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A decomposition analysis of fertility rate in South Africa by population groups and provinces

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ABSTRACT

This study is about examining how fertility in South Africa is affected by changes in marriage patterns, changes in marriage fertility, non-marital fertility and age sex structure, across Provinces and Population groups.

South Africa has experienced a decrease in fertility since the 1960s. South Africa is one of the first countries in sub-Saharan Africa to experience fertility decline. The problem is that very little has been researched on the underlying effects, contributors to the decline, reference to changes in marriage, changes in marriage fertility, changes in age-sex structure and by how much these variables contribute to the decline? The main objective of the study was to decompose fertility rate of South Africa by population groups and provinces.

The study used data from the 1996, 2001 and 2011 population censuses conducted by Statistics South Africa and the Das Gupta decomposition method to establish the contribution of age-sex structure and marriage on the observed changes in fertility in South Africa.

The Total Fertility Rate of South Africa has been declining and continues to decline, the results from this study show that between 1996, 2001 and 2011 fertility was indeed declining i.e from 3.22 in 1996, to 2.85 in 2001 and then to 2.74 in 2011. A similar pattern can be seen in population groups which showed a decreasing trend between 1996 and 2011, with the highest TFR being the black population at 2.91 as at 2011 followed by Coloured at 2.67 and then Indians at 1.74 and the lowest being the White population group at 1.50.

The proportion of women in the population contributed to the decrease in total fertility rate between 1996 and 2001, and between 2001 and 2011 changes in the non-marital fertility also contributed to the decrease in the total fertility rate of South Africa. Crude birth rate on the other hand indicates that the decrease between 1996 and 2001 was due to proportion women and non-marital fertility and between 2001 and 2011 non-marital fertility contributed to the decrease in Crude birth rate.

LIST OF ACCRONIMS

CBR	Crude Birth Rate
CEB	Children Ever Born
DHS	Demographic and Health Survey
DoH	Department Of Health
DTT	Demographic Transition Theory
SDTT	Second Demographic Transition Theory
STATSSA	Statistics South Africa
TFR	Total Fertility Rate
TMFR	Total Marital Fertility Rate

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CHAPTER 1 INTRODUCTION

1.1 Background

Fertility is one of the components of population growth, and one of the main features of population studies, not only because it usually surpasses mortality and migration but because it is the main cause of population growth. Besides, it can be more controlled and may be influenced by many external factors. Moreover, unlike death, which may occur at any age, women give birth to children only during a comparatively short period of their lives.

Different authors have acknowledged that fertility decline has now been well established in some countries of southern and eastern Africa (Shapiro and Hinde, 2017; Mueni, 2016; Bongaarts 2008). Although fertility decline has been observed in all the regions of the world, it is not only high but also decline is slow in sub-Saharan Africa. Shapiro and Hinde (2017) posited that fertility has been on the decline in sub-Saharan Africa but at a slower pace as compared to Latin American and Caribbean countries. Bongaarts (2008) and Mueni (2016) share the same sentiments of fertility decline in sub-Saharan Africa being of a slower pace.

There are several factors that are associated with fertility decline. Some of the factors for fertility decline in Africa are increased use of contraceptive, education, urbanization and changing patterns of marriage. In other countries fertility declines with increasing age at marriage and reduced proportion married.

Researchers have identified a process, called the “demographic transition,” where by populations move from high fertility and high mortality rates, to low mortality rates and high fertility and finally shifting to both low fertility and low mortality rates, which creates a temporary window of opportunity for a process of “demographic dividend”.

Unfortunately, for South Africa, not much information on fertility and its determinants was available during apartheid era. With the birth of democracy, information on demographic events such as marriage, fertility, and mortality has increased. As such there is an opportunity to undertake rigorous demographic analyses. Therefore, this study is about examining how changes in marriage patterns, marriage fertility, non-marital fertility and age sex structure affect fertility in South Africa.

1.2 Problem Statement

According to Moultrie and Timæus (2002), South Africa was the first country in sub-Saharan Africa to experience fertility rate decline since the 1960s. The problem is that little research has been carried out on the underlying effects of the decrease; Contributor to the decline reference to changes in marriage, changes in marriage fertility, and changes in age-sex structure and by how much these variables contribute to the decline. Also most studies in South Africa only used census 1996 and 2001 censuses and not census 2011 data.

The high rate of teenage pregnancies has its concerns, for those who are the poorest and most disadvantaged groups in the country. Mostly pregnancies are neither planned nor wanted. The father of the child barely acknowledges the child or takes full responsibility for the financial, emotional and practical support of the child. On the other hand the mother in most cases drops out of school and end or reduce her chances for personal growth thereby exposing her to poverty.

Because of the youthfulness of the mother, her child is vulnerable to perinatal mortality. If the child survives it is usually brought into a situation where it cannot be supported emotionally, financially and otherwise.

The study of fertility is important because fertility has a great impact on population growth and on the social and economic conditions of any society. Fertility is influenced by general lifestyle and choices from available options that are determined by people's background, social locations and subsequent life chances be it religious or cultural conditions on a particular population group.

Furthermore, there is a significant difference in the fertility rates among population groups and reflecting differences in the levels of human development and population change, as well as in the values attached to children. In most societies child bearing has traditionally been related with marriage. However there is an increase in childbearing among women outside marriage.

Little information is known on the contribution of the use of contraceptives in marriage and on fertility as they are key determinants of fertility. Many people feel the need to disregard its value and the sanctity of the institution of marriage.

Things have been changing in South Africa with regards to marriage i.e. legalizing of same sex marriage, more out of wedlock births, no study is being documented or explored on the role of marriage changes and its impact on declining fertility rates. These are some of the problems that prompted this study. Therefore this study seeks to investigate or to explore the factors behind the nature and pattern of fertility decline in South Africa, the study will employ the decomposition method which will break down the changes in fertility, in to four components i.e age sex structure, proportion married, marital and non-marital fertility.

1.3 Objectives

Main objective

The main objective is to decompose fertility rate of South Africa by population groups and provinces using the Das Gupta decomposition method.

Specific Objectives

- To examine whether fertility occurs inside marriage or outside marriage.
- To establish the influence of age-sex structure on the pattern of fertility in South Africa.
- To establish how marriage influences fertility in South Africa.

1.4 Significance of the study

This study will contribute to the existing literature on marriage and fertility, in addition the study used the South African Population censuses i.e. census 1996, 2001 and 2011 conducted by Statistics South Africa. It investigated differentials in fertility levels, patterns and trends and examined the determinants for such differentials among the four population groups of South Africa.

In addition most of these studies used censuses 1996 and 2001, this study will look in to census 2011 exploring the contributing/ determinants of declining fertility in South Africa.

The application of the Das Gupta technique is gaining momentum not only in demography as other fields are applying the technique. The significance thereof is to apply this technique and explore how it will respond in the South African context.

The reason for this study is to re-examine the determinants of fertility for each population group and provinces in South Africa using the latest census information. The result from this study seeks to assist policy development as well as the planning processes of social and economic development of the country. Policy makers will be in a position to develop policies aimed at reducing unwanted fertility and increasing access to the need of contraceptives as well as intensifying family planning programmes.

1.5 Definition of concepts

Age Specific Fertility Rate-Number of births per 1000 women of a specific age (group) in a given year. Fertility rates is calculated for specific age groups to see differences in fertility behaviour at different ages or for comparison over time.

CBR-Number of live births per 1000 population in a given year.

Marriage is a process which involves the payment of bride wealth by the groom to the bride's family.

Non-Marital Fertility: births occurring to never married women.

Proportion Women- number of women aged 15-49 divided by the total women population.

Proportion Married- number of married women 15-49 divided by the total women population.

Total Fertility Rate-The average number of children that would be born to a woman by the time she ended childbearing if she were to pass through all her childbearing years conforming to the age-specific fertility rates of a given year. ($TFR = 5 \times \sum ASFR / 1,000$)

1.6 Proposed structure of the mini dissertation

The study is presented in five chapters. Chapter one gives an introduction to marriage, fertility, premarital and marital fertility, 1.2 Problem statement, 1.3 Research questions, 1.4 Objective of the study, 1.5 significance of the study. Chapter two, reviews literature, providing theoretical background on marriage and fertility in South Africa and also provides definitions, and further highlights factors affecting marriage and fertility. Chapter three gives the description of the research methodology. Chapter four presents the findings of the study. Chapter five presents the summary of key findings and conclusions are made. References and appendices will be provided after the final chapter.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This chapter presents an analysis of former studies which have been conducted by various researchers regarding concerns related to the determinants of the disparities in levels of fertility in South Africa. The chapter highlights the relationship between marriage and fertility. Furthermore, it outlines the reasons for fertility decline in South Africa. Finally, the chapter briefly describes South Africa's fertility patterns in the nine provinces.

Fertility, mortality and migration determine the size of a population and how age and sex are distributed. The latter is the movement of people from one place to another as a result of many reasons such as seeking employment opportunities. This movement critically impacts the structure of the population. On the other hand, mortality is the permanent end of life which inevitably influences the total population structure. Lastly, fertility happens only to women and is determined by an individual woman. This suggests that fertility happens at a particular point in time. In recent years, fertility has been on a significant decline trajectory. High birth and deaths rates were prominent features of population change in the early years.

2.2 Fertility

Fertility levels in South Africa

South African fertility has been declining since the 1960s and currently is the lowest among sub-Saharan Africa countries. Moultrie and Timaeus (2002), used the age distributions from the 1970 and 1996 censuses to estimate the South African fertility trends from 1955 to 1996. Their observation showed that the fertility transition of South Africa began in the mid-sixties.

According to Moultrie et al (2004), birth rates in South Africa have been falling, and the decline is not limited to particular population groups. From the Whites and Indians/Asians for example, the birth rates are lower than the replacement levels. Births amongst Coloured women also continue falling, although the decline is at a slower pace than that of other population groups such as Whites and Indians. Moreover, the fertility

rate for African women has declined by almost half between the years 1996 and 2001. The projected birth rates of over three children per African woman and almost 2.8 children per woman at national level in South Africa are perhaps the lowest in sub-Saharan Africa, (Moultrie et al, 2004).

Furthermore, Moultrie et al (2004), noted that the current decrease in South African fertility is a prolongation of a progression of steady decline which was set in motion in the mid-1960s. The experience of developed countries is shown by low levels of fertility suggesting that further declines in the level of fertility are apparent among all population groups.

Moultrie and Timæus (2003) studied the 1998 DHS, 1996 and 1970 censuses information to project fertility levels during 1948 and 1996. The results indicated that the birth rate of Africans began to decrease steadily after the 1960s and the decrease was quicker in the 1980s. The total rate of fertility for African women had dropped to almost 7 births in the late 1950s, and plunged to 3.5 by 1996. The major decline occurred from mid-1980s.

However, between 1950 and 1970, the fertility rate of South Africa was high and steady with the estimated number of children between 6 and 7 per woman. The speed of decline has hastened since the early 1980s with an average estimate of 4 to 5 children per woman between 1980 and 1995 (United Nations, 1995). The total fertility rate of South Africa was at 2.9 children per woman according to the (MRC 1998).

According to the Statistics South Africa (2011) report, the national TFR declined from 3,23 births per woman in 1996 to 2,67 births per woman in 2011 (Statistics South Africa, 2010, 2015). The 2018 mid-year population estimates of South Africa shows a further decline in the total fertility from 2.57 in 2012 to 2.40 in 2018.

According to Moultrie et al. (2004), the important landmark in South Africa's demographic evolution has been passed, i.e. the number of births per year was high several years ago, before the 2001 census, and is now declining, something that cannot go unnoticed. The shift, from the number of births increasing at a decreasing rate, to decreasing at an increasing rate is of particular importance for the planning and implementation of a country's developmental plans and programmes.

According to Statistics South Africa's Monograph on fertility in South Africa which used data from census 2007, variations in fertility among population groups were noted as follows: with Africans TFR being 2.9 and for coloureds TFR was 2.5 and for Whites 1.8 and TFR for Indians was 2.0. In 2011 the average fertility of South Africa was estimated at 2.8: African women was (2,82) and coloured women (2,57). The rate has remained high, while for white and Indian/Asian women have a lower replacement fertility rate with a TFR of 1,70 and 1,85 respectively. Population groups recorded a decrease in TFR over time. Nonetheless, the TFR for coloureds increased from 2,41 in 2001 to 2,57 in 2011 (Statistics South Africa, 2011).

2.3 Fertility decline attributes

Family planning

Family planning contributes to fertility decline, (Rossouw et al. 2012). On their practical analysis Rossouw et al. (2012) considered the fertility choices of women age cohorts born after 1960, and those who were in their childbearing years during mid-1980s to mid-2000s. This is the period at which there was the sharpest drop in the number of births.

One of the credible explanations for the observed decrease in birth rate is the population control stance that was taken by the apartheid government. The aim of the programme was to uphold family management using both supply and demand measures. In essence, the government provided contraception, family planning programmes, encouraged the population to value health education and involved women economically (Swartz 2002).

The effect of the government of the day policy on population was enhanced by quick urbanization that generally would bring experience to and mindfulness of the use of family planning and other methods of contraception (Moultrie & Timæus, 2001: 210; Moultrie & Timæus, 2003: 280). In 1974, the apartheid government funded a policy with the aim of stopping African population growth.

Since the advent of democracy, the attention has been on improving the health and status of South African women. In 1996, women were given a legal and safe choice of termination of pregnancy, it became easier for women to have harmless and lawful

abortions at public clinics and hospitals. The consequence was an upsurge in the frequency of lawful abortions and also a reduction in maternal deaths when giving birth. In 1998 a new population policy was launched. It mainly focussed on refining the status of women (gender equity) as well as encouraging males to know and participate in contraception and contraceptive use (Cooper et al.; 2004).

Education

According to Zwang and Garenne (2008), the philosophy and global literature notes that improved education levels will reduce the desired fertility and close the bridge between wanted and unwanted fertility. If the population has more educated mothers, households will have higher salary likelihoods and in this case a mother will look at the cost of having a child versus the cost of making own salary or wages. Higher levels of education improve a woman's mindfulness because the woman will have clear facts about family planning and contraceptives.

Contraceptives

Another determinant of fertility is use of contraceptives. Contraception is an important proximate factor responsible for keeping fertility low. The family planning programmes in South Africa started in the early sixties and their success has shown a massive impact on its population. High consistent use of contraceptives and knowledge have led to low levels of fertility.

According to the Demographic and Health Survey of 1998, most if not all South African female respondents in the survey were conscious of at least one method to avoid pregnancy, while more than half of women had already started having access and used contraceptive methods (Medical Research Council of South Africa (MRC), 1998: 18-20).

Compared to the rates for the rest of Sub-Saharan Africa, South Africa reportedly had a much higher knowledge of contraceptives. Comparable studies show that 66 percent of females in Cameroon, 49 percent in Sudan and 40 percent in Senegal had never heard of any method of contraception. In Sudan and Senegal, the number of females who used contraceptives was below 6 percent (Rossouw et al, 2012). These studies show why fertility levels in South Africa are less than those of African countries. The statistics

also indicate that the knowledge and usage of contraceptives is higher in South Africa than in other African countries.

Migration

Labour migration also had some effects on the way things were done in many African societies, which in turn affected fertility. In the era of migrant labour system, time and again husbands had to leave their spouses and children in rural areas and journey to cities to find employment. The extended absence of the men back home, made significant monetary and social doubt and put much stress on these families. The wives in return attempted to take charge over their children and own lives and in most cases ultimately began to operate as the heads of their homes (Posel *et.al.*, 2012).

Husbands were naturally the travellers and they were disallowed to travel with their families to look for employment. The impact of this on family structure has been documented, and it was established that this caused new family structures where husbands left their wives in the rural areas, and went to reside in urban areas where they would most likely form other relationships, and establish other families. It was unlikely for these men to marry their urban partners since they already had wives. This resulted in high out-of-wedlock childbearing in areas where labour migrants were concentrated (Posel *et.al.*, 2012).

Social norms

Among the factors that have been documented to be responsible for fertility decline in South Africa is the changing social normalities. Social revolution was intense in South Africa, especially for the Black/African population group which faced stressful moments in life. In the late nineteenth century, the Black/ African population was still practising their traditional culture. In traditional societies, marriage was early for most women, and families discouraged pre-marital sex.

During the twenty-first century, the Africans' way of life had changed to a modern and developing society. This life was characterized by a money economy, urbanization, improved education, new family structures, new ethics, and more freedom for young adults. Amid these changes, there was large scale economic development,

industrialization, massive migration, critical political changes, and the emergence of Christian religion.

These major social and economic changes had significant effects on marriage patterns, family structures, and fertility behaviours especially in the African population group (Zwang and Garenne, 2008).

2.4 Marriage and marriage differentials

As a result of multiplicity of beliefs marriage in South Africa has transformed extensively. Traditionally, the lawful meaning of marriage, which is derived from the Roman Dutch law, was restricted to monogamous marriages and for opposite-sex couples. The law of the country has now recognized different versions of marriage, including polygynous marriages, inter-race as well as inter-generational and marriages that are conducted under African customary law. Since 2006, South Africa became the fifth country in the world to allow same-sex marriage. These changes in marriage critically affect the contribution of marriage in total fertility.

Statistics South Africa (2001), defines marriage to include all those that have gone through civil or religious ceremonies, all those married by customary law and all those living permanently together. The legitimacy of the union can be established by religious, or civil and other means as recognised by law. Marriage in South Africa, like in most sub-Saharan African societies, is a process involving a sequence of negotiations over several years. It is not a single event.

Furthermore, marriage is a process which involves the payment of bride wealth by the groom to the bride's family. The bride wealth may sometimes be paid in instalments, depending on its affordability. This has the potential of extending the process over a period of months or even years (Magagula, 2009).

In most traditional communities, the age of the woman in her first marriage is important and serves as the immediate determinant of the total fertility level (Palamuleni 2010). Moreover, in Africa, especially in South Africa, the number of never married women is on the rise and age at which women get married is delayed. Demographic scholars attribute the delayed age to the increasing levels of education for women, urbanisation and economic opportunities as well as new outlooks and preference of young women

for later marriages and or remaining unmarried, (Garenne et al, 2000). Marriage in most Southern African societies indicates the beginning of a woman's exposure to the risk of falling pregnant, but marriage also defines the period and speed of procreative activity (Palamuleni, 2010).

Age at first Marriage

Young age at first marriage may lead to higher fertility, mostly in the absence of contraception. Consequently, entering marriage at later ages offers women a shorter exposure to the risk of becoming pregnant inside marriage. Hence, early or late age marriage affects the overall fertility of the society.

Age at marriage is of particular interest and importance because it marks the beginning of exposure to the risks of pregnancy and childbearing thereby affecting fertility levels and population growth especially in countries with low contraceptive usage. Marriage is the basis of family formation and, is an important determinant of fertility as it increases the duration of exposure to the risk of childbearing.

Women who marry early are likely to have, on average a longer period of exposure to the risk of falling pregnant. This often leads to higher completed fertility. Variation in age of entry into marriage helps to explain changes in fertility across populations and trends in fertility within individual population groups over time. Therefore, age at first marriage has a direct bearing on fertility behaviour.

Fertility rates are affected by the number of women who get married and the age at which they tend to marry since childbearing is assumed to occur within marriage. However, in South Africa this is not the case as age at which a woman marries is delayed (Magagula, 2009). The delay is caused by female labour participation, women's attainment of formal education, urbanization and the expenses of marriage.

The average age at which people get married in South Africa is higher than the legal minimum age at marriage when compared to other African countries. African and coloured population groups appear to marry at a later age than Indian and white population groups (Udjo, 2003). The proportions of marriage are low and late among African and rural women. According to Magagula (2009), there seems to be an increase in the proportion of women who are cohabiting and are never-married.

Early marriage is common in developing countries, whilst adolescent and child marriages continue to be a strong social ill. In the developing countries early marriage is usually associated with early pregnancy; its main purpose is to have children. Delayed age at marriage directly affects fertility by reducing the number of years available for childbearing. A delayed marriage may affect fertility indirectly due to physiological reasons that are linked with higher age at marriage.

Variation in the age of marriage helps to clarify the variances in the births across population groups and also helps to explain trends in fertility patterns within individual population groups over time. Therefore age at first marriage has a direct influence on fertility behaviour.

Cohabitation

The census data shows that the old form of nuclei family is gradually being replaced by new family forms of cohabitation. The reasons why people some people choose to cohabit vary from one individual to the other. The study could not ascertain whether cohabitation is actually a new form of family or a step towards marriage. It is necessary to understand the reasons behind these changes in order to develop appropriate social policies to support the variety of families and other social units which are emerging in societies.

According to Possel (2013), in South Africa in 2010, the majority of African women were not, or had never been married. In contrast, four fifths of White women were ever-married. Low marriage rates among African women have been partially offset by the rising rate of cohabitation. Among African women who were mothers, more than half were ever-married or cohabiting with a partner in 2010, whereas almost 97 per cent of White women who are mothers were married.

Udjo (2003), used Census 1996 data and attempted to look at factors affecting non-marital fertility. He compared marital TFR with total TFR and concluded that the differences between marital TFR and total TFR were inflated by high rates of childbearing in cohabiting unions. When cohabitation was taken into account, the difference between marital and non-marital fertility was reduced from 29% to 9% indicating that most of the non-marital childbearing occurred within cohabiting unions.

According to Goodman et al (2010), mothers in cohabiting unions were more likely to have been a teenager at the birth of their first child, 18% of mothers in cohabiting couples first gave birth before they were 20 years old, compared with 4.2% of married mothers, while over 30% of married mothers were over 30 at the time of their first child's birth, compared with 21% of cohabiting mothers.

Additionally, Goodman et al. (2010), noted that married couples are likely to have lived together for a longer period of time prior to the birth of their first child than cohabiting couples. More than half of married couples have lived together for more than 6 years, compared with 16% of cohabiting couples prior to the birth of the child in the Millennium Cohort Study. Almost 40% of cohabiting couples had lived together for less than 2 years, compared with only 8% of married couples. The relationship here is that if more people turn to cohabit, there is a positive likelihood that fertility will increase.

