape DoH data. In discussion with the Women's Health Programmes Manager, no definitive reason could be suggested to explain the significant difference between the CoCT data and the DoH data. One factor that needs to be considered is that the CoCT reports data based on calendar years and not the financial period of 1 April to 31 March, as adopted by the DoH. Another factor is that the data for the CoCT used a different data source for this analysis. The CoCT uses the *Live Births* reporting system which incorporates data from the DoH as well as private hospitals and data from the Department of Home Affairs. It has been documented that there has been significant under-reporting of births from Provincial Health facilities, into the CoCT birth registration system, which may explain the discrepancy (Personal Communication with a Senior Manager, Western Cape DoH, 01/12/2013).

The concerns regarding the quality of the data is not limited to the Western Cape DoH. The National Health Department invited all facility, nursing and information managers in the Province to an urgent workshop in November December 2013 to address the problem of incomplete and inaccurate data.

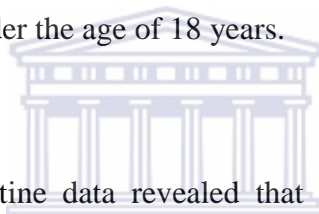
Components of a Time Series

Wegner (2007) identified four components of a time series: Trend, Cycles, Seasonality and Irregular Fluctuations. From a public health perspective, irregular fluctuations have limited value because it is difficult to plan policies and structured interventions for events that occur randomly. For health managers, it would be important to remain mindful that systems are necessary to detect unexpected spikes in Deliveries for Women under 18 years of age and ensure that appropriate health services are available to cater for this need, but no additional actions might be taken if an increase is not

sustained. A limitation of this analysis is that it would be difficult to retrospectively account for the underlying causes for any outliers that are observed in the data, given the extent of aggregation of data to sub-district and district level. With respect to this analysis, cycles of increases and decreases were not observed. The reasons for these cycles could not be determined because a time series analysis focuses on one variable only, and therefore causality cannot be determined.

Trend for Deliveries in Facilities for Women Under 18 Years

One of the study objectives was to determine if there is a trend in the deliveries for women under the age of 18 years.

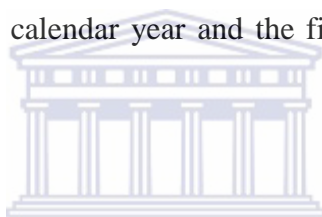


The analysis of the routine data revealed that there was a considerable increase in the number of deliveries to women under the age of 18 years in the Western Cape from 2000-2001 until 2006-2007. It must be noted that the completeness of the data up to 2003 is questionable. Despite this, the general trend is an upward trend until 2006-2007. Thereafter, the trend for deliveries for women under the age of 18 decreases notably. Due to the level of aggregation of the data, and the paucity of the available demographic information at district and sub-district level, it was not possible to analyse the trend in births to women under the age of 18 years of age in relation to population growth. Any area for further analysis would therefore be to plot the absolute number of deliveries to women under 18 years against the population growth in general and age specific bands and to compare the trend line. There was a steep decrease in the absolute number of deliveries.

The DoH conducted an internal Monitoring and Evaluation session in quarter 3 of 2013-2014. Senior managers, Family Physicians, Health Programmes managers, public health specialists and general specialists from

the rural and urban districts were invited to participate in the review of the Department's performance on key indicators. The review session provided an opportunity to test whether the findings in this study were corroborated during the discussions with a range of Departmental stake-holders. Participants were divided into working groups and were tasked with reviewing the data and providing direction in terms of the appropriate strategic responses.

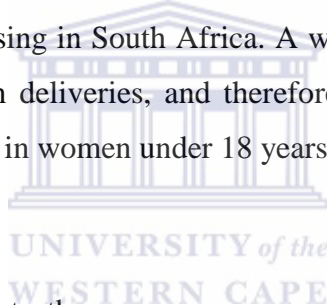
The delivery rates reported at the Western Cape DoH performance review were very similar to the proportion of deliveries for women under 18 years demonstrated in this analysis. The most likely reason to account for marginal discrepancies is that the data used for the WCDoH performance review was for the 2012 calendar year and the first 6 months of the 2013 calendar year.



The findings reported in this thesis – that teenage deliveries have decreased in recent years, in contrast to widespread perceptions of an out of control increase in teenage pregnancies - were supported by the data presented at the official Western Cape DoH performance review. During the discussion at the performance review, the Women's Health Working group agreed unanimously that deliveries to women under 18 years are decreasing and thus not a public health and resource allocation priority per se, relative to other sexual and reproductive health issues that could also influence teen pregnancy rates and outcomes (for example, scale up of family planning services, termination of pregnancy services, implementation of recommendations to reduce maternal mortality). Further, the group discussed that existing sexual reproductive health services should be strengthened to ensure that young people had access to a wider range of family planning methods and barrier methods in an environment that is sensitive to the unique needs of young people. Particularly, health managers were encouraged to develop local arrangements with schools as entry into schools remains a challenge at a political level. This vignette illustrates the

value of accurate and timely information for the basis of decision-making based on the local context and available resources. The health managers in the Western Cape have committed to dedicate resources to strengthen existing sexual reproductive health services and increase the available contraceptive methods for youth.

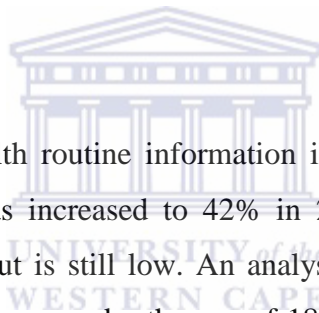
The results of the mini-thesis analysis demonstrated that the Western Cape has experienced a decline in the rate of deliveries for women under 18 years every year since 2006-2007. The absolute numbers of deliveries under age 18 in 2011 (n=6317) was 6.5% higher than in 2002 (n=5928), while the total population of the Western Cape increased by 19.4% over the same period. This is consistent with recent findings by Morrell *et al.* (2012) that teenage pregnancies were decreasing in South Africa. A word of caution is that this analysis focused only on deliveries, and therefore no conclusions may be drawn about pregnancies in women under 18 years.



The data were presented to the programme managers for Women's Health as well as Youth and Adolescent Health and School Health in order to determine the extent that the findings regarding teenage pregnancies were aligned to the perceptions of programmes managers in the Province. The dialogue remarked that a noticeable decrease was observed in the number of deliveries for women under 18 years from 2006-2007. The reasons for the decrease are not clear because the DoH did not implement specific strategies to address unplanned or unwanted pregnancies during this period, nor were policy changes introduced that resulted in changes to the family planning methods. There were no other wide scale interventions introduced by other government departments that might account for the decrease in deliveries to women under the age of 18 years.

The findings of this study contrast with the statistics provided by the WCED who reported a 26.65% increase in the number of pregnant learners in

schools from 2009 until 2013 (WCED, personal communication February 2014 unpublished data, my analysis). However, the Department of Health data shows almost 3 times as many women under 18 years having delivered babies than the numbers reported to be pregnant by the WCED reported learners who have been pregnant. This variation could reflect either under-counting in the WCED data, or be indicative of high numbers of teenage women leaving school early and therefore not forming part of the cohort of pregnant learners, or it may be suggestive that many learners do not report that they are pregnant. The significant increase in the number of reported pregnant learners in school may also paradoxically indicate greater access to schooling, or that the national policy encouraging pregnant learners to remain in school rather than dropping out is succeeding. Further research and analysis are needed.



The Department of Health routine information illustrated that the Couple Year Protection Rate has increased to 42% in 2011-2012. Contraceptive coverage is improving but is still low. An analysis of the extent to which this would impact on women under the age of 18 years was not possible in the timeframe available for this thesis. The preliminary analysis of the TOP data (appendix 67) does not suggest that utilisation of TOP services increased over the period 2007-2008 to 2011-2012. The provisional conclusion is that a decrease in the number of deliveries for women under 18 years is not attributable to an increase in TOP services uptake. However, further research would be necessary before any firm conclusions could be drawn.

In concluding this discussion on the trends, it would appear from the data that the number of deliveries for women under 18 years of age is decreasing; and because the total number of deliveries has remained stable, the proportion of women under 18 years has also decreased. The reasons for the decrease are not well understood. This could be an area for future research.

A second consideration is that the conundrum posed by the paradox in the apparent increase in public concern about teenage pregnancies, in the context of a decrease in the actual rate of teenage deliveries over the past 5 years and very little absolute change since 2000, has not been fully addressed. Many assumptions can be made about the role of culture or religion, the role of political agendas, the contribution of socio-economic concerns, concerns regarding the sexual reproductive rights and the role of normative gender constructs and values of communities. However, the Primary Health Care philosophy suggests that that the range and key aspects of public concerns can only be determined in dialogue with communities and any strategies to mitigate unintended teenage pregnancies should be developed and implemented in partnership with communities.

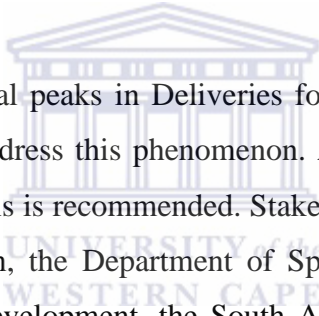
Seasonal Variations in Deliveries in Facilities for Women Under 18 Years



The data for Deliveries in facilities for women under 18 years illustrates three distinct peaks that are repeated across the reporting period. The first one occurs between August and September, and a smaller peak occurs between November and January, and again in March. The first peak correlates with the summer holidays over the Christmas period in December and January nine months earlier. The smaller peak correlates with the Easter holiday break and then soon after, the mid-year holidays in June. The first two peaks are considered to be festive holidays in the South African cultural context. The seasonal peaks confirm a concern that health managers in the Province have had about the need to strengthen health promotion and education to young people about the consistent and appropriate use of condoms and family planning methods.

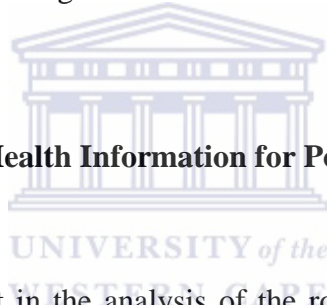
There are complex socio-economic and cultural factors that underlie the seasonal peaks with deliveries to women under 18 years that could explain

the peaks observed in the data. The contributing factors that could account for the increases in deliveries over the school holidays include the lack of supervision during the holidays while parents are at work. Other factors may relate to increased alcohol and substance use over the holiday period. There is a high level of acceptance of alcohol and substance use at community level. Another factor to consider is the pervasive levels of crime in South African communities. There is a perception that it is not safe for young people to be outside of their homes because the risk of being harmed, raped or assaulted is so high. The risk of being a victim of violent crimes therefore acts as a deterrent to young people participating in sports and other structured programmes and extramural activities that may have acted as a buffer for unplanned pregnancies in this age group.



The tendency for seasonal peaks in Deliveries for Women under 18 years highlights the need to address this phenomenon. An intersectoral approach operating on several levels is recommended. Stakeholders would include the Department of Education, the Department of Sports and Recreation, The Department of Social Development, the South African Police Service and the Department of Health. In rural districts, additional stakeholders might include the Department of Agriculture and the Department of Labour, as there may be additional problems associated with young people leaving schools early in search of work. The first level of intervention would be to review existing policies and legislation in order to strengthen the policy framework and to clarify the roles and responsibilities of each agency with respect to preventing unintended pregnancies in teenage populations. The second level of interventions would include the development and implementation of structured programmes in communities that provide a safe environment for young people to participate in sport and learn life skills in order to lower the risk of unintended pregnancies. The role of communities both in shaping and implementing strategies to address seasonal peaks in deliveries for women under 18 years is considered to be a critical leverage point that will determine the impact of these interventions.

For the DoH specifically, there appears to be a need to strengthen sexual reproductive health services for young people. An issue that is frequently discussed is the need to establish youth friendly family planning services. It is recognised that the cultural beliefs of staff and stigma associated with the sexual behaviour of young people may act as a barrier to young people seeking health services. In addition, the provision of emergency contraception in the Cape Metropole is recognised as an area that requires strengthening. Sexual reproductive health services would extend from access to family planning methods, to access to safe termination of pregnancy services to health promotion regarding safe sexual health choices. The Western Cape DoH has also in recent years explored to what extent sexual reproductive health services are mainstreamed and integrated into the comprehensive package of health services available to communities.



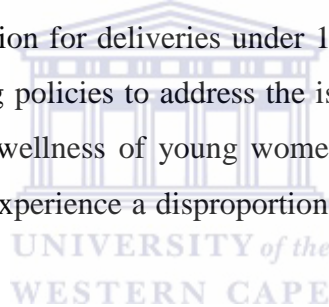
Usefulness of Routine Health Information for Policy Development

The most striking deficit in the analysis of the routine analysis is that the data presented cannot be disaggregated further for the period under investigation. It is thus impossible to determine the profile of women under 18 who experience pregnancies. This is significant from a policy perspective because the social, health, and economic consequences of an unintended pregnancy on a 14 or 15 year old are likely to be significantly different to the consequences for a 17 year or 18 year old.

Further, routine health data do not allow an analysis of race distribution of deliveries for women under 18 years. The reason that Sub-District ratios were not used as a proxy for race distribution in this analysis was that in the urban district, it is thought that the sub-district level is too large to make reliable assumptions about communities living in that geographic area. The DoH has therefore introduced the electoral ward as the smallest unit of planning as it moves towards *Healthcare 2030*. Sub-districts in the rural

districts and much more sparsely populated and therefore the Sub-District will be the smallest unit of planning. The SSA *Census 2011* report did not provide data disaggregated to district or sub-district level, and the projected population estimates based on the 2001 census used by the DoH previously were found to under-estimate the true population growth.

The socio-political consequences of apartheid in South Africa are pervasive and continue to manifest in the form of differential risks for undesirable outcomes based on racial grounds. Certain groups, including Coloured and Black teenagers therefore continue to face greater risks of unintended adolescent pregnancies. This demonstrates that policies intended to address social inequity are critical. It is argued, based on the findings presented here, that the routine information for deliveries under 18 years is insufficient for the purpose of informing policies to address the issue of equity in terms of the health outcomes or wellness of young women in Coloured and Black communities who may experience a disproportional risk of experiencing an early pregnancy.



Reflecting upon the Western Cape DoH report *Rationalization of the Minimum Set of Performance Indicators for 2013/2014* (undated), the findings of this study resonate very strongly with the findings of the Departmental situational analysis. It is disconcerting that in order to build a profile of the cohort in an attempt to understand how adolescents are affected by pregnancy, one would need to go to each facility and study the birth registers to determine population based information. This would seem to be a highly inefficient, impractical and arduous process considering the number of Midwife Obstetric Units and hospitals in the Province. One of the contributing causes for this is the historical fragmentation of data collection tools and systems in the Province. To illustrate this, Midwife Obstetric Units would collect information about births in a facility using a birth register, but submit aggregated tick sheets to the Provincial office or capture aggregated data directly onto the Sinjani system on a monthly basis. In hospitals

however, electronic patient administration systems have been in place for years that enables the integration of patient level and population level analysis.

An issue that causes concern for health managers is the impact of in-migration for health care. In-migration has particular consequences in terms of resource allocation and potential under-funding of services. Because of the level of aggregation of the data, it is not possible to determine to what extent young people from other provinces are utilising services in the Western Cape. This type of information would be available at facility level, but is not available at the Provincial level. The planned introduction of a ward-based system of primary health care delivery in South Africa will help to address this challenge.

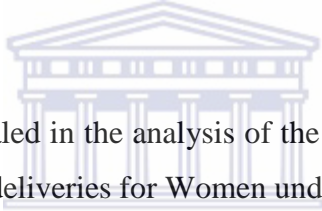


A concluding reflection about data management in the Western Cape DoH, is that it must be emphasised that significant gains have been made to improve the quality of data in the Province. Based on an understanding of the local health service, it is proposed that the quality of health data can be improved and the improvements sustained if the following recommendations are considered:

1. Ensure the clinical staff responsible for completing antenatal registers and the Prevention of Mother To Child Transmission (PMTCT) registers and routine monthly reporting tick sheets are trained and supported in order to ensure that data collection tools are completed fully and accurately.
2. Provide regular training and supervision to administrative staff to ensure that data are correctly captured on Sinjani
3. Ensure that data validation occurs at facility and district or regional level as well as Provincial level

4. Ensure that facility managers sign off the data to verify that outliers are investigated and explained and that errors and omissions are corrected.
5. Ensure that facility data are regularly discussed with staff in the Obstetric units so that staff can understand the value of correct data.
6. Information regarding deliveries as well as contraception coverage, terminations of pregnancy and PMTCT must be presented at Monitoring and Evaluation sessions in an integrated manner so that a more comprehensive understanding of teenage fertility and sexual health can be gained.

Access to Health Services



One of the findings revealed in the analysis of the data was that there was a disproportionate load of deliveries for Women under 18 years in certain sub-districts. In the Cape Metropole for example, the Tygerberg Sub-District shows significantly higher number of deliveries for women under 18 years compared to other Sub-Districts. In an urban setting, it is assumed that geographical access to health facilities should not be a restrictive factor in accessing health services. A limitation of this analysis is that the routine data does not permit an analysis of drainage patterns or referral routes from the perspective of being able to determine where the women who delivered at each facility live. That is to say that the data represented in this analysis reflected the sub-districts where the women in the Province delivered, not necessarily the areas where the women reside.

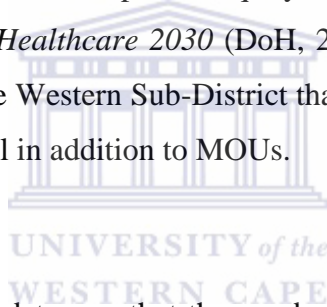
To illustrate this point, the data for Khayelitsha Eastern Sub-Structures and Northern Tygerberg Sub-Structures in the Cape Metropole were further explored. Khayelitsha Sub-District, while geographically small, is one of the most densely populated sub-districts in the Cape Metropole. A review of the data indicated that the number of deliveries for Khayelitsha was

disproportionately low compared to the relative size of the population living there. The Northern and Eastern Sub-Districts are less densely populated, but display a similar incongruence between the proportion of deliveries in the Cape Metropole compared to the relative size of the population. The Tygerberg Sub-District, on the other hand carries an enormous load in terms of the number of deliveries to women under 18 years. It would be interesting to examine to what extent young people from the Northern, Eastern and Khayelitsha Sub-Districts are accessing services in the Tygerberg Sub-District. This would help to understand whether access to services in those sub-districts is a factor that needs to be addressed. The information management system used in hospitals currently would enable a much richer analysis than the systems available in district level systems, as one could determine additional information, such as migration between and within health districts. To illustrate, the Eastern Sub-District has one Midwife Obstetric Unit (MOU) and one district hospital where obstetric services are delivered. It is not certain to what extent communities in the rural district that border the Eastern Sub-District cross district borders in order to access health services.

Because the available data cannot be disaggregated to patient level information, it is very difficult to determine if there are pockets where teenage deliveries are very high because the data can only illustrate where patients delivered, not where they live. In other words, the data reflects the site of delivery rather than the geographic address of the woman delivering the baby. Further research would be necessary to determine whether issues regarding the perceived quality of existing services, the accessibility of services, and the acceptability of available services to young people living in those sub-districts needs to be addressed as part of the planning and provision of health services in those sub-districts.

Reflecting on this subject more deeply, the issue of equity in access to health services in the Cape Metropole raises concerns regarding the

distributive justice in the way resources, including the infrastructure for health facilities, have historically been allocated. By way of explanation, prior to the opening Khayelitsha District Hospital in the 2012, there were 2 Midwife Obstetric Units (MOUs) in Khayelitsha, 1 MOU and 1 District Hospital in Eastern Sub-Districts, and 1 MOU in Northern Sub-District. Prior to the opening of Delft MOU in 2012, there were 2 MOUs and 2 Hospitals with Obstetric services in the Tygerberg Sub-District. It is proposed that there is an inherent unfairness in the health system where the people of Northern, Eastern and Khayelitsha Sub-Districts do not have equitable access to health services close to where they live. The Department has acknowledged these historic anomalies and has attempted to correct them through the implementation of the *Comprehensive Service Plan 2010*, and continues to strive towards improved equity of access to health services in the strategic plan for *Healthcare 2030* (DoH, 2013). The same issues of access would apply to the Western Sub-District that has a tertiary hospital, a regional obstetric hospital in addition to MOUs.

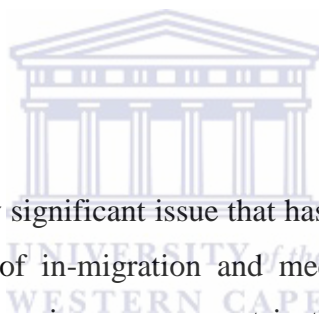


A striking finding in the data was that the number of deliveries for women under 18 years is decreasing at a faster rate in Tygerberg Sub-District than in the rest of Metro East. This suggests that another variable, other than access to services has come into play, because the new Khayelitsha Hospital only opened in 2012-2013. If improved access to services was driving the accelerated decrease in deliveries, one would expect to find that the decrease in Tygerberg Sub-District would be associated with an equivalent increase in the Khayelitsha Sub-District. The data revealed that the decrease in Tygerberg Sub-District is not related to an increase in other Sub-Districts.

The question of access in the rural sub-districts on the other hand probably reflects issues regarding economies of scale in service delivery. When the data was presented to the Provincial Department of Health Women's Health Programme manager, one of the discussion points focussed on economies of scale and access to services. Many communities in the rural sub-districts are

both sparsely populated and geographically dispersed. The health facilities in these communities tend to be smaller than in more densely populated communities. It would therefore be less viable to deliver an obstetric service where Caesarean Sections can be performed. This would therefore result in more women being referred to health services outside of the district where they reside. The reason for referral would thus relate more to the way services are configured and the allocation of resources. Focusing on the Central Karoo Sub-District to illustrate this phenomenon, Beaufort West Sub-District is the only sub-district in the district where Caesarean Sections are performed. The increased load in that Sub-District therefore reflects, in part, the referral patterns in the area.

Migration



Migration is a potentially significant issue that has not been explored in this mini-thesis. The extent of in-migration and medical tourism has been a highly debated issue for senior management in the Department of Health, both from the perspective of resourcing services for growing numbers of service users, but also for planning and organising services that can accommodate the multiple needs of the diverse communities we serve. There has been a widespread belief in the Department that both inter-provincial in-migration as well as inter-national in-migration have resulted in an exponential growth in service pressures, particularly in the area of the women's health programme. Health facility managers in the Cape Metropole have often flagged concerns about growing numbers of Foreign Nationals presenting to health facilities. Responding to cultural beliefs and overcoming language barriers particularly in the provision of obstetric and sexual reproductive health services has been highlighted as an area of concern. In the rural districts, the issue of seasonal occupational migration poses a bigger barrier to service delivery. The recent South African Census report *The South Africa I Know, the Home I Understand* confirmed that the Western Cape is one of the two provinces with the highest levels of in-

migration in the country (SSA, 2012b). Interestingly, the Census 2011 survey did not ask respondents to indicate if they were a South African citizen (SSA, 2012b) although respondents were asked if they were born in South Africa.

For the purpose of this analysis, the key reflection on the data is that the WCDoH routine health information system does not include information on the mother's place of origin, and therefore it is not possible to extrapolate what impact migration could have on teenage deliveries in the Province. This is an area where there is currently a paucity of knowledge and where research could have a tremendous impact on addressing the sexual reproductive health needs of young women. Health managers have for example raised concerns about how seasonal occupational migration in farming communities would impact on unplanned pregnancies. Similarly, there are many rural towns that provide stops for truckers transporting goods across the Province. The relationship between truckers, economic deprivation in towns, the sexual behaviour of young women, the cultural interpretation of transactional sex and the values and beliefs of young women, families and communities is an area that should be explored. An issue that requires further exploration is also the health seeking behaviour of young women, and particularly young women who are Foreign Nationals, with regards to sexual reproductive health services. Further research should also be aimed at developing models of health service provision for mobile communities, such as seasonal workers.

Health Seeking Behaviour and Wellness Profile of Teenagers in the Western Cape

Teenage Fertility

The data presented in this study cannot be used to postulate about teenage fertility. If it were possible to triangulate the Terminations of Pregnancy (ToP) data into the analysis, one may have had a fuller picture of teenage fertility. However, the uptake of services has historically been limited to the Cape Metropole services, determined in part by restrictions in access to the service. The use of existing data would therefore be inadequate for the purpose of building a fertility profile for young women in the Western Cape, and could in fact result in inappropriate conclusions.



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HIV Status

The HIV status of pregnant women is currently recorded on the PMTCT registers. However, due to the siloed and vertical structure for the HAST programme, separate data reporting systems and tools have been implemented for HAST related indicators. The data ultimately feeds into the Sinjani system, but does not form part of the data set that was reviewed in this analysis.

Health Seeking Behaviour and Sexual Reproductive Health Choices

The DoH collects data about the number of contraceptive methods issued to women under 18 years. The data does not form part of the dataset under review. Because the family planning methods are reported as a count of methods issued to women under 18 or women over 18 years, the coverage would need to be determined using a series of formulas and weights. This would result in an increased workload in the data analysis. In addition, the DoH described an incomplete understanding of the extent of contraceptive

coverage because the size of the contribution of private providers is not known (DoH, 2013) and therefore a substantial undercount is anticipated.

The DoH collects no information about condoms other than the number of condoms distributed. Because condoms are available in public spaces and are taken by users rather than issued by staff, it is impossible to determine to what extent young women utilise them.

While the DoH keeps data on the family planning methods issued to women under 18 years, no information exists regarding potential barriers to uptake of services or about the extent that existing services are acceptable to teenagers. The paucity of youth friendly services remains a concern. With the drive to strengthen the District Health System, there may be an opportunity to explore non-traditional models of service delivery outside of health facilities. Health services provided in non-medical sites and schools may be appropriate and cost-effective models of service delivery to cater for the needs of young people. Focussing on wellness rather than having vertical family planning services might help to overcome the stigma attached to young people seeking health services. A more integrated service package may also present health workers with additional opportunities to provide screening services to young people.

A final consideration in terms of the wellness of women under the age of 18 is that currently no data is collected to determine the incidence and prevalence of patients who are victims of gender based violence. In light of the evidence of the increased risks of sexual coercion and violence that young women face, it would be important for this issue to be elevated within the health service.

Study Limitations

The following limitations were experienced during the systematic analysis of secondary data:

- 1) It was not possible to infer causal relationships between variables.
- 2) Comparisons over time could be influenced by poor data quality, especially in earlier years.
- 3) Incomplete or inaccurate data could have invalidated any conclusions derived from the data.
- 4) The analysis was limited to a description of the trends in the number of delivery of for women under 18 years. The findings do not reflect adolescent fertility.
- 5) The historic challenges with data management in the Province has resulted in an environment where multiple data collection tools, systems and data reporting lines existed in parallel with each other, compromising data quality. Although the DoH has investigated significantly to address this problem, it will take a while for these investments to pay dividends.
- 6) The study could not provide insights into access to sexual reproductive health services.
- 7) The study could not inform an understanding of the knowledge, attitudes and sexual health behaviours and choices of adolescent females. To this extent, one cannot determine the true risk profile for unintended adolescent fertility in the Western Cape Province.
- 8) The data presented in this analysis was extracted from the Sinjani data repository into Excel Pivot tables for analysis. The manipulation of the data in Excel was an onerous task, and was both labour intensive and required a lot of time. There is a risk that the steps required to pull the data together in order to graphically represent the data may have influenced hidden formulas and resulted in deviations between the source data and the data that was presented in the mini-thesis. Every effort has been made to cross-check the data, and any deviation that may have arisen would be unintentional.

