

**DETERMINANTS OF FERTILITY IN KENYA: A COMPARATIVE  
STUDY OF WESTERN AND CENTRAL PROVINCES**

**BY**

**LUNAYO A. JANET**

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## DECLARATION

This research project is my original work and has not been presented for a degree in any other University.

Signature J. Lunayo

Date 19/11/2009

**LUNAYO JANET**

This project has been submitted for examination with our approval as the University supervisors:

Signature Dr. Murungaru

Date 19/11/2009

**DR. MURUNGARU KIMANI**

Signature Mr. Andrew Mutuku

Date 19.11.09

**MR. ANDREW MUTUKU**

## **DEDICATION**

To my father Clement Lunayo, my mother Diphina Achitsa, siblings and friends

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I thank the Almighty God for the strength and ability to accomplish this research project.

I am greatly indebted to the University of Nairobi for granting me a scholarship that enabled me to undertake a full time study for the degree of Master of Arts in Population Studies at Population Studies and Research Institute (PSRI), University of Nairobi.

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## ABSTRACT

Kenya has undergone a dramatic fertility transition with total fertility rate declining from 8.2 births per woman in the late 1970s to 4.7 towards the end of the 1990s. The 1998 and 2003 Kenya Demographic and Health Survey revealed that Kenyan fertility increased marginally from 4.7 to 4.9 revealing a stall in fertility. In Kenya regional variation in fertility levels have been experienced. For instance in Central province fertility declined from 3.7 in 1998 to 3.4 in 2003 while Western province recorded a rise from 5.6 to 5.8 during the same period. However there are limited studies focusing on fertility differentials at regional levels in Kenya and the factors responsible for fertility differentials in these two regions are not clearly known. This study therefore sought to establish the factors responsible for fertility differentials between Western and Central province.

The main objective of this study was to determine the factors that influence fertility levels among women of reproductive age group in Western and Central provinces in Kenya. The specific objectives were; to determine whether some selected socio-economic factors influence fertility differentials between Western and Central province; to establish how some selected demographic factors influence fertility differentials between Western and Central province; and to examine the influence of socio-cultural factors such as, age at first marriage, marriage patterns on fertility levels in Western and Central provinces.

Data was obtained from women aged 15-49 years who had given numerical responses to the question on total children ever born interviewed during 2003 KDHS. The sample size was 1,314 and 991 of women in Central and Western province respectively. John Bongaarts (1978) framework was used to conceptualize the study. The dependent variable was total children ever born. The study variables were marital status, place of residence, wealth index, education level, age at first birth, age at first marriage, ideal number of children, contraceptive use by method, type of marriage, and work status.

The tools of data analysis were simple and multivariate linear regression. The results of simple linear regression showed that, place of residence, wealth index, education level, and

to some extent contraceptive use by method were all significantly associated with fertility level in the two regions. The results of multivariate analysis indicated that marital status, wealth index, education level, age at first birth, age at first marriage, ideal number of children, and contraceptive use by method were significant factors associated with fertility levels in the two regions. Place of residence, type of marriage and work status were found not to be significantly associated with fertility. However results on contraceptive use in Western showed that those who were not using any form of contraceptive had fewer children ever born compared to those using modern contraceptives.

The study recommends support to expansion of secondary education opportunities for girls' education especially secondary education and above, and support for the ongoing effort to reposition family planning services. The study also recommends further qualitative studies to address clearly why the differences in fertility levels in the two regions exist.

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# CHAPTER ONE

## INTRODUCTION AND PROBLEM STATEMENT

### 1.1 Introduction

Kenya is one of the few sub-Saharan countries to experience remarkable decline in fertility (including Botswana, Zimbabwe, and South Africa), after being renowned for having the highest fertility and population growth rate in the world (NCPD, 1989, and 1994; CBS, 1969). Total Fertility Rate (TFR) declined from 8.0 in 1980s to 4.7 in 1990s and 4.9-5.0 in 2003 (CBS et al 2004). This fertility transition has generated a lot of interest and responses from researchers and policy makers (Dow et al., 1994; Robinson, 1992; Sindingi, 1991; Van de Walle & Foster, 1990).