The marital status of mothers differs by race, (Posel and Rudwick 2011). African women who are already mothers have less chance to be married than White women who are mothers. Moreover, among single ('never-married') mothers, cohabitation rates are lower among African women than White women. As a result, a larger share of African mothers is never married (and not cohabitating) compared to White mothers. These patterns of union formation have significant implications on the wellbeing of the children because children will be less vulnerable to poverty if the mother is married or cohabiting with a partner.

The evidence from South Africa October Household Survey of 1998 shows that the proportion of cohabiting is relatively high among Africans and Coloureds (11%) in the age group of 30 to 34 years. However, within the same age group, the proportion of women cohabiting for Whites and Indians is just below 4 percent (Magagula 2009).

2.5 Marriage statistics in South Africa

According to Marriages and divorces of South Africa (2013), a total of 158 642 civil marriages were recorded with the Department of Home Affairs in 2013. The number oscillated between 2003 and 2008 after which there was a steady decline. In addition, the Marriages and divorces of South Africa (2013) report shows that throughout the period 2003 to 2013, the largest number of marriages was recorded in 2008 (186 522) and the lowest number in 2013 (158 642). The 2013 total number of 158 642 civil

marriages displays a decrease of 1, 5% from the 161 112 marriages recorded in 2012. In 2013, the crude civil marriage rate was 3, 0 per 1 000 estimated population.

Palamuleni (2010), noted that the number of married women has decreased between 1996 and 2001 for all age groups. For all women in the reproductive age groups, the proportion of married women declined from 35 per cent in 1996 to 31 per cent in 2001. Assuming that marriage was once common in South Africa, and that almost all women were expected to get married, these statistics indicate that nowadays only about a third of women eventually get married.

In addition, the proportion of women having a child as well as succeeding childbirth shows a particular pattern of fertility behaviour of a country, and is valuable in explaining the forms of families and the factors that are affecting fertility shift in South Africa.

According to Statistics South Africa (2011), the total number of women has an effect on the total number of births of the country. In South Africa the number of women aged 15-49 was 53% of the total women population in 1996 and it continued to be the same for 2001 and in 2011 it increased to 54%, in 2016 it went down to 53% (Statistics South Africa, 2011).

According to Posel and Rudwick (2011) historically, non-marriage among Africans in South Africa has been rare, falling marriage rates have been documented since the 1960s. During the post-apartheid period, racial differences in marriage rates have widened further. By 2010, there was a 40 fraction point difference between the shares of African and White women (20 years and older) who were 'ever-married'.

Patterns of marriage and family formations have dramatically changed in South Africa in recent years, these changes have been more acute for black South Africans than White South Africans. Economic changes, political changes and ideology of marriage are the leading reasons for these changes, Furthermore the high bride-wealth payment (Lobola) has contributed significantly to the changes in marriage (Hosegood *et.al.*, 2011; Posel *et.al.* 2011).

2.6 Marital and Pre-marital fertility

According to Garenne and Zwang (2008), premarital birth is defined as a birth taking place before first marriage and varies greatly among African countries, and among traditional groups.

In some communities, birth before marriage is non-existent, whereas in other communities a majority of first births do occur before marriage. In South Africa, high incidences of out-of-wedlock births are common in Black/African and Coloured population groups, and rare for White/Europeans or Indian/Asian. The phenomenon is found in both urban and rural areas.

Marriage is often early and universal in societies where virginity is considered to be important for the first marriage and where premarital fertility is viewed as a social embarrassment. Most girls who fall pregnant before marriage, in such societies, are often required to identify the man responsible in order for him to be coerced to marry them. Early marriage might lead to higher fertility, especially in the absence of contraception. Therefore, marriage at later ages offers women a shorter exposure to the chance of becoming pregnant (Palamuleni, 2010).

Marital fertility has been defined traditionally as births happening within marriage. This definition is derived from the western legal and religious concept of legality, which does not simply translate into the African context. The term 'premarital fertility' has been used to designate fertility before the first marriage.

African communities in South Africa went through intense social and economic changes in the twentieth century. The changes among others include late marriage for women, a high number of women who never marry, and the emergence of premarital fertility (Zwang and Garenne, 2008).

In earlier years, an unwanted pregnancy led to early marriage. Nowadays, men tend to be unwilling to indulge in early marriage for a variety of reasons, that is, lack of maturity, desire to leave an independent life, migration, lack of income to support a family, and fear of paying bride wealth (lobola) and school fees.

Family formation patterns are also changing. Increasingly, both men and women want to first establish themselves in the labour market before beginning a family. Hence, the age of mothers at first childbirth has risen and coupled with it is the probability of having fewer children than previous generations. Moreover, many women remain childless. Birth rates have fallen and life expectancy has increased, so there are fewer children and more grandparents than before.

Magagula (2009), contends that South Africa is found on the rise of higher socio-economic needs. That is, its income growth and educational expansion jointly lead to the articulation of more expressive needs. The change of bride wealth payment (lobola) from “cattle” to “cash” has further made marriage processes difficult for many young African men. Bride wealth is sometimes paid in instalments, depending on its affordability. These needs are also centred on self-actualization in formulating goals and women independence in choosing means of delaying marriage.

The post-apartheid family planning policies further gave South African women choices to control their fertility. High use of contraceptives was found among the never-married and the educated women as compared to the married and uneducated women. Even women in the rural areas were forced to make their own decisions about their reproduction while their husbands were in the cities, potentially engaging in extramarital relationships, and compelled into cohabitation.

There are socioeconomic factors, such as women’s educational attainment and increasing urbanization, which have negatively impacted the lower proportions of marriage and higher fertility outside wedlock (Magagula 2009). With regards the changes in the process of marriage in relation to changes in lobola Magagula (2009), explains the expense of marriage bride wealth payment as another factor. This explains the shift from Demographic Transition Theory to the Second Demographic Transition Theory in figure 2.1 below.

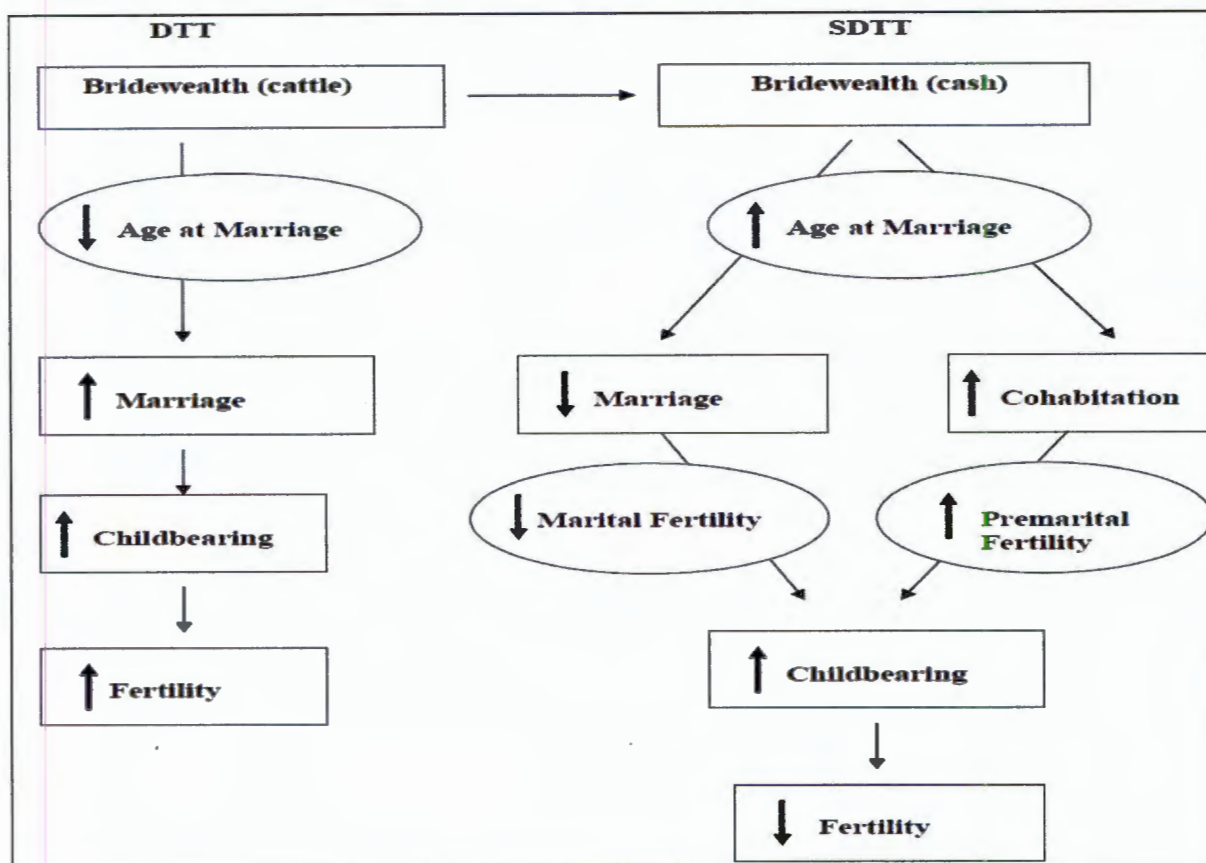


Figure 2-1: Demographic transition theory

Palamuleni (2010), note a relationship of delaying marriage and the limiting of fertility. The single women find choosing the number of children they want stress-free than those who are married. Those who are not married do not encounter the same burden, and do not need to live up to the anyone's outlooks even family members or husbands who pressurise them to have a particular size of the family or number of children.

Swartz (2002), argues that the decline in marriages among African females has enhanced the fertility decrease. In contrast, Rossouw et al. (2012,) maintain that lower rates of marriage are having a less significance than the anticipated effect on births. This is due to the collapse of the customarily solid connection between getting married and having children especially for young women. Nzimande (2005), claimed that greater pre-marital child birth might be due to the delay of marriage and also shows that out of wedlock child birth is much higher in living-together setups and it differs by population groups.

The rates seem to be high for black Africans followed by coloureds and low among whites and Asian/Indians (Nzimande, 2005). The disparities in non-marital fertility by race are in line with marital patterns. The highest proportions of marriages in women of reproductive ages are found among whites and Indian/Asians and lowest amongst blacks Africans and coloureds.

Marriage is an important determinant of a woman's reproductive behaviour. In African countries, early marriage is characterized by high fertility when most of the births are likely to occur within the first two years of marriage (Swartz, 2002). South Africa is found to reveal a unique case where late marriage among women occurs with a significant number remaining unmarried throughout their reproductive life. Delayed age at marriage is found to be characterized by high levels of education and urbanization.

2.7 Decomposition method of analysis

The study will use decomposition methods to "decompose" fertility rates into its various components. "Decomposition" is a method that is utilised in demographic studies to break down the changes in demographic parameters (fertility, mortality and migration) into two or more components. In this study, decomposition analyses will involve decomposing the observed changes in both Total Fertility Rate (TFR) and Crude Birth Rate (CBR) into four components as follows: change in age-sex structure, change in proportion married, and change in marital fertility and non-marital fertility.

Decomposition methods are used when equating demographic variables that belong to different populations or when comparing variables of the same population over time, (Romo 2003). Decomposition has the advantage of being compatible with other methods and being simple, flexible and easy to interpret.

Das Gupta (1991), claims that decomposition deals with finding the additive contributions of the effects of the differences in the compositional or rate factors in two populations to the difference in their overall rates. According to Das Gupta (1991), decomposition techniques have been extended to include any number of factors, various functional relationships of the factors with the overall rate including the rate from cross-classified data, and simultaneous considerations of three or more populations. Moreover, the subjects of standardization and decomposition are strictly linked, and logical, one cannot be treated independently of the other.

Different scholars such as Cho and Retherford (1973); Blake and Das Gupta (1976); Das Gupta (1978, 1988, 1989, 1990, 1991, 1992); Kim and Strobino (1984); Arriaga (1984); Pollard (1988); Nathanson and Kim (1989); and Pullum, Tedrow, and Herting (1989) have made a significant contribution to the subject of decomposition.

Das Gupta (1991), expresses the crude birth rate as the product of the general fertility rate, the proportion of women in the childbearing ages among all women, and the proportion of women in the population. Recently, an increasing number of researchers are using decomposition method in different research fields (Sayi, 2008; Palamuleni 2011, 2018, Chisumpa and Odimegwu 2018).

Sayi (2008), applied the decomposition method in exploring the relationship between marriage and fertility transition in sub-Saharan Africa, using data from (1979-2009) for those countries which conducted more than four censuses, using four factors as variables, that is, proportion single, proportion married, non-marital fertility and marital fertility. The study shows that in countries with lower fertility, changing marriage rates have less effect on overall fertility trends, relative to marital and non-marital fertility rates, than in higher fertility countries. Whereas rates of cohabitation and entering into marriage had some effects on fertility, divorce, widowhood, polygyny, and non-marriage rates had small effects on fertility changes. Moreover, the effects vary by age and the changing rates of entering into marriage primarily affect fertility rates of the youngest women.

Palamuleni (2011), applied the method when decomposing the crude birth rate of South Africa using 1996 and 2001 census data. In this study, he used three factors as variables i.e. proportion women, proportion married and marital fertility. Palamuleni (2011), established that the decomposition of CBR results showed that the decrease in proportion of the married population made the greatest contribution to the decline in the birth rates of the South Africa population as a whole and its provinces during the period 1996–2001. In addition, there are differences in the factors prompting fertility among population groups and provinces. The coloured, Asian and white population groups show that changes in marital fertility are more important than variations in nuptiality whereas for the African population the opposite is true.

Recently Palamuleni (2018), has used decomposition techniques to study the components of fertility decline in Malawi. In this study, like in that of South Africa using 1996 and 2001 census, he used three factors as variables i.e. proportion women, proportion married and marital fertility.

Chisumpa (2018), used decomposition analysis of age- and cause-specific mortality in age group 15–59 was performed to determine the contributions to the gap in life expectancy at birth between males and females in Zambia. The study used cross-sectional data from the 2010 Zambia census of population and housing (10 per cent sample) and the 2010–2012 SAVVY, The SAVVY is a nationally representative survey that used verbal autopsy questionnaires to collect more detailed information on causes of death for deceased persons aged 15 years and older in households that experienced a death in the last 12 months.

The decomposition results showed that Age- and cause-specific adult mortality positively contributed, 50 per cent of the years, to the gender gap in life expectancy at birth.

This study will use a decomposition analysis to decompose the fertility rate of South Africa using data from all the three censuses (1996, 2001 and 2011), and will explore the contribution of four variables namely proportion married, proportion women, marital and non-marital fertility on total fertility.

2.8 South Africa's Description

South Africa is one of the countries in Africa which have nine provinces, four population groups and eleven official languages. South Africa attained its democracy in 1994, and is still a developing country. The total population of South Africa as at community survey 2016 was 55 million and 51% of those being females and 49% being males. The African/ Black population amounting to 80.7% of the total population, 8.7% being Coloured, 8.1% being White and 2.5% being the Indian population.

According to Statistics South Africa 2016b, the Eastern Cape is a province in the eastern part of South Africa. The province shares borders with KwaZulu-Natal, Free State, Western Cape, and Lesotho. Eastern Cape is mostly populated by black Africans, the widely used language is isiXhosa. The province is ranked the third most populated

province in the country. The total population was 6 996 976 as at 2016. 52.4% were females and 47.6% were males.

According to Statistics South Africa 2016c, Gauteng is one of the smallest provinces in South Africa in terms of square kilometres, it is enclosed by four provinces namely Free State, North West, Limpopo and Mpumalanga. Gauteng has the largest share of the South African population at about 13 million which accounts for 24% of the total South African population. Male population was 50.4% and females were 49.6%. 80% of the population were Black Africans as at 2016.

According to Statistics South Africa 2016d, KwaZulu-Natal was established in 1994 when the Zulu Bantustan of KwaZulu ("Place of the Zulu" in Zulu) and Natal Province were merged. It is located in the southeast of the country, and shares borders with Mozambique, Swaziland and Lesotho. The capital of KwaZulu-Natal is Pietermaritzburg and its largest city is Durban. It is the second most populated province in South Africa. As at 2016, the total population of Kwazulu Natal was 11 million where 52.1% were females and 47.9 were males. 87% of the population comprised black Africans.

According to Statistics South Africa 2016i, Limpopo is located in the north-eastern part of South Africa and shares borders with Botswana, Zimbabwe and Mozambique countries and Mpumalanga, Gauteng, and North West provinces. The total population of Limpopo was 5 799 090 where 52.8% were females and 47.2 were males. 97.1% were black Africans.

The next province is Mpumalanga which means "place where the sun rises." Many people are attracted to the province by its magnificent scenery of fauna and flora, and the attractive remnants of the 1870 gold-rush era. With a surface area of 76 495 square kilometres, it is the second-smallest province after Gauteng. The total population of Mpumalanga was 4 335 964 as at 2016 and the share of gender was 50.7% females and 49.3 males. 93.6% were black Africans.

According to Statistics South Africa 2016e, the North West is an internal province in South African that shares borders with Botswana country, Limpopo, Gauteng, Free State and Northern Cape provinces. It is acknowledged as the Platinum Province for the wealth of the metal it has underground. The province is mainly populated by black

Africans at 91.6% of the total population. The most spoken language in the province is Setswana. The total population was 3 748 435 with 50.9% males and 49.1 females.

According to Statistics South Africa 2016h, the Northern Cape is the biggest province in terms of land size but has the smallest population in South Africa. The province shares borders with four other provinces, namely Western Cape, Eastern Cape, Free State and North West. It also shares borders with the states of Namibia and Botswana. The majority of the population residing in the province is black Africans at 48.1%, followed by coloureds at 43.7%, and the most spoken languages are Afrikaans, Setswana, Xhosa and English. The total population was 1 193 780 as at 2016 with 50% males and 50% females.

According to Statistics South Africa 2016a, the Western Cape is located on the south-western tip of the African continent, sharing borders with Northern Cape in the north, the Eastern Cape in the east, the Atlantic Ocean in the west and the Indian Ocean in the south. The province is sub-divided into five districts, which are made up of 24 municipalities and one metropolitan municipality, the City of Cape Town. According to Community Survey (CS) 2016, the coloured population is the most dominant population group in the province contributing 47.5%, followed by black Africans contributing 35.7%. The total population was 6 279 730 with 50.7% females and 49.3% males.

2.9 Summary

This chapter highlighted relevant literature on the effects of fertility decline in South Africa, making reference to variables such as changes in the proportion married, proportion women (age structure) marital and non-marital fertility. Furthermore, it outlined the mini profiles of South Africa's provinces.

Marriage has been changing and continues to change due to migration of men and women due to employment and other economy related reasons. Those who have migrated might never come back and may start new family away from their initial families. Marriage patterns are also changing due to the price tag (lobola), as well as the changes in the preference of individuals to whom to get married. Having noted these factors, this study still considers marriage as a determinant factor of fertility, although it has undergone evolution.

A decomposition method or analysis will be used in this study. Decomposition can be applied when equating demographic variables that belong to different populations or when equating variables of the same population over time, and for this study the researcher focuses on CBR and TFR of South Africa with variables such as proportion women, proportion married, marital and non-marital fertility on how they contribute to the decline of the overall fertility.

The next chapter looks at the methodology that was used to determine where fertility is happening or what factors are affecting fertility decline in South Africa, looking at variables such as marriage, marital fertility and the proportion of women aged 15-49 years.

CHAPTER 3 RESEARCH METHODOLOGY

3.1 Introduction

The chapter is divided into three sections. The first section describes the data source whereas the second section describes the methods of analysis used. Lastly the section describes the variables used in the study and data limitation.

3.2 Sources of Data

This study used data from Statistics South Africa's population censuses, i.e. census 1996, 2001 and 2011. Statistics South Africa has conducted three population censuses i.e. (1996, 2001 and 2011) and numerous household studies. Censuses to this day remain the vital data bases providing government and private sector with data so that they could have a baseline information and developmental planning at all spheres of government. South Africa conducts decennial censuses and the 2011 census is the latest with next population census scheduled for 2021.

These censuses collected data on "births in the last twelve months" as well as "current marital status". The "births in the last twelve months" are used to calculate various fertility measures including total fertility which is the main focus of this study and the "current marital status" to calculate the proportion of currently married women which is used as a factor of analysis in the study.

Data on the population by gender and age (15-49), marital status, and population group are used in this study. All censuses provide the said information in support of the methodology to be used which requires data at two points in time, in this case 1996, 2001 and 2011.

Statistics South Africa use *SuperCROSS* software, which has databases with their corresponding mapping data linked to ESRI's ArcExplorer software. The software enables the users to do cross-tabulations and mapping on different geographical hierarchies. The researcher will use Microsoft excel spread sheet to paste copied cross tabulations from *SuperCROSS* and further analyse the results.

Census 1996

Before the advent of democracy, there was less or no reliable information available about the country as a whole. Only two censuses, those conducted in 1936 and 1970, were believed to have enumerated the African population of the country with some degree of accuracy. Thus, the three post-apartheid censuses conducted in South Africa (in 1996, 2001 and 2011) are relied upon to provide crucial information to help demographers, planners and others to understand and assess current fertility dynamics in the country (Dorrington et al, 2015).

According to Statistics South Africa census (1996) report, census 1996 was the first time, the enumerators went out to all South Africans in every fragment of the country. The census mission began in October 1996 when a hundred thousand enumerators waded across the cities, towns, townships, informal settlements, villages, farms and rural areas of South Africa to record the information of people living in more than nine million households. Homeless people, hostels, prisons and other institutions were also visited to ensure a comprehensive count.

Census 1996 applied a uniform method for the collection of data for the large information. Households were visited and details were obtained about all its members from a representative, who was either questioned, or asked to fill in a questionnaire in the language of their choice. The data were captured into computers in the forgoing period, and adjusted for undercount.

A Census 1996 fertility questions

Part D of the 1996 census fertility questions was to be completed by all females who had ever given birth as it was phrased. The questions were as follows: what was your age when your first child was born? State the number of children ever born alive? Born alive during 1995? Born alive since the beginning of 1996?