CHAPTER 7: CONCLUSION

This thesis is the first available compilation, synthesis and discussion of deliveries in public facilities by women under 18 years of age across the Western Cape over a 10 year time period. The data and graphs may be helpful for planning and monitoring of reproductive health programmes affecting teenagers, at multiple levels of the health system.

The concerns regarding rising teenage pregnancies have not been borne out through the analysis of deliveries for women under 18 years, which have been used as a proxy for teenage fertility in this analysis. The study demonstrated that both the absolute number and the proportion of deliveries for women under 18 years have decreased since 2006 – 2007. The reasons for the decrease in deliveries is not well understood and would require further investigation. It is important to note that while the decreasing trend in the number of deliveries is encouraging, the absolute number of births remains high.

The data illustrated that seasonal increases in the number of deliveries for women under 18 years are experienced 9 months after school holidays. This is an important consideration for health programme managers in terms of preventing the risk of unintended and unwanted pregnancies. It is proposed that this intervention be rooted in a primary health care approach with the involvement of communities and other government agencies and non-profit organisations as key stakeholders.

The study confirmed that routine health information is a valuable source of information that can support decision-making in health services. While concerns regarding the data quality were noted, especially for the earlier years, the data quality was sufficient to enable an analysis of the trends for

deliveries for women under 18 years in the Western Cape. Recent investments in the Health Information Management system in the DoH should further improve the utility of routinised health information.

In the light of the evidence in the literature regarding the disproportionate impact of early motherhood on teenagers, both socially, emotionally, physiologically and economically, and the disproportionate risk for early pregnancies for in certain demographic groups, I believe an argument could be made to try to obtain more comprehensive demographic information about the teenagers who deliver in public health facilities in order to understand more about who these teenagers are (demographic information), and what proportion of the women under 18 years who deliver are experiencing early pregnancies (under 15 years). It would also be useful to determine whether women under the age of 18 years are experiencing multiple pregnancies while they are teenagers. However, the literature also clearly demonstrates that loading the routine information management system with data that will not trigger an action wastes resources and compromises data integrity. A counter proposal for consideration by the Western Cape DoH is to consider alternate sources of information such as point prevalence surveys, annual surveys, or data collection at sentinel sites. The cost of the data collection would therefore be balanced against the value of being able to implement targeted interventions for areas with a high teenage delivery rate.

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80CA12E2680B/jspui/bitstream/123456789/19715/1/Teenage%20Sexual%20and%20Reproductive%20Behavior%20in%20Developed%20Countries%20Can%20More%20Progress%20Be%20Made.pdf?1[Downloaded: 29/03/2012].

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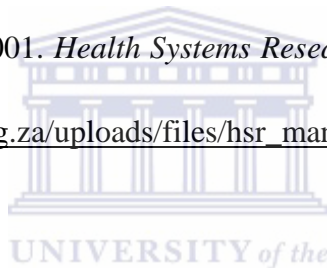
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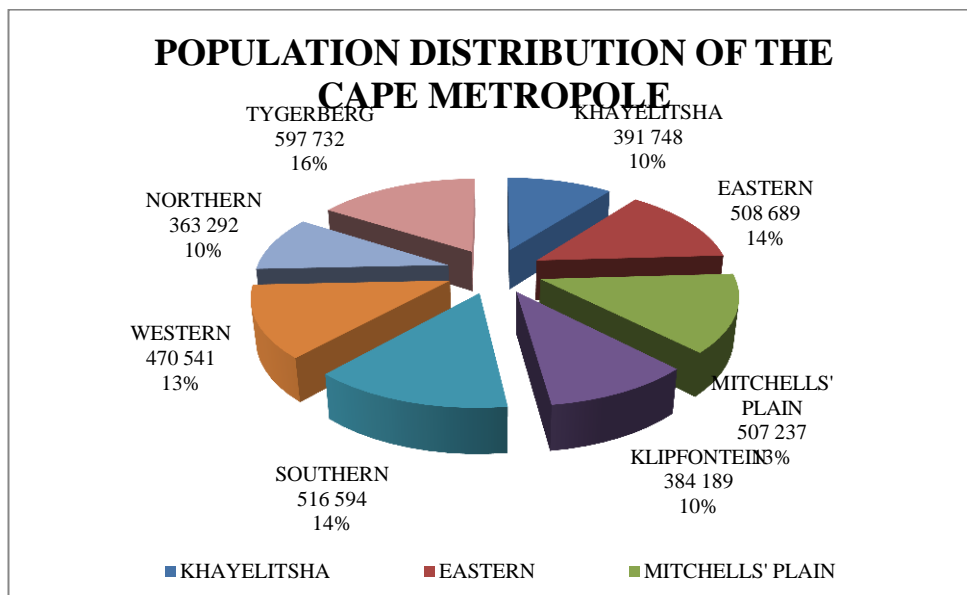
APPENDICES

APPENDIX 1: POPULATION ESTIMATES FOR THE WESTERN PROVINCE BASED ON THE PROJECTED 2001 CENSUS

| District | Census 2001 | Community Survey: 2007 | 2008 2008/09 | 2009 2009/10 | 2010 2010/11 | 2011 2011/12 | 2012 2012/13 | 2013 2013/14 | 2014 2014/15 | 2015 2015/16 | % Uninsured |
|-------------------|-------------|------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|
| City of Cape Town | 2 892 243 | 3 497 097 | 3 553 571 | 3 638 959 | 3 724 347 | 3 809 735 | 3 895 123 | 3 980 511 | 4 065 899 | 4 151 287 | 76% |
| Cape Winelands | 630 492 | 712 413 | 726 687 | 740 556 | 754 426 | 768 295 | 782 165 | 796 034 | 809 903 | 823 773 | 77% |
| West Coast | 282 672 | 286 750 | 299 888 | 304 901 | 309 914 | 314 926 | 319 939 | 324 952 | 329 965 | 334 978 | 83% |
| Overberg | 203 519 | 212 836 | 223 706 | 228 499 | 233 292 | 238 086 | 242 879 | 247 673 | 252 466 | 257 259 | 83% |
| Eden | 454 924 | 513 308 | 528 676 | 540 302 | 551 937 | 563 573 | 575 206 | 586 834 | 598 457 | 610 076 | 85% |
| Central Karoo | 60 482 | 56 229 | 59 238 | 59 822 | 60 407 | 60 991 | 61 576 | 62 160 | 62 744 | 63 329 | 86% |
| Western Cape | 4 524 332 | 5 278 634 | 5 391 765 | 5 513 039 | 5 634 323 | 5 755 607 | 5 876 887 | 5 998 164 | 6 119 435 | 6 240 702 | 78% |
| Uninsured | | | | | | | | | | | |
| City of Cape Town | 2 209 674 | 2 671 782 | 2 714 928 | 2 780 164 | 2 845 401 | 2 910 637 | 2 975 874 | 3 041 110 | 3 106 346 | 3 171 583 | |
| Cape Winelands | 483 587 | 546 421 | 557 369 | 568 007 | 578 645 | 589 282 | 599 920 | 610 558 | 621 196 | 631 834 | |
| West Coast | 235 183 | 238 576 | 249 507 | 253 677 | 257 848 | 262 019 | 266 190 | 270 360 | 274 531 | 278 702 | |
| Overberg | 168 310 | 176 016 | 185 005 | 188 969 | 192 933 | 196 897 | 200 861 | 204 825 | 208 789 | 212 753 | |
| Eden | 387 140 | 436 825 | 449 903 | 459 797 | 469 699 | 479 601 | 489 500 | 499 396 | 509 287 | 519 175 | |
| Central Karoo | 51 833 | 48 188 | 50 767 | 51 268 | 51 769 | 52 269 | 52 770 | 53 271 | 53 772 | 54 273 | |
| Western Cape | 3 535 728 | 4 117 808 | 4 207 479 | 4 301 882 | 4 396 294 | 4 490 706 | 4 585 115 | 4 679 521 | 4 773 922 | 4 868 319 | |

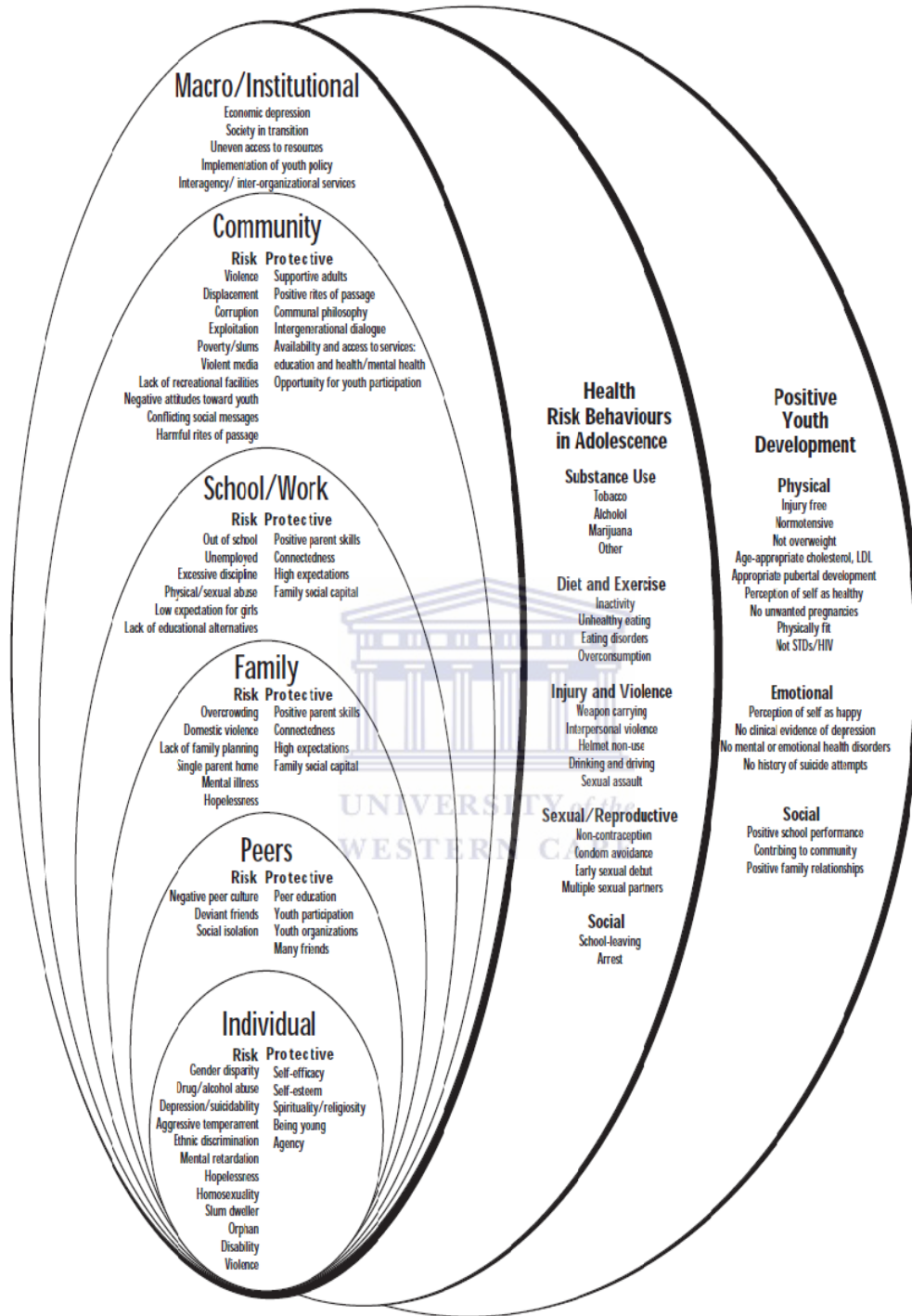
Source: Western Cape Department of Health Circular H13/2010 cited in WC DoH *Annual Performance Plan 2013-2014* (2013:26)

APPENDIX 2: POPULATION OF THE WESTERN CAPE



NOTE: The data were assimilated from the *City of Cape Town: 2011 Census – Cape Town Report* (2012)

APPENDIX 3: WHO RISK AND PROTECTIVE FACTORS FRAMEWORK



Source: WHO (2005, 2)

The shortfall of this framework is that many risks arise out of a combination of more than one of the *contexts* presented in the framework. Drawing on the summary of factors contributing to the sexual reproductive health problems facing young people described by the WHO (2006a), it becomes clear that there is much

ambiguity in the practical application of the framework. The risk factors were extracted from the WHO analysis and the context column illustrates how the framework could be used:

| <u>Risk Factor</u> | <u>Context</u> |
|--|----------------------------------|
| Unable to protect themselves | Individual/Peers/Institutional |
| Under presser to marry and bear children early | Family/Community |
| Unable to refuse unwanted sex | Individual/Family/Peer/Community |
| Compelled to undergo genital mutilation | Family/Community |
| Subjected to Gender double standards | Family/School/Community |

In the South African context, the high prevalence of HIV, gender-based violence; poverty and political history of racial discrimination has impacted on the sexual health outcomes of young women in very specific and unequal ways.

APPENDIX 4: SOUTH AFRICA - MATERNAL MORTALITY RATE

Table 11.i.5 Maternal Mortality Rates (MMR) per district 2008-2010 compared with 2002-2007, according to residence of Mother (private hospital deaths excluded)

| DISTRICT | NO. Maternal deaths | No. Live births | MMR 2008-2010 Deaths per 100,000 live births | MMR 2002-2007 Deaths per 100,000 live births |
|----------------|---------------------|-----------------|--|--|
| Metro | 157 | 194 300 | 80.8 | 72.82 |
| Eden | 31 | 29 061 | 106.7 | 92.36 |
| Cape Winelands | 26 | 39 986 | 65.2 | 46.4 |
| West Coast | 11 | 16 126 | 68.2 | 77.67 |
| Central Karoo | 7 | 3 641 | 192.3 | 140.45 |
| Overberg | 10 | 9 518 | 105.6 | 84.38 |

Source: Department of Health: *Saving Mothers 2008 – 2010*: 295

Table 4: DATA DEFINITION - DELIVERY IN FACILITY TO WOMEN UNDER 18 YEARS

| 1. | Data element name | Delivery in facility to woman under 18 years (N) |
|----|--|---|
| | Bulleted definition | <ul style="list-style-type: none"> • Delivery in facility to woman under 18 years is the number of women delivering in a health facility • Under the supervision of trained medical/nursing staff, • And where the mother is under 18 years on the day of delivery. |
| | Components of the definition | <ul style="list-style-type: none"> • Multiple deliveries need to be counted as 1 delivery and 2 (or more) births irrespective of the method of delivery. |
| | Important considerations | <ul style="list-style-type: none"> • Data in the maternity register must be copied onto the monthly input form. |
| | Inclusions | <ul style="list-style-type: none"> • None. |
| | Exclusions | <ul style="list-style-type: none"> • EXCLUDE a mother delivering on her 18th birthday. • EXCLUDE miscarriages and TOP's. |
| | Absolute Validation Rule | <ul style="list-style-type: none"> • Delivery in facility to women under 18 years should be less than total deliveries in facility. |
| | Sites for data to be collected (data sources) | <ul style="list-style-type: none"> • Hospitals. • CHC's. • MOU's. |
| | Purpose of indicator | <ul style="list-style-type: none"> • Note that this data element can be used as a proxy for teenage deliveries (pregnancies). • To calculate the teenage pregnancy rate, which can be analyzed both from a health perspective (mothers whose bodies may be too undeveloped to deliver safely) and from a socio-economic perspective (mothers not able to take care of the child or the child will interrupt or permanently disrupt e.g. the mother's education). • There is much debate about where the cut-off age should be and for what reason when dealing with young mothers. • In particular, a cultural and socio-economic perspective yields very different results in different communities. |
| | Indicator(s) the data element is used for | <ul style="list-style-type: none"> • Delivery rate in facility under 18 years. |
| | Components of the definition | <ul style="list-style-type: none"> • If several procedures are performed under a single anaesthetic this should be counted as a single operation. • Duration of the operation is measured from the start of anaesthesia until the end of anaesthesia. • For operations done under local anaesthesia, the minutes are measured from onset of local anaesthesia till end of procedure. It includes operations that were cancelled after anaesthesia was initiated (Procedure manual Chapter 18 – 6.3.1.1.1[iv & v]). |

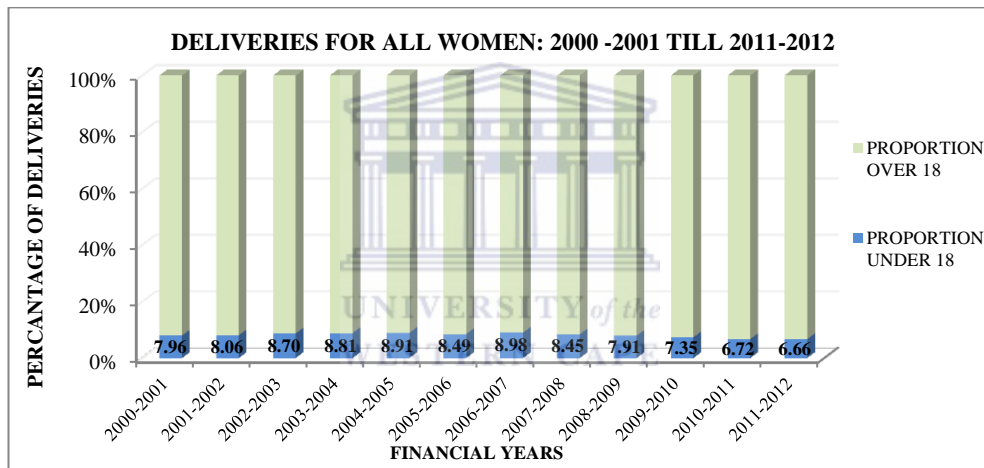
Source: DoH Data Element Definitions for Inpatient Throughput and outpatient and inpatient related services 2012/13 FY (31/05/2012)

APPENDIX 5: COMPARISON BETWEEN 1995 AND 2000 AGE SPECIFIC FERTILITY RATES AND TOTAL FERTILITY RATES

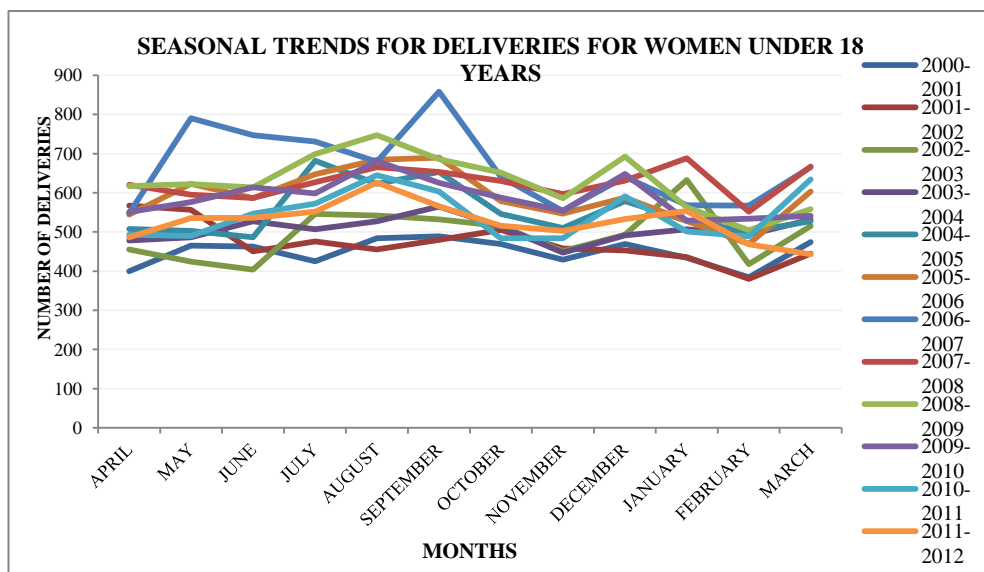
| | 1995 | | 2000 | |
|-----------------|-------------------|------|-------------------|------|
| | ASFR 15-19 yrs | TFR | ASFR 15-19 yrs | TFR |
| African | 45 | 3.6 | 65 | 3.01 |
| Coloured | 54 | 2.8 | 56 | 2.54 |
| Indian | 28 | 2.49 | 27 | 2.4 |
| White | 6 | 1.99 | 20 | 1.8 |

TFR = Total Fertility Rate (All women of Reproductive Age)
 ASFR = Age Specific Fertility Rate (Women aged between 15 and 19)
 Source: Makiwane, *et al.* (2006: 8)
 Note: the term: *African* is the nomenclature used by the authors of this document.
 The preferred term that has been adopted in this mini thesis is *Black*

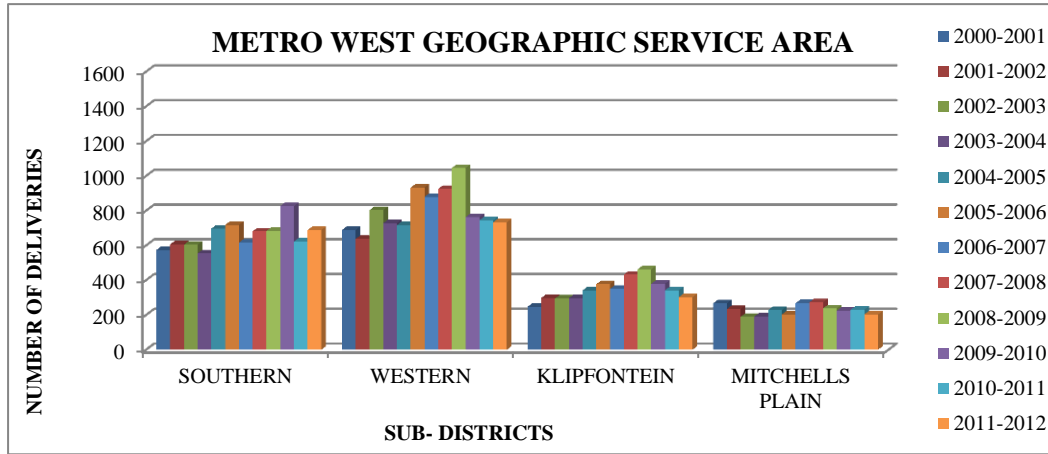
APPENDIX 6: PROPORTION OF DELIVERIES FOR TOTAL DELIVERIES COMPARED TO DELIVERIES FOR WOMEN UNDER 18



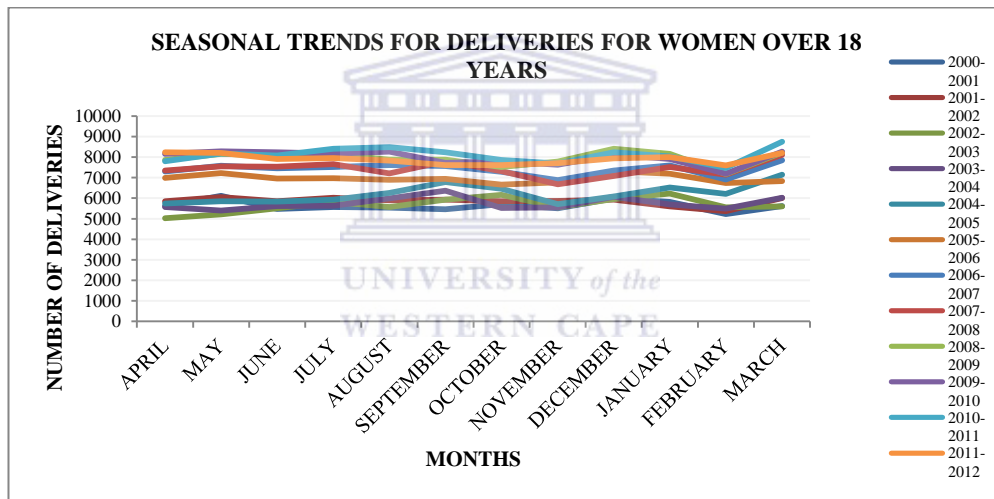
APPENDIX 7: TOTAL DELIVERIES FOR WOMEN UNDER 18 FROM 2000-2001 – 2011-2012 ANALYSED BY MONTH



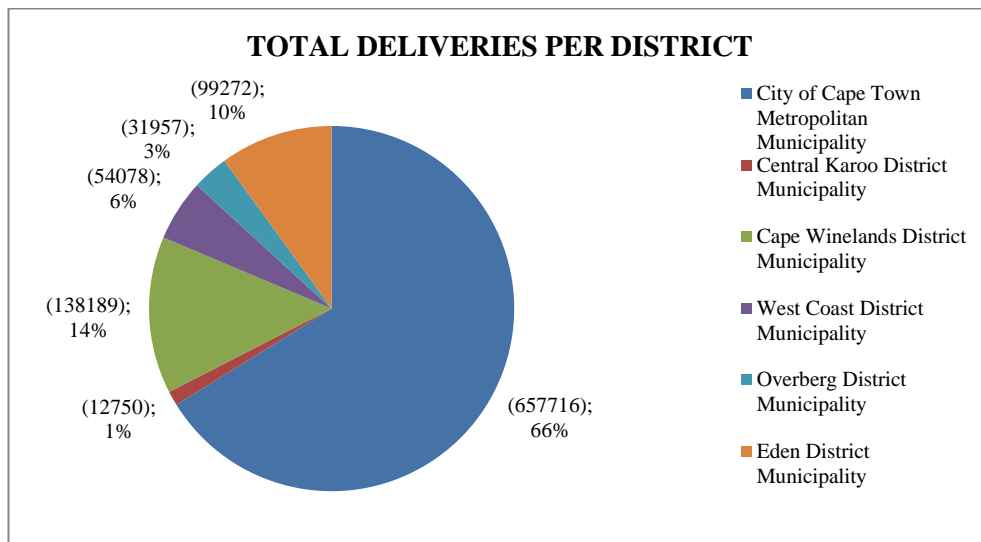
APPENDIX 8: CAPE METROPOLE - METRO WEST GEOGRAPHIC SERVICE AREA



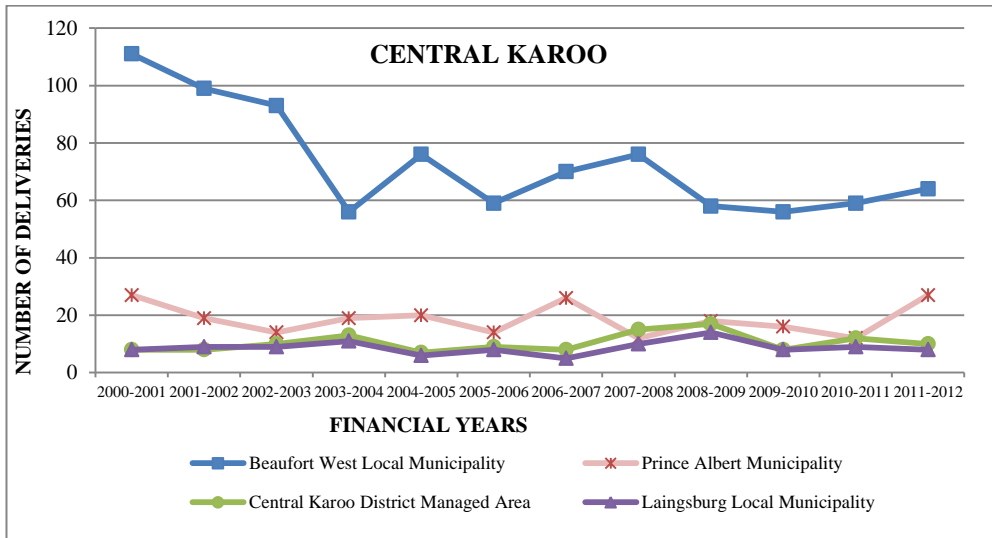
APPENDIX 9: TOTAL DELIVERIES FOR WOMEN UNDER 18 FROM 2000-2001 – 2011-2012 ANALYSED BY MONTH