The concern of the government of Kenya as regards the high population growth rate goes back to 1962, when the census revealed a population size of 8.6 million persons and an intercensal growth rate of 3.3 per cent per year. In early 1960s, a group of private Kenyan individuals had started Family Planning Association of Kenya to help those Kenyans who needed the family planning services. The sessional paper number 10 of 1965 titled "African Socialism and its Application to Planning in Kenya", which was a government statement on Kenya's National Goals and her Philosophy of Development, gave an overall strategy for development. The concern about the rate of population growth and its impact on resources and the rate of development was noted. The concern about the high rate of population growth and its effect on economic development prompted the Kenya government in 1966 to invite Population Council Advisory Mission to study the situation and make recommendations. Partly prompted by mission's report, the National Family Planning Program was officially begun in 1967. Acceptance of family planning services was to be wholly voluntary and individual customs and values were to be fully respected and emphasis was to be placed on family size and spacing of children. Due to lack of an effective health infrastructure and lack of trained personnel in family planning, the ministry of health depended on private organizations like International Planned Parenthood Federation (IPPF), Family Planning Association of Kenya (FPAK), and expatriate staff to carry out family planning work.

The 1969 census results confirmed earlier findings about high fertility. On basis of this information, government decided to launch a family planning five-year (1975-1979) programme, which was to serve as the basis for the expansion and integration of services and to provide operational target against which to measure the achievement. The specific goals the programme were to help reduce the high annual rate of population growth rate from 3.3 (1975) to 3.0 (1979) and to improve the health of mothers and children under the age of five years. The programme made considerable progress in information and education activities. However family planning component had limited success.

The 1979 census yielded an estimated crude birth rate of 52 per thousand and a reduction in the crude death rate to about 14 per thousand. Thus instead of a decline in the population growth rate, a significant increase occurred that raised the rate to about 3.8 per cent in 1979. This compelled the Kenya government to establish the National Council for Population and Development in 1982. The council was set up to formulate population policies and strategies and to co-ordinate population oriented activities aimed at reducing Kenya's population growth rate. The four major areas that characterized effects of high population growth rates at National level were: increasing pressure on land, high dependency burden, rapid labor force growth and rising demand for basic services (Sessional Paper No. 4 of 1982). The National Population Policy for sustainable Development succeeds the sessional paper Number 4 of 1984 on Population Policy Guidelines. This policy outlines the population and Development goals, objectives, and targets to guide its implementation up to the year 2010. One of the major goals is the sustenance of the ongoing demographic transition to further reduce fertility, infant and child mortality. This resulted to the current sessional paper 1 of 2000 on "National Population Policy for Sustainable Development" outlines demographic situation in Kenya. It notes that a drop in fertility rate has been observed throughout the country although differentials still exist among Kenyan women associated with socio-economic, socio-cultural, and demographic factors. Support to this has been availed by studies such as Kenya Demographic and Health Surveys that collects information on fertility and other issues for policy and programs. Therefore fertility decline in Kenya remains an important area of study by scholars and fertility studies revolve around key factors influencing fertility in most broadly categorized as socio-economic factors, socio-cultural factors and demographic factors.

## 1.2 Problem Statement

Kenya has undergone dramatic fertility transition, with the total fertility rate (TFR) declining from 8.2 births per woman in the late 1970s to 4.7 towards the end of the 1990s. The 1998 and 2003 Kenyan Demographic and Health Survey revealed that Kenyan fertility reversed the trend i.e. 4.9 tending towards 5.0 (CBS et al., 2004) revealing a stall in fertility. According to demographic transition theory, once transition is underway neither a stall nor a further rise in fertility is expected. At aggregate level, research has established that lack of progress in socio-economic development is associated with those developing countries which registered a slow down in their rate of fertility decline, Kenya and Ghana being examples of such states (Bongaarts 2006; Bongaarts 2007; Shapiro and Gebreselassie 2007). Fertility variations regionally are a key concern for most of the developing countries where fertility rates are still high. In Kenya differentials in fertility levels regionally have been experienced. For instance, in Central its fertility has continued to decline from 3.7 in 1998 to 3.4 in 2003 recording a drop. However, Western province recorded a rise from 5.6 to 5.8 in 1998 and 2003 respectively. This implies that the total fertility rate (TFR) recorded in Western province is almost twice that of Central province (5.8 versus 3.4 children per woman respectively). The factors responsible for fertility transition include proximate determinants, socio-economic, socio-cultural and demographic factors (CBS et al 2003).