Census 2001

According to Statistics South Africa census (2001) report in October 2001, South Africans were counted for the second time as citizens of a democracy. Over 83 000 data collectors and over 17 000 supervisors and fieldwork coordinators were employed

to collect data on persons and households all over the country, using a uniform methodology. Census night, or the night of data collection, was 9-10 October 2001.

A Census 2001 fertility question

P20 of the census 2001 fertility section was phrased as follows: the questions were to be asked to women aged 12-50: How many children if any, has (the person) ever had that were born alive? If the person has ever given live birth, when was the last child born?

Census 2011

According to Statistics South Africa census (2011) report, the 2011 Census was the third census conducted by a democratic South African government and formed part of the 2010 round of African censuses, whose aim was to provide comprehensive data on the continent for improved planning and to assist development.

A Census 2011 fertility question

Page 11 of the census 2011 fertility section was phrased as follows: also the questions were asked to women aged 12-50: P32 Children ever born (has_ ever given birth to a live child, even if the child died soon after birth?), P33 age at first birth (at what age did_ have her first child born?) P34 Total children number of children ever born (how many children has_ ever had that were born alive?). P38 Last child born (when was _ last child born, even if the child died soon after birth?).

3.3 Data quality

According to Moultrie and Timæus (2002) the data from the three censuses each had its own problems. In 1996, because of the organising of the questions and/or poor training, respondents and/or enumerators repeatedly did not appreciate the distinction between the questions on lifetime and recent fertility, providing the same answers to both questions.

In 2001, the process of trying to remove errors from the data on fertility that was collected was such that only almost half of the information provided was deemed to be credible in the estimation of fertility rates (Moultrie and Dorringon, 2004).

The recently-released 2011 South African census provides demographers with a new dataset from which to estimate fertility trends and patterns. Statistics South Africa produced a report on the quality of the census 2011 data, and according to that report marital status was not heavily imputed (credited) and therefore appraising the quality of the variables used in this study. Age and sex data were also of good quality according to the report. However, censuses in South Africa have been hindered by high rates of undercounts, and this has been on the increase even with the latest census.

3.4 The Relational Gompertz Method

The relational Gompertz method can be regarded as a successor to the earlier P/F technique, also pioneered by Brass. It is predicated after two observations about the general errors encountered in fertility data collected in developing countries that recent fertility is generally underreported. However, the independence of women's age, and that lifetime fertility are generally well-reported by younger women. On the contrary, lifetime fertility is increasingly underreported with increasing age of the women reporting. The method seeks to establish the shape of the underlying fertility trends from the reports of recent fertility while correcting for the anticipated underreporting using the information on lifetime fertility (Moultrie, 2013).

The method fits a Gompertz function to data on average number of children ever born or ASFRs, by age of women. The benefit of the method is that it provides estimates of TFR based on each 5-year age group in childbearing ages, which permits for implications about trends in the levels of fertility. Another attractive property of the Relational Gompertz method is that it is flexible enough to fit good data well but bad data badly (Statistics South Africa 2010).

The main limitations of the method include: (1) the results obtained by applying the method are extremely complex to errors in the reported numbers of children ever born by women; (2) estimates based on data for women aged 15–19 years are not reliable because data for these ages are sensitive to information errors; (3) the method is only well suited for populations with medium to high fertility (Moultrie 2013).

As input data, the method requires average parities at each age group, for $x = 15, 20, 25, 30, 35, 40, 45$, and fertility rates in each age group. For ease of exposition, and to

differentiate more clearly between lifetime and recent fertility, data are indexed as $P(1)$, as $P(2)$ and so on.

According to Moultrie et al. (2013), there are integral flaws in this method, firstly it requires total births as an input. Secondly, estimates of total fertility obtainable from reported age-specific fertility rates (ASFRs) might be partial. In fact, total fertility is often the parameter of greatest attention that the analyst is trying to estimate. The second weakness is the inherent hypothesis of constant fertility over time rising from the treatment of the parity gompits. Nonetheless, Brass' formulation inspired the derivation of the standard fertility schedule by Booth (1980, 1984), which is still used in the model to this day.

The study used the Gompertz rational to adjust the fertility data, in an attempt to minimise the reported errors.

3.5 Decomposition Techniques

Decomposition methods were used in this study. To decompose means to detach a product into its essential parts or elements or into simpler groupings. Decomposition methods are used when equating demographic variables that belong to different populations or when equating variables of the same population over time (Das Gupta 1991).

There are different techniques to decompose changes in fertility into a broad set of components. One such decomposition technique is the Bongaarts model that decomposes fertility into four proximate determinants of fertility (Bongaarts 1978). However, almost all decomposition methods in demography are founded on the ground-breaking work of (Kitagawa, 1955). The method of decomposition is based on the difference between two measures over time.

In the past it was not possible to apply this method to African populations because the necessary data were not available. The unavailability of data poses a problem in applying these techniques, especially in developing countries.

Nonetheless, as mentioned earlier, more researchers are exploring this method in different research fields. Sayi (2008), applied the decomposition method in exploring the

relationship between marriage and fertility transition in sub-Saharan Africa. Palamuleni (2011), applied the method when decomposing crude birth rate of South Africa using 1996 and 2001 census data. He further applied the method of the analysis of fertility decline in Malawi (2018).

The aim of the method was to get the total number of women in the 15-49 age groups, and total number of births in the last twelve months. It further sought to analyse the numbers of children who were ever born and also the marital status of women aged between 15-49 years. The method aimed to calculate the Total Fertility Rate, Crude birth Rate and the Age Specific Fertility Rate, from all the census information.

For the purpose of this study, the researcher decomposed the fertility rate, taking into consideration the marital status of women between 15-49 age groups. The approach was to group the Separated, Divorced, Widowed, and Never Married and analyse them as one variable Non Married (NLWSD) and Married (M) Civil or Traditional and Living together as the other variable: Married.

The adjusted Total Fertility Rate used in this study is mainly self-calculated, using the information derived from the *SuperCROSS*, data set produced by Statistics South Africa (Gompertz model Moultrie et al. 2013). ASFR is the product of births occurring to a particular age group divided by the number of females in that age group. The study will plot the ASFR results for South Africa for all censuses.

The interest of this study is to look into the Total Fertility Rate which is defined as the number of children a woman would bear during child bearing period under prevailing age specific fertility rates which is calculated as the sum of Age Specific Fertility Rate (ASFR) multiplied by five, because of the five years age groups. Also the paper will calculate crude birth rate (CBR) as another unit of measure for fertility and to be in a position to identify the best measure between the two.

The decomposition deals with finding the additive contributions of the effects of the differences in the compositional or rate factors in two populations to the difference in their overall rates. Decomposition is the difference between two populations or two points in time, however, in the case of Das Gupta (1991), it is the difference between two crude birth rates $R_2 - R_1$ Das (Gupta, 1991).

The assumption of this study is that since TFR is derived from ASFR, and ASFR has elements of births and population the same as CBR, the same methodology used by Das Gupta using CBR can be used in TFR.

To implement this method, the researcher decomposed changes in the CBR and TFR respectively by standardizing both CBR and TFR. The researcher further used standardisation by Das Gupta (1991) and interchanged all factors i.e. marital fertility (TMFR), non-marital fertility (NMTFR), proportion married woman (PM) and proportion woman aged 15-49 (PW). For each year, the researcher constructed TFR/CBR for each census year and the difference/change of the standardised rates should give the value equals the sum of the decomposition effect.

The standardisation and decomposition formula for four factors is:

$$R_2 - R_1 = \left[\frac{bcd + BCD}{4} \right] + \left[\frac{bcD + bCd + Bcd + BCd + BcD + bCD}{12} \right] * (a - A)$$

Where

R = Crude birth rate/ Total Fertility Rate

A = General marital fertility rate/ Total marital fertility rate (α)

B = Proportion of married woman in the population (β)

C = Proportion of woman in the population (γ)

D = Non Marital fertility rate (σ)

4 and 12 are interaction constants

Population 1 will be represented by capital letters (A) and Population 2 will be small letters (a). In this case population 1 & 2 are represented by censuses.

Table 3.1 Das Gupta Decomposition table

	RATES		DECOMPOSITION	
	Year1	Year2	Effect	% distribution
TFR	Rate	Rate		
TMFR	A	a	α	α/sum
PROPM	B	b	β	β/sum
PROPW	C	c	γ	γ/sum
NMTFR	D	d	σ	σ/sum
Total			Sum(effects)	

Table 3.1 above is the Das Gupta decomposition table, researchers chose to use Das Gupta decomposition method because other methods are more complicated. Again, it is different from the statistical modelling method, the method decomposes the change between two rates into additive main effects and does not involve any interaction effects. This should be a desirable aspect in a decomposition problem because it lends itself to easier and simpler interpretations of the results.

3.6 Measures of Fertility

Measures of fertility are number of births in the population, crude birth rate, general fertility rate, age specific fertility rate and total fertility rate all this affect population change and will be explained further in the following section.

3.6.1 Crude Birth Rate (CBR)

Number of births in a given population per 1000 divided by total population

$$CBR = \left[\frac{Births}{Population} \right] * 1000$$

The advantage of CBR is that it is the simplest measure of fertility as it takes only total births and total population, also to note is the shortfall of CBR that it makes no allowance in the ratio of sex, difference in the age distribution postponement and speeding up marriage.

Age Specific Fertility Rates (ASFR's)

The number of live births to women, in a specific age group, within the reproductive period per thousand.

$$ASFR = \left[\frac{Births}{Female\ Population(15 - 49)} \right] * 1000$$

$$ASFMR = \left[\frac{Births}{Married\ Female\ Population(15 - 49)} \right] * 1000$$

The advantage of ASFR is that it eliminates one of the drawbacks of CBR by removing the distortion produced by the age structure of the population. However, the disadvantage of ASFR is that it is not a single measure and cannot compare various populations.

Total Fertility Rates (TFR's)

Total Fertility Rate is the measure of the total number of children a woman entering procreative age is expected to have in the end of a reproductive period, presumptuous fertility remains constant in the future, and it is aggregated from the computed ASFR.

$$TFR = \Sigma ASFR * 5$$

$$TMFR = \Sigma ASMFR * 5$$

$$TNMFR = \Sigma ASNMFR * 5$$

TFR is normally used as a summary measure of fertility as it is free from age-spreading of the population. The age structure of the population is taken care of in the calculation of ASFR. The TFR takes into account the age-specific birth rates of women between the ages of 15 and 49 using 5-year age groups. The age-specific rates are summed together and multiplied by 5 because of the 5-year age groups.

The total marital and non-marital fertility rates in the study accounts for the married and the non-married woman aged 15-49.

3.7 Limitations of the Study

These results, methods and conclusion of this study will only be used in this research project. The study is only about finding out how much of a percentage marital fertility, proportion women and age sex structure contribute to the Total Fertility Rate of South Africa.

The adjusted TFR used in this study was mainly self-calculated, using the information derived from the *SuperCROSS* data set produced by Statistics South Africa and the Gompertz adjustment.

The study however, does note some weaknesses, as the derived estimates of crude birth and total fertility rates are based on the estimates given by Statistics South Africa (1996, 2001 and 2011). In essence, according to Moultrie and Timæus (2002) the data from the three censuses each had its own problems in this study and no attempt has been made to adjust the reported population figures.

3.8 Ethical consideration

This study used secondary data from existing database from Statistics South Africa. No personal information or name of the respondent was identified in the database. As a result anonymity and confidentiality of the respondents are guaranteed.

3.9 Summary

The research methodology explained in this chapter was based on the Das Gupta decomposition technique. The Gopertz rational technique was used to adjust the reported data from the censuses, and demographic measures of fertility applied will assist in employing both the Gompertz and the Decomposition methods. From the census data also highlighted in this chapter are the fertility questions asked to women aged 15-49. The following chapter discusses and presents research findings.

CHAPTER 4 PRESENTATION OF RESULTS

4.1 Introduction

This chapter presents the findings of the study. The chapter is divided into four sections i.e. Decomposition of CBR, ASFR analysis, decomposition of TFR, and summary. The analysis is from the decomposition of Crude Birth Rate and the Total Fertility Rate for the 1996-2001 censuses and 2001-2011 censuses using das Gupta methodology, also the analysis has results for South Africa, population groups and Provinces.

4.2 Decomposition of Crude Birth Rate

Table 4.1 below shows the Crude birth rate by population groups, Province and South Africa as a country for all population censuses.

Table 4.1 Crude birth rate by population group, province and South Africa

POPULATION GROUP	CENSUS 96_CBR	CENSUS 2001_CBR	CENSUS 2011_CBR
Blacks	22.17	21.00	20.94
Coloured	19.52	19.48	17.51
Indian/Asian	15.25	13.17	11.39
White	12.98	10.80	9.98
PROVINCE	CENSUS 96_CBR	CENSUS 2001_CBR	CENSUS 2011_CBR
Eastern Cape	21.31	17.50	18.69
Free State	18.98	18.93	19.05
Gauteng	19.09	19.45	18.87
Kwa-Zulu Natal	20.51	19.79	18.98
Limpopo	25.47	21.68	22.99
Mpumalanga	21.62	22.19	20.52
North West	19.50	21.27	20.84
Northern Cape	19.45	20.36	19.93
Western Cape	19.14	18.22	17.19
SOUTH AFRICA	20.67	19.69	19.41

The CBR for South Africa shows a decreasing trend i.e. in 1996 CBR was 20.67 in 2001 CBR was 19.69 and in 2011 CBR was 19.41. The CBR for all population groups seems to have a decreasing trend between 1996 and 2011, with the highest CBR being the black population at 20.94 as at 2011 followed by Coloured at 17.51 and then Indians at 11.39 and the lowest being the White population group at 9.98.

The provincial CBR varies as in some provinces the CBR decreases then increase i.e. in the Eastern Cape and Limpopo, while the CBR shows increase then decrease trend in Gauteng, Mpumalanga, North West and Northern Cape, the CBR is the decreasing trend just like in the Free State, Kwa-Zulu Natal, and the Western Cape.

Limpopo province shows the highest CBR of 22.99 in 2011, followed by North West province with a CBR of 20.84. Mpumalanga province has the 3rd highest CBR of 20.52, followed by Free State and Northern Cape at 19.93 and 19.05 respectively, which are then followed by Eastern Cape, Gauteng and Kwa-Zulu at 18.69, 18.98 and 18.87 respectively. The least CBR is recorded in Western Cape at 17.19. There is a clear diversity in CBR geographically, i.e. in the urbanized provinces the CBR is low as compared to the non-urbanized provinces which have a high CBR.

Table 4.2 Crude Birth rate Decomposition input table (Census 1996-2001-2011)

	1996						2001						2011					
	GMFR	NGMFR	PROP W	PROP M	GMFR	NGMFR	PROP W	PROP M	GMFR	NGMFR	PROP W	PROP M	GMFR	NGMFR	PROP W	PROP M	GMFR	NGMFR
Eastern Cape	49.95	12.62	0.47	0.17	37.16	11.37	0.49	0.17	29.50	15.13	0.49	0.16	29.50	15.13	0.49	0.16	29.50	15.13
Free State	37.54	9.99	0.54	0.24	34.74	11.58	0.55	0.24	30.38	13.97	0.53	0.22	30.38	13.97	0.53	0.22	30.38	13.97
Gauteng	33.91	11.38	0.59	0.27	32.84	11.85	0.61	0.28	31.34	11.75	0.60	0.27	31.34	11.75	0.60	0.27	31.34	11.75
KwaZulu-Natal	41.22	14.13	0.51	0.17	34.63	15.07	0.52	0.17	25.82	16.81	0.53	0.16	25.82	16.81	0.53	0.16	25.82	16.81
Limpopo	64.32	13.55	0.46	0.18	44.50	14.32	0.49	0.19	37.63	18.01	0.51	0.18	37.63	18.01	0.51	0.18	37.63	18.01
Mpumalanga	45.41	12.95	0.51	0.21	40.90	15.41	0.53	0.21	31.51	16.46	0.54	0.19	31.51	16.46	0.54	0.19	31.51	16.46
North West	37.18	13.26	0.52	0.19	31.85	17.03	0.54	0.20	28.82	17.55	0.53	0.20	28.82	17.55	0.53	0.20	28.82	17.55
Northern Cape	35.59	13.73	0.51	0.20	31.22	15.74	0.52	0.22	27.35	16.81	0.52	0.20	27.35	16.81	0.52	0.20	27.35	16.81
Western Cape	35.38	11.45	0.55	0.25	31.73	10.90	0.57	0.26	26.89	11.50	0.56	0.26	26.89	11.50	0.56	0.26	26.89	11.50
African/Black	47.78	13.96	0.52	0.18	39.74	14.68	0.54	0.19	33.87	16.43	0.55	0.19	33.87	16.43	0.55	0.19	33.87	16.43
Coloured	37.00	12.30	0.55	0.24	33.33	12.79	0.56	0.25	26.53	12.82	0.54	0.24	26.53	12.82	0.54	0.24	26.53	12.82
Indian/Asian	32.28	2.55	0.57	0.34	27.15	1.81	0.58	0.34	21.57	2.22	0.56	0.33	21.57	2.22	0.56	0.33	21.57	2.22
White	24.16	3.00	0.52	0.31	19.62	1.64	0.52	0.32	16.95	1.80	0.49	0.30	16.95	1.80	0.49	0.30	16.95	1.80
South Africa	41.71	12.69	0.52	0.21	35.20	13.41	0.54	0.21	29.90	14.97	0.54	0.21	29.90	14.97	0.54	0.21	29.90	14.97

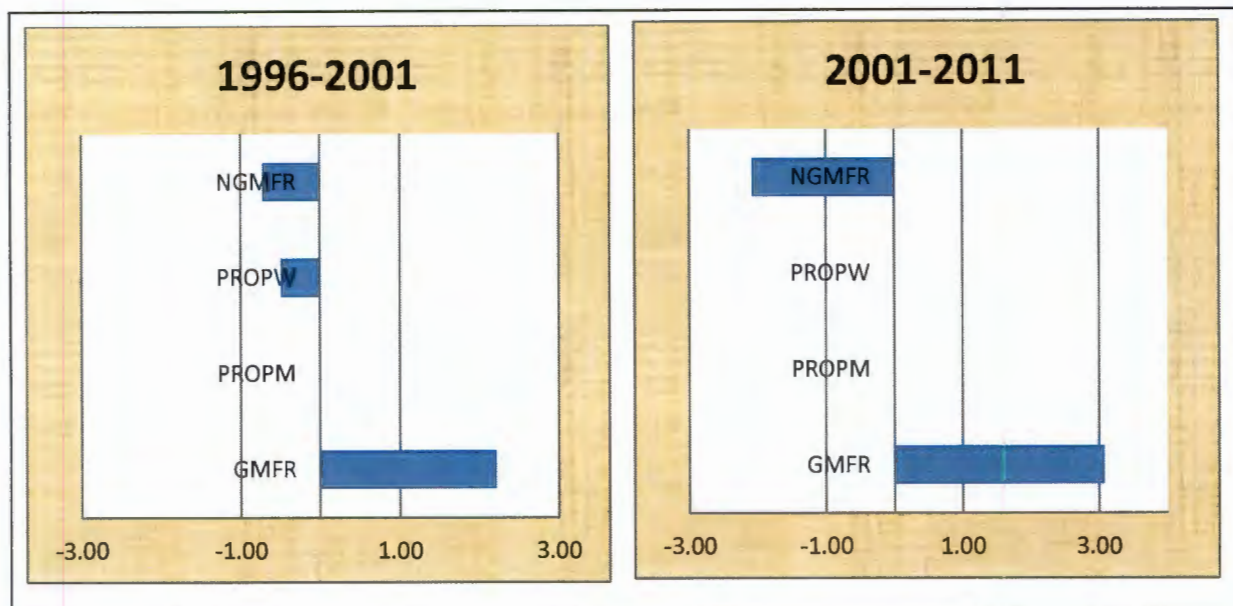


Figure 4-1 Decomposition Crude Birth Rate South Africa

Figure 4.1 above shows the results from Das Gupta decomposition analysis of crude birth rate of South Africa. The CBR of South Africa was 20.67 in 1996 then decreased to 19.69 in 2001. The crude birth rate was 19.69 in 2001 then decreased to 19.41 in 2011.

The decrease between 1996 and 2001 is mainly due to non-general marital fertility and the proportion women whereas the general marital fertility rate went to the opposite direction of the decrease in CBR. The proportion married between 1996 and 2001 remained the same and had no effect on the decrease in CBR.

The decrease was due to the pulling down of non-general marital fertility by -2.08. Proportion married, and proportion women had no effect on CBR whilst marital fertility pushed the CBR to the opposite direction.

The decrease in crude birth rate from 1996 to 2011 can be attributed to the decrease in the general non marital fertility rate, as it went down during both census periods i.e 1996 to 2001 and 2001 to 2011. Also to note is that the proportion married did not have any effect on the decrease in crude birth rate from 1996-2001 as it remained unchanged.

4.3 Decomposition CBR for population groups in South Africa

Figures below show the crude birth rate by population groups in South Africa according to censuses 1996, 2001 and 2011 and the Das Gupta analysis.