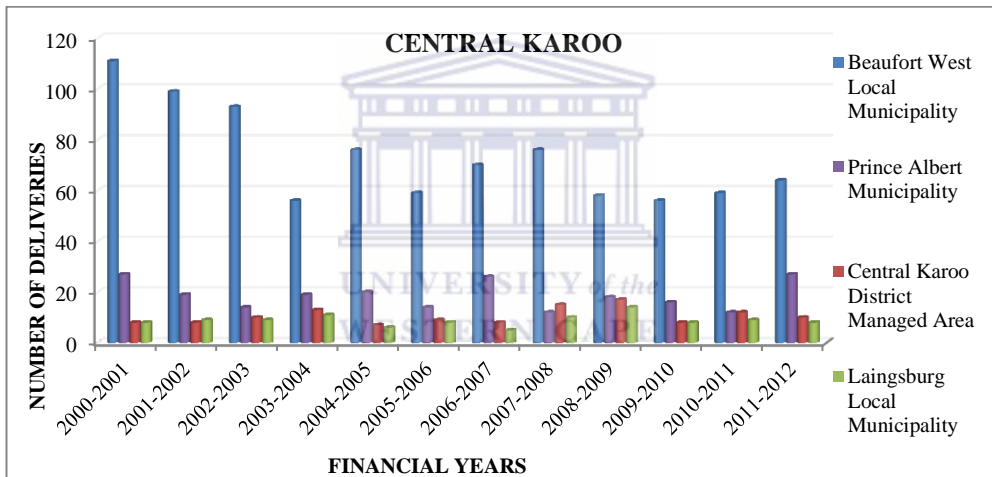
APPENDIX 10: TOTAL DELIVERIES PER DISTRICT



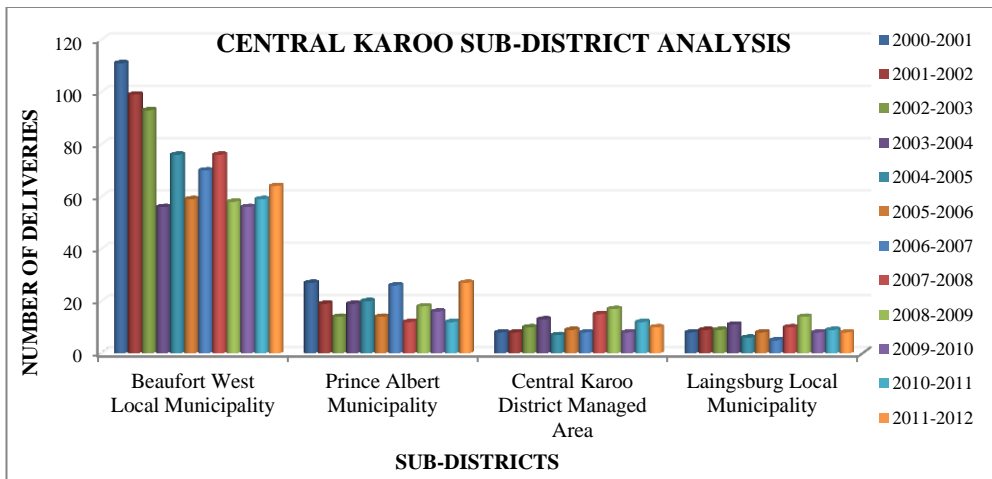
APPENDIX 11: CENTRAL KAROO



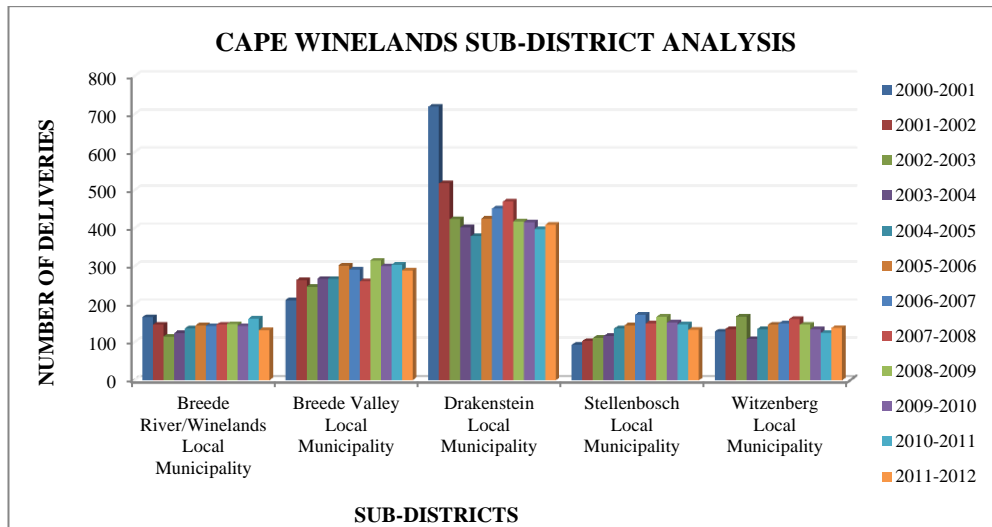
APPENDIX 12: SUB-DISTRICT ANALYSIS: CENTRAL KAROO



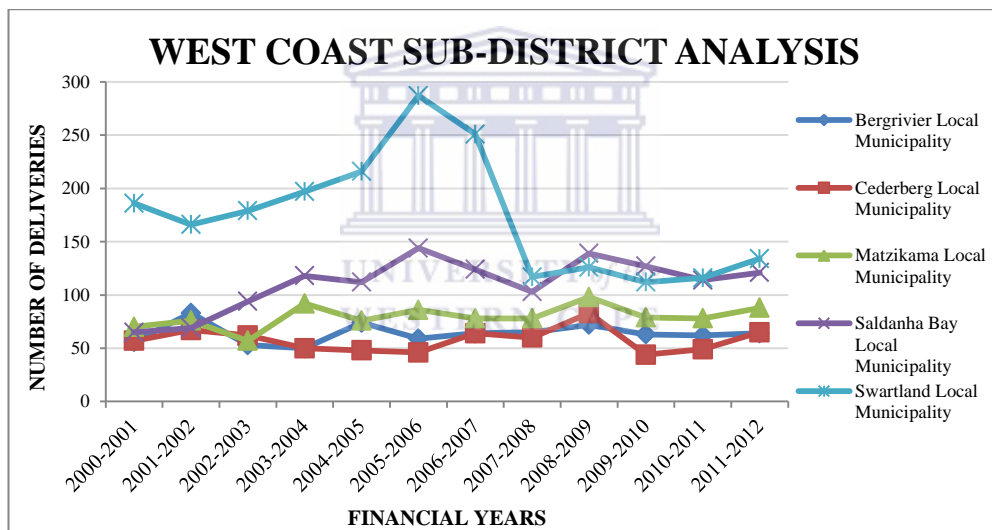
APPENDIX 13: CENTRAL KAROO SUB-DISTRICT PROFILE



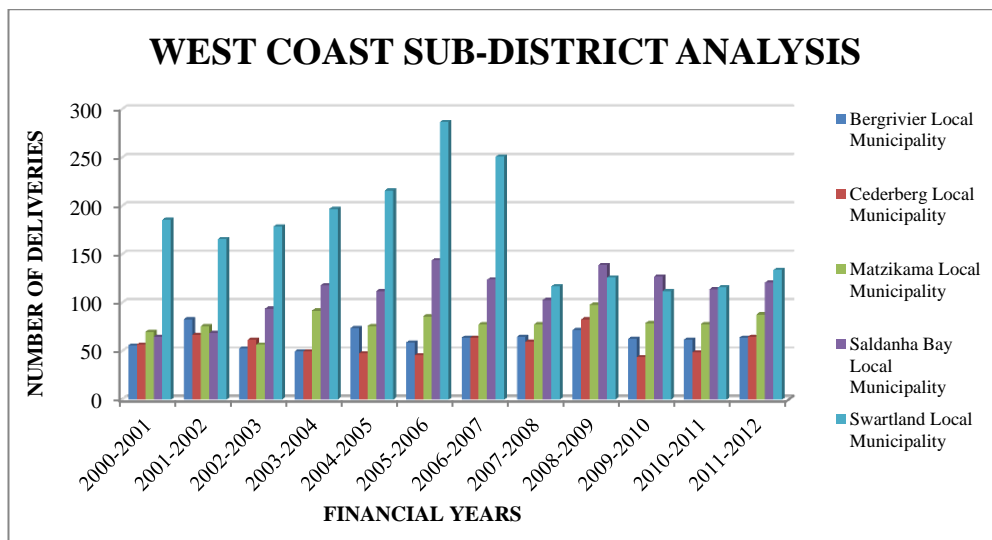
APPENDIX 14: CAPE WINELANDS SUB-DISTRICT ANALYSIS



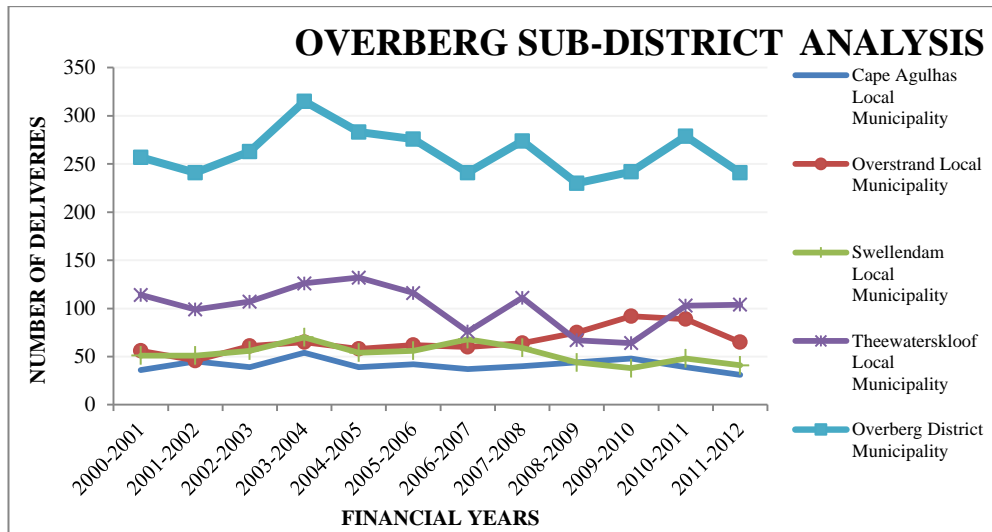
APPENDIX 15: WEST COAST SUB-DISTRICT ANALYSIS



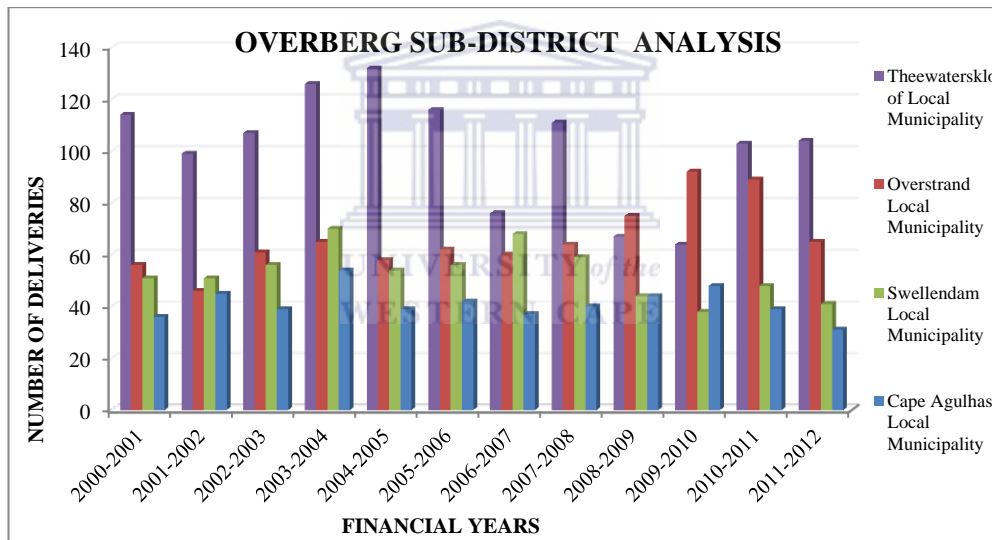
APPENDIX 16: WEST COAST DISTRICT-SUB-DISTRICT ANALYSIS



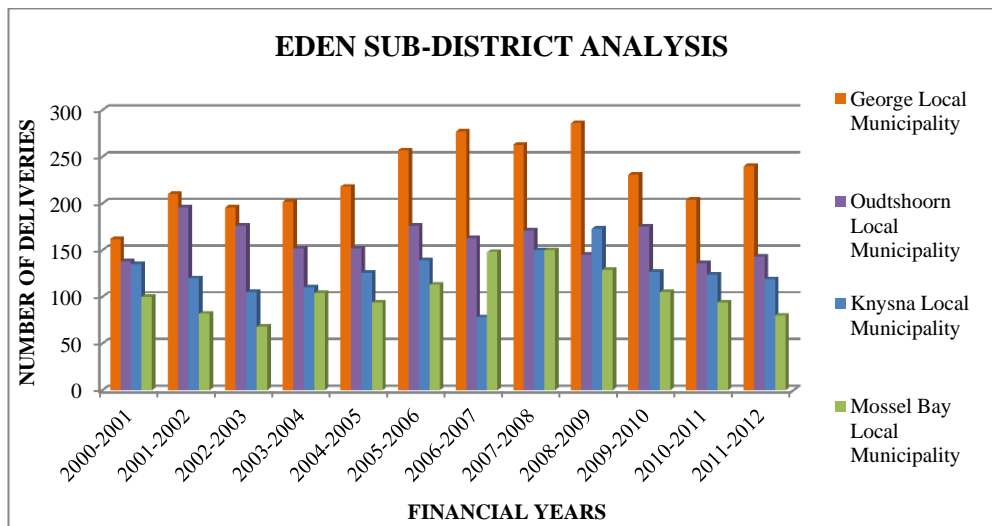
APPENDIX 17: OVERBERG DISTRICT - SUB-DISTRICT ANALYSIS



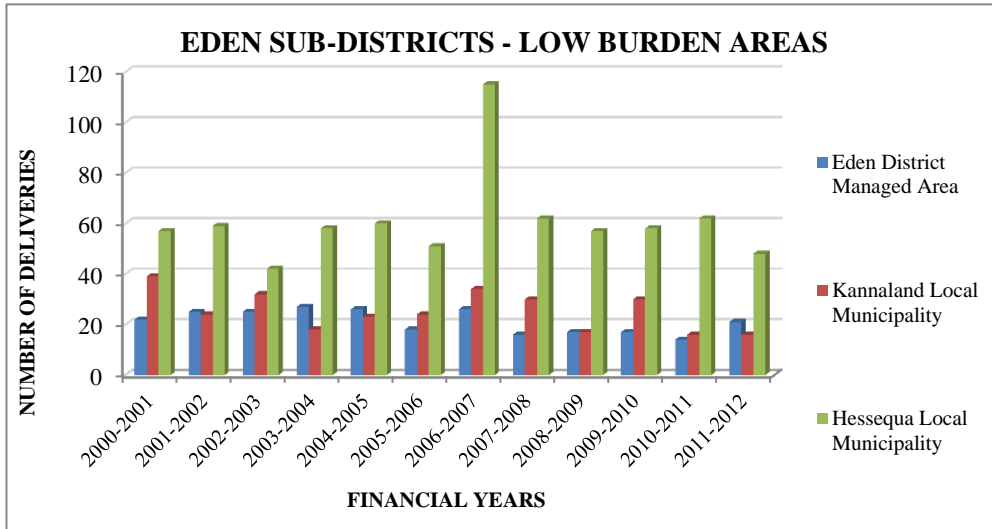
APPENDIX 18: OVERBERG SUB-DISTRICT ANALYSIS



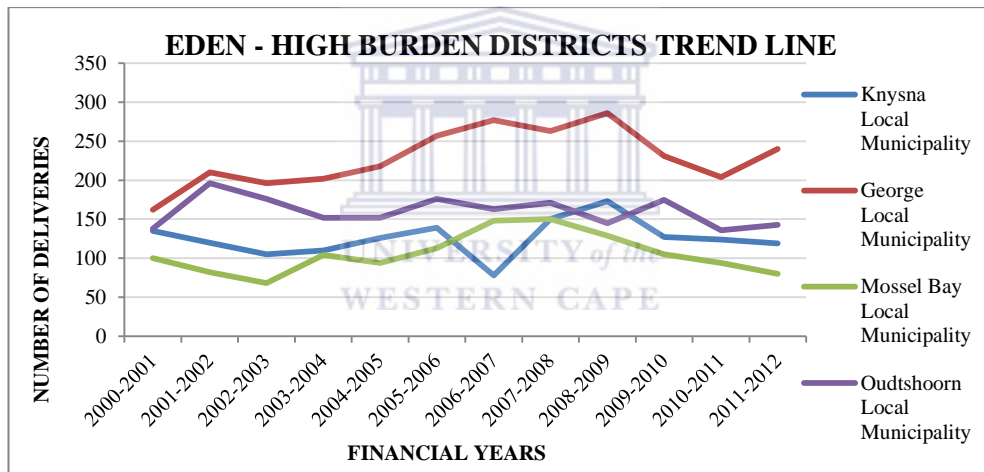
APPENDIX 19: EDEN - HIGH BURDEN SUB-DISTRICTS



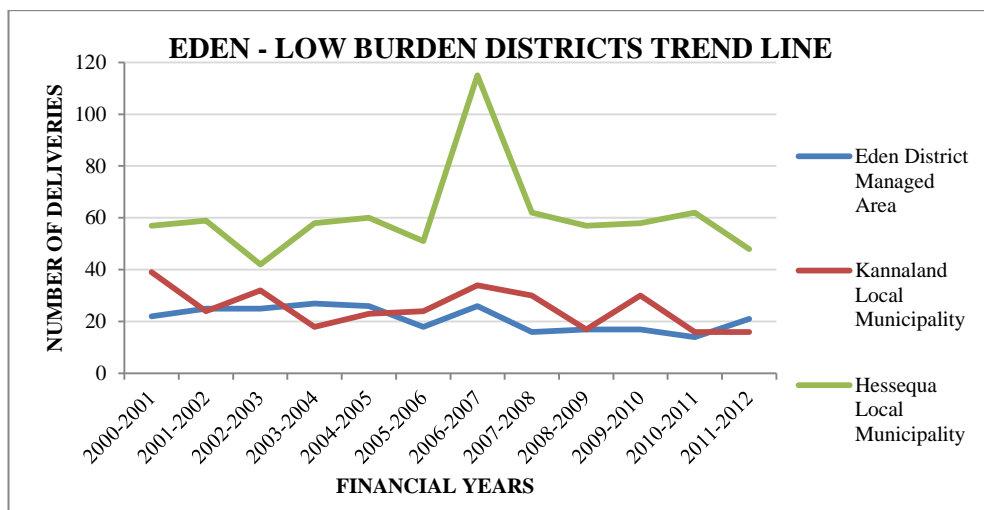
APPENDIX 20: EDEN DISTRICT - LOW BURDEN SUB-DISTRICTS



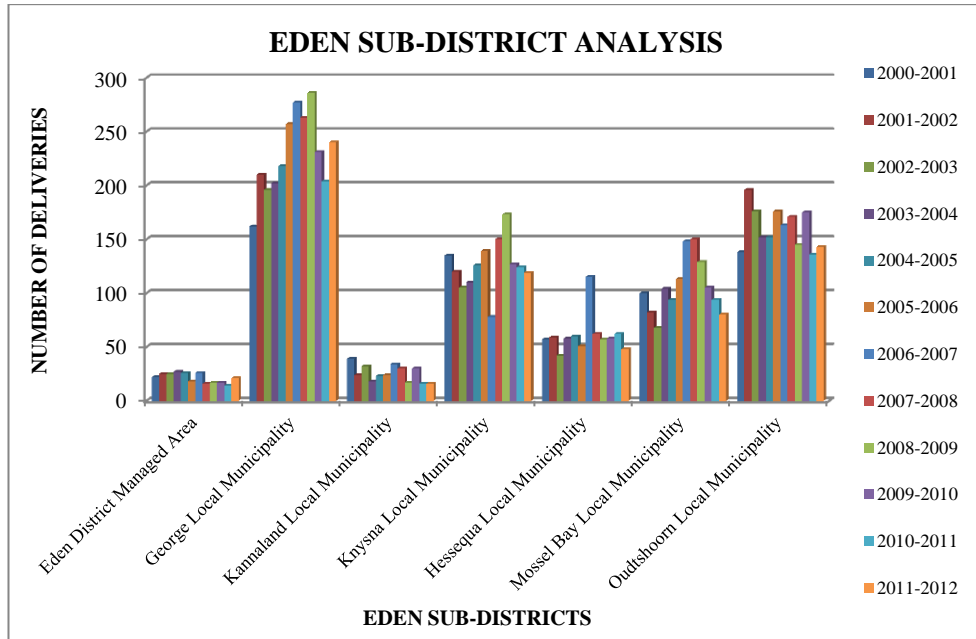
APPENDIX 21: EDEN SUB-DISTRICTS ANALYSIS