A lot of differences exist between Western and Central provinces; demographic, socio-economic and socio-cultural which can explain differentials in fertility decline (CBS et al., 2004). Studies in Kenya such as Henin and Jain (1987) have tried to explain such variations are as a result of the differing rate of socio-economic, demographic and socio-cultural change for various regions in the country.

Recent studies in Kenya have found out that the most important proximate determinant which contributes to fertility declines in Kenya is the increase in contraceptive use (Ekisa et al., 2006). However there are limited studies focusing on regional variation in fertility in Kenya. Thus factors that are responsible for fertility differentials in these two regions are not clearly known. This study sought to answer this question: What are the factors associated with fertility differentials between Western and Central province?

### **1.3 Objectives of the Study**

The main objective of this study was to determine factors that have contributed to differentials in fertility levels between Western and Central provinces in Kenya. The specific objectives of this study were:

- i) To determine whether socio-economic factors such as education level, wealth status, place of residence, that influence fertility differentials between Western and Central province;
- ii) To establish how demographic factors such as age at first birth, marital status, that influence fertility differentials between Western and Central province;
- iii) To examine the influence of socio-cultural factors such as, age at first marriage, marriage patterns on fertility levels in Western and Central provinces.

### **1.4 Justification of the Study**

This study focused on understanding the factors responsible for fertility differentials between Western and Central provinces of Kenya. Since these two provinces vary in many aspects, i.e. socio-economic, demographic, and socio-cultural, this study helped to determine whether differentials in fertility levels are due to socio- economic, demographic, or socio-cultural factors. Since fertility in Kenya has a stalled, given differentials in fertility between these two regions it is important to find out factors responsible for fertility differentials in the two regions. Studying of fertility variation is of national concern because it affects entire population directly or indirectly; for instance low fertility is associated with higher standards of living, better educational opportunities, reduction in unemployment, and maternal and child health improvements. Decline in fertility is of great concern in view of scarce resources in Kenya at the moment hence the study's findings will help policy formulators to set priorities in allocation of scarce resources towards important factors that will reduce fertility.

Comparative study is useful in determining the policy approach that would be more appropriate in attaining a continued reduction in fertility. This study offers support in achieving population policy goal of sustaining the on-going demographic transition to further reduce fertility, and achieve Kenya's specific demographic targets of stabilization population growth rate of percent

per annum of 2.1 by 2010 as outlined in Kenya's population policy. The differentials in determinants of fertility in Western and Central need to be clearly understood for the development and improvement of intervention programs that will seek to reduce fertility. This is because Central province has recorded a remarkable decline in fertility rates; a study in this area is important to this country as it reveals what had made the decline possible. The findings and recommendations of this study formed a basis for further research by researchers and demographers in the area of fertility in order to contribute towards a better understanding of the factors that affect understanding of fertility levels in Kenya.

### **1.5 Scope and Limitations of the Study**

The study covered two provinces in Kenya namely, Central and Western. Data from the Kenya Demographic Health Survey of 2003 for women aged 15-49 in the provinces, (991 in Western province and 1,314 in Central province) will be utilized. Since secondary data was utilized, it suffers a number of limitations such as age heaping. Number of children ever born reporting was done retrospectively thus underreporting of children born especially those whose death occurred soon after birth. The basic report of Kenya Demographic and Health Survey however indicated that data was of fairly good quality.

## CHAPTER TWO

### LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

#### 2.1 Introduction

This chapter reviewed literature on socio-economic, socio-cultural and demographic determinants of fertility that are relevant for this study. Part one discusses the theoretical basis of the study followed by a discussion on conceptual framework.

#### 2.2 Theoretical Perspective

Becker (1960), argues that couples with sufficient access to contraception will acquire children much in the same way as they acquire durable goods e.g. cars. Number of children depends on constraints faced by household incomes and time, its relative preference for children as compared to other goods, the costs and benefits of children as compared to other goods. In modern societies children contribute little if anything to the incomes of parents. Economically they are a burden. However they possess utility by providing parents with various kinds of satisfaction. It turns out to be a choice between quantity and quality of children because of time factor. He points out the most empirical evidence is an inverse relationship between income and fertility. He seeks to explain that a society where access to contraception knowledge and devices is completely equal, a positive correlation between income and family size will prevail. He gives a distinction between quality elasticity and quantity elasticity.