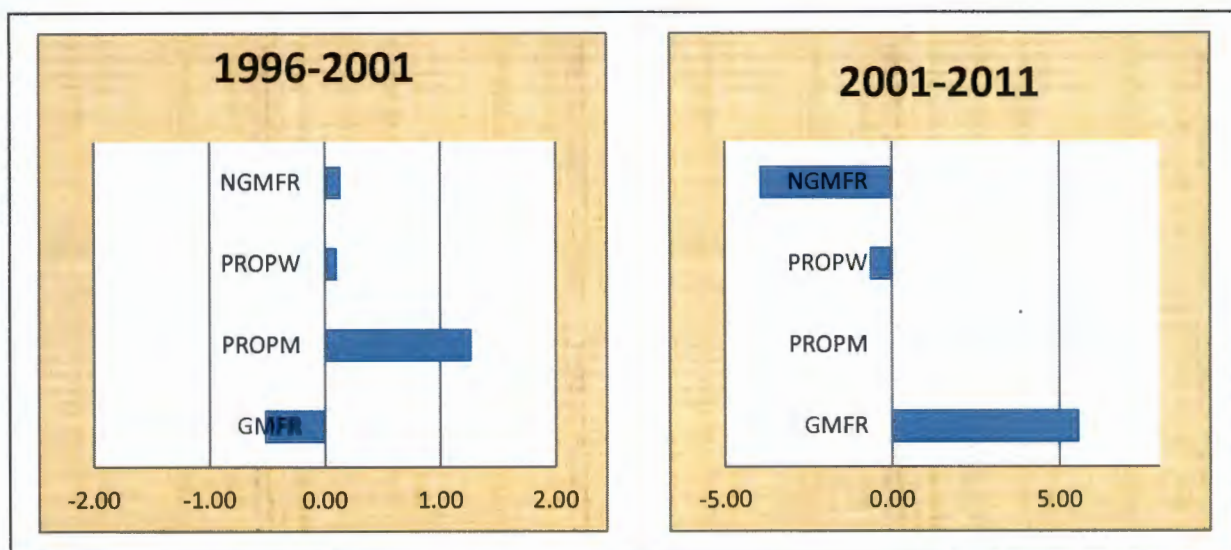


Figure 4-2 Decomposition results African

The crude birth rate of African/ black population group was 22.17 in 1996 and decreased to 21.00 in 2001. The decrease was due to GMFR by -0.52, whilst NGMFR and proportion married and proportion women pushed up CBR but not significantly.

Crude birth rate was 21.00 in 2001 then decreased to 20.94 the contributing factors to the decrease was the decrease in the non-general marital fertility rate and proportion women, the proportion married had no effect, whilst the marital fertility pushed CBR up but not significantly.

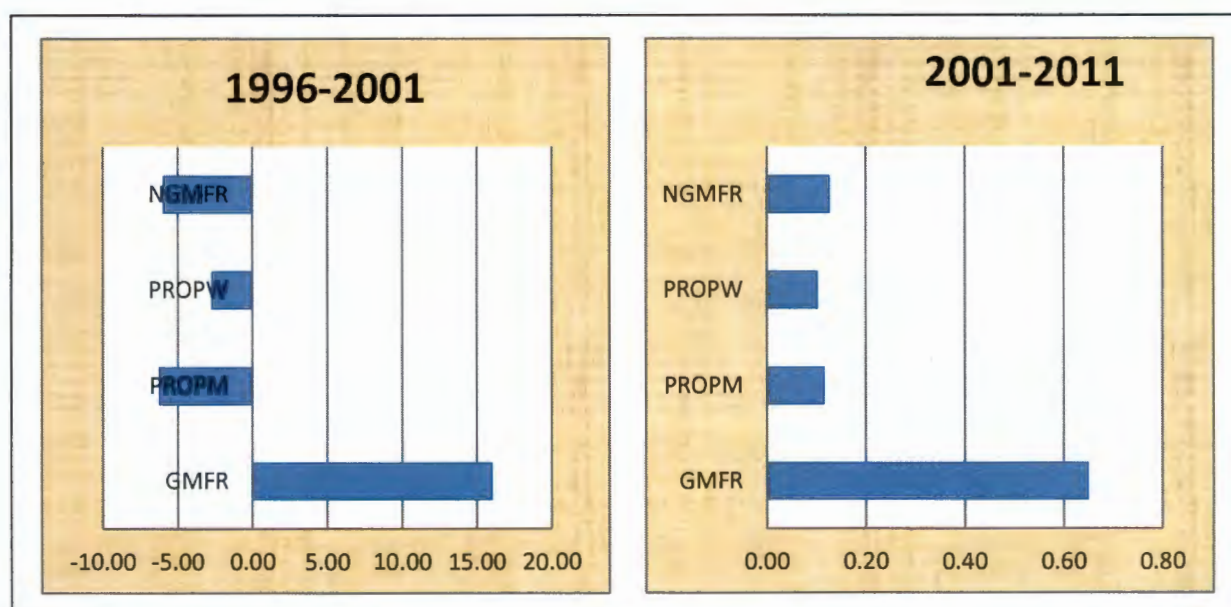


Figure 4-3 Decomposition results Coloureds

The CBR for coloured population group was 19.52 in 1996, decreased to 19.48 in 2001, the decrease was due to non-general marital fertility rate and proportion women and proportion married. The GMFR went to the opposite direction of the CBR.

The Coloured CBR then decreased further from 19.48 in 2001 to 17.51 in 2011, the decrease could not be accounted for by the measured variables as they all went to the opposite direction.

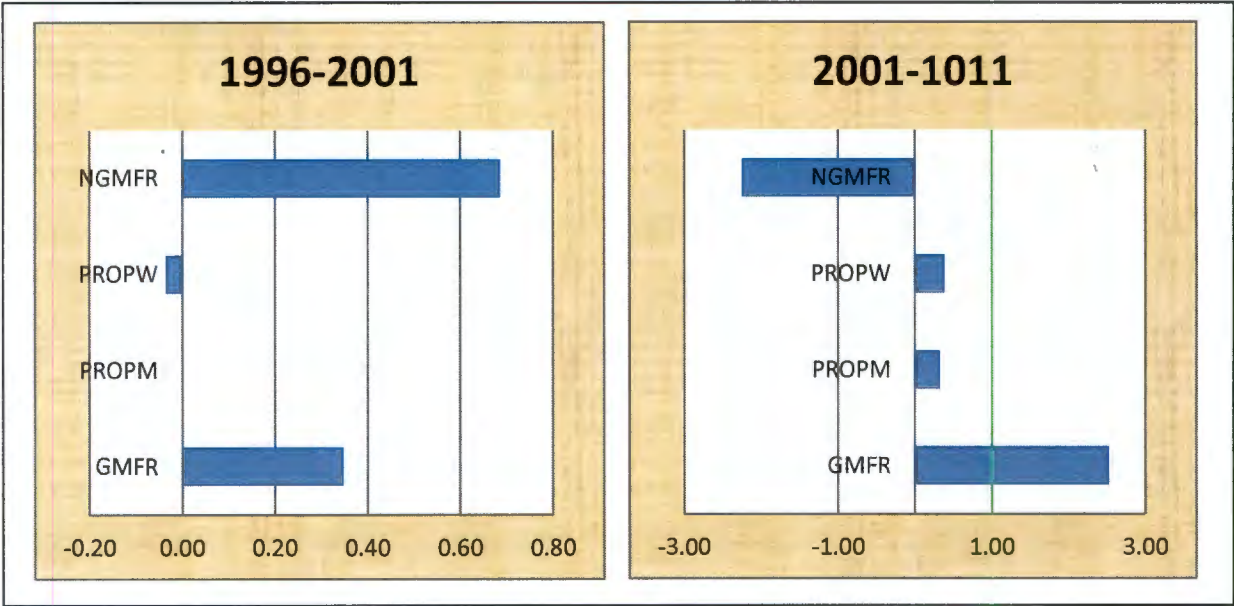


Figure 4-4 Decomposition results Indians

The crude birth rate of the Indian population group was 15.25 in 1996 and decreased to 13.17 in 2001, the decrease was due to proportion women which pulled CBR down by -0.04, GMFR and NGMFR pushed up CBR and proportion married had no effect on CBR.

Figure 4.4 above shows that between 2001 and 2011 the CBR decreased further from 13.17 in 2001 to 11.39 in 2011. The decrease was due to the pulling down of the non-marital fertility by -2.25. Marital fertility and proportion women and marital fertility went to the opposite direction of the CBR.

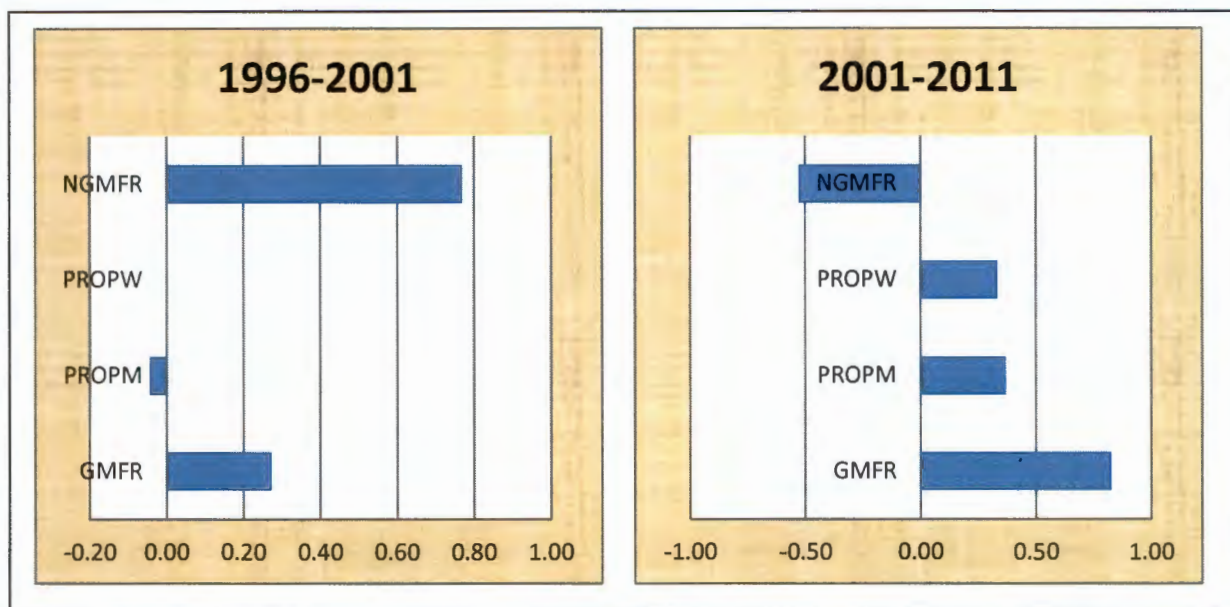


Figure 4-5 Decomposition results Whites

The crude birth rate of the White population group was 12.98 in 1996 and decreased to 10.80 in 2001. The decrease can be attributed to proportion married. Proportion women had no effect on CBR. Marital and non-marital fertility pushed to the opposite direction of the decrease in CBR.

Between 2001 and 2011 the CBR for white population decreased from 10.80 to 9.98 and the decrease was the pulling factor of non-marital fertility. The proportion married, proportion women and the marital fertility pushed up CBR but not significantly.

4.4 Decomposition of CBR for South African Provinces

The following section will show the decomposition results of crude birth rate by provinces.

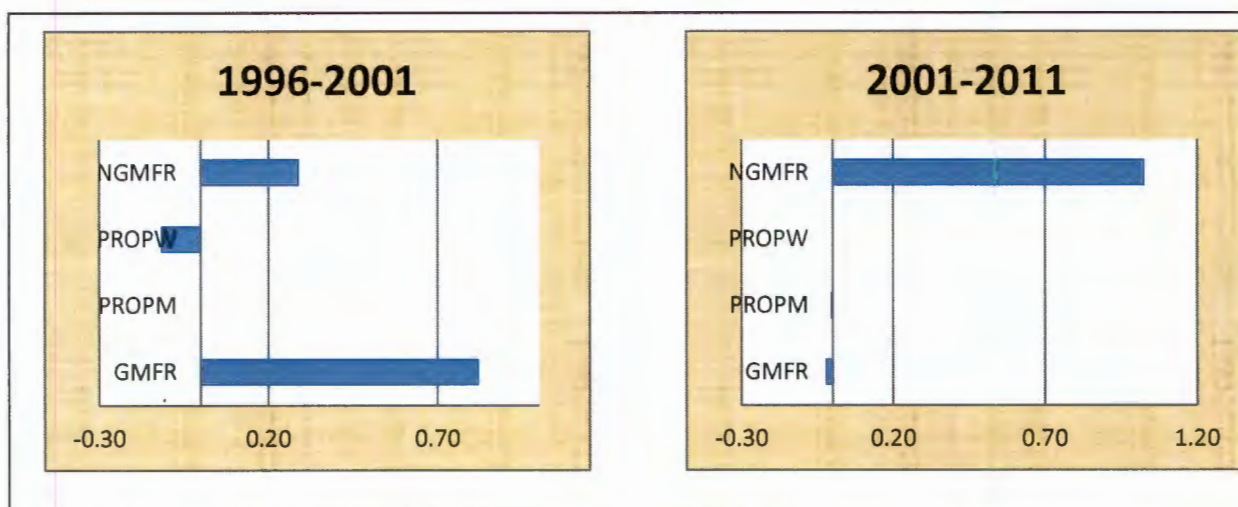


Figure 4-6: Decomposition CBR results Eastern Cape

The Eastern Cape crude birth rate was 21.31 in 1996 then decreased to 17.50 and then increased to 18.69 in 2011. Between 1996 and 2001 proportion women pulled down CBR by -0.12, proportion married had no effect whilst NGMFR and GMFR pushed CBR up but not significantly.

The Eastern Cape CBR increased between 2001 and 2011, the increase was due to the increase in non-marital fertility by 1.03 and marital fertility went to the opposite direction whilst proportion women and proportion married had no effect on CBR.

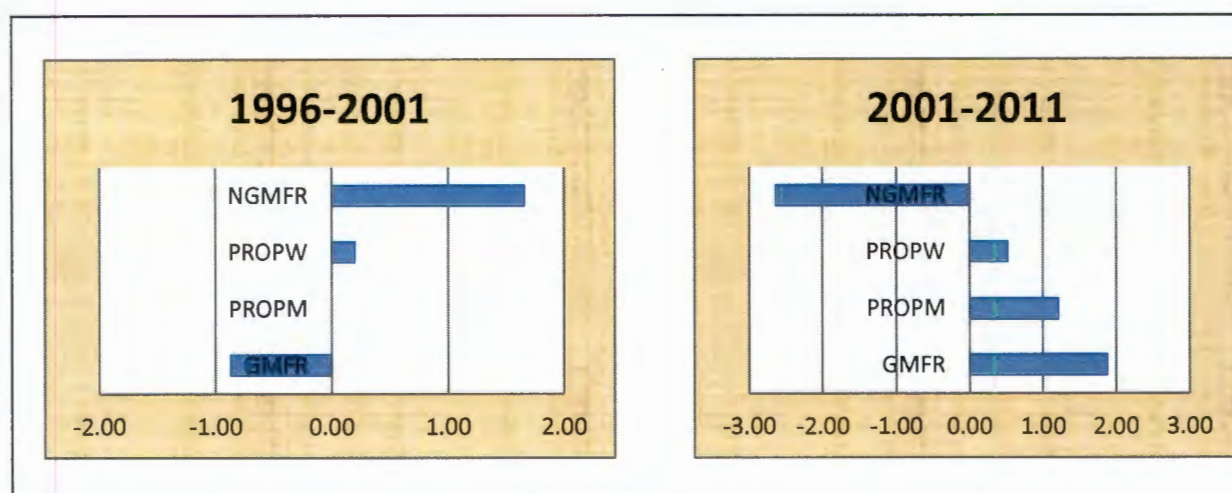


Figure 4-7 Decomposition CBR results Free State

The Free State province CBR was 18.98 in 1996 and decreased to 18.93 in 2001 and then increased to 19.05 in 2011.

The decrease between 1996 and 2001 was due to the decrease in marital fertility by -0.88, proportion women and NGMFR pushed CBR up and proportion married had no effect on CBR between 1996 and 2001.

Between 2001 and 2011 CBR increased, the increase was due to the increase in the marital fertility by 1.89, proportion women by 0.53 and proportion married by 1.23. NGMFR pulled to the opposite direction.

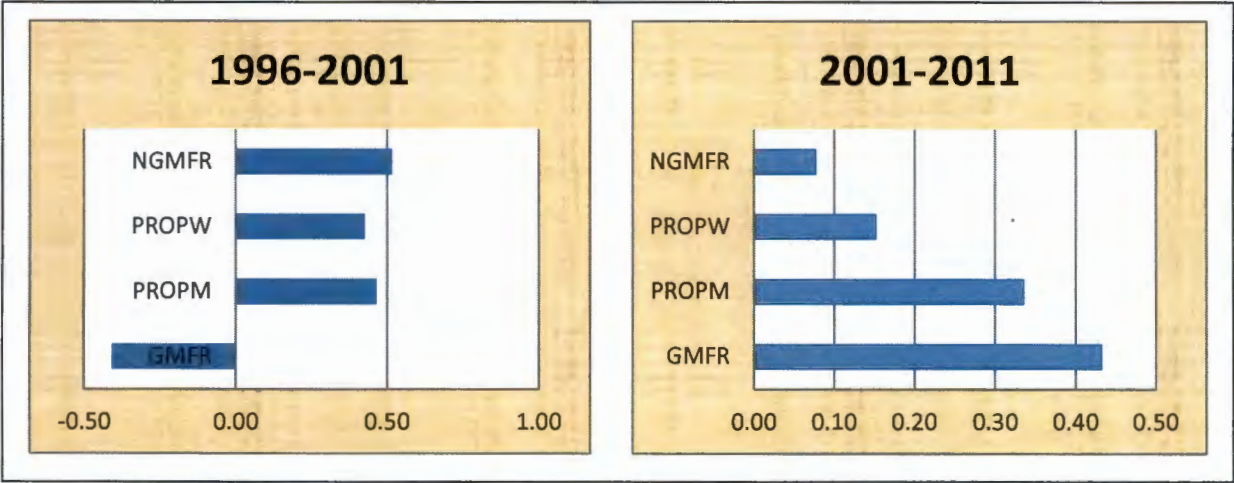


Figure 4-8 Decomposition CBR results Gauteng

The CBR of Gauteng province in 1996 was 19.09 and increased to 19.45 in 2001 and then decreased to 18.87 in 2011.

The increase was mainly due to the increase in the proportion married by 0.47, proportion women by 0.43 and non-general fertility by 0.52. The marital fertility on the other hand pulled to the opposite direction by -0.41.

Between 2001 and 2011 CBR decreased, the decrease could not be accounted for from the measured variables as they all pushed up CBR.

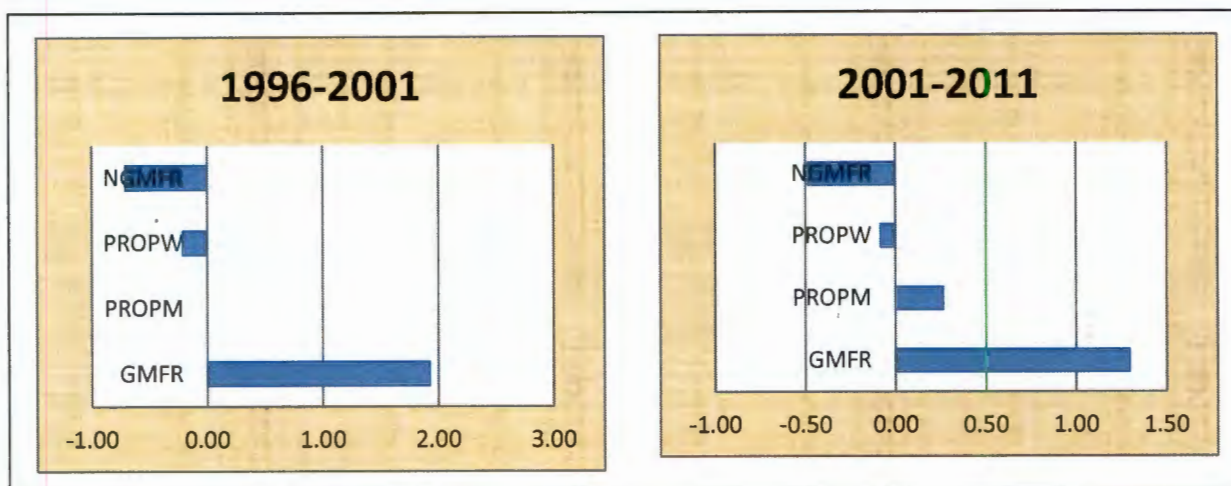


Figure 4-9 Decomposition CBR results Kwa-Zulu Natal

The decomposition results of KZN CBR show that the CBR was 20.51 in 1996 and decreased to 19.79 in 2001 and decreased further in 2011.

The decrease between 1996 and 2001 can be attributed to the pulling down or decrease in non-general fertility rate by -0.72 and the proportion women by -0.22. Proportion married remained the same between 1996 and 2001 i.e. had no effect on the decrease of CBR. The general marital fertility rate pushed CBR up by 1.94.

Significantly again the decrease in CBR between 2001 and 2011 was due to the decrease in non-general fertility rate by -0.49 and proportion women by -0.09, whereas the general marital and proportion married pushed up the CBR.

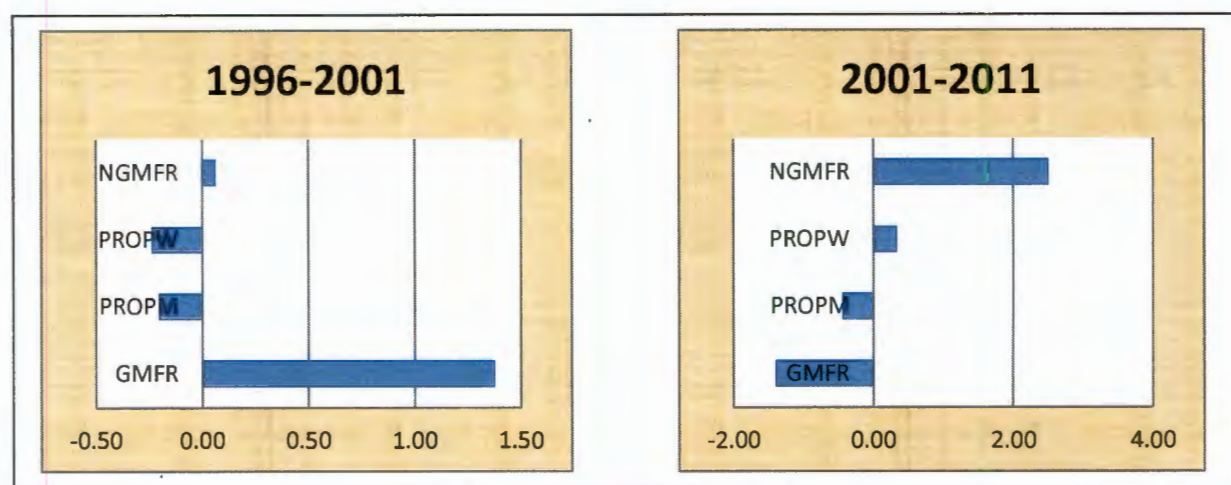


Figure 4-10 Decomposition CBR results Limpopo

The Limpopo province results show that the CBR decreased between 1996 and 2001 from 25.47 to 21.68, and then increased to 22.99 in 2011.