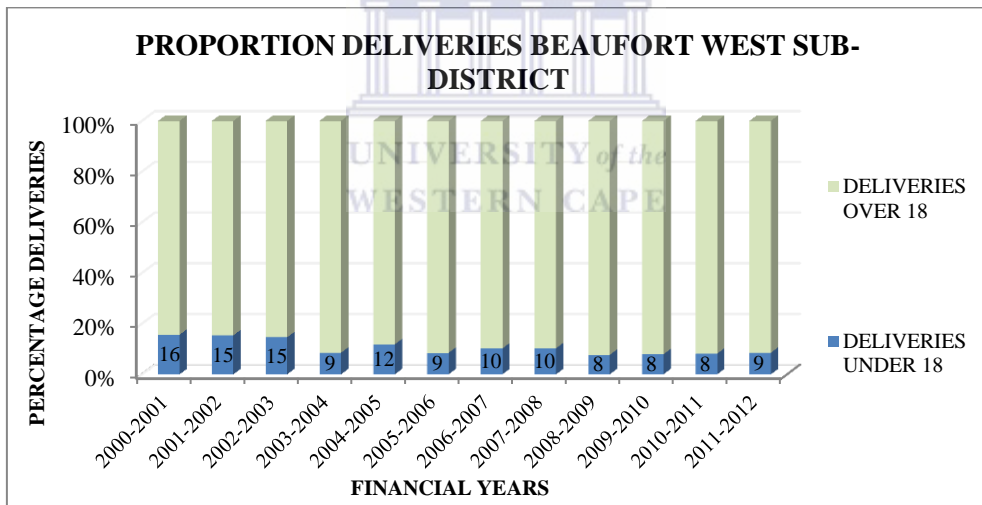
APPENDIX 22: EDEN SUB-DISTRICTS



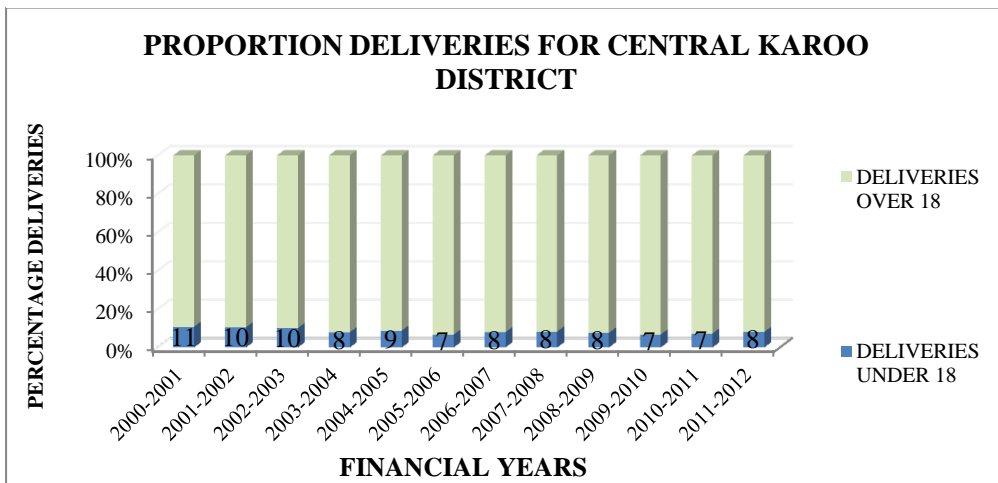
APPENDIX 23: EDEN SUB-DISTRICTS



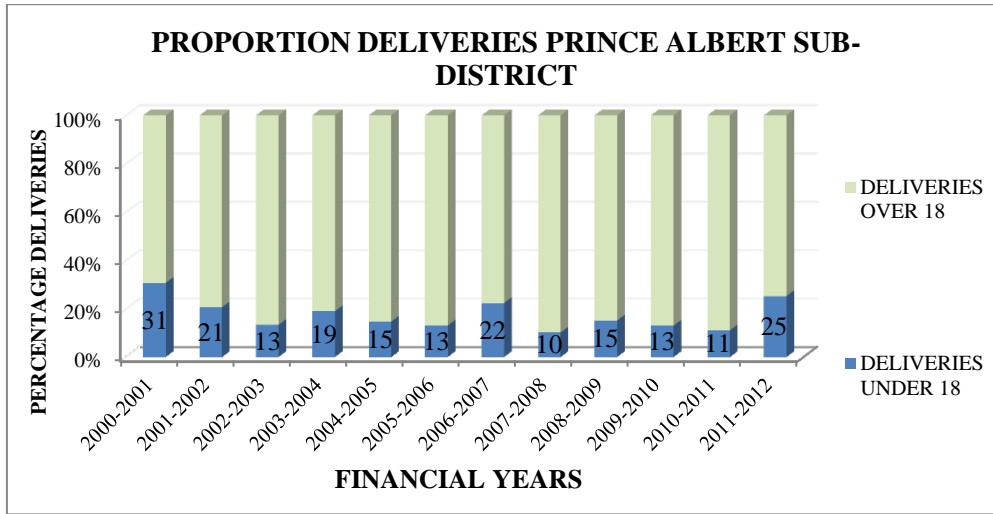
APPENDIX 24: PROPORTION DELIVERIES BEAUFORT WEST SUB-DISTRICT



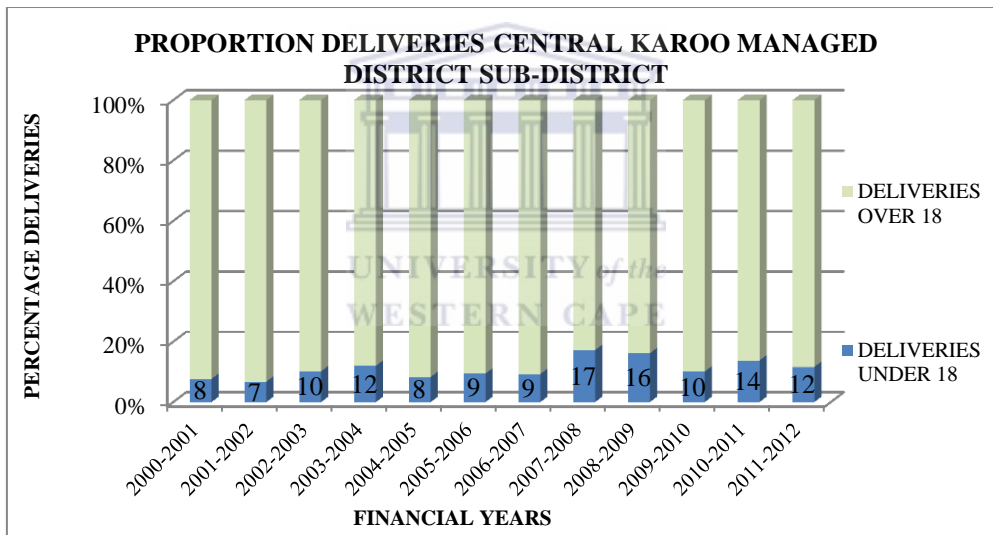
APPENDIX 25: PROPORTION DELIVERIES FOR CENTRAL KAROO DISTRICT



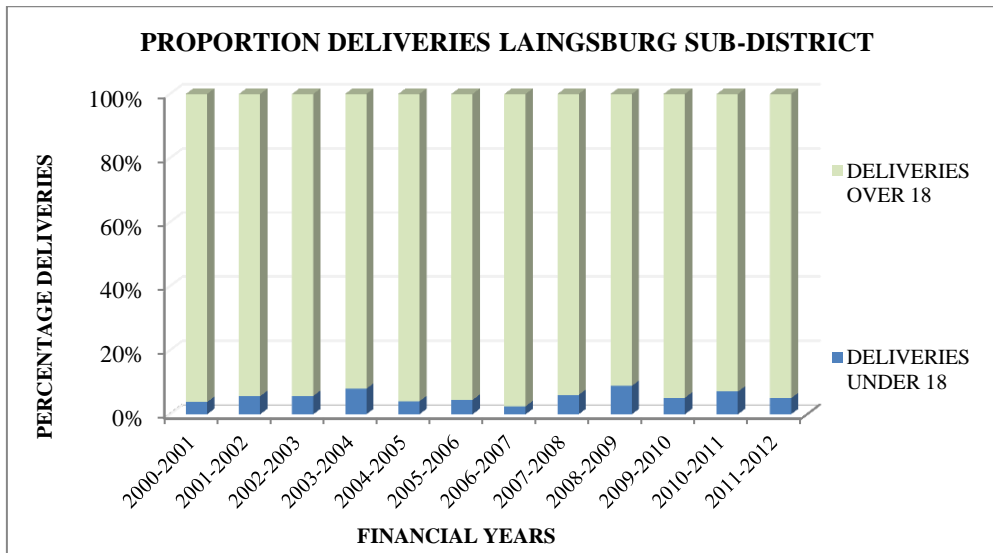
APPENDIX 26: PROPORTION DELIVERIES PRINCE ALBERT SUB-DISTRICT



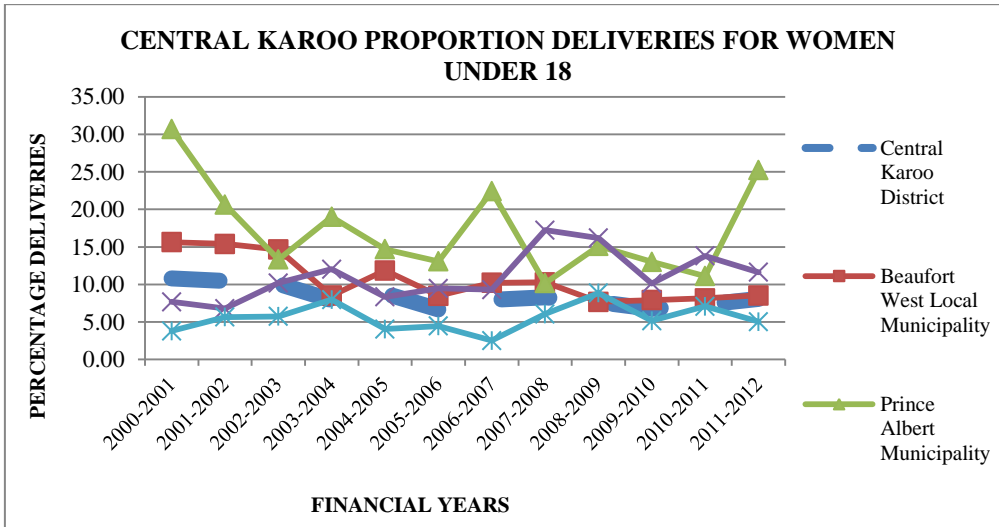
APPENDIX 27: PROPORTION DELIVERIES CENTRAL KAROO MANAGED DISTRICT SUB-DISTRICT



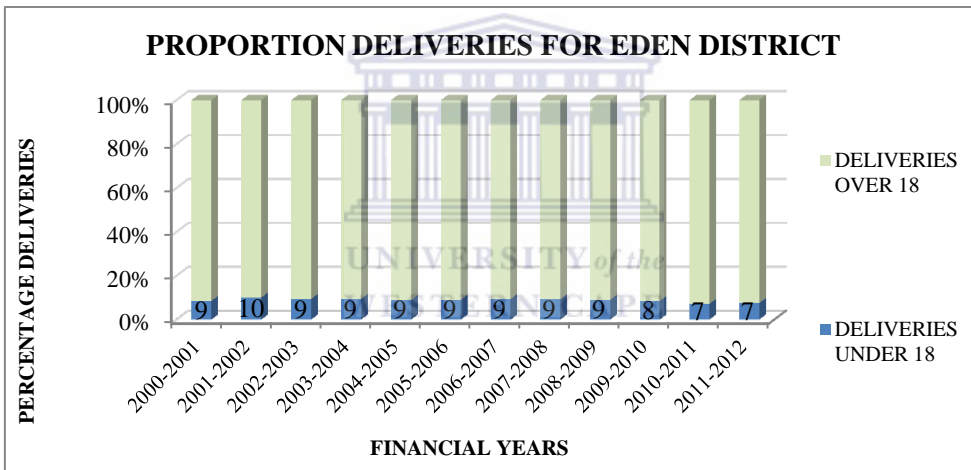
APPENDIX 28: PROPORTION DELIVERIES LAINGSBURG SUB-DISTRICT



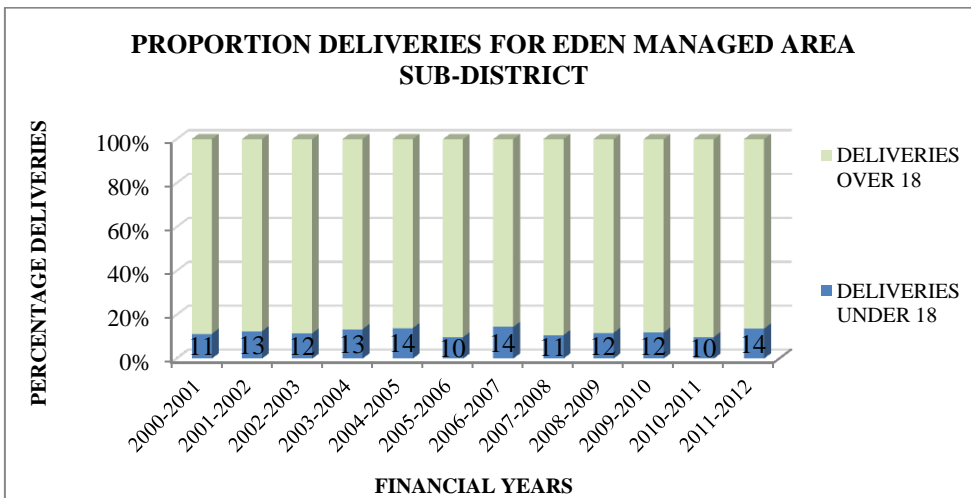
APPENDIX 29: PROPORTION DELIVERIES FOR CENTRAL KAROO



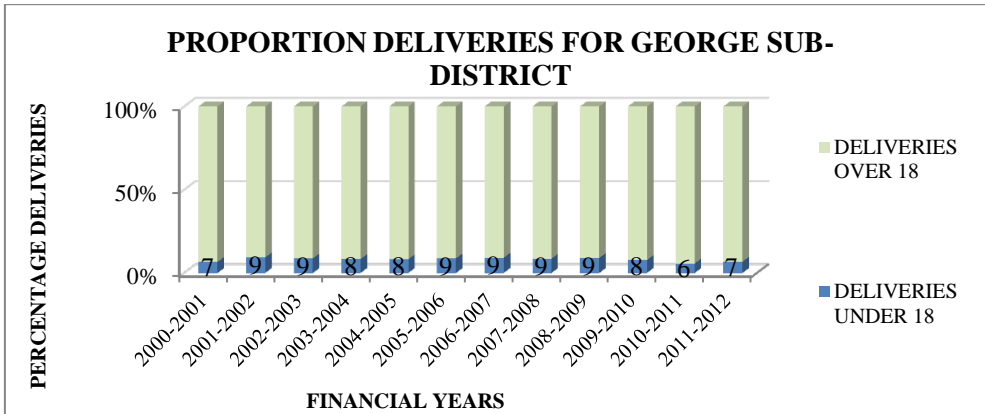
APPENDIX 30: PROPORTION DELIVERIES FOR EDEN DISTRICT



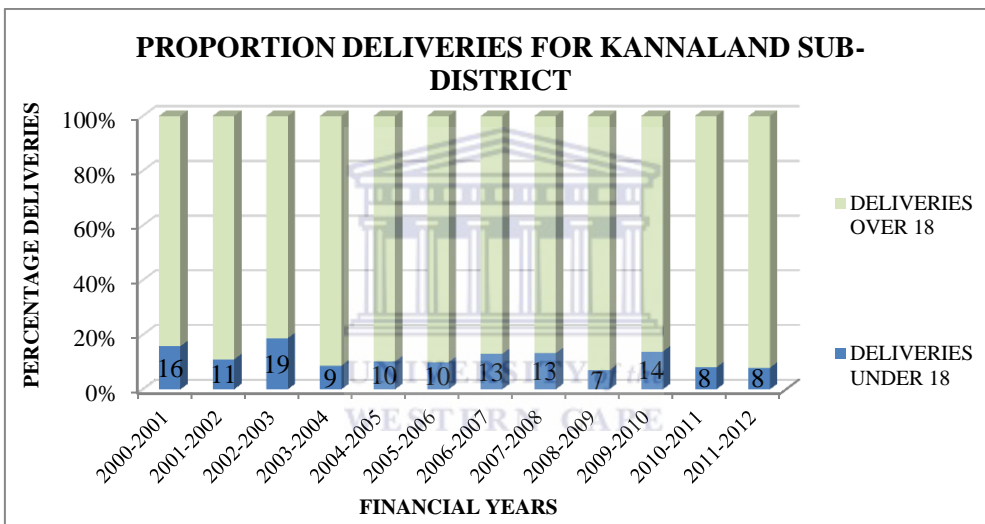
APPENDIX 31: PROPORTION DELIVERIES FOR EDEN MANAGED AREA SUB-DISTRICT



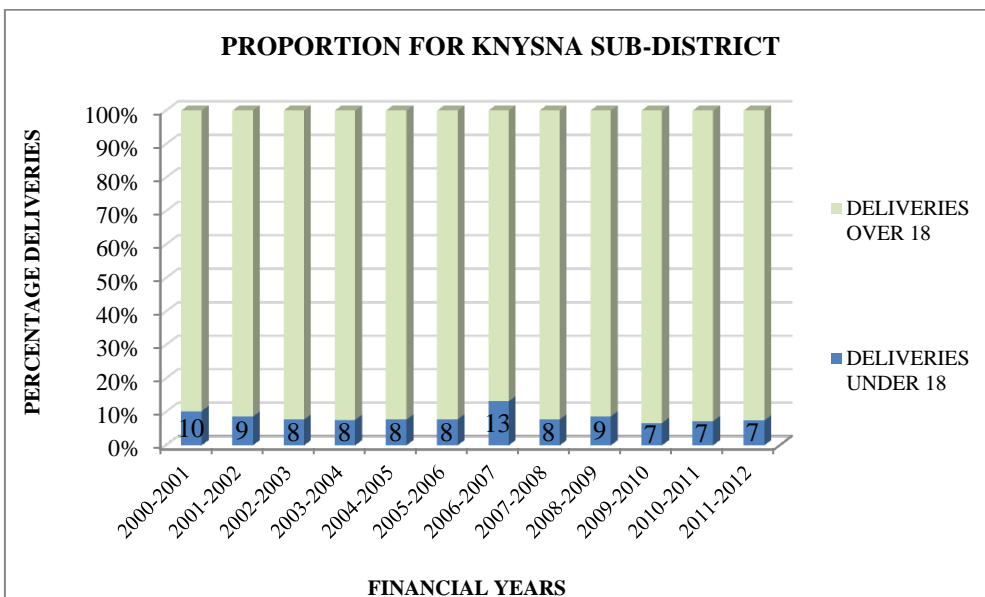
APPENDIX 32: PROPORTION DELIVERIES FOR GEORGE SUB-DISTRICT



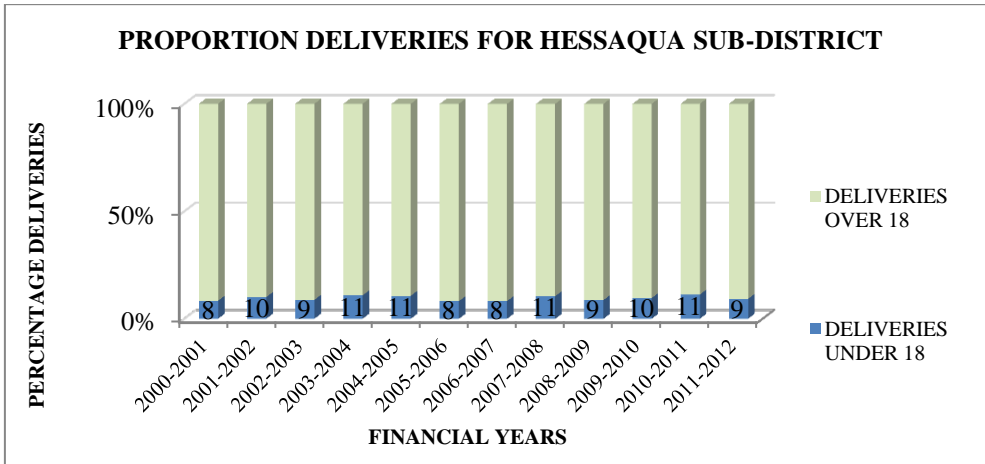
APPENDIX 33: PROPORTION DELIVERIES FOR KANNALAND SUB-DISTRICT



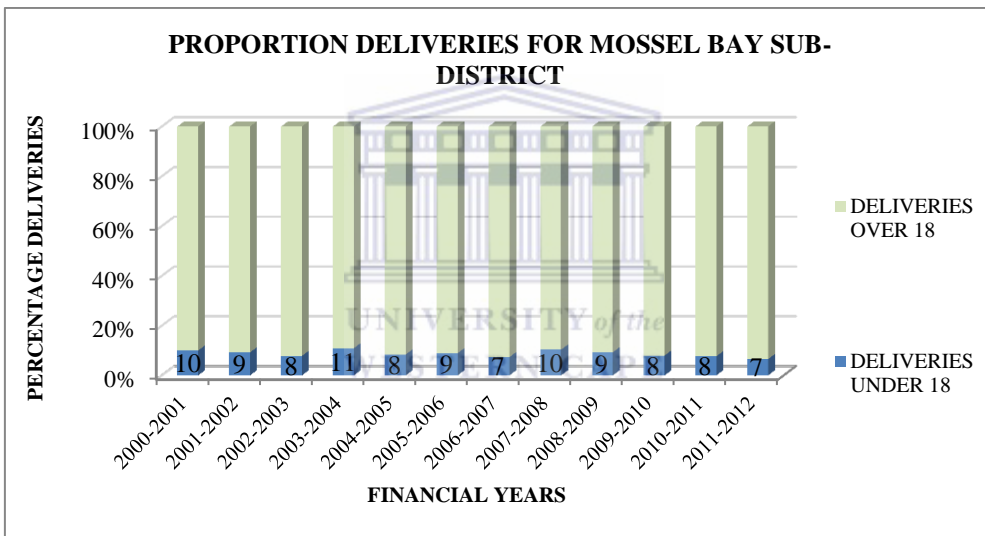
APPENDIX 34: PROPORTION FOR KNYSNA SUB-DISTRICT