According to Easterlin (1978), the key emphasis on fertility is demand for children as key to understanding fertility behavior. He treats fully and systematically the costs of controlling fertility. The determinants of fertility are seen as working through one or more of the following; the demand for children, the potential output of children, and the costs of fertility regulation.

Bongaarts' and Kirmeyer (1982) observed that fertility on average prevalence increases with age until a maximum in age 30-34. It declines slightly to other older ages and as noted in the previous studies, the patterns of different populations are similar in shape. The only significant differences appear to be relatively prevalence among younger women in France and United States. This may be attributed to greater inclination to use of contraception for spacing purposes.



They discussed the occurrence of excess fertility in Kenya, Yemen, Syria, Jordan and Zimbabwe in 1987 and hinted that in some instances the explanation lies in the two relatively low fertility inhibiting effect of other proximate determinants such as breastfeeding and marriage given the stage of development implied by the contraceptive prevalence. Bongaarts demonstrated that differences in fertility among and between populations are mainly a function of four intermediate variables; proportion married among females, contraceptive use and effectiveness, prevalence of induced abortions, and duration of postpartum infecundability. Data on the natural fertility factors (the remaining three variables) are available and not used for this analysis for they are considered to be less important according to Bongaarts's. Fecundity for example can be estimated either directly from data on last closed or open interval and indirectly through Mosley's model and its sterility. Primary sterility was found to be very insignificant as a fertility inhibiting variable among Kenyan women (Mosley, 1982).

Most of the earlier efforts focused on the construction of increasingly more efforts focused on the construction of increasingly more realistic and sometimes highly complex models for the relationship between fertility and the proximate determinants of fertility. This development has continued into the 1980s, and relatively simple yet quite realistic fertility models now exist. The construction of these models and their validation has been made possible the greatly increased availability of empirical measures of the proximate variables in many populations. The resulting improvements in the understanding of the fertility effect of the proximate determinants has led to more frequent inclusion of the proximate factors in studies of socio-economic, and environmental determinants of fertility (Page 1982).

Hobcraft and Little (1984) developed a new method for assessing the contribution of the proximate determinants of fertility differentials. According to them Davis and Blake framework has proved hard to operationalize, mainly because of the absence of suitable data on the intermediate fertility variables. They also said that Gaslonde's sexual activity table's main flow was the failure to take account of postpartum infecundability and particularly the effects of lactation. They then came up with an approach which is a natural extension of Gaslonde's sexual activity table meant for analysis of fertility exposure.

Caldwell (1985) identifies the principal social and cultural sources of sustained high fertility in sub-Saharan Africa.

He argues that the key timing and slope of fertility decline must best be found by monitoring the continuity or change in patterns of wealth flow and emotional nucleation within the family. Greater emotional and social nucleation would flow eventually from process of Westernization that might proceed, accompany or follow economic development. He later found that net parental advantage is intergenerational wealth flow or benefit exchanges to be. He realizes wealth flows from children to parents, from parents to children and to and from other relatives. He notes that in developing countries wealth flows from children to parents' i.e. upward wealth flow from children to parents, on ground that is strongly sanction and religiously expected tribute. This makes the pre-industrial societies prefer more children as a source of wealth.

Caldwell notes that there are five ways in which education acts: it reduces child potential for work inside and outside home, because of the absence of the child from the family and home industries while at school; it increases the cost of children for fees, uniform, stationery and others; education indoctrinates rational way of thinking; schooling speeds up cultural change and imposes middle class value; these includes having few children; and more specifically in the contemporary world the school serves as the means for propagating the specific values of the Western middle class and transmitting the idea and knowledge of family planning. These include the view that girls are as important as boys and just as much to be educated and that white collar work is better than farming. Economic transformation towards money economy, especially through universal education, increases the costs and may consequently reduce demand for children. Through mass education children become the object of expenses rather than producing resources for their parents benefit and fertility is likely to decline.

Singh, Casterline and Cleland (1985) observed that fertility reducing impact of marriage and contraception is nearly always greater among women living in towns and small cities than for rural women and greater still for those living in towns and small cities than for those living in major urban areas. The expectation is that the fertility reducing effect of marriage and contraception will increase with education but that opposite relationship will hold for post partum infecundability.