The decrease between 1996 and 2001 was due to the pulling down or decrease in proportion women by -0.24 and the proportion married by -0.20. Non general marital fertility and the marital fertility rate pushed the CBR up by 0.06 and 1.38 respectively.

CBR increased between 2001 and 2011, due to the increase or pushing up of the proportion women and non-general marital fertility rate by 0.34 and 2.51 respectively. Proportion married and general marital fertility rate pulled to the opposite direction.

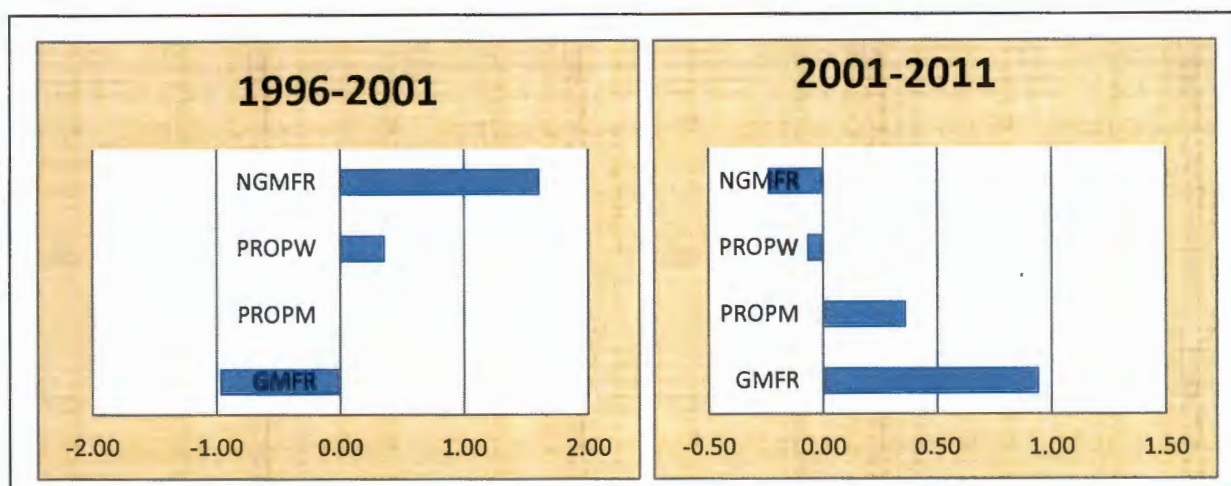


Figure 4-11 Decomposition CBR results Mpumalanga

The Mpumalanga province CBR and decomposition results show that between 1996 and 2001 CBR increased from 21.62 to 22.19 and then decreased to 20.52 in 2011.

The increase was due to the push up of non-general marital fertility rate by 1.61 and the proportion women by 0.36. The general fertility rate pulled to the opposite direction by -0.97, whereas proportion married remained the same between 1996 and 2001, and had no effect on the increase in CBR.

Between 2001 and 2011 the CBR decreased, the decrease can be attributed to the non-general marital fertility rate by -0.24 and proportion women by -0.7. The general marital fertility and proportion married pushed up the CBR.

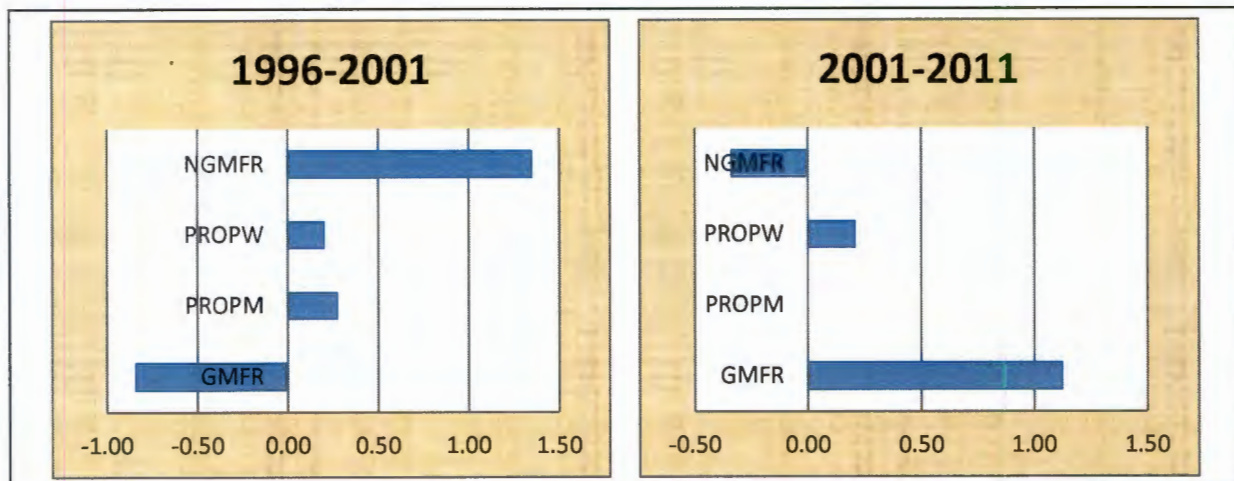


Figure 4-12 Decomposition CBR results North West

The North west CBR and the decomposition results shows that between 1996 and 2001 the CBR increased from 19.50 to 21.27 and then decreased to 20.84 in 2011.

The increase between 1996 and 2001 was due to the increase in the non-general marital fertility and proportion married and proportion women whilst general marital fertility decreased between the same periods.

The decrease in CBR between 2001 and 2011, can be attributed to the decrease in the non-general marital fertility rate by -0.34, whereas proportion women and the general marital fertility rate pushed to the opposite direction. The proportion married remained the same between 2001 and 2011, hence it had no effect.

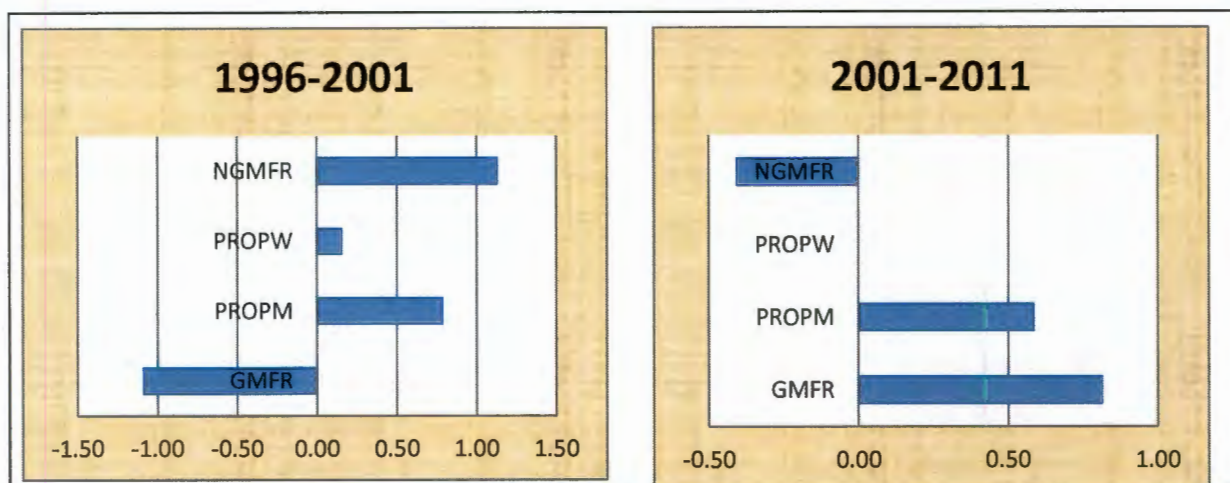


Figure 4-13 Decomposition CBR results Northern Cape

The crude birth rate of the Northern Cape Province in 1996 was 19.45 and increased to 20.36 in 2001, and then decreased to 19.93 in 2011.

The increase in CBR between 1996 and 2001 was due to the pushing up of non-general marital fertility rate, the proportion women and the proportion married by 1.14, 0.16 and 0.79 r espectively. The general marital fertility rate pulled to the opposite direction by - 1.09.

Between 2001 and 2011 the CBR decreased, the decrease was due to non-general marital fertility rate which decreased by -0.41. The general marital fertility rate and the proportion married pushed up the CBR but it was not significant. The proportion women remained the same between 2001 and 2011 and had no effect on CBR.

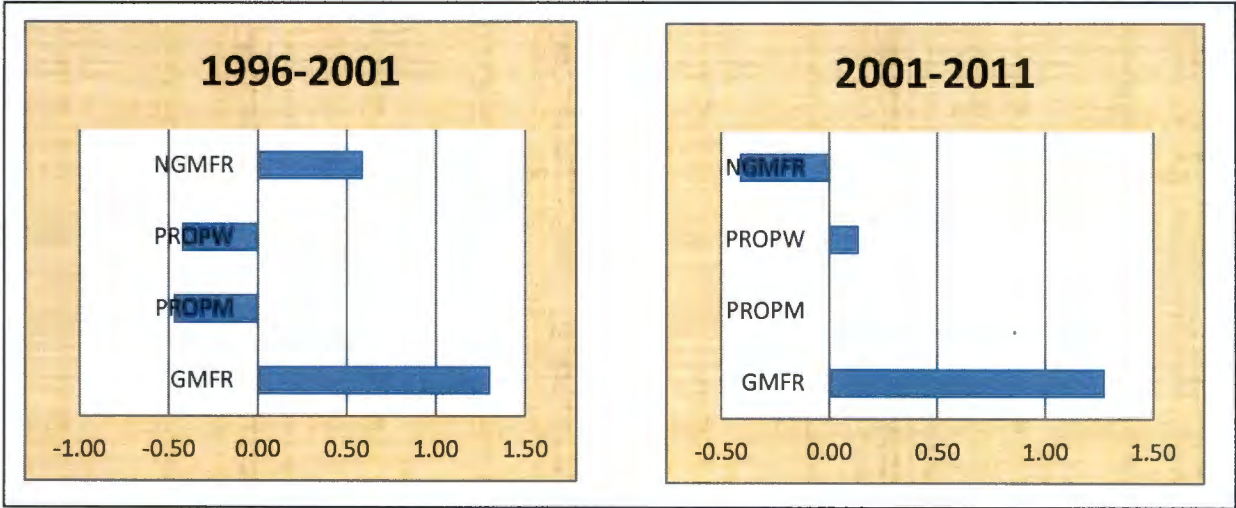


Figure 4-14 Decomposition CBR results Western Cape

The Western Cape province CBR and the decomposition results between 1996, 2001 and 2011. Indicate that the CBR was 2.67 in 1996 and decreased to 2.35 in 2001 and then slightly increased to 2.37 in 2011.

Between 1996 and 2001 the decrease in CBR was due to the decrease in the proportion women and proportion married by -0.43 and -0.47 respectively. The non-general marital fertility and the marital fertility rate pushed up the CBR of the province.

The increase in CBR between 2001 and 2011 was mainly due to general marital fertility rate and the increase in the proportion of women, whereas the proportion married

remained the same and the non-general marital fertility rate pulled to the opposite direction.

4.5 Age specific fertility rate of South Africa

As one of the fertility measures of live births occurring to a woman in her reproductive age i.e. 15-49, the study examined if there is a specific age at which that South African women had children.

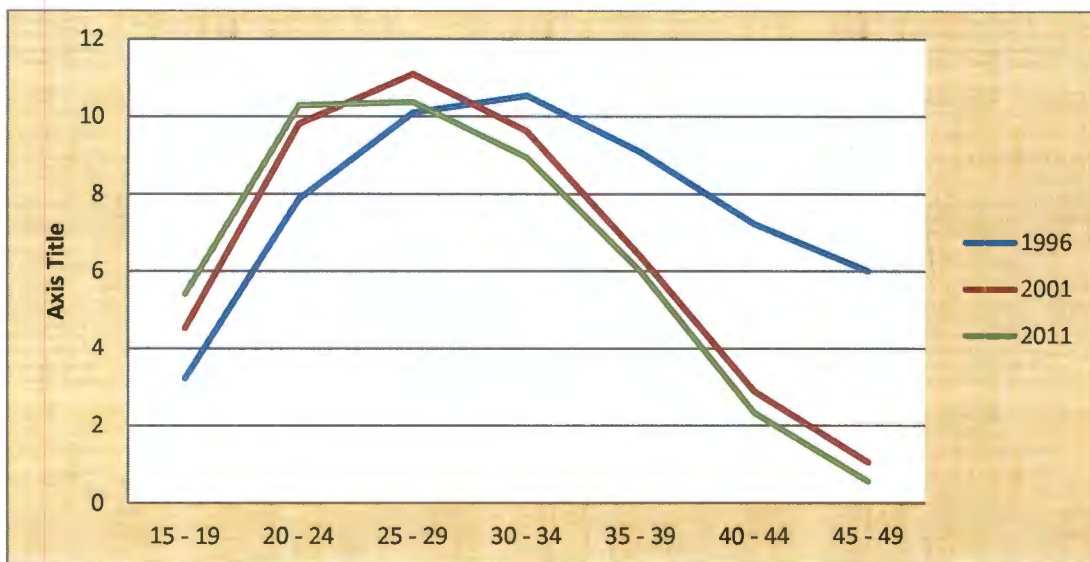


Figure 4-15 South Africa's Age Specific Fertility Rates

Figure 4.15 shows the age specific fertility rate of South African woman irrespective of their marital status according to census (1996, 2001 and 2011). It clearly shows that women tend to have children at age group 25-29 with the highest being 0.11 ASFR in 2001.

Fertility seems to be happening mostly in the early ages of women in the reproductive groups. The figure further shows a normality curve with low rates at low ages and high rates at middle ages then lower rates at older age groups.

Again what is significant is the fact that in 1996 the age specific rate was at a low rate for age groups 15-29 compared to latter censuses, also to note is that age specific fertility is higher at older age groups in 1996 compared to latter censuses. The reasons might be due to the 1996 census data quality as stated earlier that of the structuring of the questions and/or poor training. The respondents and/or enumerators frequently did

not appreciate the distinction between the questions on lifetime and recent fertility which resulted in them providing the same answers to both questions, Moultrie and Timæus (2002). Moreover census 1996 was the first inclusive censuses it was bound to have errors in the data.

Age specific fertility rate by Population groups

Annexure A shows that the age specific fertility rate by population group in 1996 population census was the highest amongst Blacks across all age groups. This is followed by the coloured population group, which showed high age specific rate at lower ages i.e. 15-24, and then a decrease as age increases. The Indian population group had the higher age specific fertility at early ages as compared to the white population group, but from age 29-49 both the White and Indian population groups showed similar ASFR.

Annexure B shows the age specific fertility rate by population groups according to the 2001 population census. Compared to the 1996 ASFR, there is a significant difference as the coloured population group somehow reported a higher ASFR more than the Black population group between age groups 20-29. This means that the Coloured population group had children at early ages but from age groups 30-49 the picture changed as the Black population group was reported to have higher ASFR than any other population group.

Something to note between 1996 and 2001 is that the White population group had the lowest ASFR across all age groups with just a slight pick in 2001 at age group 30-34 where the White population group had ASFR of 0.08 which was higher than that of the Indian population group. As for the variation between 1996 and 2001 on the black population one can attribute it to data quality again and or to improvements on data collection and responses, also to improved access to contraceptives for the black population.

Annexure C shows the age specific fertility rate by population group according to the 2011 population census. The black population group shows a higher ASFR across all age groups. Followed by the coloured population group the Indian and white population groups interchanged the ASFR at lower age groups (15-24) the Indians reported a

slightly higher ASFR and at age groups (25-34) the white population group reported a higher ASFR and then from age group 35-49 both had similar ASFR.

Age specific fertility rate by SA Provinces as shown in the annexure.

Eastern Cape shows the age specific fertility rate between 1996 and 2011. In 1996 ASFR was low at lower ages but high at higher ages and something to note is that it is the highest from age 25-49 across all censuses. In 2001 ASFR was low at lower ages and went up at age 25-29 and then went down from age 25-49 and lower than ASFR for 1996. In 2011 ASFR was high at lower ages as compared to other censuses from age 15-24 and was the lowest from age 25-49 across all censuses.

Free state, Gauteng, Mpumalanga, North West, Northern Cape and Western Cape yielded almost the same pattern of age specific fertility rate, the ASFR was low at low ages 15-34, then fell steadily from age 35-49, but was higher than other censuses. In 2001 it was parallel with 2011 from age 15-24 but then picked at age 25-34 and then steadily fell parallel again with 2011 from age 34-49.

Kwa-Zulu Natal in 1996 ASFR was low at low ages 15-25 then went up at age 30-34, and then fell from age 35-49 but was higher than the latter censuses. In 2001 compared to 1996 ASFR was high at low ages 15-24 and picked at age 25-29, then fell steadily from 30-49 age groups. In 2011 ASFR was high at low ages 15-20 then fell rapidly at ages 20-49 and it was the lowest of all the censuses.

Limpopo in 1996 ASFR was the lowest at age groups 15-24 and high at older ages 25-49, even though it started to fall from age 35. In 2001 ASFR was low at low ages 15-24 and started falling at age 25-49. In 2011 ASFR was higher at lower ages 15-25 and lowest from age 30-49.

Table 4.3 Total Fertility Rate by population group, Province and South Africa.

POPULATION GROUP	CENSUS 96_TFR	CENSUS 2001_TFR	CENSUS 2011_TFR
Blacks	3.51	3.06	2.91
Coloured	3.00	2.63	2.67
Indian/Asian	2.34	2.00	1.74
White	1.85	1.64	1.50
PROVINCE	CENSUS 96_TFR	CENSUS 2001_TFR	CENSUS 2011_TFR
Eastern Cape	3.67	2.96	2.93
Free State	3.14	2.67	2.62
Gauteng	2.66	2.41	2.37
KwaZulu-Natal	3.33	3.02	2.93
Limpopo	3.85	3.97	3.16
Mpumalanga	3.66	3.38	3.05
North West	3.31	2.93	2.92
Northern Cape	3.35	2.97	2.98
Western Cape	2.67	2.35	2.37
SOUTH AFRICA	3.22	2.85	2.74

Table 4.3. above shows the Total Fertility Rate by population groups, Province and South Africa for all population censuses. South Africa's TFR showed a decreasing trend which has been observed by other authors, in 1996 TFR was 3.22 and in 2001 TFR was 2.85 and in 2011 TFR was 2.74.

The TFR for all population groups seems to have a decreasing trend between 1996 and 2011, TFR for Blacks has always been the highest through all the censuses (1996, 2001 and 2011), followed by coloureds, Indians and White population groups. In 2011 the highest TFR was the black population at 2.91 as at 2011 followed by Coloured at 2.67 and then Indians at 1.74 and the lowest being the White population group at 1.50.

The provincial TFR also shows a decreasing trend between 1996 and 2011, with a slight exception of Limpopo province which had an increase between 1996 and 2001, but then decreased in 2011. There is a clear diversity in TFR geographically; i.e in the urbanized provinces Gauteng and Western Cape will have low TFR as compared to the non-urbanized provinces Limpopo and Eastern Cape which will have a high TFR.

Limpopo Province just like the Black population group has always been the highest TFR across all provinces and censuses (1996, 2001 and 2011). Followed by Eastern Cape, Kwazulu Natal, Mpumalanga, Northern Cape, North West and Free State provinces respectively. The provinces that registered a lower TFR are the Western Cape and Gauteng.

Table 4.4 Total fertility rate decomposition input table (Census 1996-2001-2011)

	1996					2001					2011				
	TMFR	TNMFR	PROP W	PROP M		TMFR	TNMFR	PROP W	PROP M		TMFR	TNMFR	PROP W	PROP M	
Eastern Cape	5.94	2.87	0.54	0.24		4.89	2.33	0.54	0.24		4.13	2.52	0.53	0.25	
Free State	4.91	2.48	0.51	0.33		4.15	2.1	0.52	0.32		3.97	2.22	0.52	0.31	
Gauteng	4.09	2.25	0.49	0.35		3.63	1.99	0.5	0.36		3.46	2.01	0.5	0.36	
KwaZulu-Natal	5.25	2.82	0.53	0.24		4.47	2.54	0.53	0.24		4	2.65	0.52	0.24	
Limpopo	5.65	3.19	0.54	0.24		5.09	2.98	0.55	0.24		4.49	2.79	0.53	0.25	
Mpumalanga	5.48	3.05	0.52	0.27		4.9	2.83	0.52	0.27		4.24	2.75	0.51	0.27	
North West	5.16	2.78	0.51	0.27		4.36	2.48	0.5	0.29		4.09	2.61	0.49	0.29	
Northern Cape	5.22	2.84	0.51	0.28		4.5	2.49	0.52	0.3		4.45	2.6	0.51	0.3	
Western Cape	4.35	2.17	0.51	0.33		3.72	1.85	0.52	0.35		3.66	1.95	0.51	0.37	
African/Black	5.49	2.87	0.52	0.25		4.58	2.51	0.52	0.25		4.12	2.55	0.51	0.26	
Coloured	4.89	2.42	0.52	0.3		4.17	2.08	0.52	0.33		4.14	2.2	0.52	0.34	
Indian/Asian	3.97	1.29	0.51	0.43		3.43	1.07	0.51	0.45		2.94	1.01	0.5	0.47	
White	3.14	1.15	0.51	0.48		2.62	0.93	0.52	0.51		2.44	0.86	0.51	0.54	
South Africa	5.01	2.67	0.52	0.28		4.24	2.35	0.52	0.29		4	2.41	0.51	0.3	

4.6 Decomposition Total Fertility Rate South Africa 1996-2001-2011

The results from Das-Gupta decomposition analysis of total fertility rate of South Africa. The total fertility of South Africa was 3.22 in 1996 then decreased to 2.85 in 2001, The results further show that the decrease from 2.85 in 2001 to 2.74 in 2011.