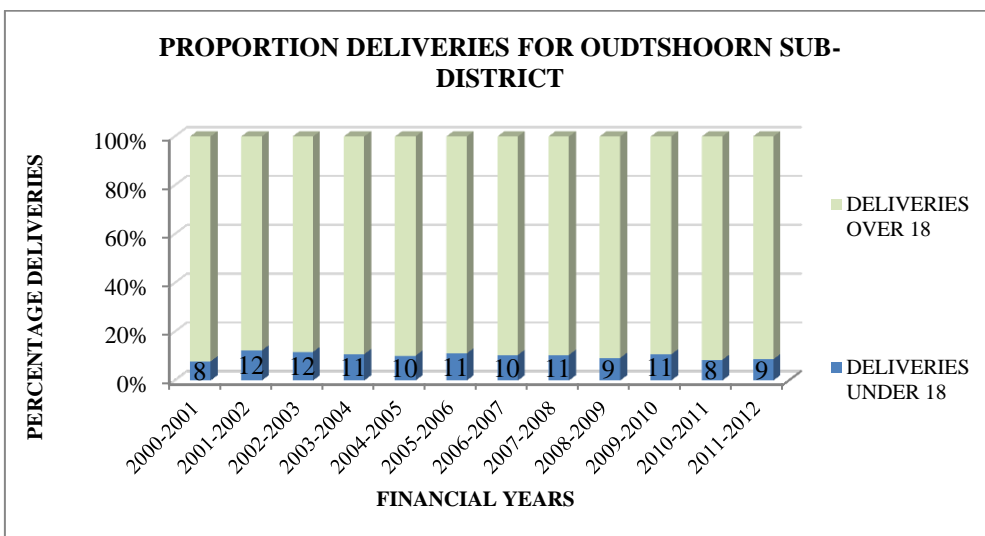
APPENDIX 35: PROPORTION DELIVERIES FOR HESSAQUA SUB-DISTRICT



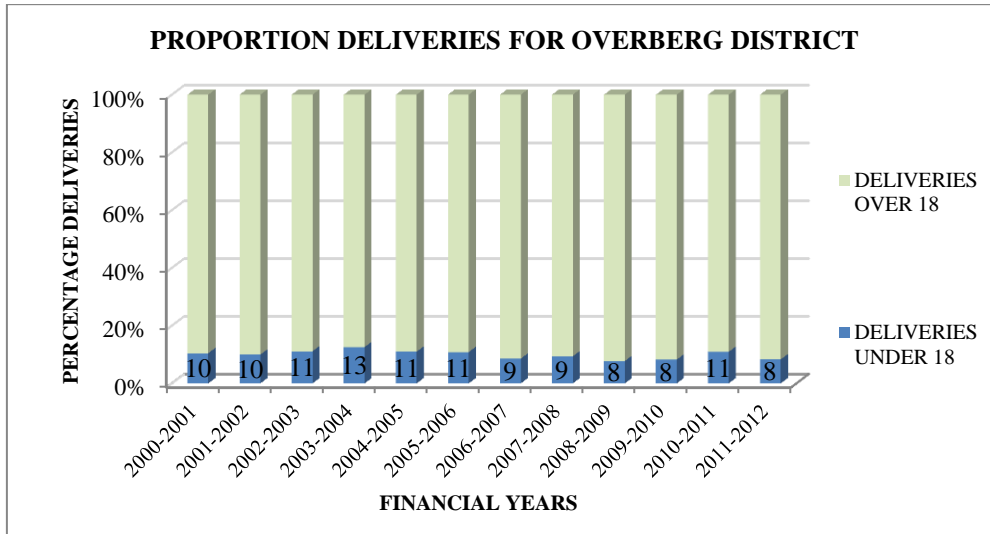
APPENDIX 36: PROPORTION DELIVERIES FOR MOSSEL BAY SUB-DISTRICT



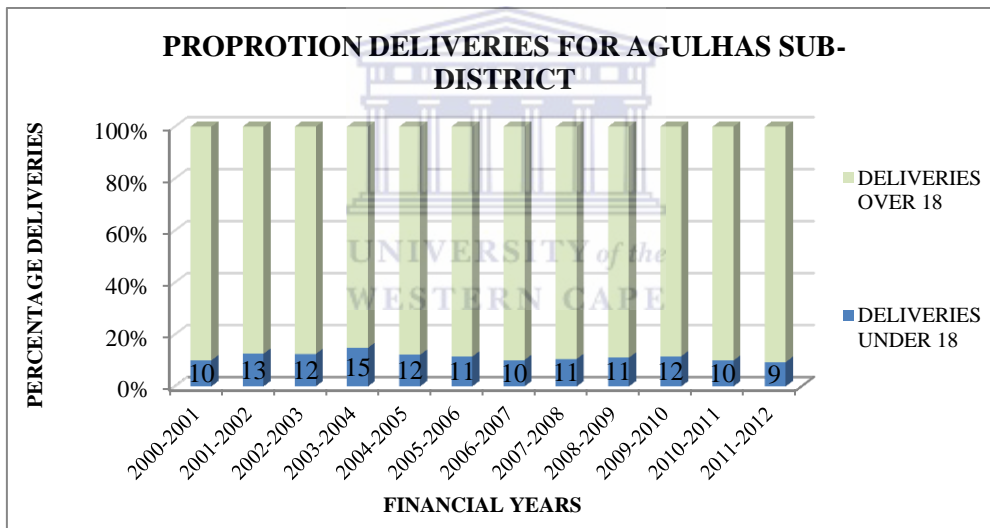
APPENDIX 37: PROPORTION DELIVERIES FOR OUDTSHOORN SUB-DISTRICT



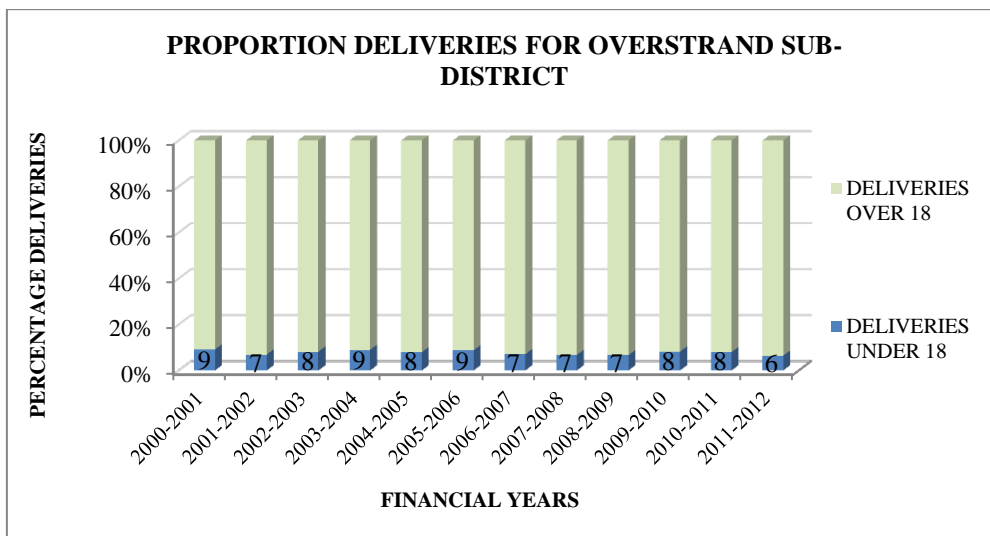
APPENDIX 38: PROPORTION DELIVERIES FOR OVERBERG DISTRICT



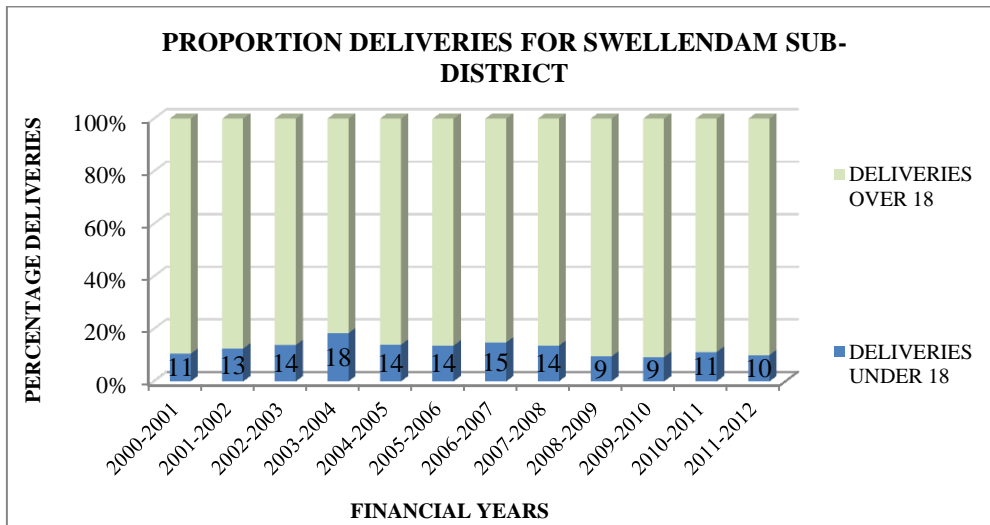
APPENDIX 39: PROPORTION DELIVERIES FOR AGULHAS SUB-DISTRICT



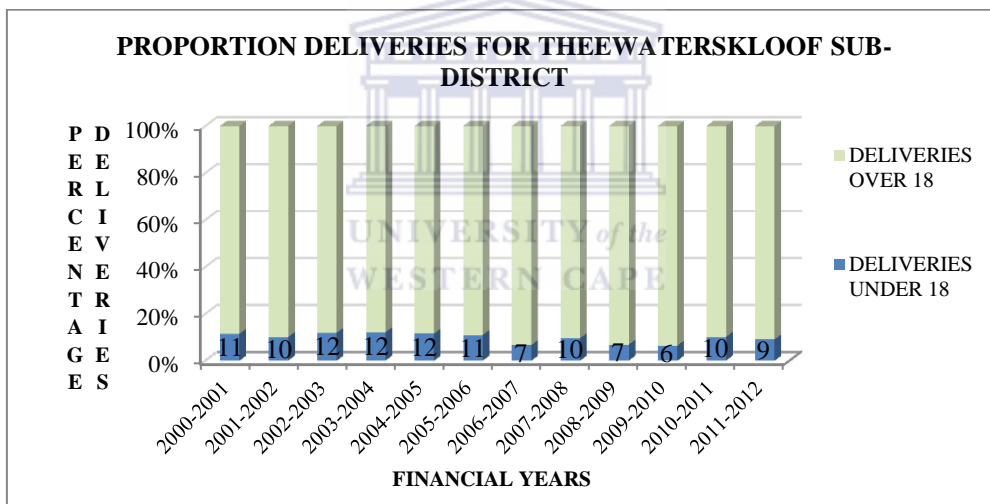
APPENDIX 40: PROPORTION DELIVERIES FOR OVERSTRAND SUB-DISTRICT



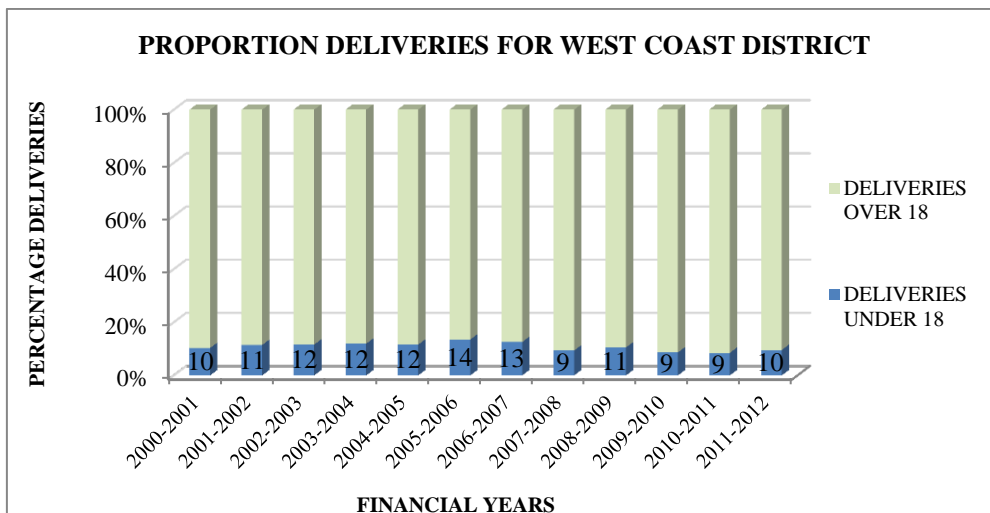
APPENDIX 41: PROPORTION DELIVERIES FOR SWELLENDAM SUB-DISTRICT



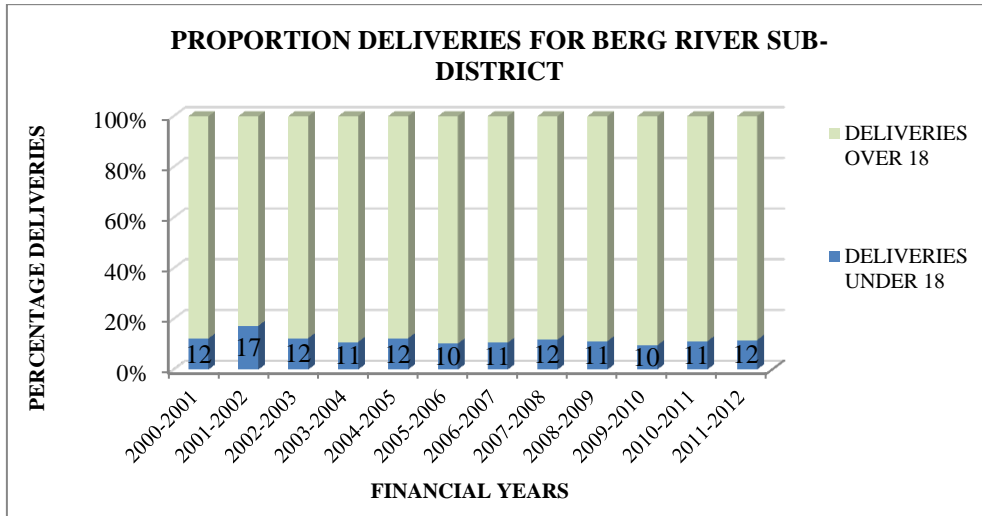
APPENDIX 42: PROPORTION DELIVERIES FOR THEEWATERSKLOOF SUB-DISTRICT



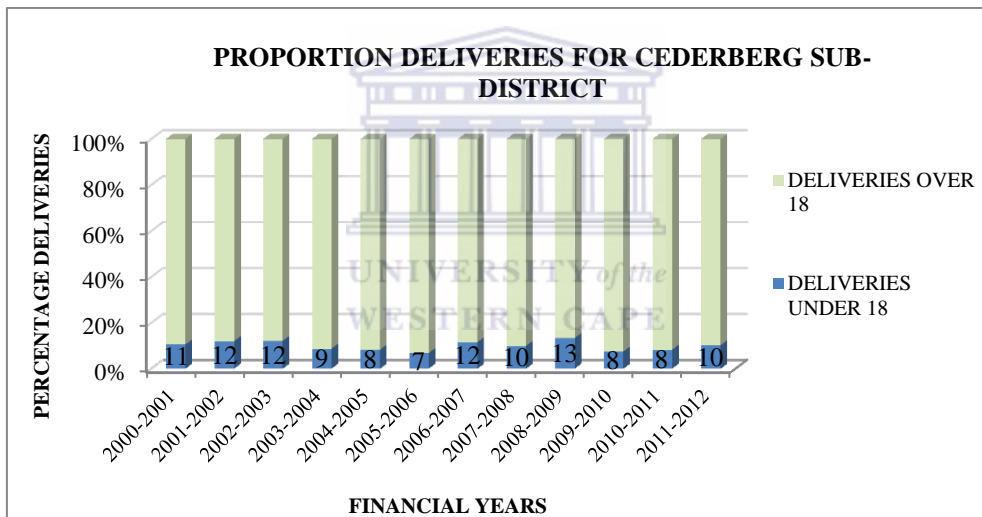
APPENDIX 43: PROPORTION DELIVERIES FOR WEST COAST DISTRICT



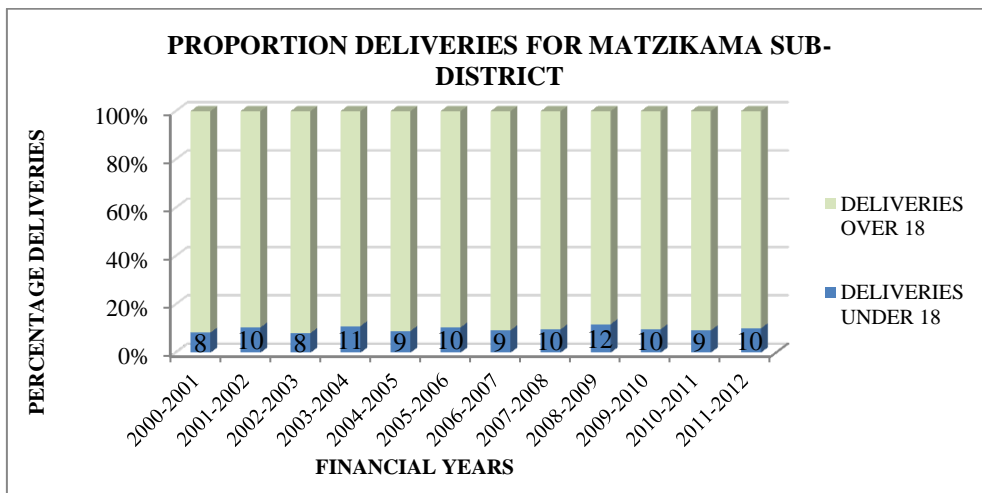
APPENDIX 44: PROPORTION DELIVERIES FOR BERG RIVER SUB-DISTRICT



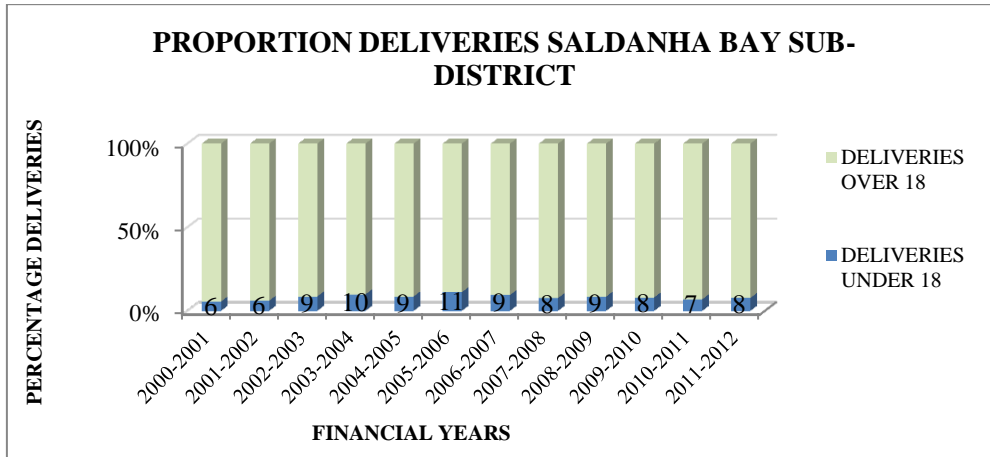
APPENDIX 45: PROPORTION DELIVERIES FOR CEDERBERG SUB-DISTRICT



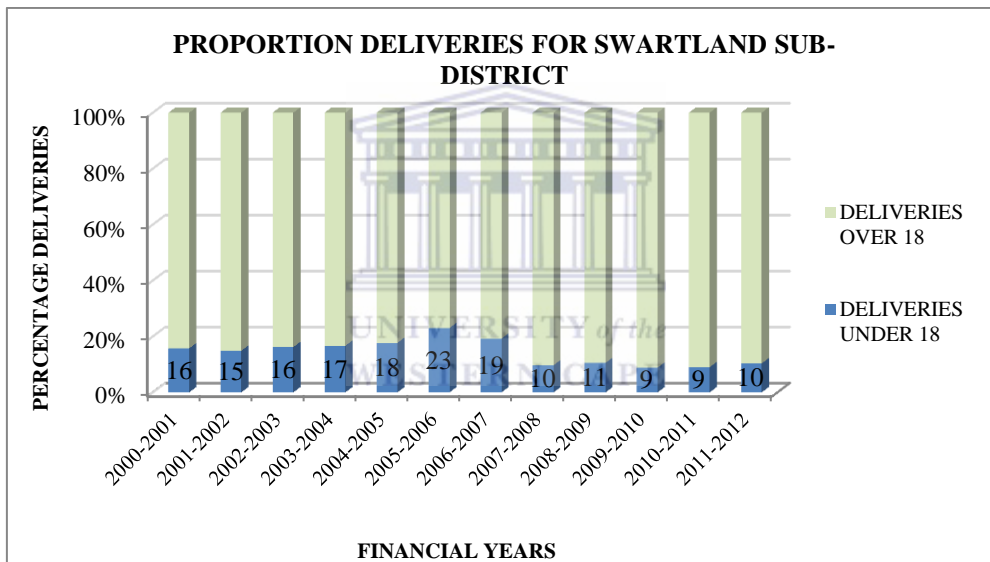
APPENDIX 46: PROPORTION DELIVERIES FOR MATZIKAMA SUB-DISTRICT



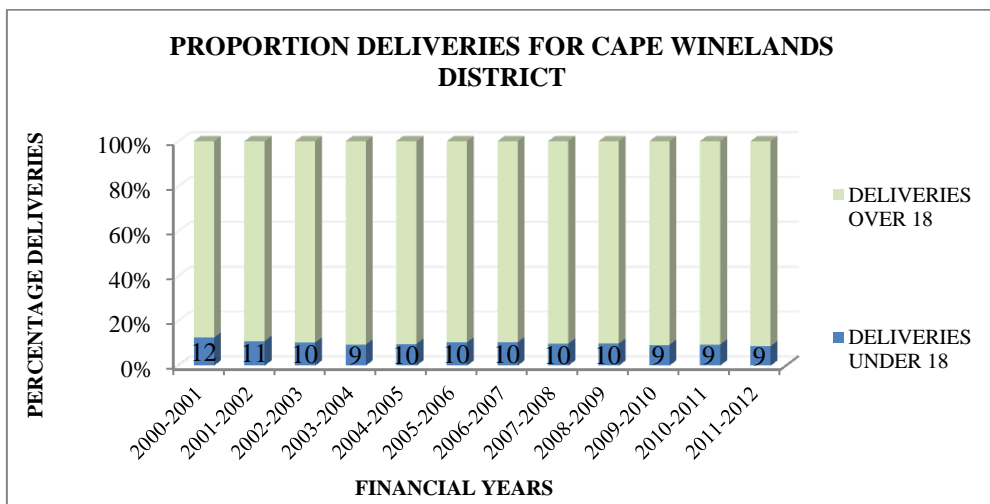
APPENDIX 47: PROPORTION DELIVERIES SALDANHA BAY SUB-DISTRICT



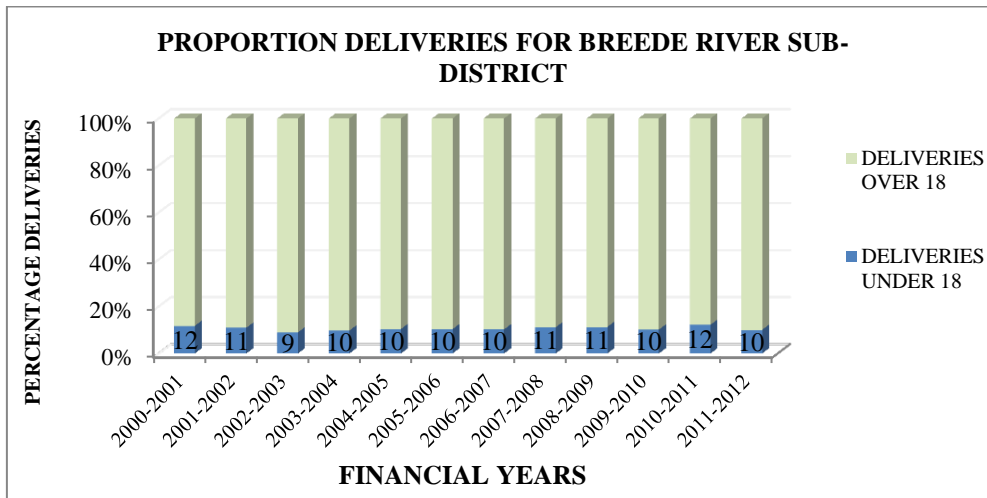
APPENDIX 48: PROPORTION DELIVERIES FOR SWARTLAND SUB-DISTRICT



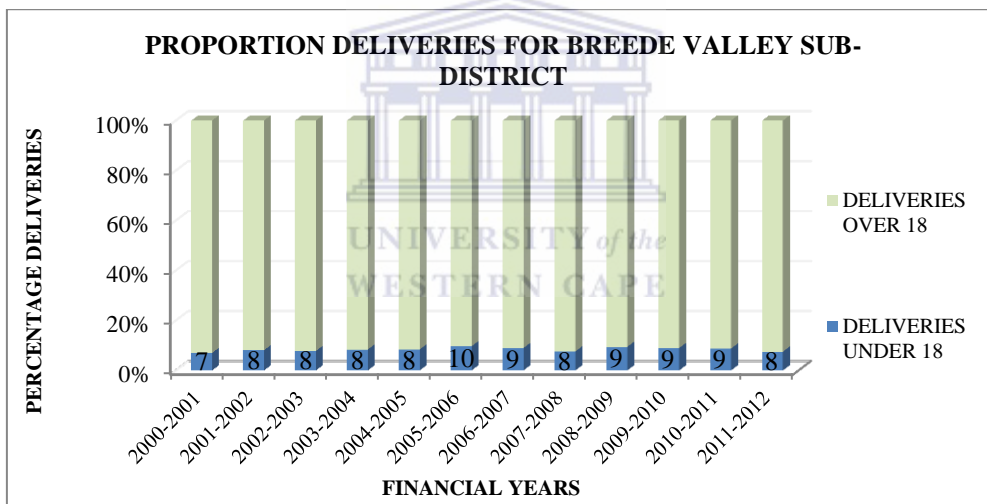
APPENDIX 49: PROPORTION DELIVERIES FOR CAPE WINELANDS DISTRICT



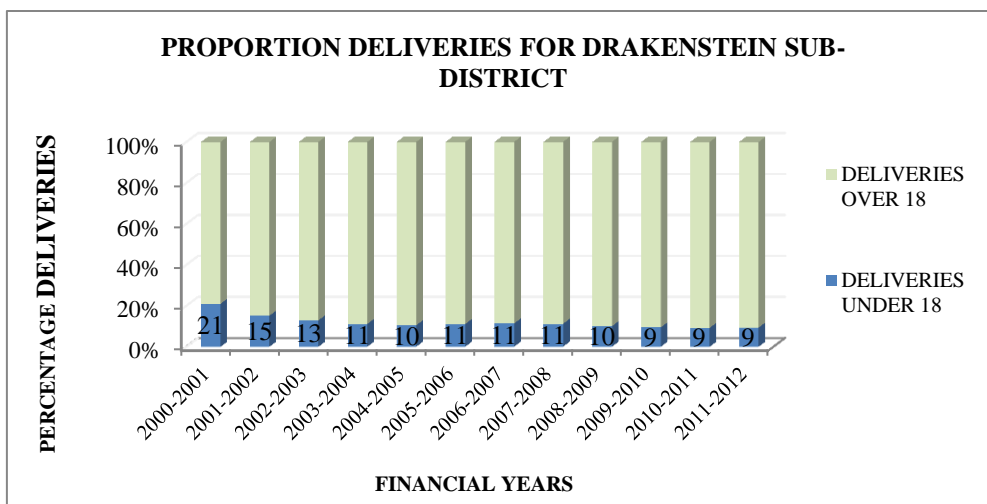
APPENDIX 50: PROPORTION DELIVERIES FOR BREEDE RIVER SUB-DISTRICT



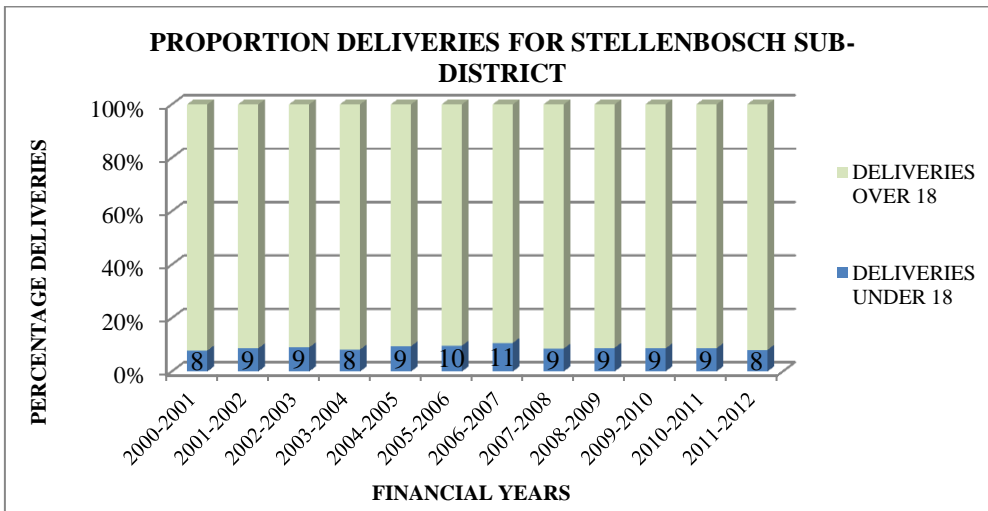
APPENDIX 51: PROPORTION DELIVERIES FOR BREEDE VALLEY SUB-DISTRICT



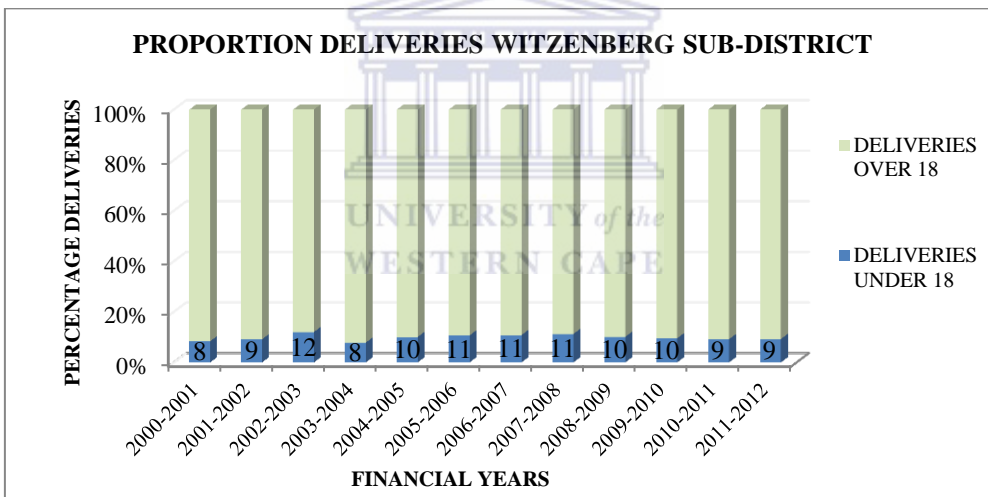
APPENDIX 52: PROPORTION DELIVERIES FOR DRAKENSTEIN SUB-DISTRICT



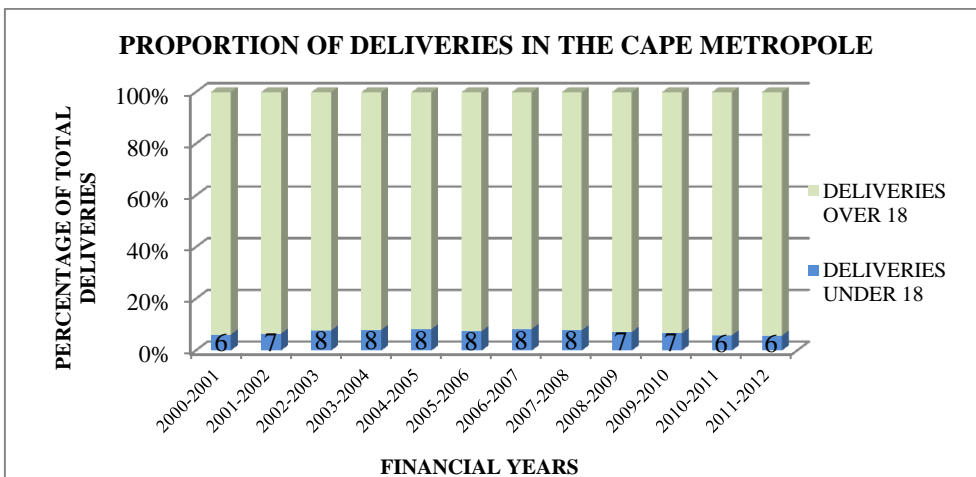
APPENDIX 53: PROPORTION DELIVERIES FOR STELLENBOSCH SUB-DISTRICT



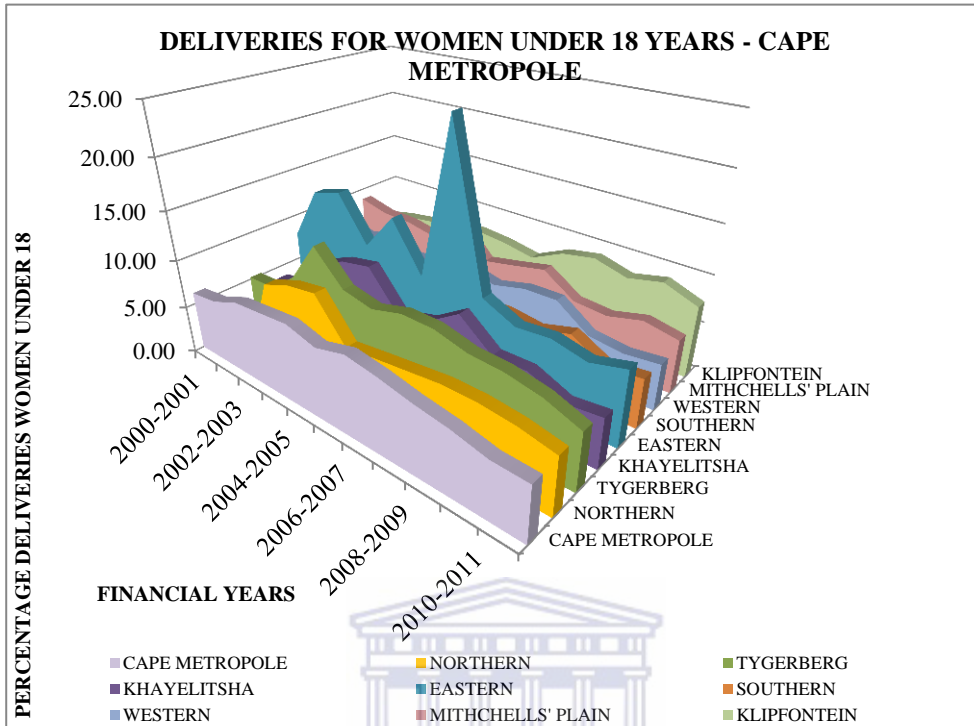
APPENDIX 54: PROPORTION DELIVERIES WITZENBERG SUB-DISTRICT



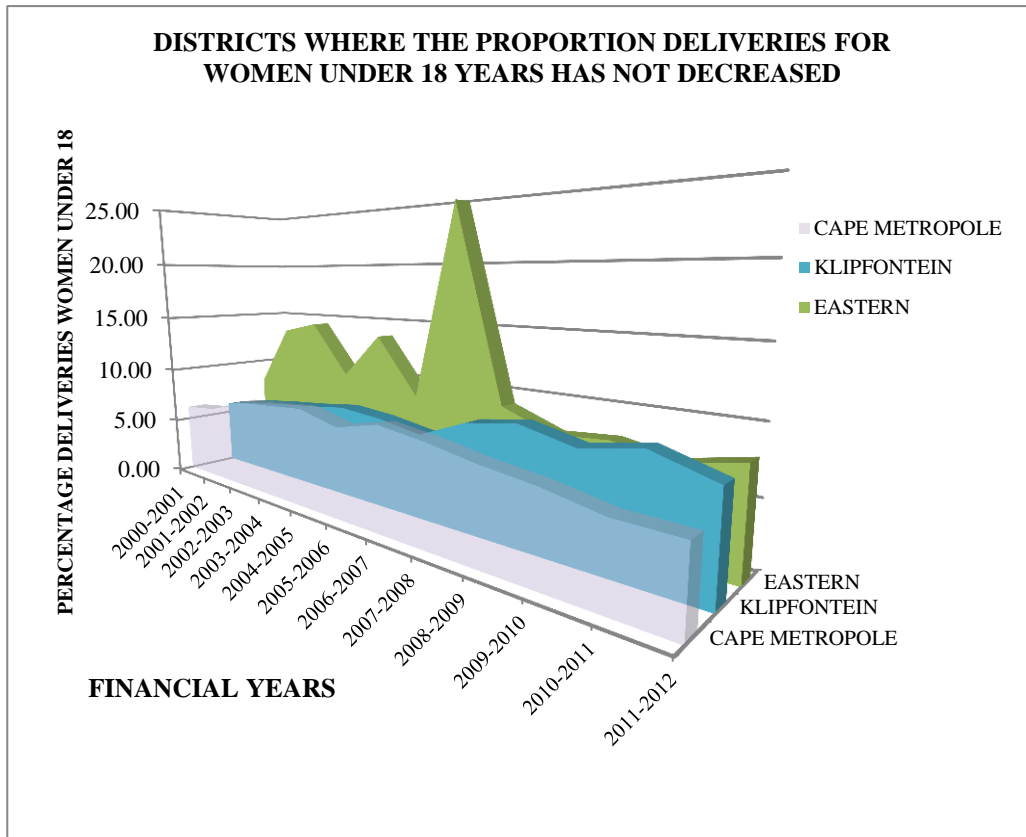
APPENDIX 55: PROPORTION DELIVERIES CAPE METROPOLE



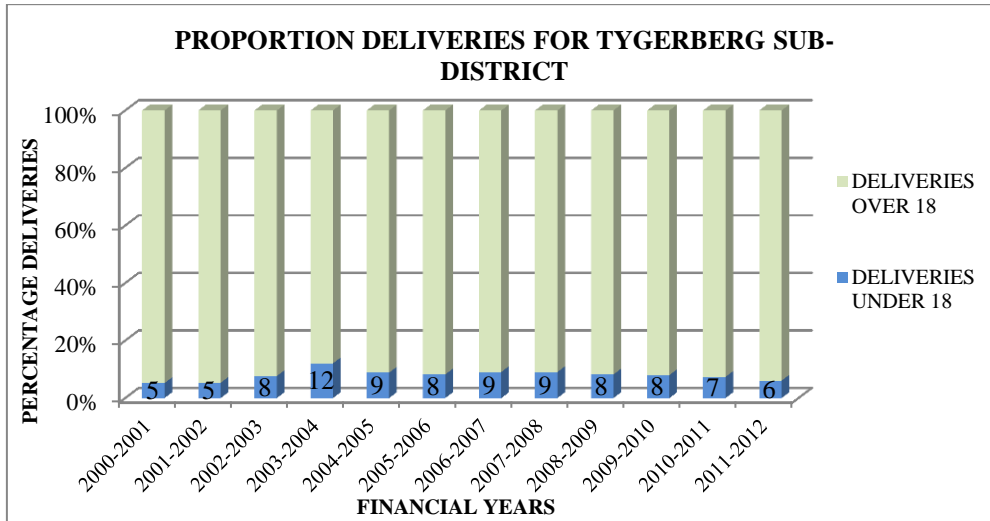
APPENDIX 56: DISTRICTS WHERE THE PROPORTION DELIVERIES FOR WOMEN UNDER 18 YEARS HAS NOT DECREASED