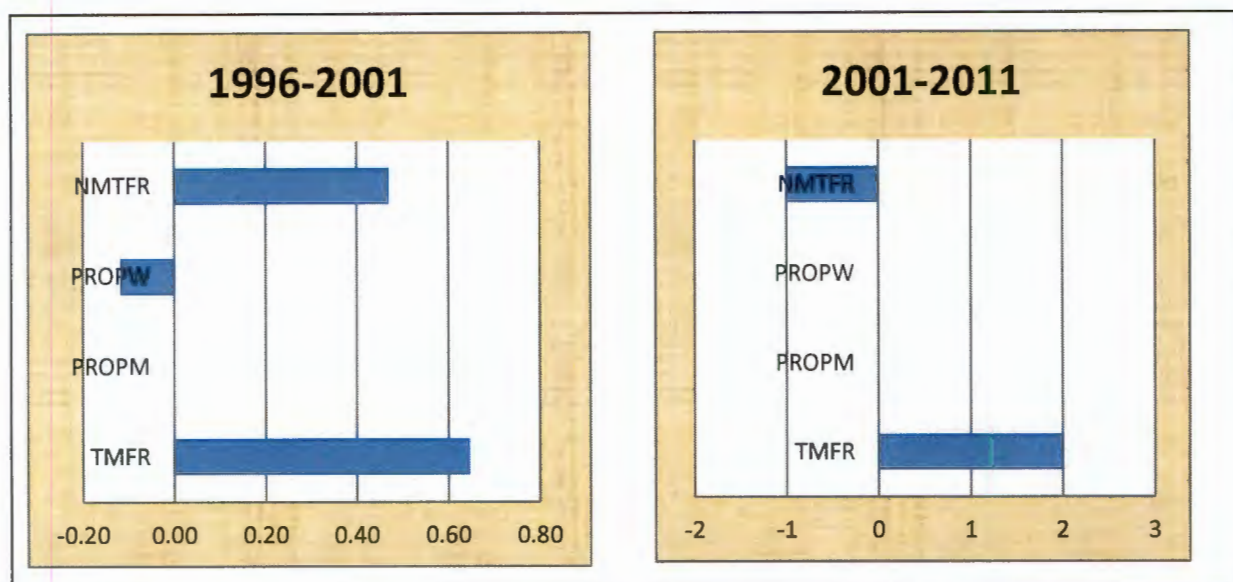


Figure 4-16 Decomposition Total Fertility Rate South Africa

Figure 4.16 shows that the proportion women pulled down fertility by -0.12, proportion married did not have any effect on the fertility decline between 1996 and 2001, non-marital fertility and marital fertility pushed up fertility. The decrease was due to the changes in non-marital fertility which pulled down fertility by 100% percent, but the 200% pushing up of marital fertility was not significant to push up fertility, it should be noted that proportion married and proportion women had no effect on the decrease in fertility between 2001 and 2011. Fertility seems to be happening inside marriage, whereas non marital fertility declined between 1996 and 2011.

The changes in the proportion women between 1996 and 2001 contributed to the decrease in TFR, but between 2001 and 2011 the decrease in TFR was due to the changes in the Non-marital fertility rate.

4.7 Decomposition results for population groups of South Africa (TFR).

Figures below show the total fertility rate by population groups in South Africa according to censuses 1996, 2001 and 2011 and the Das Gupta analysis.

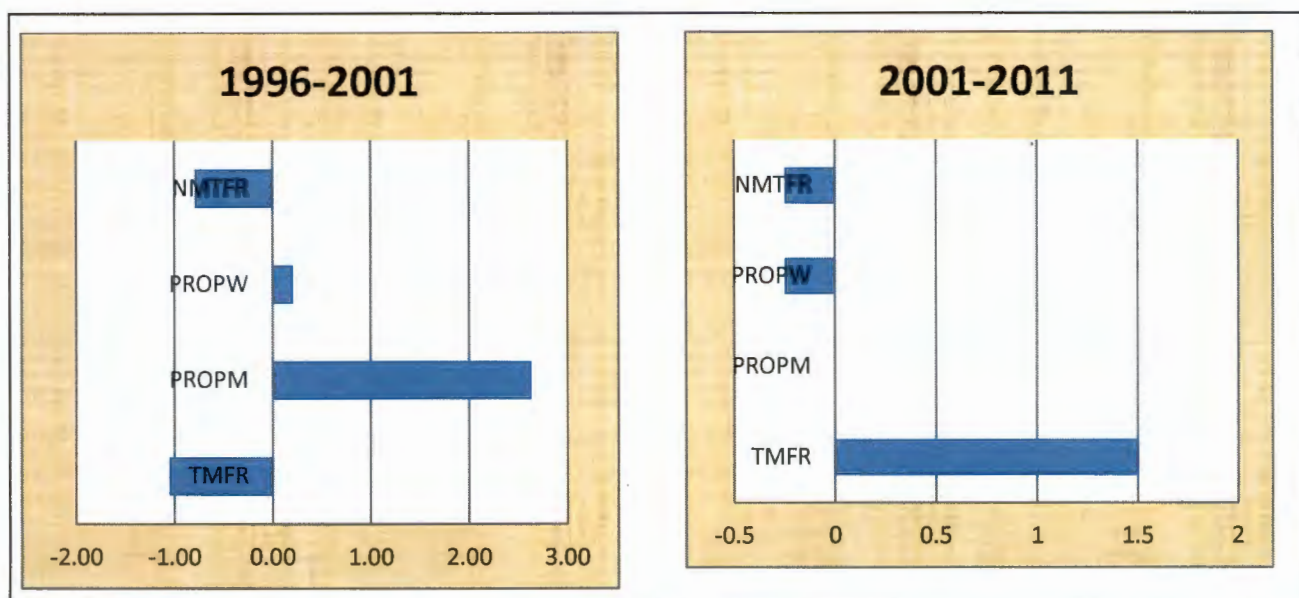


Figure 4-17 Decomposition results Africans

The total fertility rate of African/ black population group was 3.51 in 1996 and decreased to 3.06 in 2001, and further decreased to 2.91 in 2011

The decline in TFR for the African population group between 1996 and 2001 was due to changes in non-marital fertility and marital fertility whereas the decrease between 2001 and 2011 was due to changes in the proportion women and also non-marital fertility.

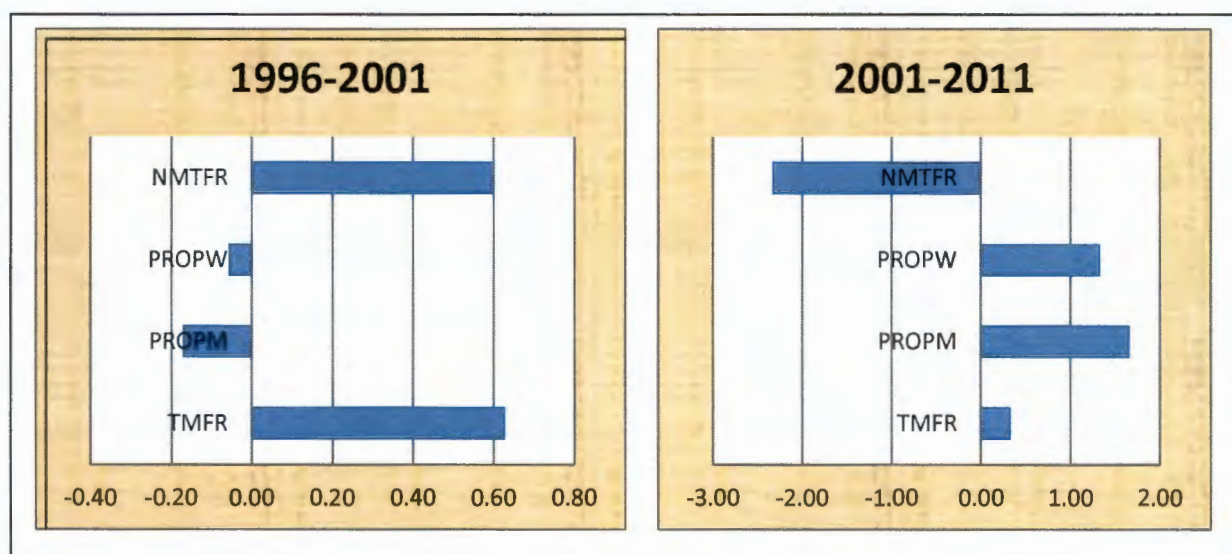


Figure 4-18 Decomposition results Coloureds

The total fertility rate for coloureds also decreased from 3 in 1996 to 2.63 in 2001 and then slightly increased to 2.67 in 2011.

The decline in TFR between 1996 and 2001 for the Coloured population group, was due to proportion women and proportion married which pulled down fertility by -0.17 and -0.06 respectively. On the contrary the increase between 2001 and 2011 was due to proportion married and proportion women which pushed up fertility by 1.67 and 1.33 respectively as well as marital fertility by 0.33.

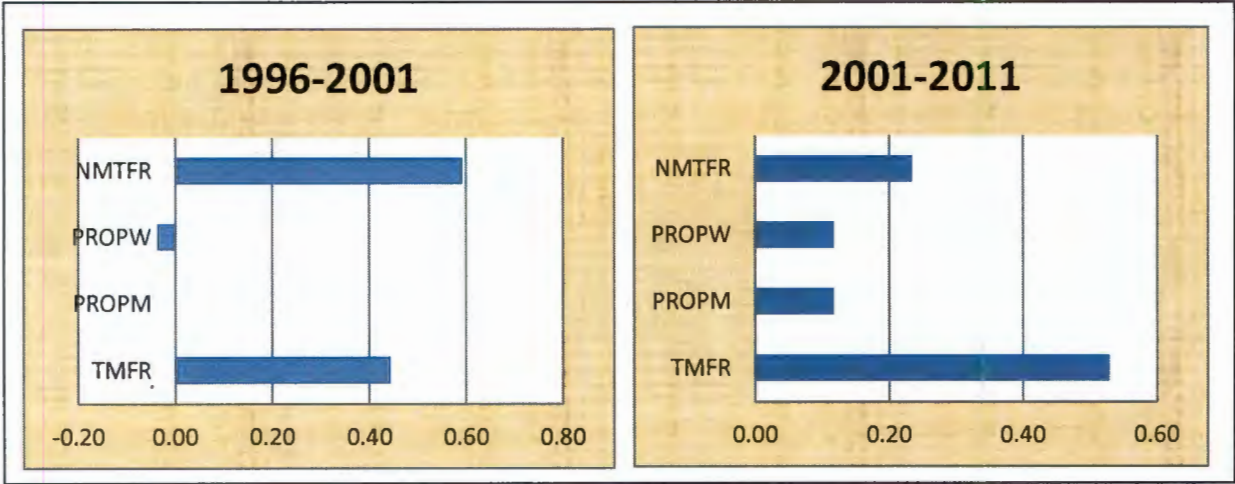


Figure 4-19 Decomposition TFR results Indians

The TFR for Indian population group decreased from 2.34 in 1996 to 2 in 2001 and then to 1.74 in 2011.

The decreasing trend in fertility for the Indian population group was due to changes in the proportion women between 1996 and 2001, whereas between 2001 and 2011 a further decrease could not be attributed to the measured variables as all of them pushed fertility to the opposite direction.

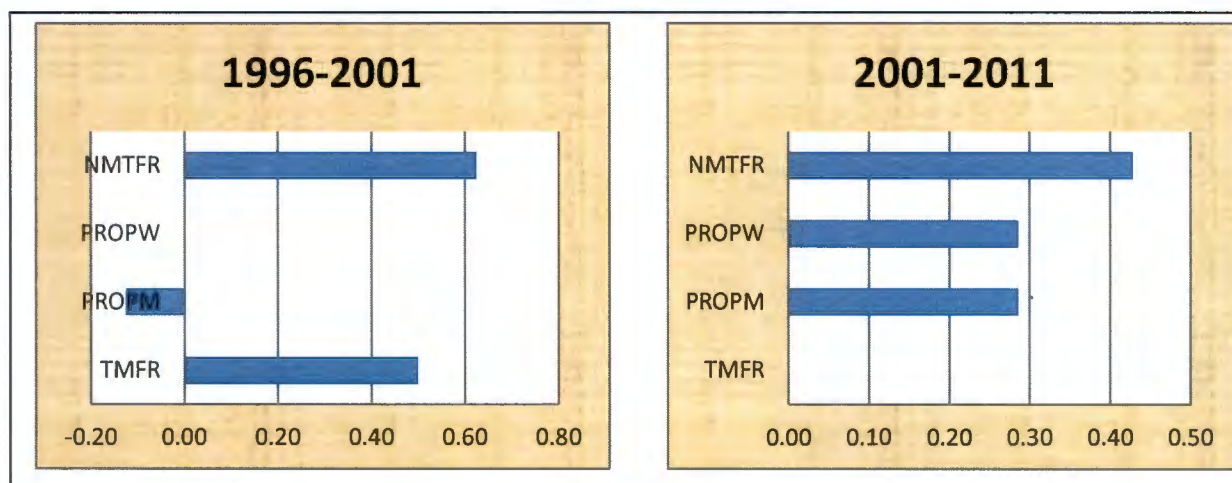


Figure 4-20 Decomposition results Whites

The Whites population group the TFR was 1.85 in 1996 then decreased to 1.64 in 2001 and declined further to 1.5 in 2011.

The changes in the proportion married were the contributing factor in the decline of fertility of the White population group between 1996 and 2001. Proportion women had no effect on the decrease and non-marital and marital fertility went to the opposite direction. Between 2001 and 2011 proportion women, proportion married and non-marital fertility pushed fertility rate up but not significantly as it went to the opposite direction.

In summary, fertility seems to be happening inside marriage across all population groups, between 1996 and 2011.

4.8 Decomposition results for South African Provinces.

The following are the South African provinces fertility rate according to censuses 1996, 2001 and 2011 and the Das Gupta decomposition analysis.

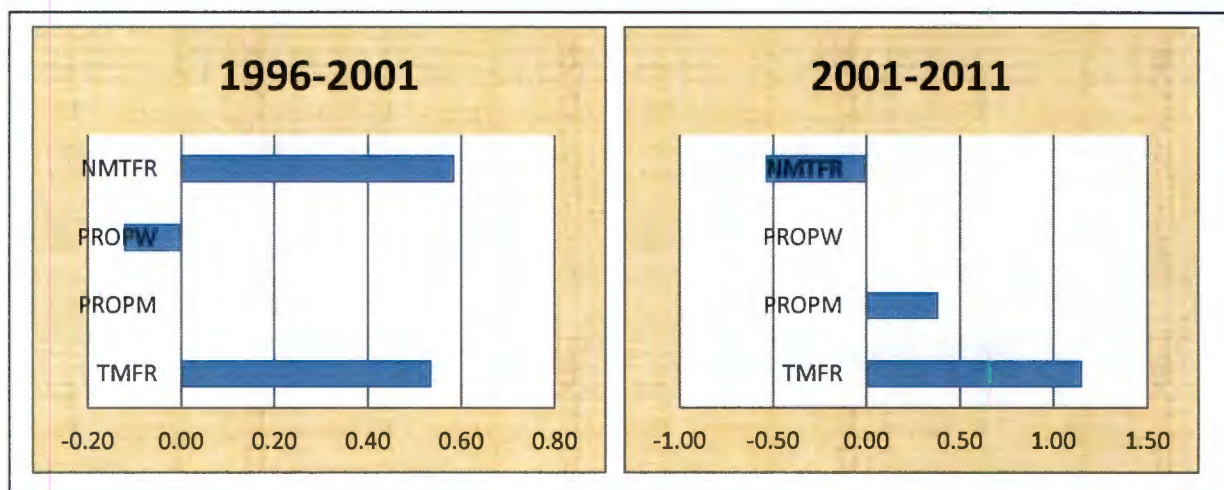


Figure 4-21 Decomposition TFR results Eastern Cape

The total fertility rate of the Eastern Cape was 3.67 in 1996 and decreased to 2.96 in 2001 and slightly decreased further to 2.93 by 2011. The proportion women which decreased by -0.12 from the measured variables seems to be the reason for the decrease in fertility between 1996 and 2001. Proportion married did not have any contribution whereas marital and non-marital fertility went to the opposite direction between 1996 and 2001. Between 2001 and 2011 the non-marital fertility decreased fertility by -0.54 whilst proportion women had no effect on the decrease and proportion married and marital fertility went to the opposite direction.

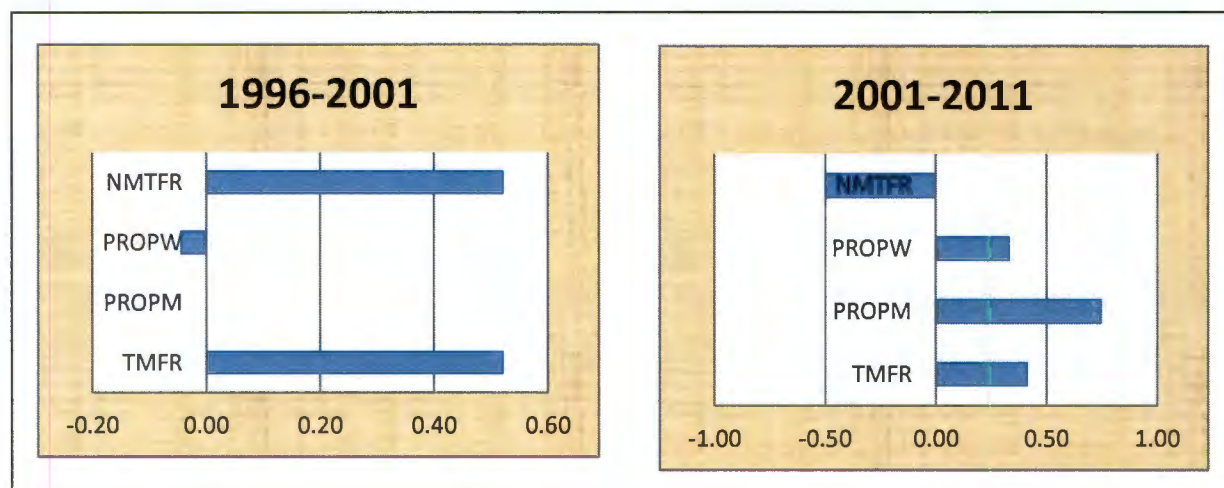


Figure 4-22 Decomposition TFR results Free State

The total fertility rate of the Free State was 3.14 in 1996 and decreased to 2.67 in 2001 and slightly decreased further to 2.62 by 2011.

The decline in TFR in the Free State was due to the decrease in proportion women by - 0.05 between 1996 and 2001, proportion married had no effect whereas marital and non-marital fertility pushed up fertility by 0.52 respectively. Changes in the non-marital fertility between 2001 and 2011 pulled down fertility by 0.5 whilst proportion women, proportion married and marital fertility went to the opposite direction.

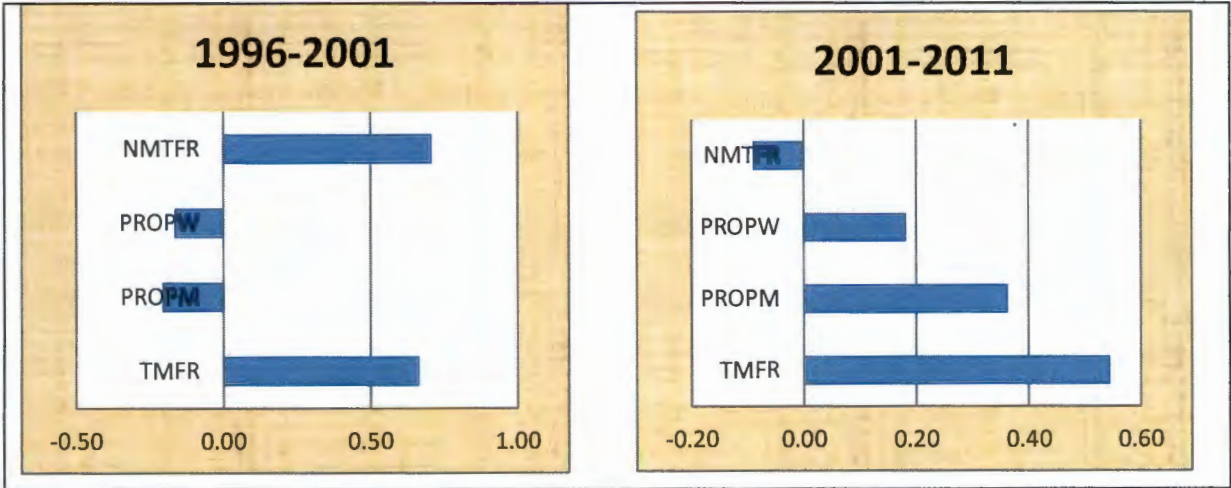


Figure 4-23 Decomposition TFR results Gauteng

The total fertility rate of the Gauteng province was 2.66 in 1996 and decreased to 2.41 in 2001 and decreased further to 2.37 by 2011.

The decline in TFR in the Gauteng was due to the decrease in proportion women by - 0.17 and proportion married by -0.21. Marital and Non-marital fertility pulled fertility to the opposite direction but was not enough to increase fertility between 1996 and 2001.

Between 2001 and 2011 fertility decreased again in the Gauteng province. The decrease can be attributed to the decrease in the non-marital fertility by -0.09, proportion women, proportion married as well as marital fertility which pushed up fertility but was not significant to increase total fertility between 2001 and 2011.

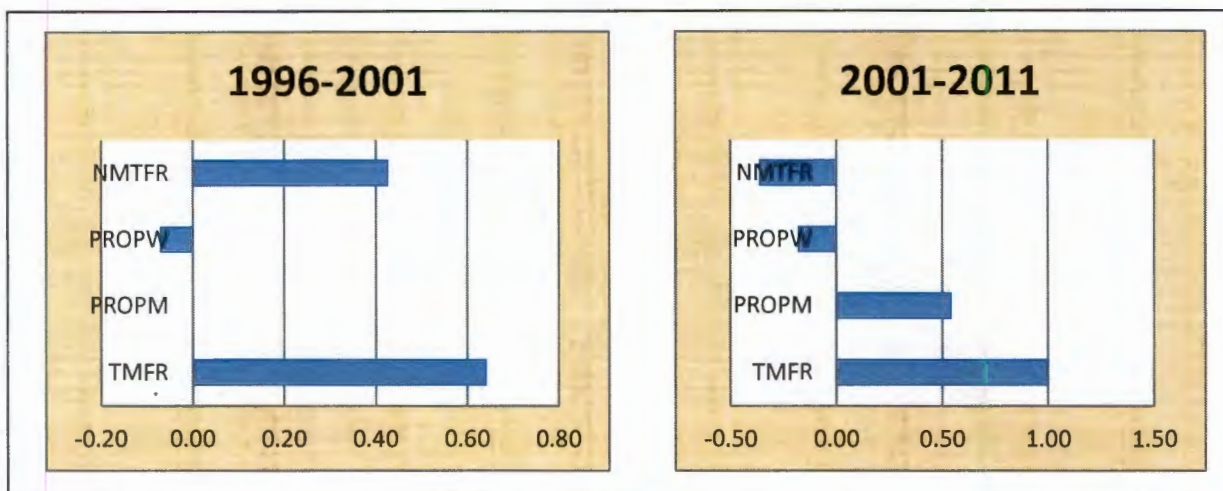


Figure 4-24 Decomposition TFR results Kwa-Zulu Natal

The total fertility rate of Kwa-Zulu Natal province was 3.33 in 1996 decreased to 3.02 in 2001 and decreased further to 2.93 in 2011.

The decline in TFR in KZN province was due to the proportion women which pulled fertility down buy -0.07 between 1996 and 2001, proportion married remained the same between 1996 and 2001 whereas marital and non-marital fertility pushed up fertility by 0.43 and 0.64 respectively.

Between 2001 and 2011 the decrease was due to non-marital fertility rate which decreased by -0.36, and the proportion women by -0.18 the marital fertility increased by 1 and the proportion married increased by 0.55.

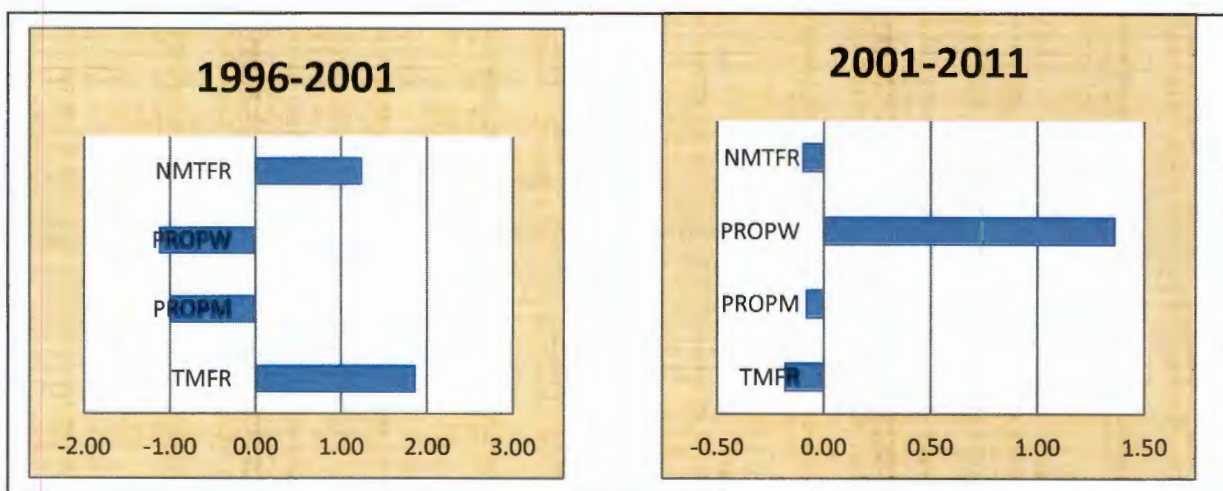


Figure 4-25 Decomposition TFR results Limpopo

The total fertility rate of Limpopo province was 3.85 in 1996 and increased to 3.97 in 2001 and then decreased to 3.16 in 2011.

The increase in TFR between 1996 and 2001 can be attributed to non-marital fertility and marital fertility rate which contributed 1.25 and 1.88 respectively, whereas proportion married and proportion women pulled to the opposite direction.

Between 2001 and 2011 TFR decreased in Limpopo and the decrease can be attributed to the proportion married which decreased by -0.08, marital fertility by -0.18 and non-marital fertility by -0.1 the proportion women went to the opposite direction.

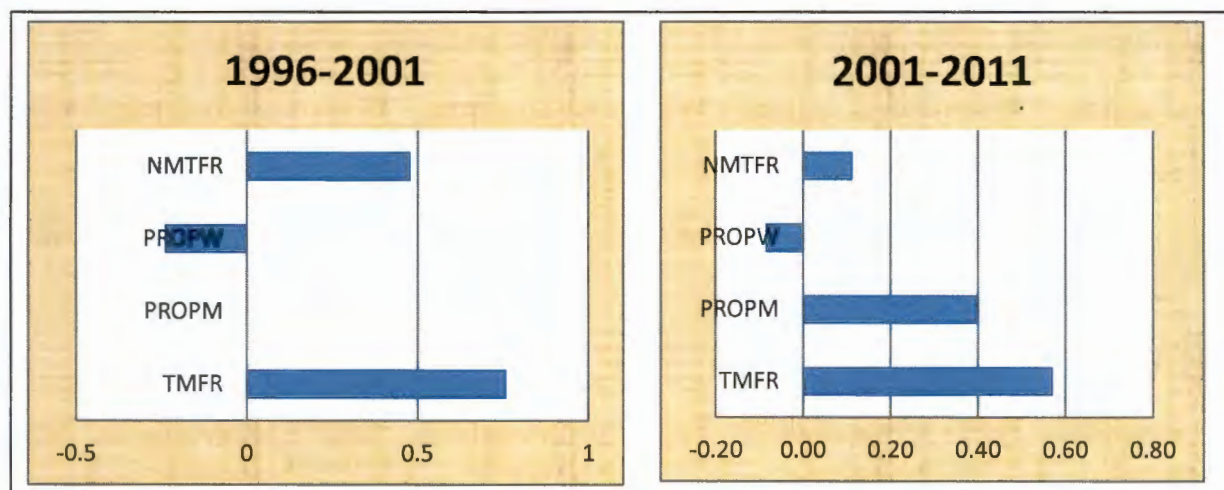


Figure 4-26 Decomposition TFR results Mpumalanga

The total fertility rate of Mpumalanga province was 3.66 in 1996 and decreased to 3.38 in 2001 and then decreased further to 3.05 in 2011.

The proportion women pulled down fertility by -0.24 and proportion married remained the same between 1996 and 2001, whereas marital and non-marital fertility pulled up fertility by 0.76 and 0.48 respectively.

The proportion women again pulled down fertility between 2001 and 2011 by -0.09 whilst proportion married, marital and non-marital fertility pulled to the opposite direction.

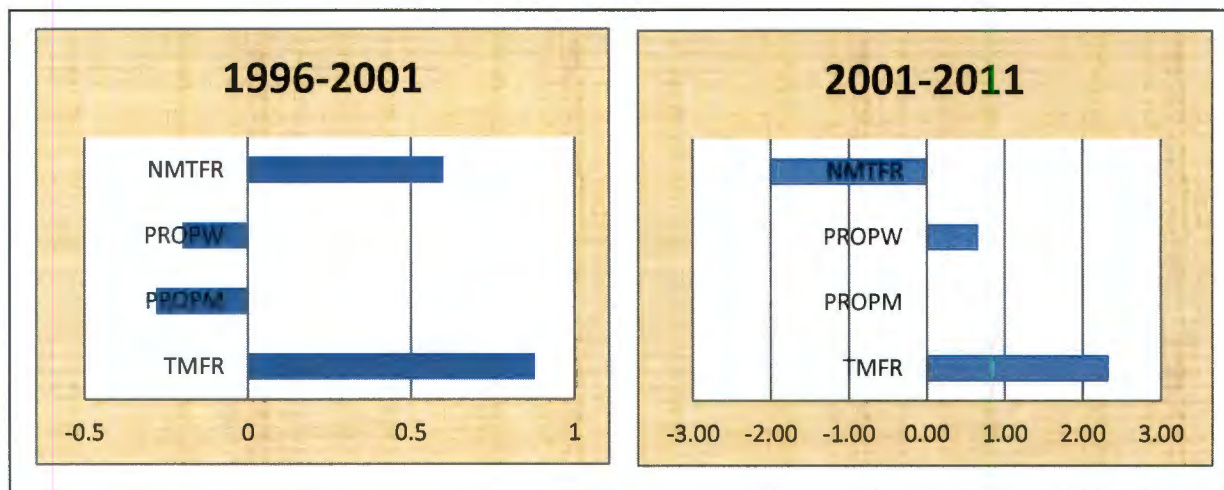


Figure 4-27 Decomposition TFR results North West

The total fertility rate of the North West province was 3.31 in 1996 and decreased to 2.93 in 2001 and then slightly decreased to 2.92 in 2011.

The decrease in TFR between 1996 and 2001 can be attributed to changes in the proportion married by -0.28 and the proportion women by -0.2. Marital and non-marital fertility pulled fertility up between 1996 and 2001.

The slight decrease between 2001 and 2011 was due to the decrease in non-marital fertility by -2, whereas proportion women and marital fertility pulled up fertility but not enough, the proportion married in the North West province remained the same between 2001 and 2011.

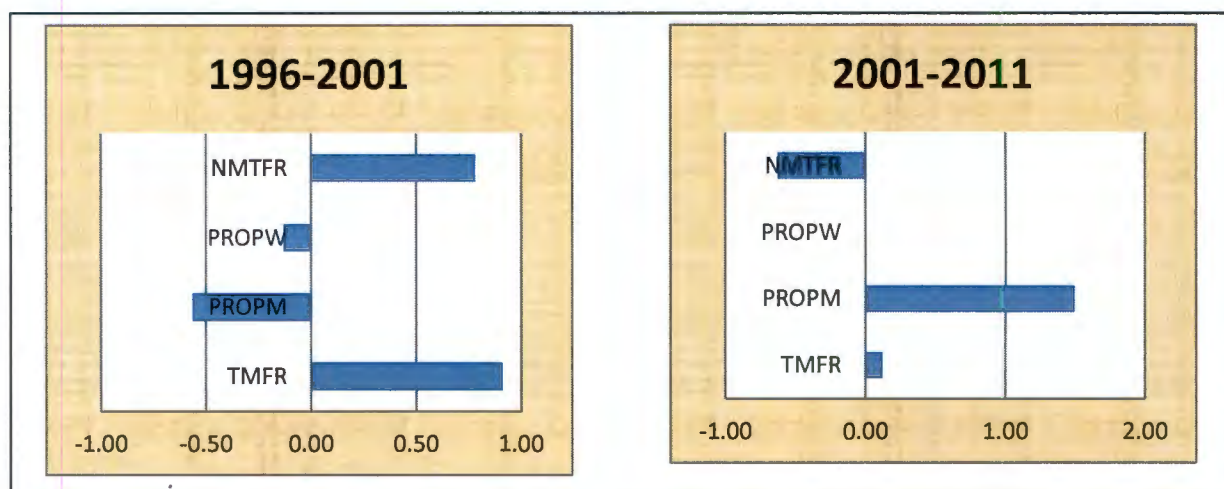


Figure 4-28 Decomposition TFR results Northern Cape

The total fertility rate of the Northern Cape Province was 3.35 in 1996 and decreased to 2.97 in 2001 and then slightly increased to 2.98 in 2011.

The decrease in TFR between 1996 and 2001 can be attributed to changes in the proportion women by -0.13 and proportion married by -0.57, whilst non marital and marital fertility increased between 1996 and 2001 by 0.78 and 0.91 respectively.

Between 2001 and 2011 the slight increase was mainly due to marital fertility which pulled fertility up by 0.13 and the proportion married by 1.5, proportion women remained the same and had no effect on the slight increase on TFR non-marital fertility pulled to the opposite direction.

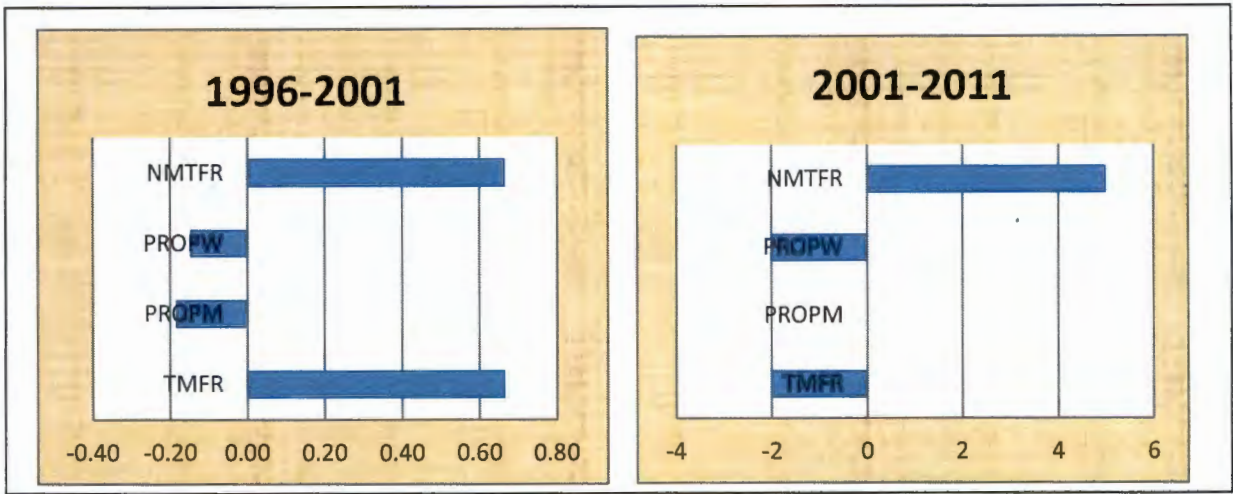


Figure 4-29 Decomposition TFR results Eastern Cape

The total fertility rate of the Western Cape Province was 2.67 in 1996 and decreased to 2.35 in 2001 and then slightly increased to 2.37 in 2011.

The decrease in TFR between 1996 and 2001 can be attributed to changes in the proportion women by -0.15 and proportion married by -0.19, marital and non-marital fertility went to the opposite direction of the decrease in fertility.

Between 2001 and 2011 the slight increase was mainly due to non-marital whilst proportion women and marital fertility went to the opposite direction and proportion married had no effect on TFR between 2001 and 2011.

4.9 Summary

Instances of re-marriages and reporting problems might be the reasons for higher non-marital ASFR on older women. Again what the study established is that as age increases the marital ASFR decreases, meaning fertility mostly happens at early ages for married woman.

From the observation of the researcher fertility seems to be mostly happening inside marriage across all population groups. The proportion married seems to be positive/increasing in most provinces and across all population groups.

The TFR and CBR of the Whites population group has always been the lowest compared to all population groups, this might be due to early access to family planning services for the white population group and continued access.

Considering the variables in the study i.e. the change in age sex structure (proportion women) change in the proportion married, change in the marital fertility as well as changes in the non-marital fertility.

At a national level on TFR between 1996 and 2001 the proportion women contributed to the decrease and between 2001 and 2011 non-marital fertility rate contributed to the decrease in TFR. On CBR between 1996 and 2001 changes in proportion women and non-general marital fertility rates contributed to the decrease, and between 2001 and 2011 changes in the non-general marital fertility rate contributed to the decrease.

This implies that the structure of the population is important to the changes in fertility, as well as the changes in the non-marital fertility bearing in mind that marriage in this study is a combination of married and cohabitation.

Provinces have their unique cultural differences and some are more urbanized than others meaning better/easy access to family planning and economic activities. Generally South Africa is mostly dominated by Black African population.

The following chapter will present the study conclusion and summary of the findings also will highlight policy implications and recommendations.

CHAPTER 5 CONCLUSION

5.1 Introduction

This study aimed at decomposing the fertility rate of South Africa, provinces and population groups using the Das Gupta method and further examined where fertility is prevalent whether inside or outside marriage. The study is designed also to document the true aspect of marriage being the determinant of fertility.

This study contributes to existing literature on fertility and marriage, and used the South African Population censuses i.e. census 1996, 2001 and 2011 conducted by Statistics South Africa. The variables in the study i.e. the change in age sex structure (proportion women) change in the proportion married change in the marital fertility as well as changes in the non-marital fertility.

A complete summary of major findings is provided in Section 5.2. Section 5.3 presents the policy implications of the findings. Finally recommendations are presented in Section 5.4.

5.2 Summary of Major Findings

The study used CBR and TFR as products of the analysis using Das Gupta 1991 methodology to decompose the rates, and observed the contribution of proportion women, proportion married marital and non-marital fertility to CBR and TFR.

In summary the crude birth rate decomposition attributed its decrease between 1996 and 2011 to the changes in non-marital fertility rate, whereas the total fertility rate decomposition analysis attributed the decrease between 1996 and 2001 to the changes in proportion women and between 2001 and 2011 the decrease in total fertility rate was due to non-marital fertility rate. The decline in TFR across provinces may reflect the different levels of socio economic status of provinces, and the supremacy of other population groups as well as the preference women and married couples to limit their number of children.

The study would summarise and conclude that since crude birth rate is the simplest measure of fertility and take total births and total population and having shortfall of not

taking sex distribution in to consideration, the study therefore appreciates the results of total fertility rate estimate.

The problems the government is facing today relating to fertility i.e. teenage pregnancy, high number of beneficiaries of child support grants and absent fathers. This can be solved by advocating marital fertility as it that will have positive effect on the upbringing of the child inside marriage. Also there will be less teenagers falling pregnant and remain unmarried, which will yield a relief on the child support grant by government.

Studies have attributed fertility decline in Africa to the increase in contraceptive use, which to a certain extent also demonstrates the success of both the international and national family planning programmes.

In this study therefore contribution to the decrease of fertility by the changes in non-marital fertility rate shows the importance of ascribing policies towards educating and planning for fertility education.

5.3 Policy implication

Efforts to reduce the population growth cannot be aimed at increasing mortality and out migration for most countries. The focus therefore has to be on reducing fertility and reducing it through voluntary approach.

Demographic components all have a distinctive contribution to policy development, since total fertility rate and crude birth rate are affected by non-marital fertility, policies needs to be in place to curb the increase of the non-marital fertility of South African women as concluded in the study.

The policy needs also to aim at reducing unwanted fertility and increase access to the need for contraception by strengthening family planning programmes. The policy should encourage the importance of completing school and finding employment and waiting for the right age to get married. Most probably, successful interventions to reduce non-marital fertility rates will yield a decrease in total fertility rate.

The results and estimates in this study can be used for different purposes. For example, they could be used as inputs in population projections. They could also be used by government structures, through policy development and to forecast and understand the

needs of women, understand changes in marriage, and understand also the changes in the age sex structure during planning.

5.4 Recommendations

There is a need to change the attitude towards not only use of contraceptive and limiting family size but also towards reproductive health which includes safe pregnancy, sexually transmitted diseases, breastfeeding, and women's nutrition. In addition throughout this process man need to be part of these interventions.

Societal expectations also need to be taken into consideration. Women, who fall pregnant out of wedlock, are part of the society and there is no pressure for males to get married for all the wrong reasons. On the same breath a man should desist from testing whether a woman can bear children before they get married to her.

From the results the researcher can also acknowledge the South African health system, on the achievement and progress made to educate the population on family planning and also on reproductive health initiatives.