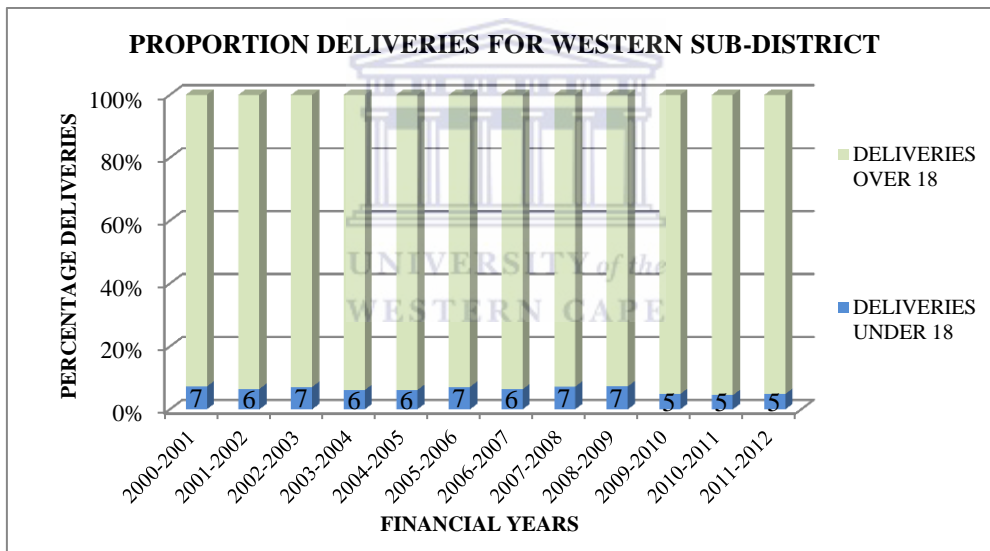
APPENDIX 57: METRO EAST PROPORTIONS FOR DELIVERIES FOR WOMEN UNDER 18 YEARS



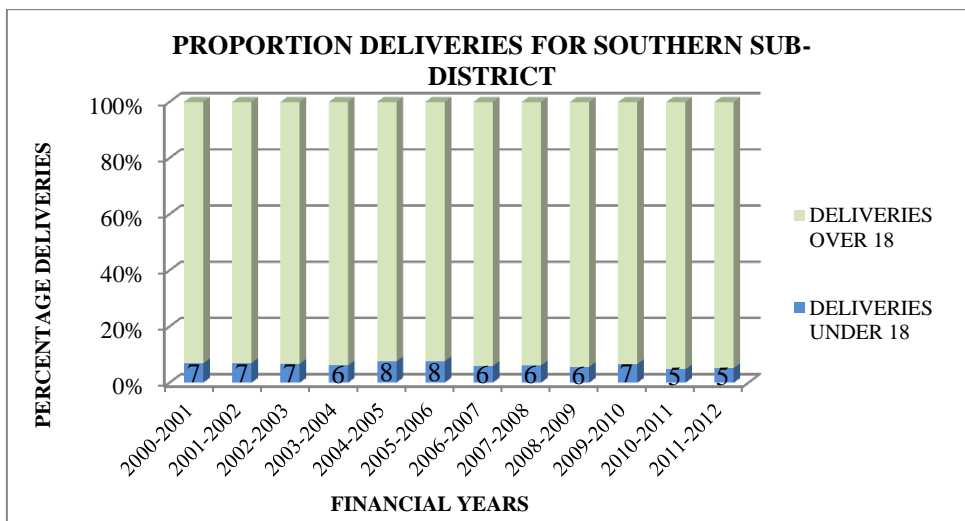
APPENDIX 58: PROPORTION DELIVERIES FOR TYGERBERG SUB-DISTRICT



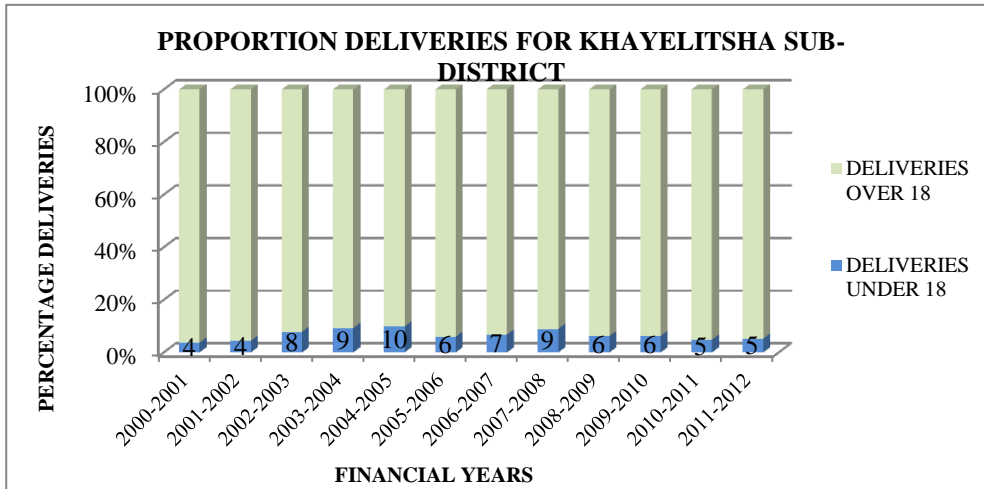
APPENDIX 59: PROPORTION DELIVERIES FOR WESTERN SUB-DISTRICT



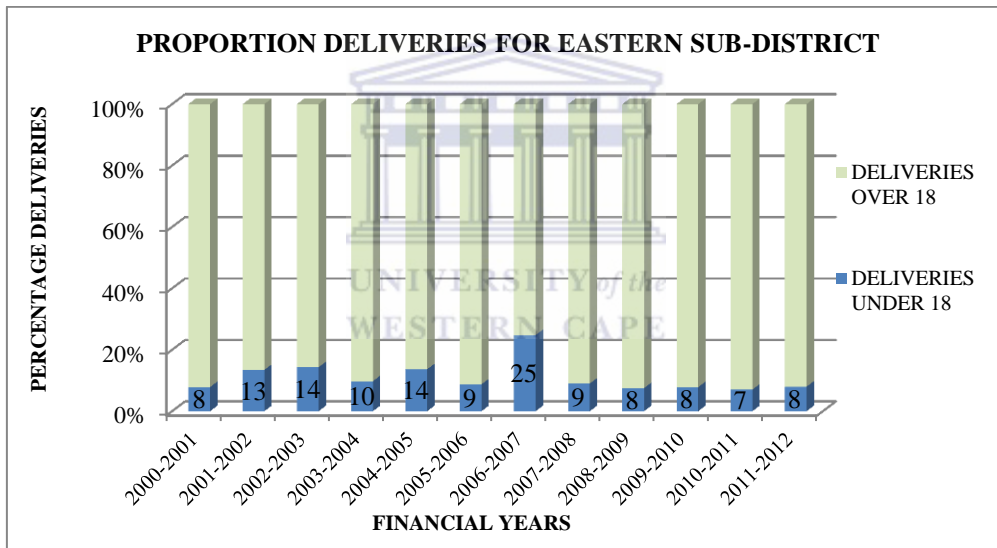
APPENDIX 60: PROPORTION DELIVERIES FOR SOUTHERN SUB-DISTRICT



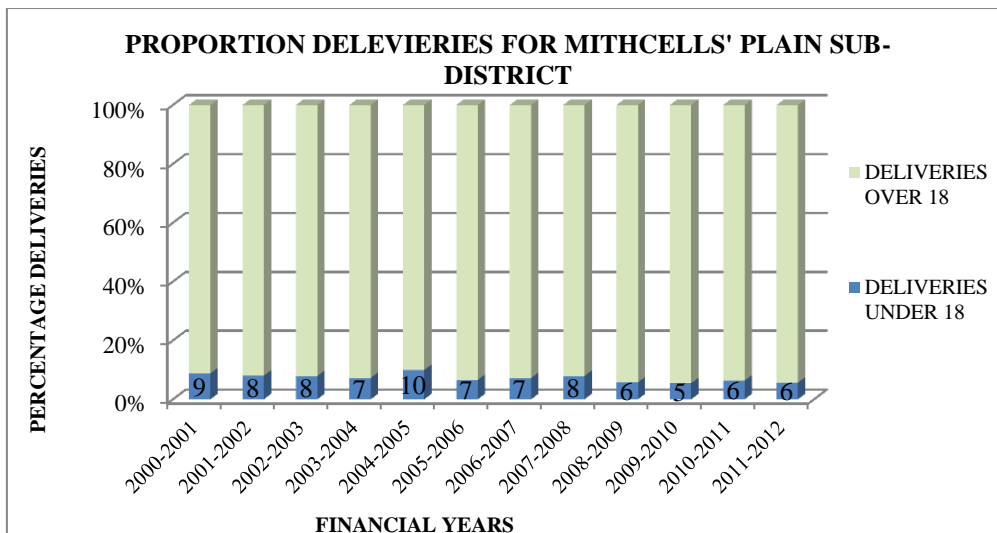
APPENDIX 61: PROPORTION DELIVERIES FOR KHAYELITSHA SUB-DISTRICT



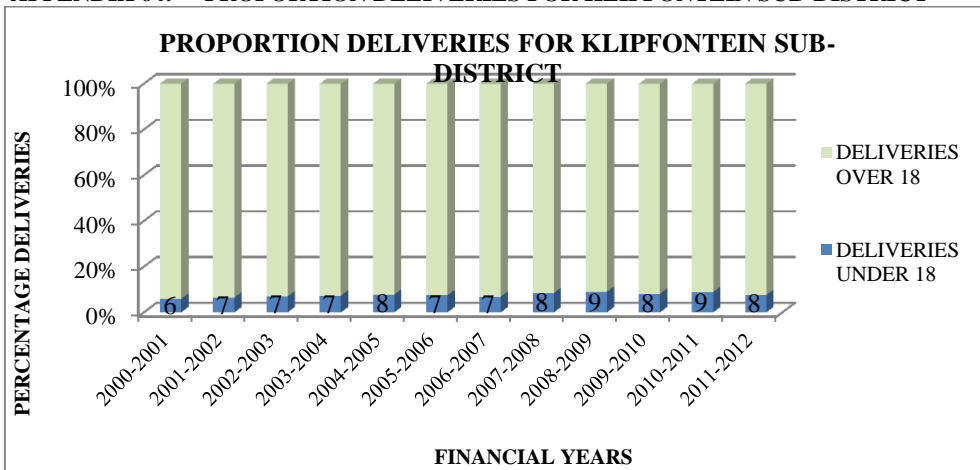
APPENDIX 62: PROPORTION DELIVERIES FOR EASTERN SUB-DISTRICT



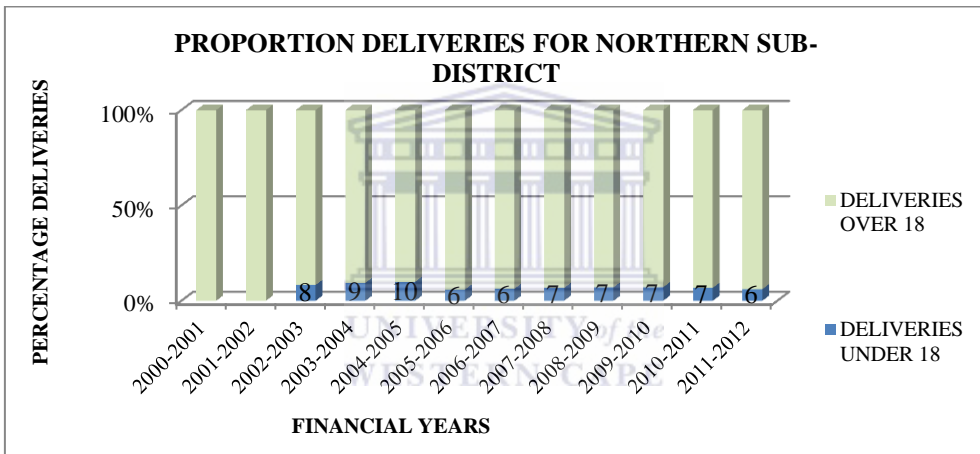
APPENDIX 63: PROPORTION DELIVERIES FOR MITHCELLS' PLAIN SUB-DISTRICT



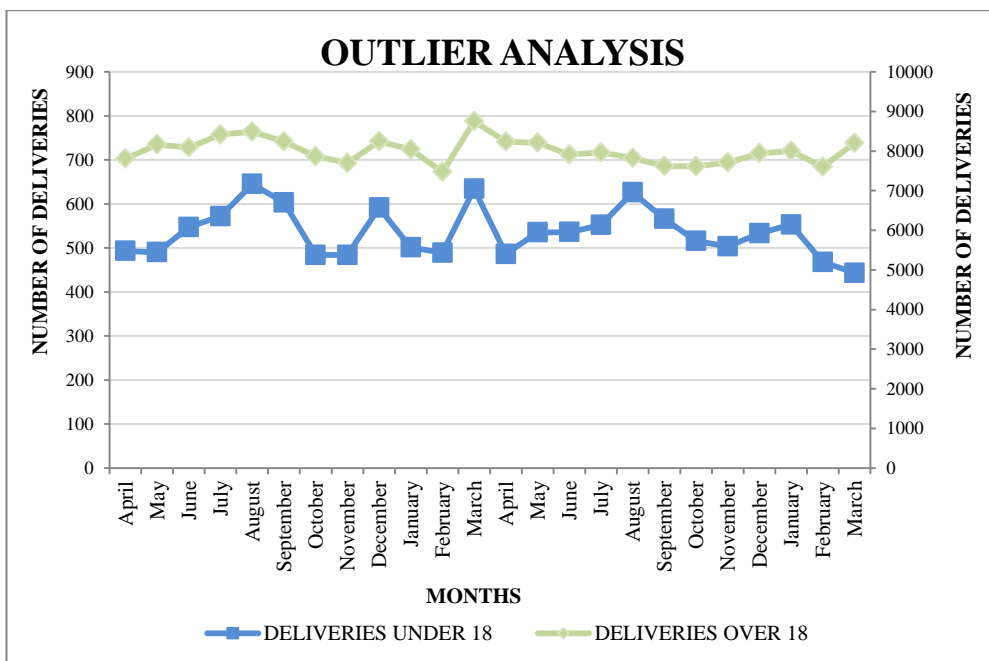
APPENDIX 64: PROPORTION DELIVERIES FOR KLIPFONTEIN SUB-DISTRICT



APPENDIX 65: PROPORTION DELIVERIES FOR NORTHERN SUB-DISTRICT



APPENDIX 66: OUTLIER ANALYSIS - APRIL 2010 - MARCH 2012



Appendix 66 is presented to show that for women over 18 years, there was an outlier in the data for March 2011. While there was a lot of fluctuation in the data, a general downward trend was observed, bar March 2011. The spike was not mirrored for women under 18 years where the expected fluctuations observed in previous years were observed.

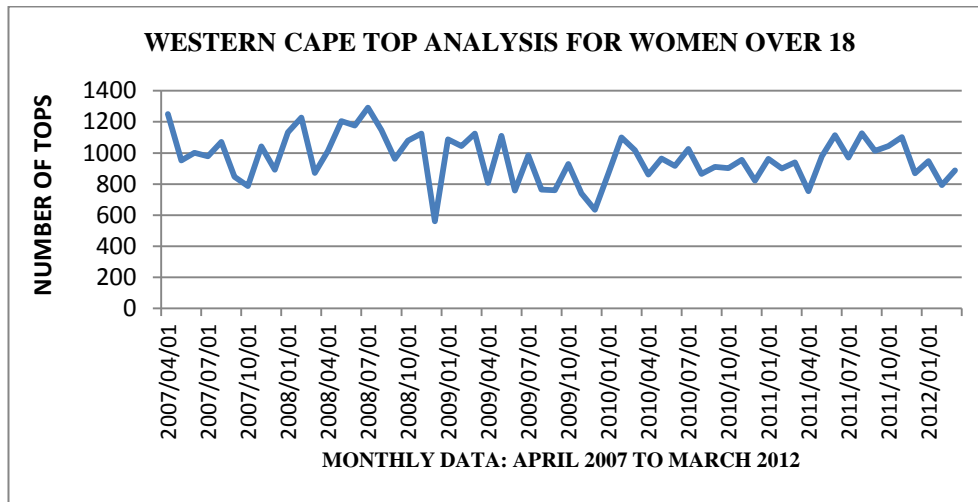
The seasonal troughs in November and February with increases in December and March have been discussed earlier. The increase in March 2011 resulted in the most number of babies delivered in one month in the Province. The high number of deliveries coincided with the World Cup in South Africa 9 months earlier. The effect seems to have been greater in the total deliveries dataset than for women under 18 years. This raises questions about the effectiveness of existing public health messages regarding safe sexual reproductive health choices. The DoH had anticipated possible scenarios – including the risk of unplanned and unwanted pregnancies - coinciding with the world cup and increased the availability of condoms accordingly. It is interesting that the increase in deliveries was observed for total deliveries, while the number of deliveries for women under 18 years was commensurate with the seasonal increases observed in other years. It would be interesting to conduct further research into the protective factors for women under the age of 18 years in order to determine whether or not the enforcement of the legal drinking age in public spaces had any bearing in avoiding a *baby boom* for women under the age of 18 years.

This data was sought in order to gain a richer picture of *pregnancy* in the Province. These data are not included in the main body of the thesis because the Provincial Women's Health Programmes managers had expressed concerns about the veracity of the data. The confidence in the data for the Cape Metropole District was deemed to be far stronger than confidence in the data for the rural districts. Further, the Department recognised that access to this service was severely restricted because of the difficulty in recruiting staff who were willing to provide the service. Historically, a mixed model of service delivery had developed across the Province, with a roving team providing the bulk of Surgical TOPs at District Hospitals in the Cape Metropole, and out-sourced service providers delivering a large proportion of services in the rural districts. For example, a doctor was contracted via Marie Stopes to provide services in the Winelands District, and Marie Stopes was directly contracted to provide services in the Eden District. In the Overberg and West Coast districts, all second trimester were referred out of the district because the DoH was unable to recruit staff to deliver the services. Similarly, TOP services were not provided in Central Karoo and all patients have historically been referred to the Eden District.

In the light of this being an exploratory analysis of teenage deliveries in the Western Cape, a preliminary analysis has been conducted that may serve as a foundation for future research into the phenomenon of teenage pregnancy. The caveat that is central to this analysis is that no firm conclusions may be drawn about this data at this stage. The analysis was conducted under significant time limitations because it followed the feedback of the external examiners, and there has not been sufficient opportunity to engage the Provincial DoH Programmes manager about the findings to determine whether the data would be deemed to hold validity with the Department.

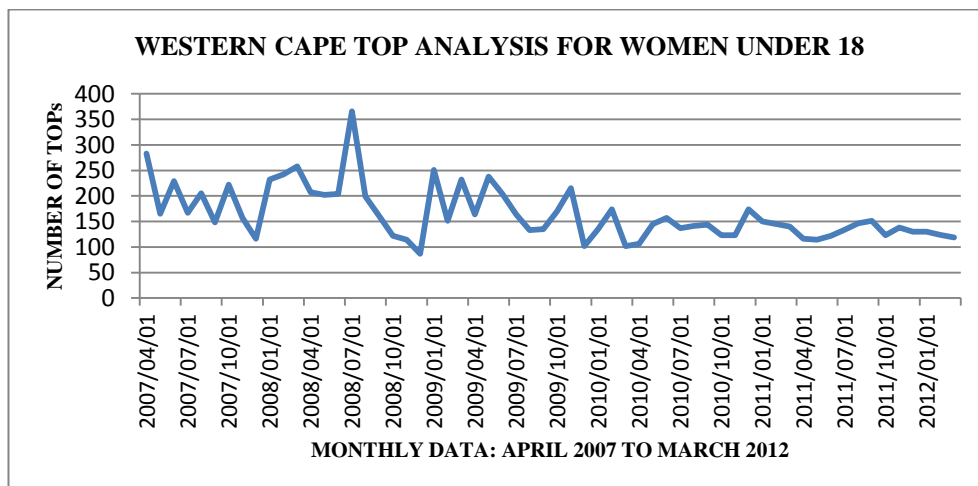
The DoH data for TOPs contained 128 elements. Only the elements related to the age of the woman were selected for this analysis because of the focus of the mini-thesis on women under the age of 18 years.

APPENDIX 68: FIVE YEAR TREND LINE FOR ALL TOPS - WOMEN OVER 18 YEARS



The data for all TOPs (including medical and surgical TOPs) for women over 18 years shows that there is significant fluctuation in the data. No discernable pattern can be distinguished from the data. A wide range in the data was noted, with a maximum of 1292 TOPs in July of 2008 and a minimum of 561 TOPs in December of 2008.

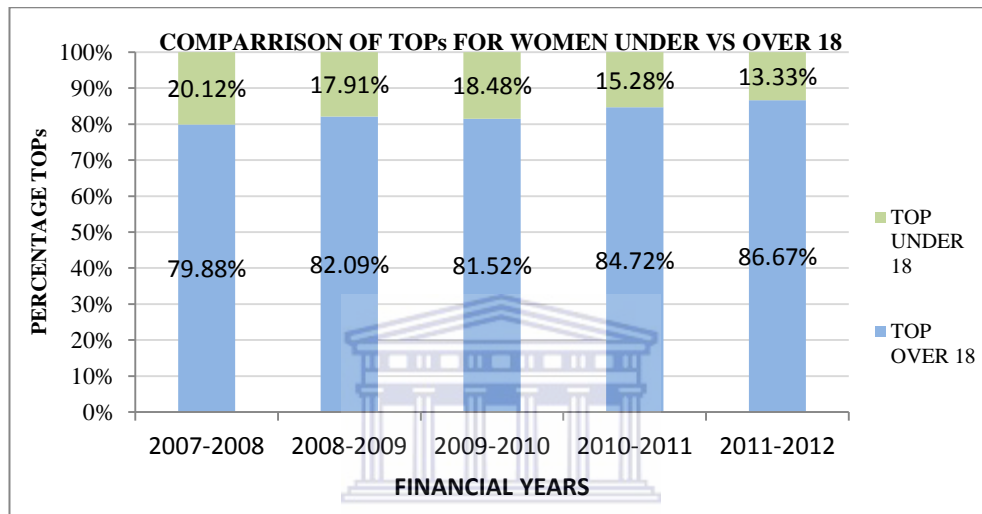
APPENDIX 69: FIVE YEAR TREND LINE FOR ALL TOPS - WOMEN UNDER 18 YEARS



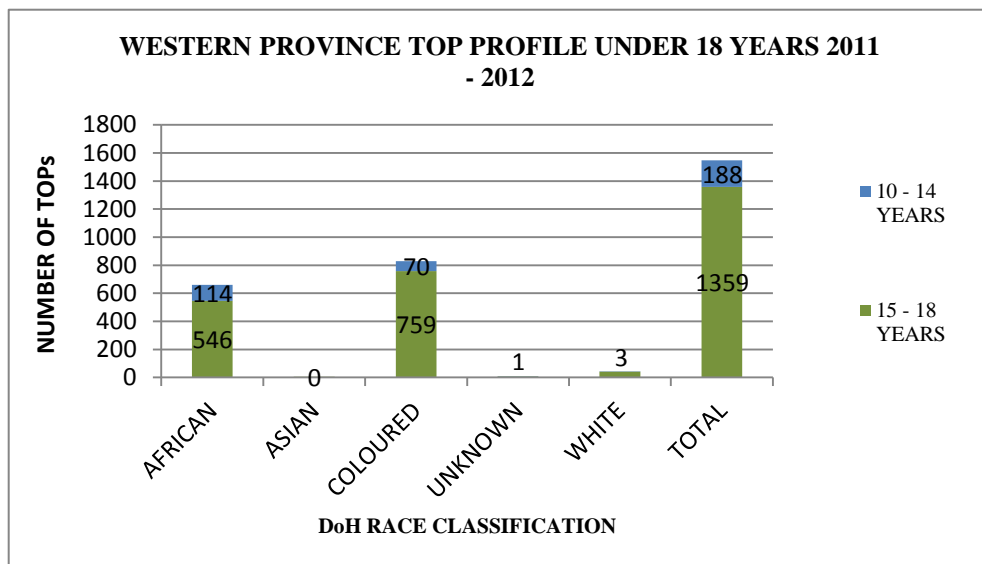
The pattern of the trend line for TOPs for women under 18 years is characterised by significant fluctuations from April 2007 until March 2010. Thereafter, the trend becomes more stable. However, it must be noted that

In order to analyse this further, the TOPs for women under 18 years was expressed as a proportion of the total TOPs compared to the TOPs for women over 18 years.