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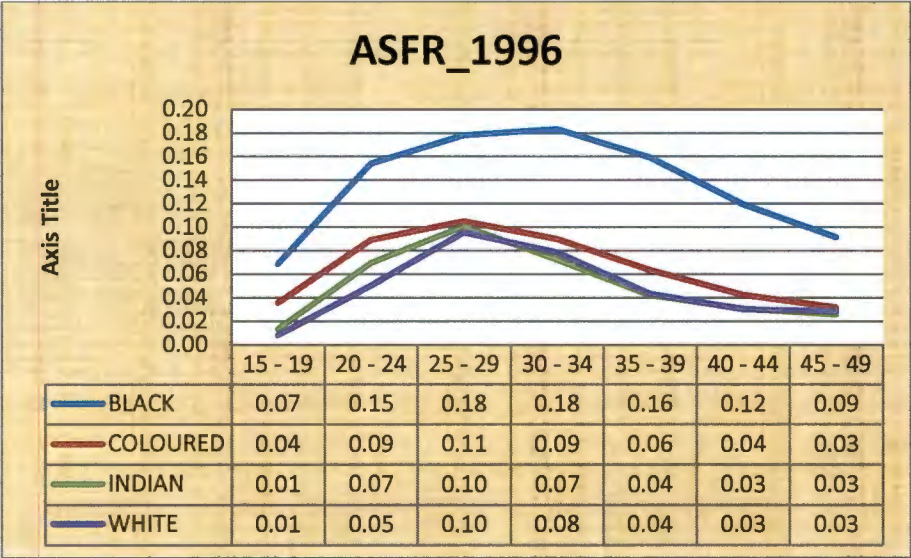
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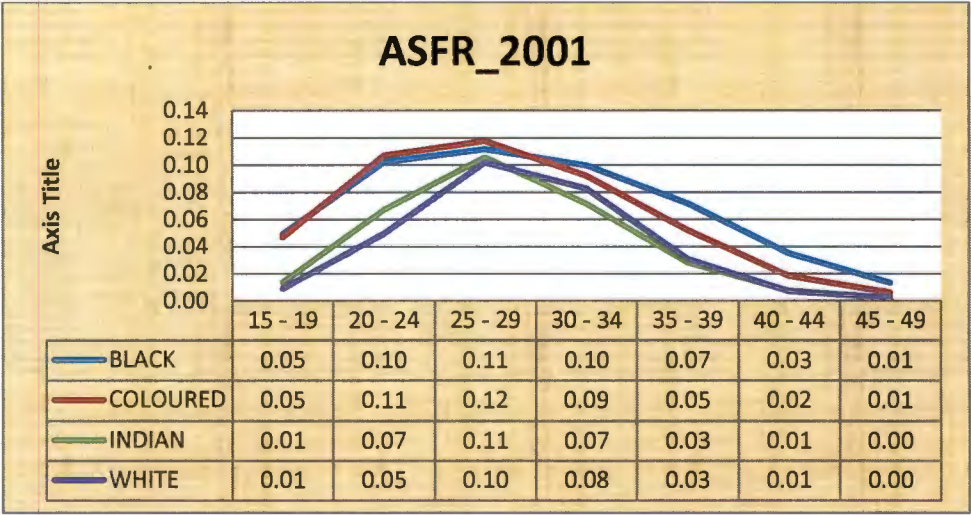
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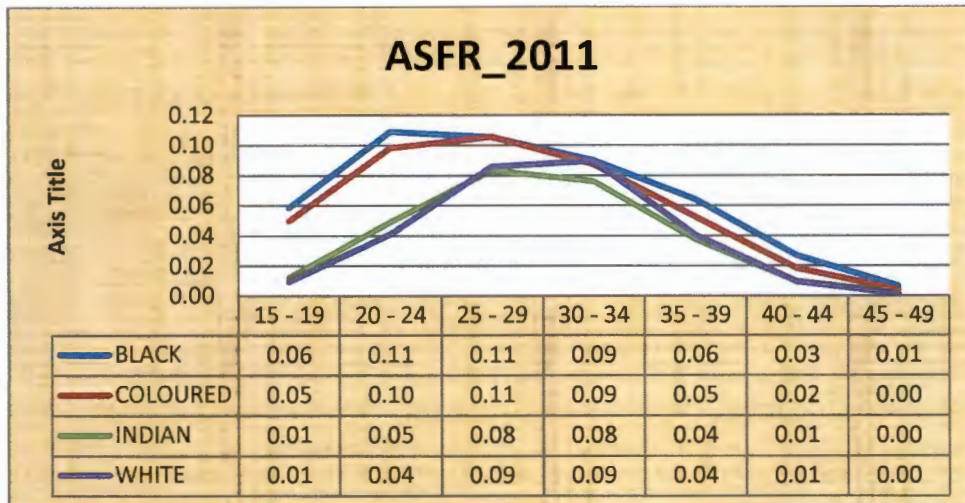
ANNEXURE A: 1996 AGE SPECIFIC FERTILITY RATE BY POPULATION GROUPS



ANNEXURE B: 2001 AGE SPECIFIC FERTILITY RATE BY POPULATION GROUPS

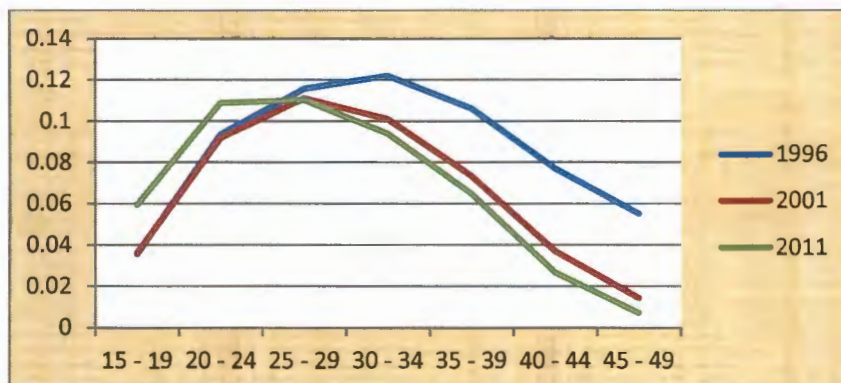


ANNEXURE C: 2011 AGE SPECIFIC FERTILITY RATE BY POPULATION GROUPS

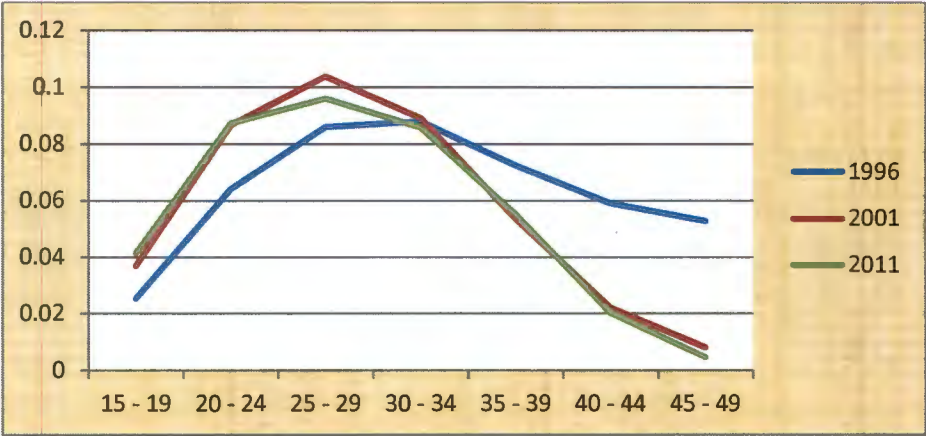


ANNEXURE D: AGE SPECIFIC FERTILITY RATE BY SA PROVINCES

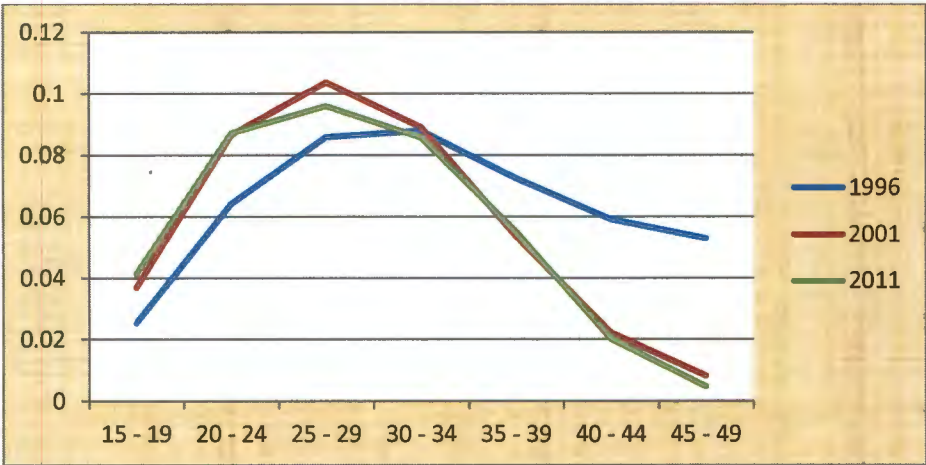
Eastern Cape



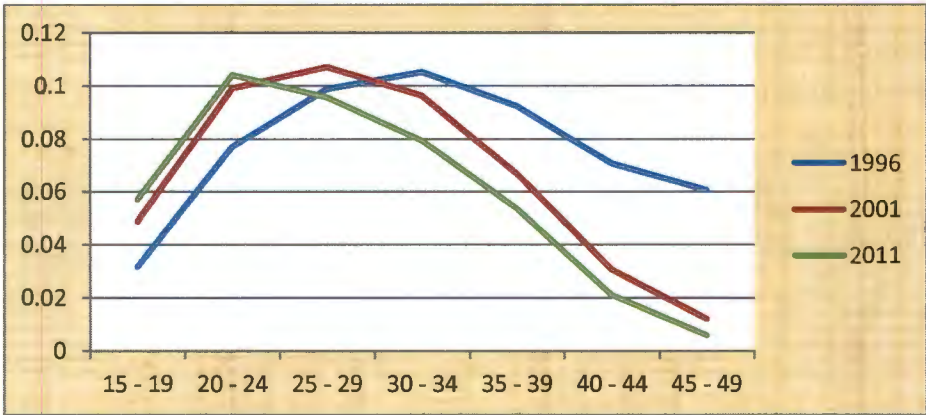
Free State



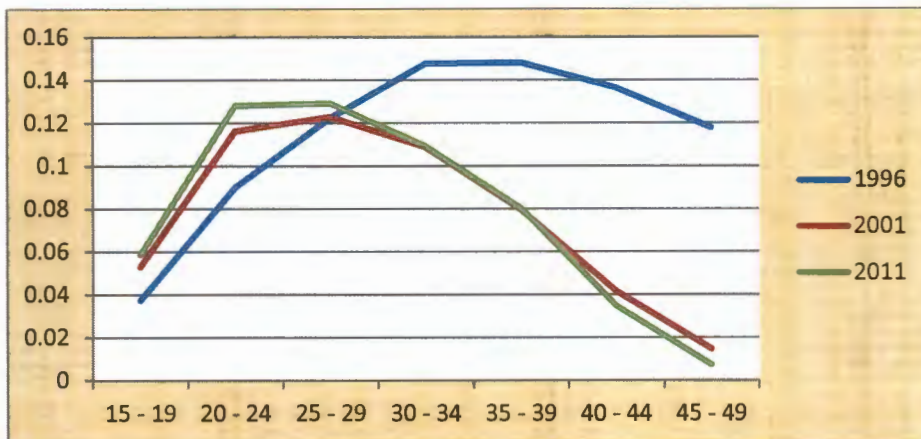
Gauteng



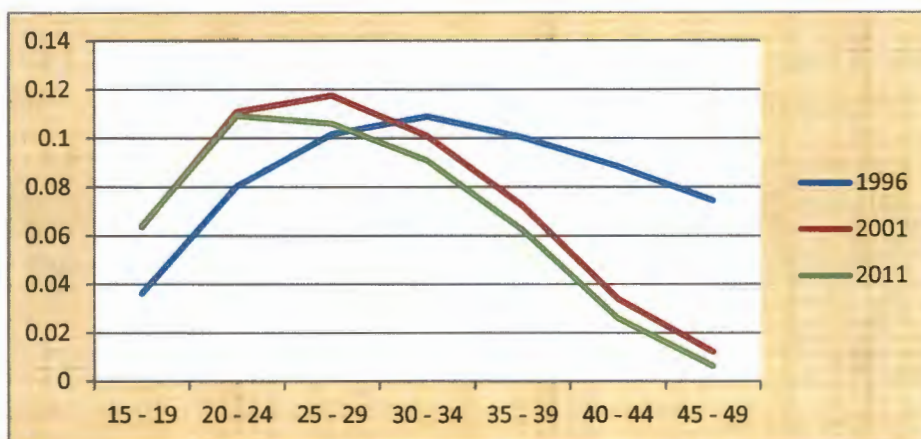
Kwa Zulu Natal



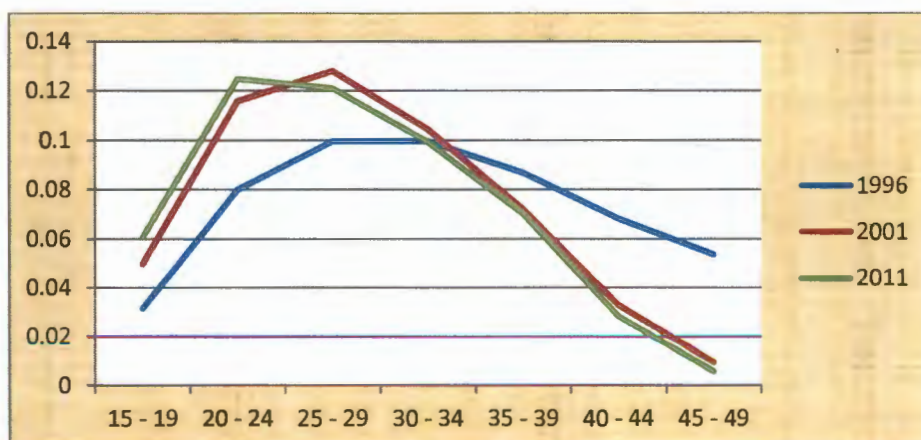
Limpopo



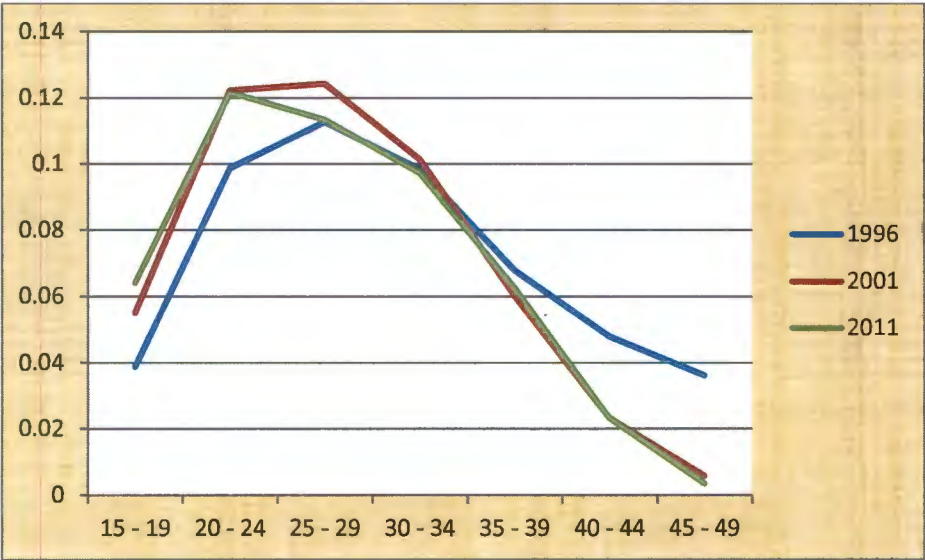
Mpumalanga



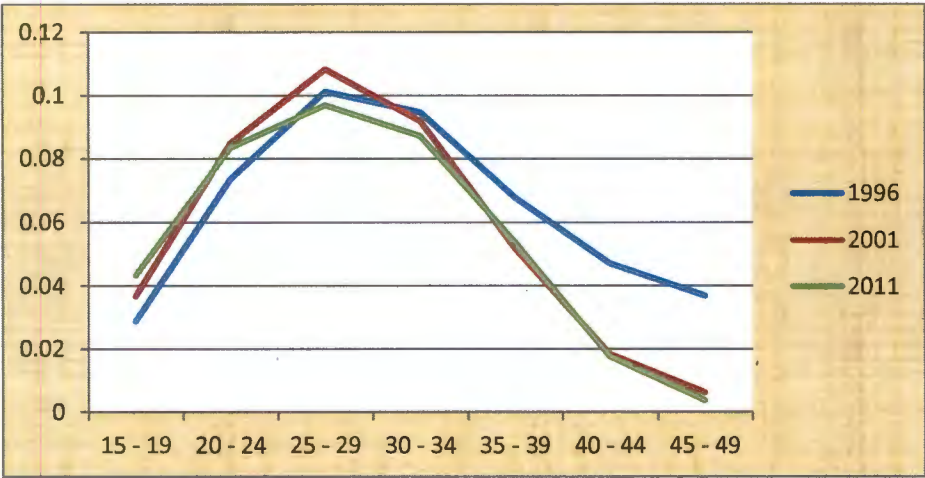
North West



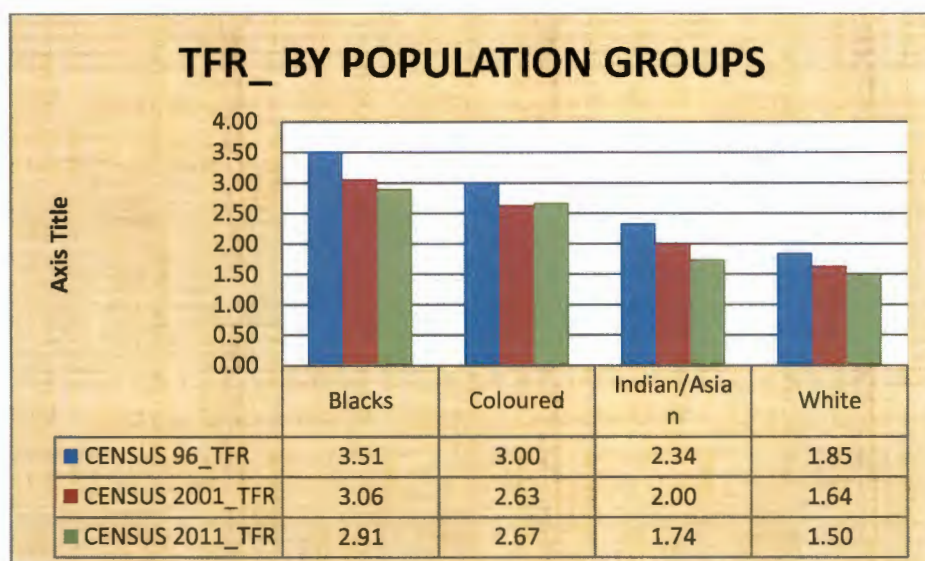
Northern Cape



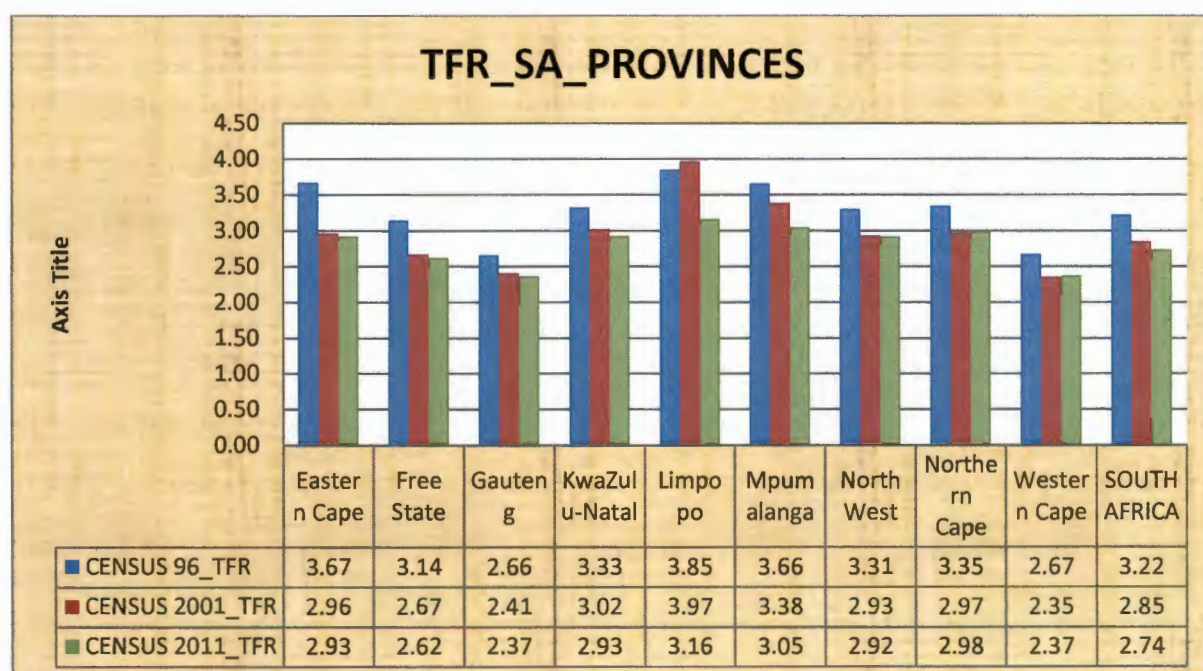
Western Cape



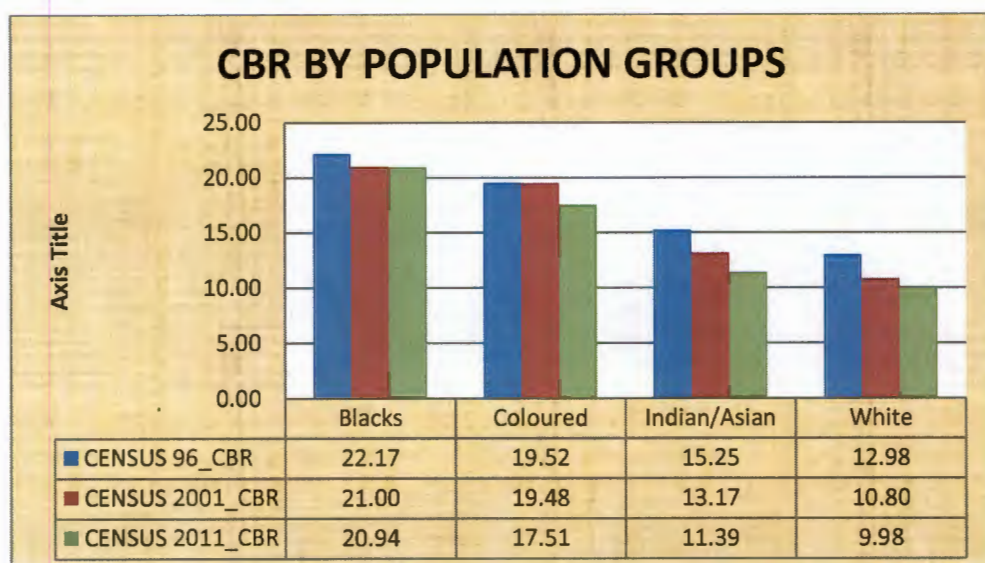
ANNEXURE E: TOTAL FERTILITY RATE BY POPULATION GROUPS.



ANNEXURE F: TOTAL FERTILITY RATE BY PROVINCE AND SOUTH AFRICA.



ANNEXURE G: CRUDE BIRTH RATE BY POPULATION GROUPS.



ANNEXURE H: CRUDE BIRTH RATE BY PROVINCE AND SOUTH AFRICA.