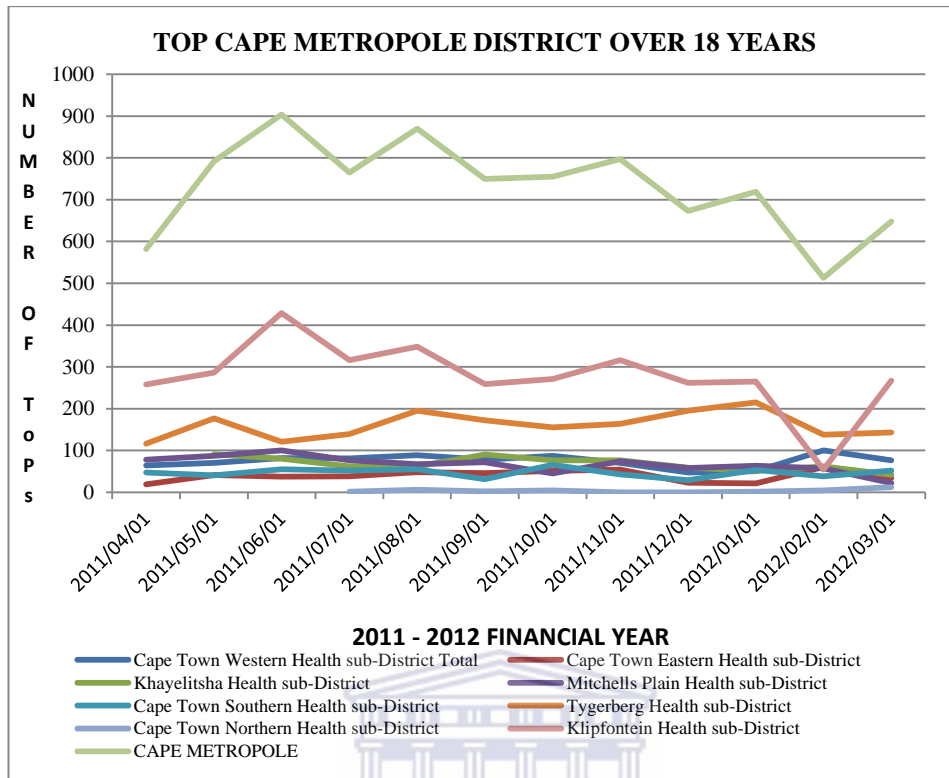
APPENDIX 72: ANALYSIS OF PROPORTIONS OF TOPs IN THE WESTERN CAPE PROVINCE



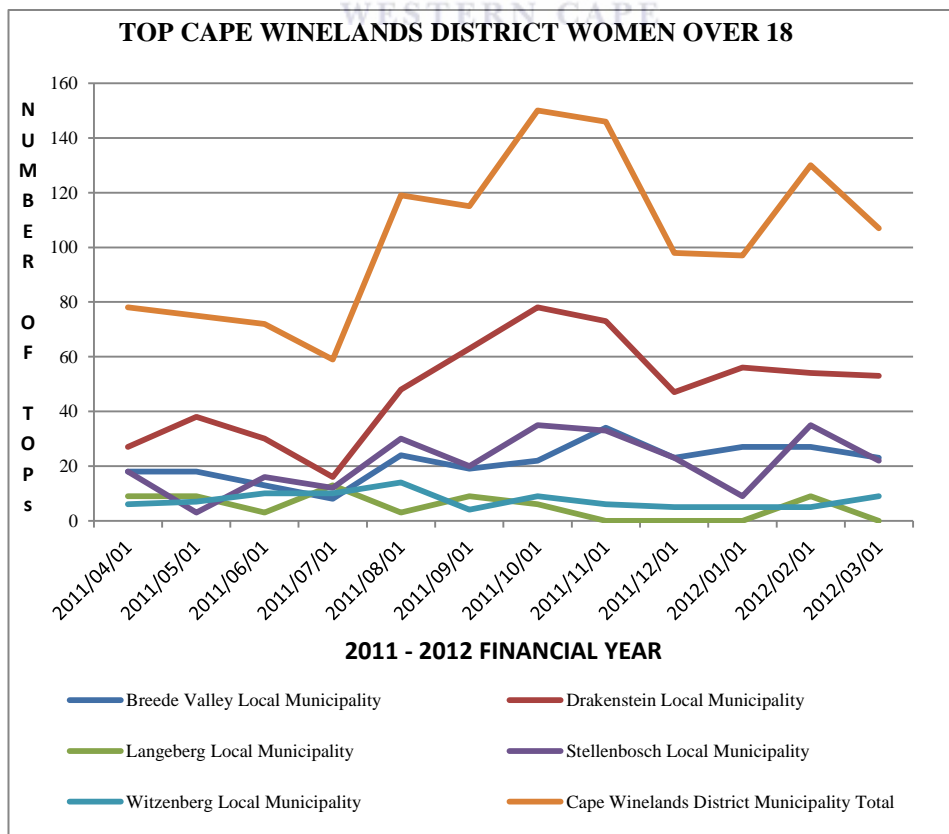
APPENDIX 73: PROFILE OF WOMEN BY AGE GROUP AND RACE FOR WOMEN UNDER 18 YEARS



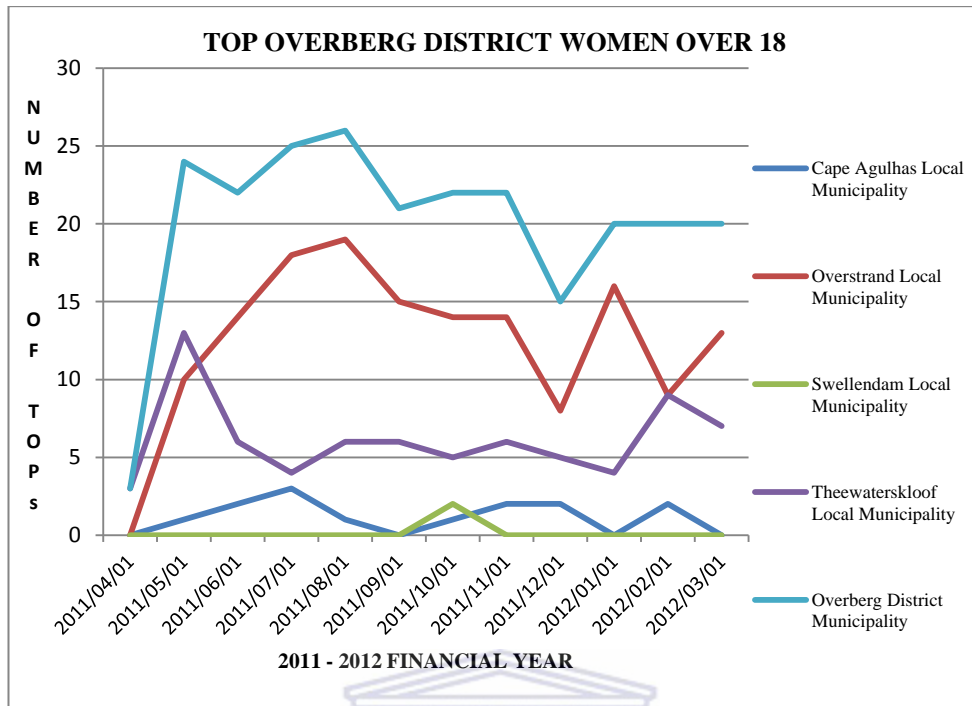
APPENDIX 74: TREND ANALYSIS - TOPs FOR WOMEN UNDER 18 YEARS



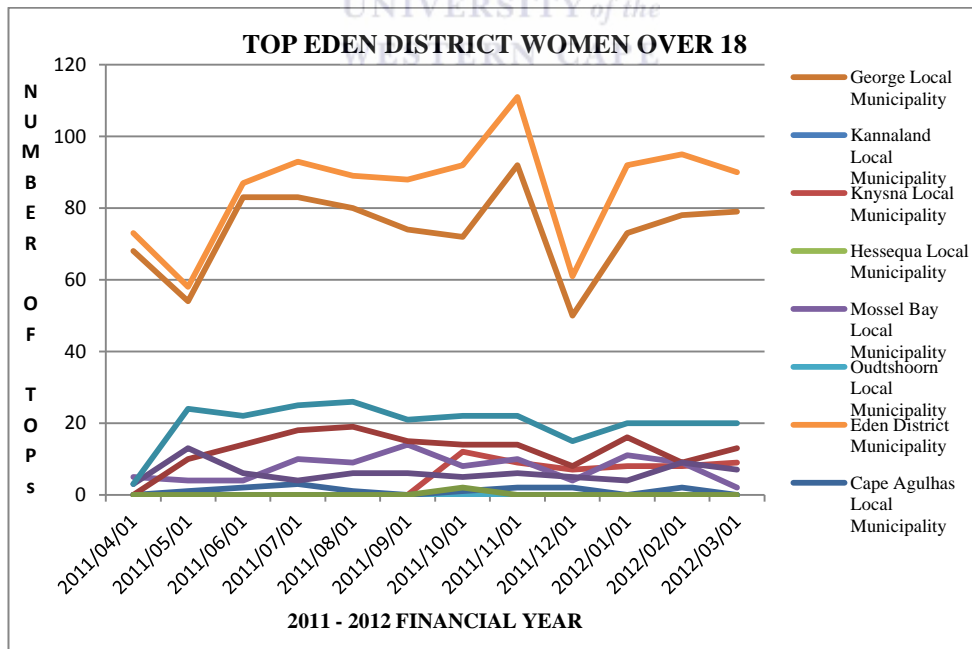
APPENDIX 75: TOP ANALYSIS - CAPE WINELANDS



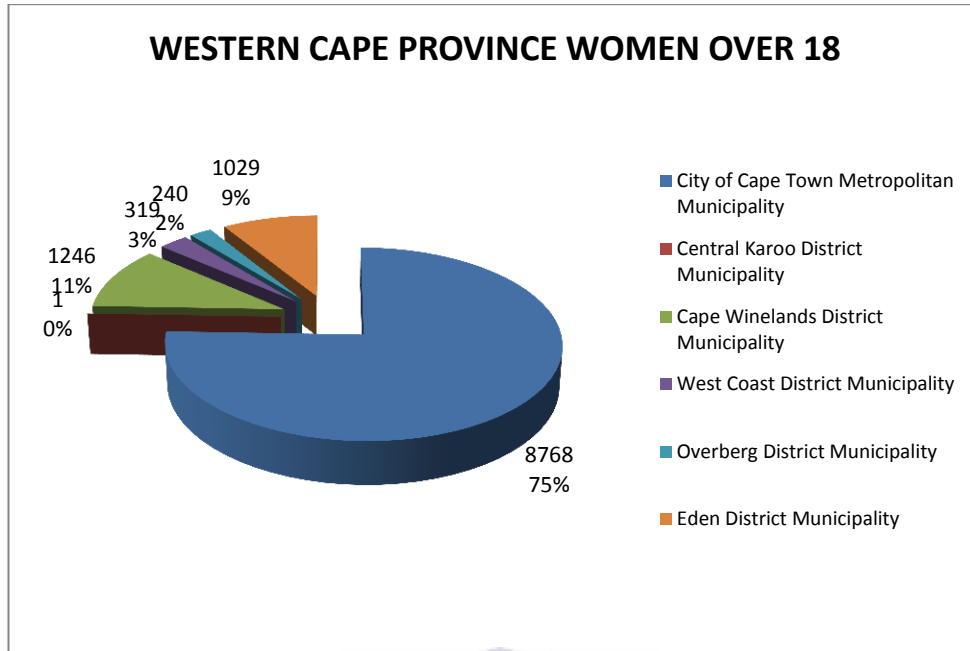
APPENDIX 76: TREND ANALYSIS - OVERBERG DISTRICT



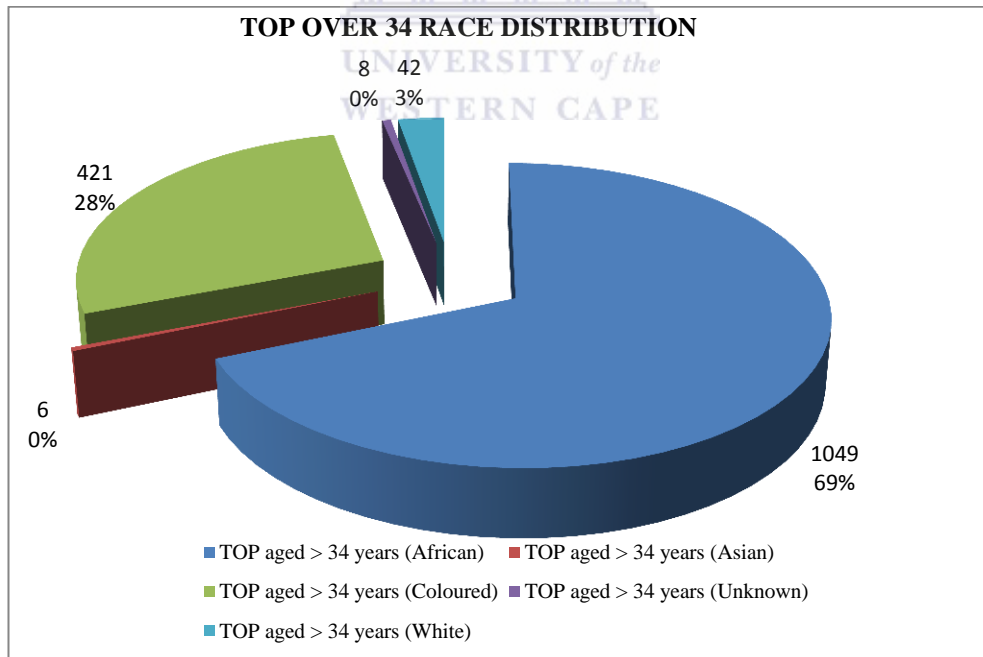
APPENDIX 77: TREND ANALYSIS - EDEN DISTRICT



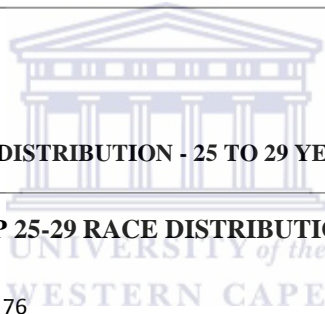
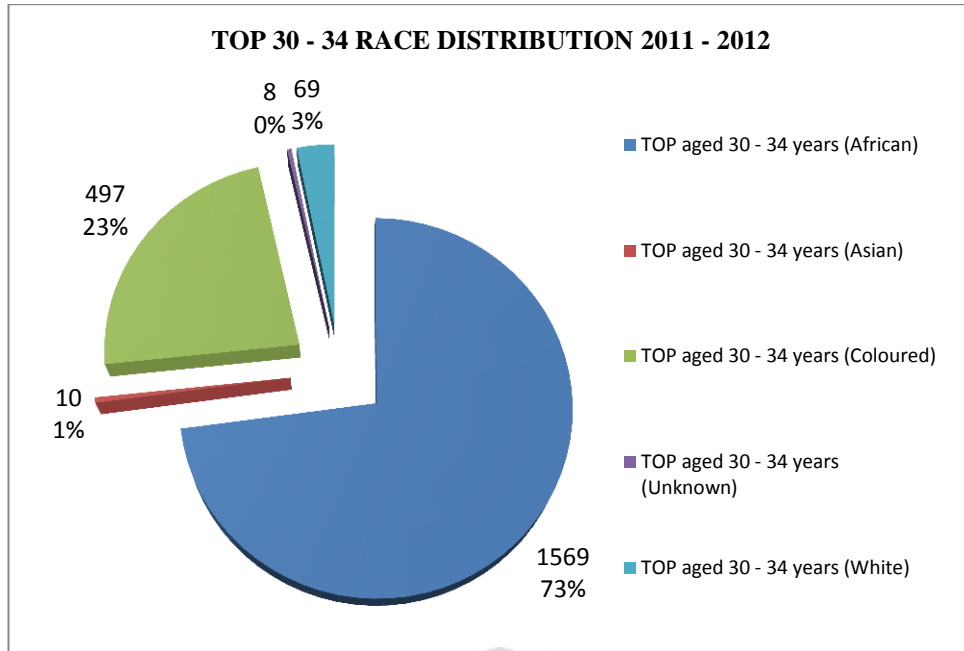
APPENDIX 78: 2011 - 2012 DISTRICT ANALYSIS



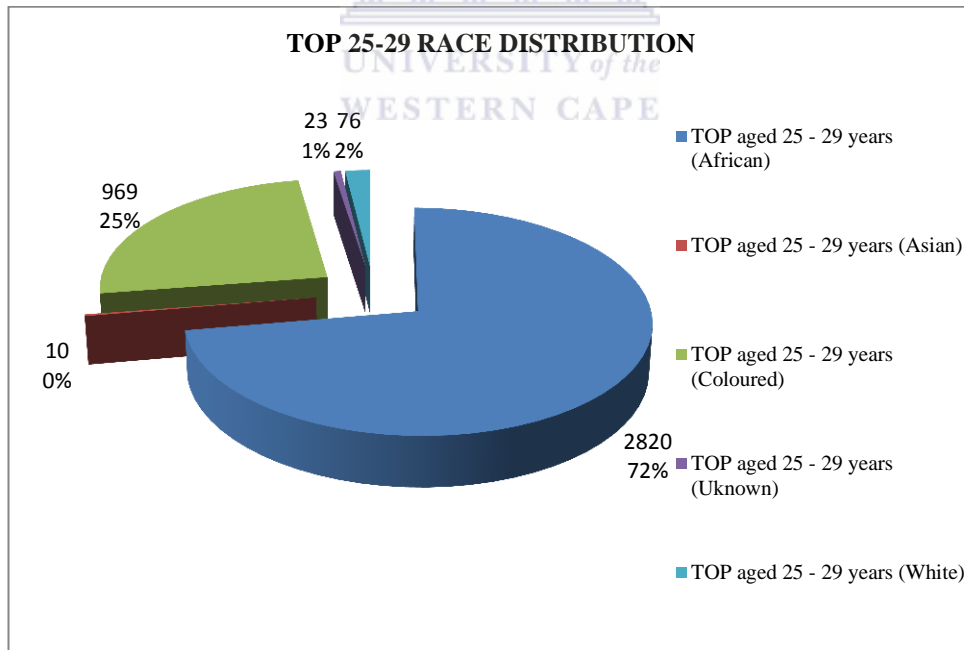
APPENDIX 79: TOP RACE DISTRIBUTION OVER 34 YEARS



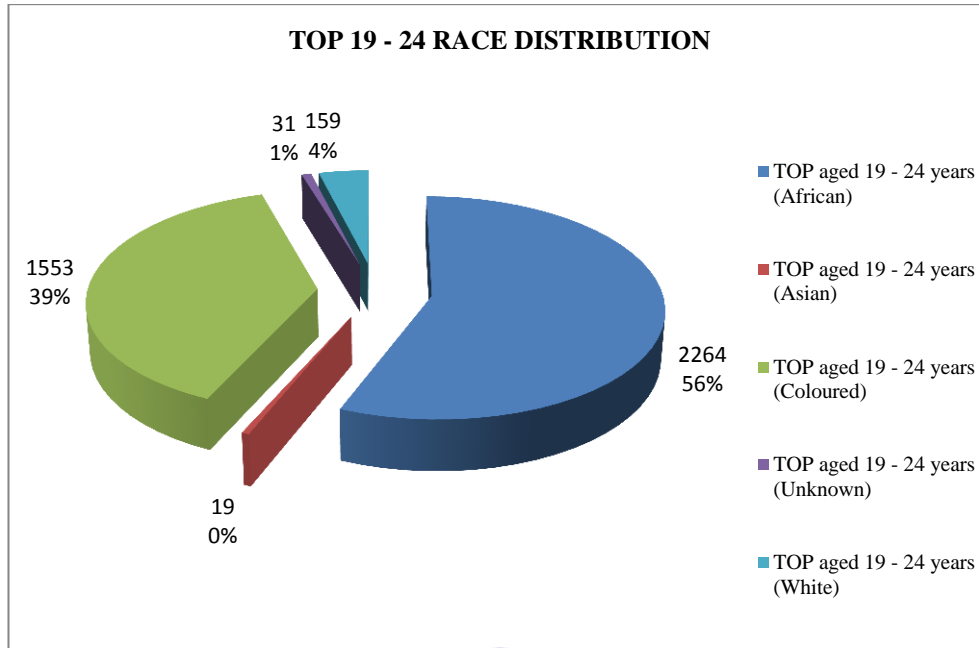
APPENDIX 80: TOP RACE DISTRIBUTION -30 TO 34 YEARS



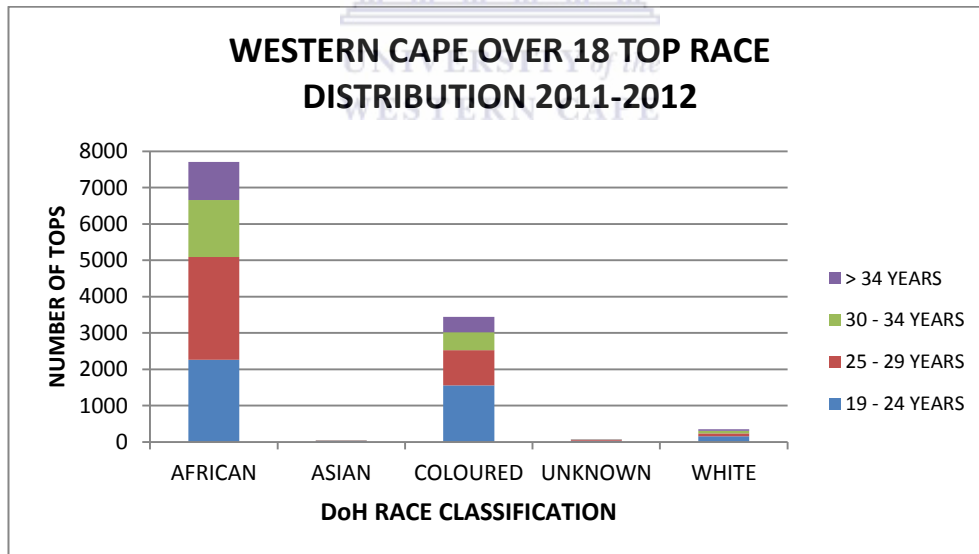
APPENDIX 81: TOP RACE DISTRIBUTION - 25 TO 29 YEARS



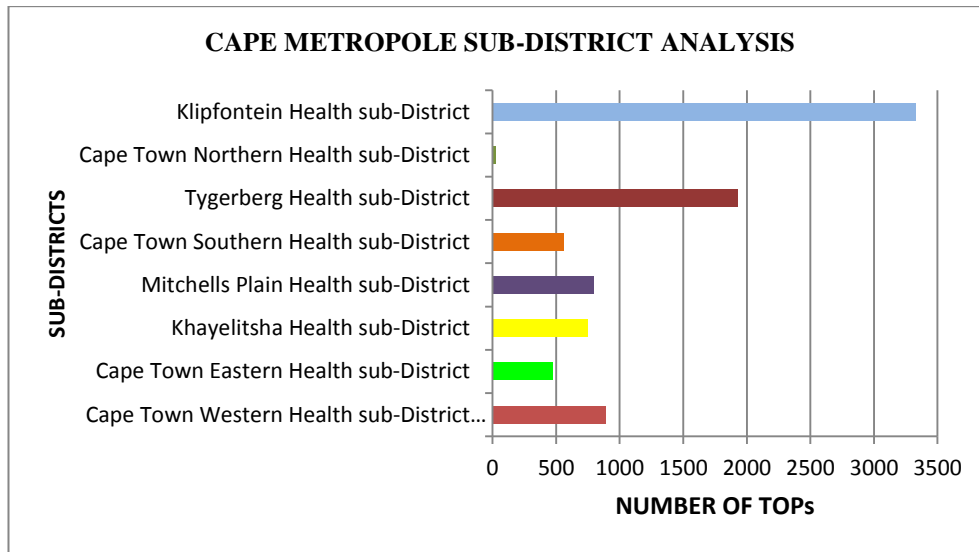
APPENDIX 82: TOP RACE DISTRIBUTION: 19 - 24 YEARS



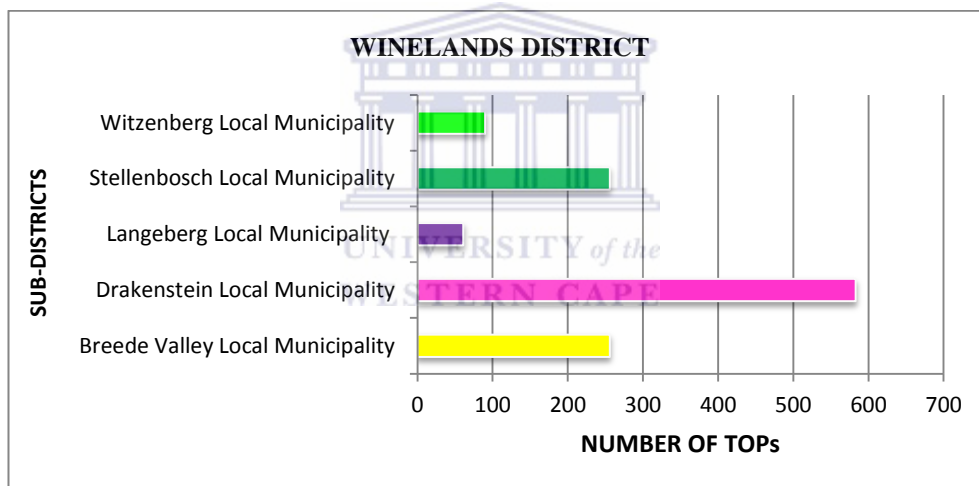
APPENDIX 83: WESTERN CAPE RACE DISTRIBUTION FOR TOPS BY AGE GROUP



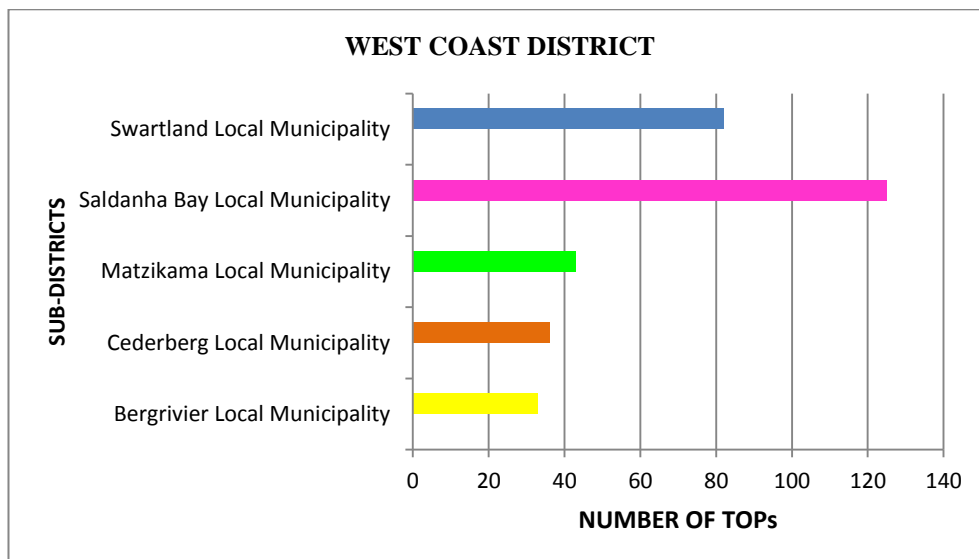
APPENDIX 84: TOP SUB-DISTRICT ANALYSIS CAPE METROPOLE OVER 18 YEARS



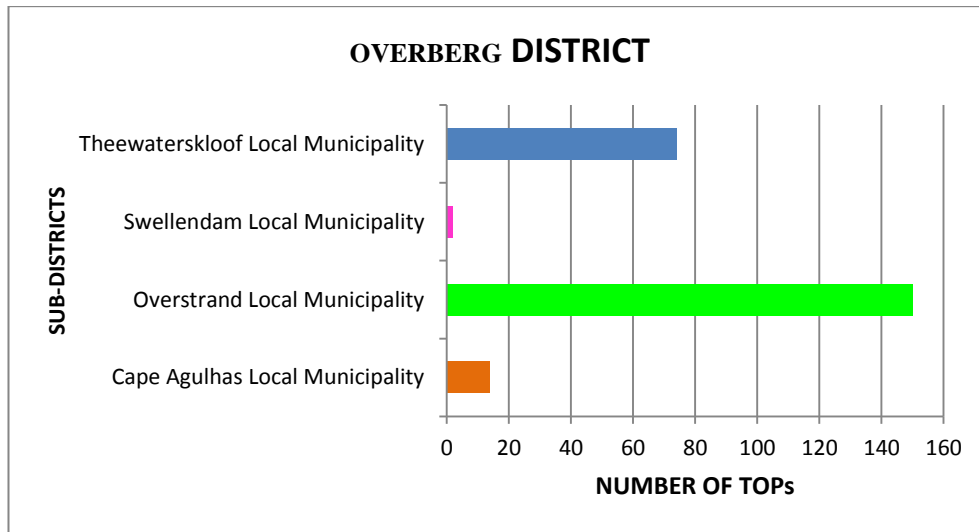
APPENDIX 85: TOP SUB-DISTRICT ANALYSIS CAPE WINELANDS OVER 18 YEARS



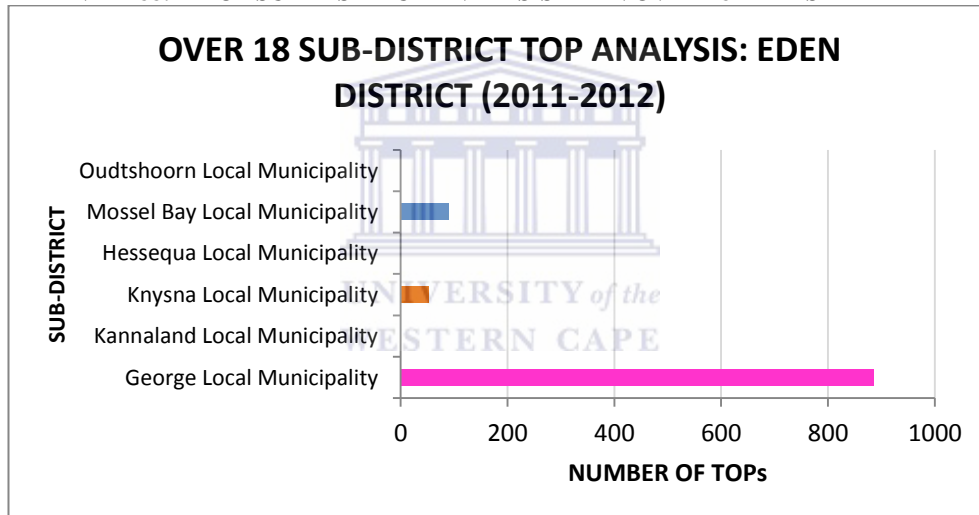
APPENDIX 86: TOP SUB-DISTRICT ANALYSIS WEST COAST OVER 18 YEARS



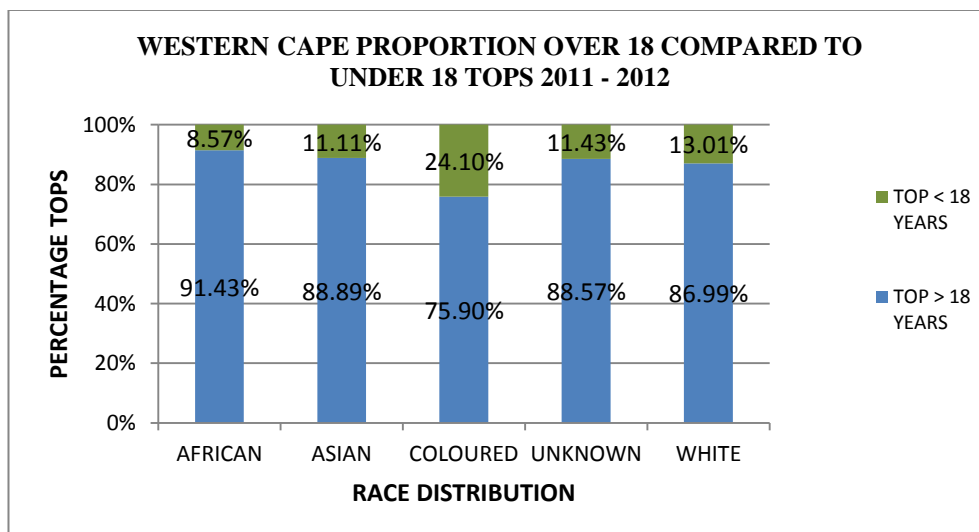
APPENDIX 87: TOP SUB-DISTRICT ANALYSIS OVERBERG OVER 18 YEARS



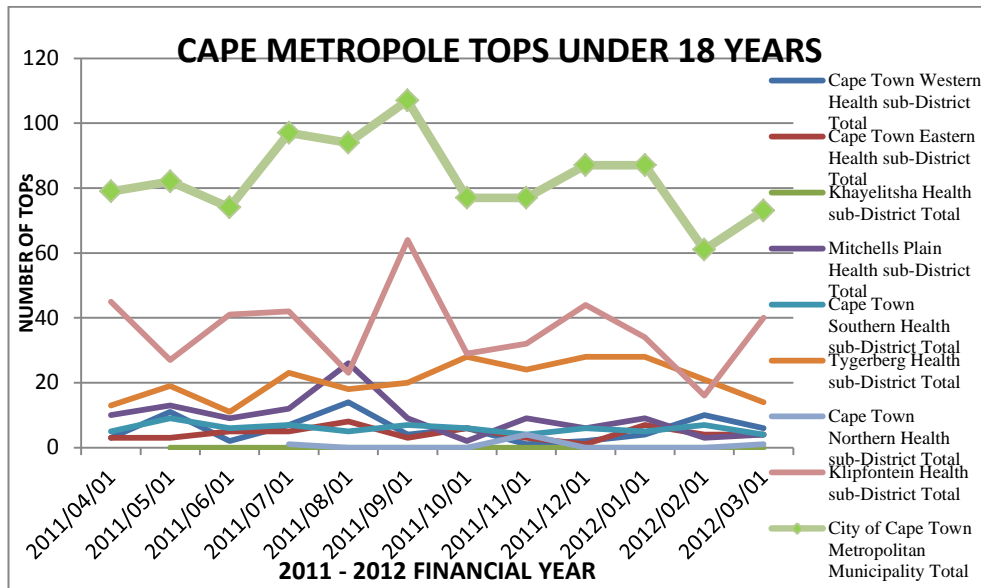
APPENDIX 88: TOP SUB-DISTRICT ANALYSIS EDEN OVER 18 YEARS



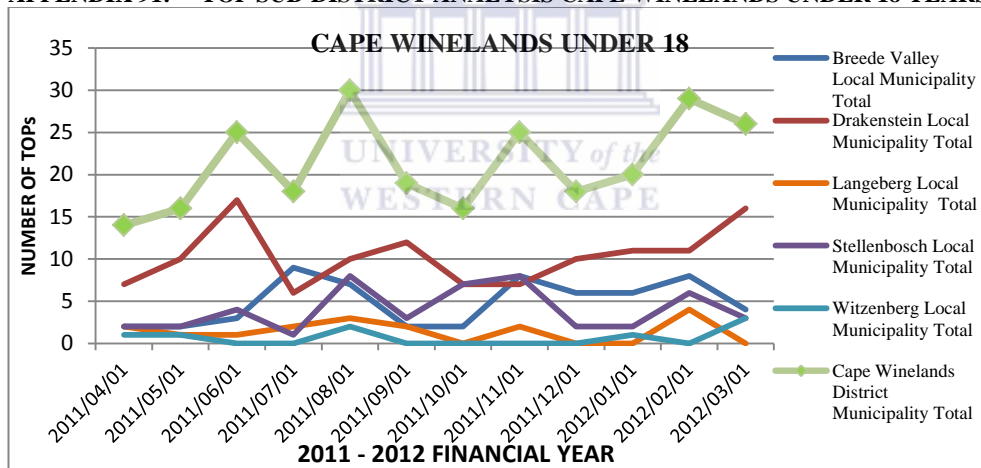
APPENDIX 89: PROPORTION TOPs



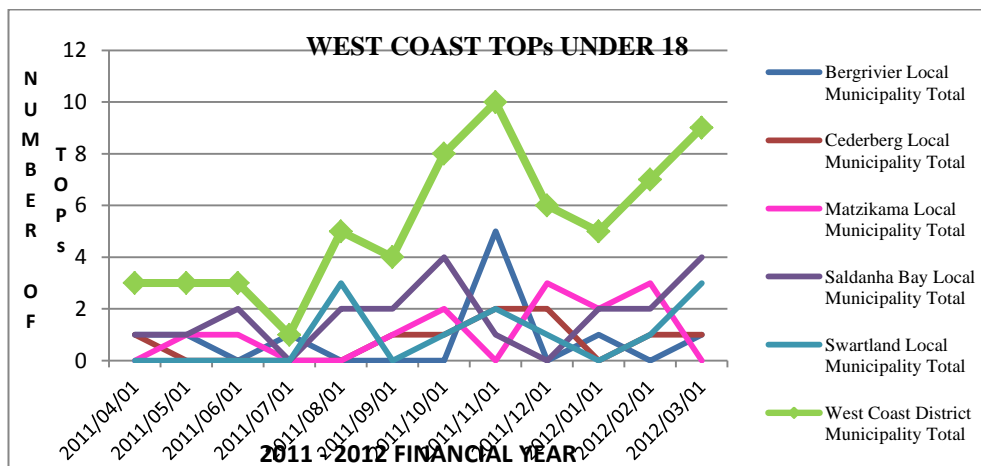
APPENDIX 90: TOP SUB-DISTRICT ANALYSIS CAPE METROPOLE UNDER 18 YEARS



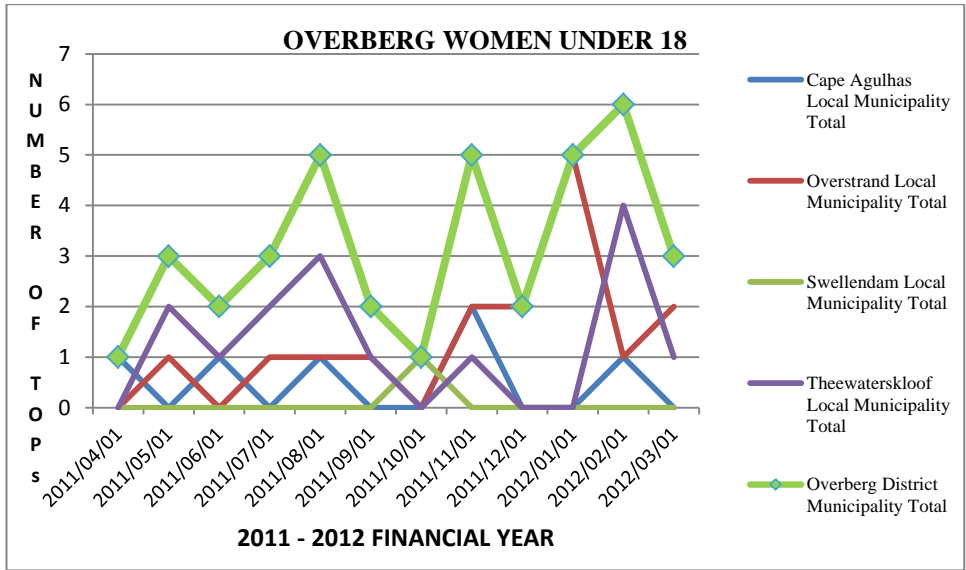
APPENDIX 91: TOP SUB-DISTRICT ANALYSIS CAPE WINELANDS UNDER 18 YEARS



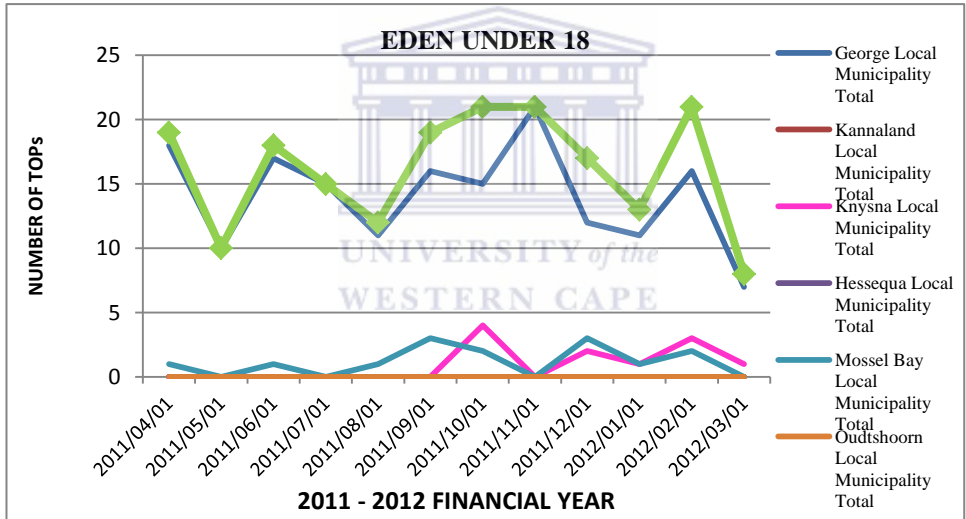
APPENDIX 92: TOP SUB-DISTRICT ANALYSIS WEST COAST UNDER 18 YEARS



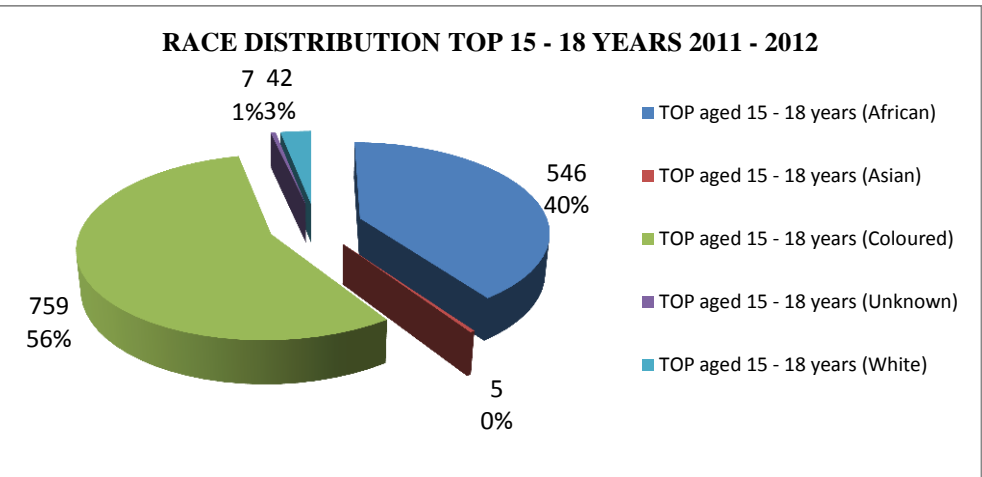
APPENDIX 93: TOP SUB-DISTRICT ANALYSIS OVERBERG UNDER 18 YEARS



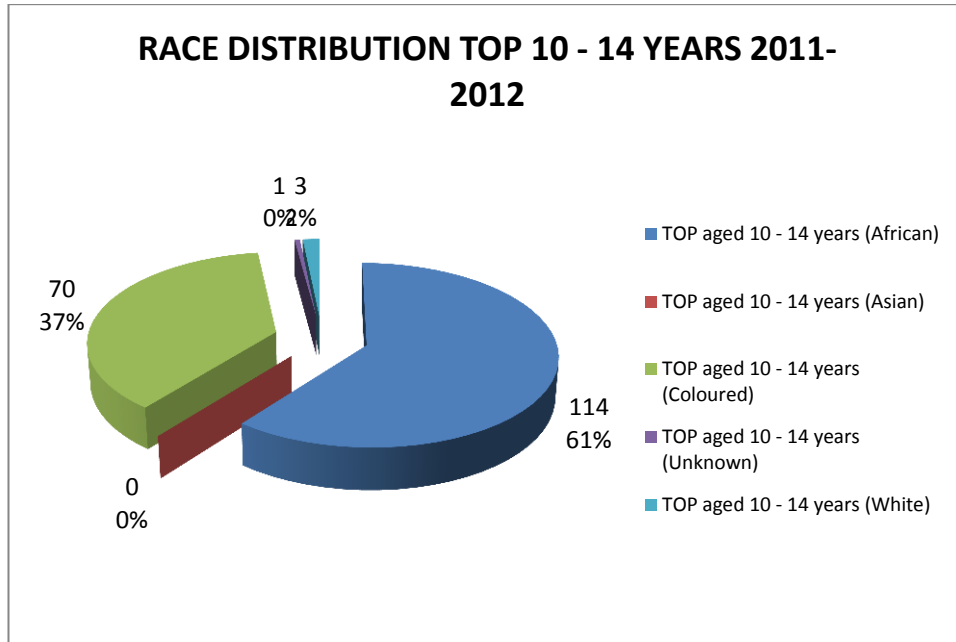
APPENDIX 94: TOP SUB-DISTRICT ANALYSIS EDEN UNDER 18 YEARS



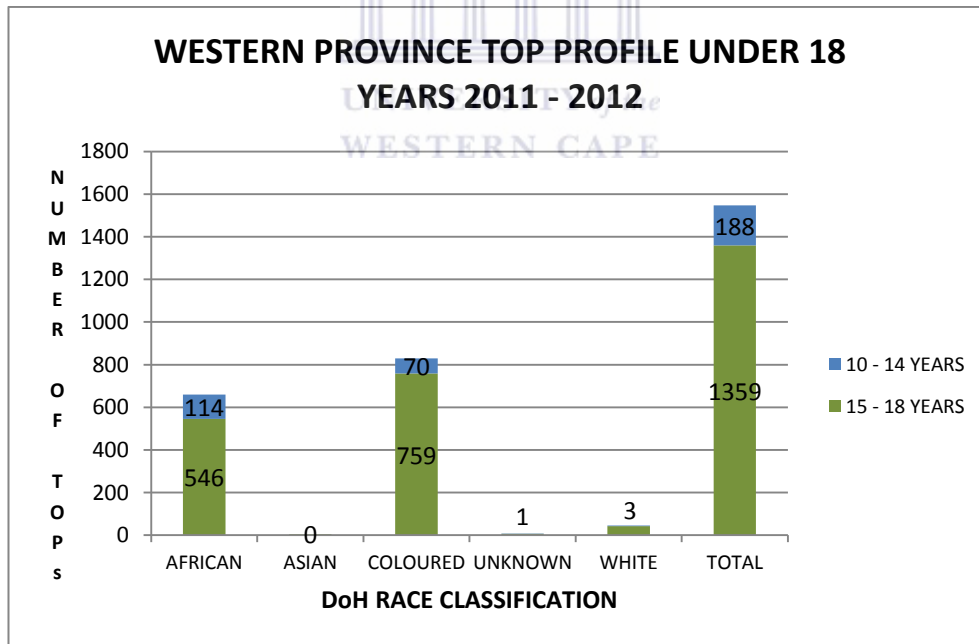
APPENDIX 95: TOP RACE DISTRIBUTION 15 TO 18 YEARS



APPENDIX 96: TOP RACE DISTRIBUTION 10 TO 14 YEARS



APPENDIX 97: TOP RACE DISTRIBUTION - WESTERN CAPE UNDER 18 YEARS



APPENDIX 98: COUPLE YEAR PROTECTION RATE

| Indicator | Target | Numerator | Numerator Data Elements | Numerator Source | Denominator | Denominator Data Elements | Denominator Source |
|-----------------------------|--------|--|--|------------------|-------------------------------|-------------------------------|--------------------|
| | | | | | | | Census 2001 |
| Couple year protection rate | 44.2% | Contraceptive years dispensed (including sterilisations) | Oral pill cycle under 18 years * 0.077 | RMR | Female population 15-44 years | Female population 15-44 years | Census 2001 |
| | | | Oral pill cycle 18 years and older * 0.077 | RMR | | | |
| | | | Medroxyprogesterone injection under 18 years * 0.25 | RMR | | | |
| | | | Medroxyprogesterone injection 18 years and older * 0.25 | RMR | | | |
| | | | Norethisterone enanthate injection under 18 years *0.166 | RMR | | | |
| | | | Norethisterone enanthate injection 18 years and older *0.166 | RMR | | | |
| | | | IUCD inserted under 18 years *4 | RMR | | | |
| | | | IUCD inserted 18 years and older *4 | RMR | | | |
| | | | Male condoms distributed * 0.005 | RMR | | | |
| | | | Vasectomy *20 | Hospital data | | | |
| | | | Interval sterilisation *10 | Hospital data | | | |
| | | | Post-partum sterilisation *10 | Hospital data | | | |

Source: WCDoH Performance Indicator Definitions 2012/2013

The HST provided the following formula for calculating the CYPR:

Numerator: Contraceptive years equivalent
 Denominator: Target population 15-44 years (couples using females as proxy)

HST (undated), available at <http://indicators.hst.org.za/healthstats/231/data>

APPENDIX 99: NATIONAL CYPR PERFORMANCE

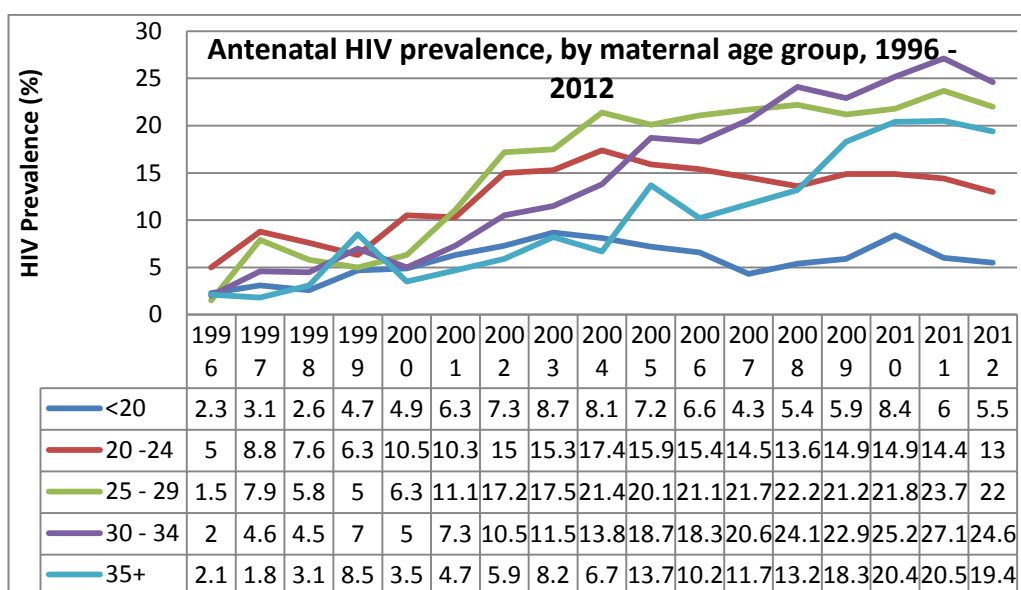
Indicator Data

| | EC | FS | GP | KZN | LP | MP | NC | NW | WC | ZA |
|-----------------------------|------|------|------|------|------|------|------|------|------|-----------|
| Couple year protection rate | | | | | | | | | | |
| 2000 DHIS | 32.1 | 29.5 | 18.8 | 18.7 | 32.7 | 24.2 | 25.5 | 30.7 | 30.1 | [1] 25.3 |
| 2001 DHIS | 30.6 | 28.7 | 19.2 | 18.9 | 33.4 | 24.9 | 27.5 | 31.1 | 31.8 | [2] 25.6 |
| 2002 DHIS | 29.1 | 29.1 | 19.7 | 23.0 | 35.4 | 22.7 | 27.5 | 27.2 | 33.2 | [3] 26.3 |
| 2003 DHIS | 28.3 | 28.5 | 20.3 | 22.9 | 34.4 | 22.9 | 30.2 | 27.5 | 34.6 | [4] 26.4 |
| 2004 DHIS | 27.5 | 27.8 | 23.3 | 22.5 | 34.2 | 24.0 | 29.7 | 26.9 | 38.9 | [5] 27.3 |
| 2005 DHIS | 27.5 | 31.1 | 23.7 | 22.9 | 35.1 | 23.1 | 30.6 | 28.9 | 39.7 | [6] 28.0 |
| 2006 DHIS | 27.8 | 32.2 | 24.2 | 24.7 | 36.3 | 24.2 | 32.4 | 28.9 | 53.6 | [7] 30.2 |
| 2007 DHIS | 26.6 | 31.6 | 24.0 | 23.9 | 35.2 | 25.3 | 32.8 | 23.9 | 58.4 | [8] 30.0 |
| 2008 DHIS | 28.8 | 32.3 | 26.1 | 23.8 | 35.4 | 28.8 | 34.4 | 23.9 | 56.5 | [9] 30.9 |
| 2009 DHIS | 29.7 | 32.0 | 27.1 | 24.2 | 35.4 | 31.6 | 33.6 | 26.0 | 59.4 | [10] 31.9 |
| 2010 DHIS | 30.4 | 32.4 | 26.3 | 24.2 | 32.7 | 33.0 | 36.0 | 26.3 | 58.8 | [11] 31.6 |
| 2011 DHIS | 31.2 | 34.7 | 26.2 | 27.1 | 36.5 | 33.7 | 35.1 | 23.6 | 58.3 | [12] 32.7 |
| 2012 DHIS | 31.3 | 39.6 | 28.3 | 37.5 | 37.3 | 35.9 | 36.2 | 32.2 | 70.2 | [13] 37.8 |

EC: Eastern Cape FS: Free State GP: Gauteng KZN: KwaZulu-Natal LP: Limpopo MP: Mpumalanga NC: Northern Cape NW: North West WC: Western Cape ZA: South Africa

SOURCE: HST (undated), available at <http://indicators.hst.org.za/healthstats/231/data>

APPENDIX 100: HIV PREVALENCE BY 5-YEAR AGE GROUP IN THE WESTERN CAPE 1996 to 2012



Adapted from: WCDoH (undated) Antenatal Survey Report. 2012.

APPENDIX 101: NUMBER OF LEARNERS WHO EXPERIENCED A PREGNANCY

| Years | Province | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 | Grade 9 | Grade 10 | Grade 11 | Grade 12 | Total |
|-------|----------|---------|---------|---------|---------|---------|---------|---------|----------|----------|----------|--------|
| 2009 | EC | 15 | 15 | 89 | 176 | 444 | 916 | 1 469 | 1 964 | 1 862 | 1 470 | 8 420 |
| | FS | | 2 | 5 | 3 | 18 | 40 | 90 | 251 | 235 | 154 | 798 |
| | GP | 74 | 67 | 112 | 43 | 102 | 283 | 614 | 1 297 | 1 486 | 1 194 | 5 272 |
| | KZN | 16 | 9 | 34 | 134 | 279 | 839 | 1 680 | 2 923 | 3 749 | 3 291 | 12 954 |
| | LP | 2 | 8 | 32 | 125 | 282 | 590 | 1 363 | 2 869 | 2 949 | 2 103 | 10 323 |
| | MP | 2 | 3 | 23 | 68 | 228 | 508 | 840 | 1 413 | 1 505 | 1 204 | 5 794 |
| | NC | | | | 3 | 8 | 16 | 42 | 55 | 60 | 48 | 232 |
| | NW | | 2 | | 1 | 9 | 22 | 36 | 67 | 63 | 71 | 271 |
| | WC | | 1 | 2 | 18 | 33 | 76 | 209 | 277 | 292 | 304 | 1 212 |
| | SA | 109 | 107 | 297 | 571 | 1 403 | 3 290 | 6 343 | 11 116 | 12 201 | 9 839 | 45 276 |

| | | | | | | | | | | | | |
|------|-----|----|----|-----|-----|-------|-------|-------|-------|-------|-------|--------|
| 2010 | EC | 17 | 21 | 41 | 123 | 317 | 719 | 1 220 | 1 367 | 1 606 | 1 085 | 6 516 |
| | FS | | | 2 | 4 | 9 | 37 | 104 | 215 | 276 | 162 | 809 |
| | GP | | 1 | 1 | 23 | 76 | 251 | 523 | 1 082 | 1 111 | 945 | 4 013 |
| | KZN | 4 | 19 | 41 | 128 | 318 | 906 | 1 876 | 3 489 | 4 126 | 3 433 | 14 340 |
| | LP | 2 | | 5 | 9 | 46 | 149 | 365 | 639 | 639 | 456 | 2 310 |
| | MP | 3 | 6 | 18 | 62 | 184 | 477 | 843 | 1 346 | 1 332 | 1 009 | 5 280 |
| | NC | | | | 4 | 27 | 93 | 125 | 227 | 242 | 211 | 929 |
| | NW | | 1 | 1 | 3 | 8 | 19 | 55 | 109 | 111 | 65 | 372 |
| | WC | | 3 | 13 | 27 | 56 | 169 | 354 | 483 | 545 | 483 | 2 133 |
| | SA | 26 | 51 | 122 | 383 | 1 041 | 2 820 | 5 465 | 8 957 | 9 988 | 7 849 | 36 702 |

Adapted from: DoBE (2013): 34