For contraception and infecundability, this expectation is fulfilled with a few expectations due to unrealistic estimates based on small number of women. Thus effect of contraception increases monotonically with ascending levels of education while that of lactational infecundability decreases. In all the three regions of the world, the effect of nuptiality, is stronger among women with between 4-6 years of schooling than among those with between 1-3 years. For the period in the 1970s, the major cause of high fertility in Kenya was due to the fast decline in breastfeeding and slow compensating movements in contraception and nuptiality.

The education of women in Brazil has changed fertility. Based on estimates from decennial censuses and the 1984 National Population Development and fertility supplement, the TFR for all the Brazil fell from 5.75 in 1970 to 4.35 in 1980 to 3.53 in 1984. Although the level and pace of fertility decline varies across Brazil's widely diverse regions, fertility has declined significantly in both the higher income Southeast and the poorer less developed Northeast. Brazil's decline unlike other Latin American countries began during a period in which were only modest family planning program in which government policy was relatively pro-natalist (Lam, 1992)

The principal proximate determinants of differentials of fertility in sub-saharan Africa are lactation amenorrhea due to breastfeeding, decreased exposure to conception due to postpartum sexual abstinence, and pathological, involuntary infertility due to diseases such as gonorrhoea. These proximate determinants depend on behaviors that are susceptible to modern influences in Africa namely education and urbanization. Thus educated urban women, although they tend to marry later, generally abstain sexually for shorter periods after delivery and replace breastfeeding earlier or altogether with alternative milk or solid foods (Frank, 1993).

### **2.3 Studies on Fertility**

Anker (1976) in their study on determinants of Fertility in Kenya using University of Nairobi Survey, Kenyan government publications, and demographic estimates based on data from 1969 census. He used multivariate analyze fertility in Kenya.

He found out that fertility differentials are as a result of increase in education in some regions that reduces fertility by increasing acceptability and effectiveness of contraceptive use thereby reducing the number of unwanted births. He further noted that family planning acceptance and fertility were negatively related *ceteris paribus*. Further more marriage customs, norms about marriage and marriageable age determine the entry into childbearing period. Marriage patterns, receptiveness to outside changes, land ownership patterns and job opportunities influence fertility levels at large thus resulting to regional differentials in fertility levels in Kenya.

Henin & Mwobobia (1982) carried out a study on differentials of fertility in Kenya and other Asian countries. They examined 41 districts using Brass technique with 1979 census data. They found out that differentials in fertility are brought about by effect of education, mean age at first marriage, marital status (divorce or separated), child mortality rate, female employment, use of modern methods of contraception, and malaria prevalence on total fertility. These variables explained 78.8 percent of the total variation in fertility. Urbanization, female primary education, and age at first marriage alone explained 66.4 percent of the variation and the inclusion of child mortality raised this figure to 72.7 percent. Urbanization, female employment, and contraception, were the chief factors suppressing otherwise strong association between each of the fertility determinants and total fertility. The level of female education was found to have a very strong association between fertility and urbanization, female employment and contraceptive practices. They concluded that their finding lends support to continued governments efforts to eradicate illiteracy in the country if fertility reductions have to be achieved. They concluded that positive association between primary level of education and fertility should be viewed with concern by policy makers, given efforts to provide free primary education.

According to Mutetei (1998) findings using Bongaarts (1978) framework and 1998 KDHS data, his findings revealed that fertility differentials regionally in Kenya is brought about by various factors. Postpartum infecundability was the most important fertility inhibiting variable in Nairobi and Central regions, and in the urban areas as well as among women with secondary and higher level of education. In Central Province, the number of children desired could be equal or almost equal the actual number of children born. Women in Central province desire smaller families

because they spend more years in school and are more exposed to mass media than in Nyanza and Western Provinces. Fertility change arises as a result of modification of behavior due to dissemination of new information and attitudes which lead to innovation in terms of fertility control. The low number of children dead or the low proportion of children dead in Central Province could have also led to rapid decline in fertility in this Province unlike in Nyanza and Western Provinces.

High socio-economic status apparently leads to a later age at marriage and lower infant and child death rates and hence causing development to be associated with reduction in fertility. These indicators were evident in Central Province. The study also found out that marital duration greatly influence fertility as it leads to a wider period of exposure to the risk of conception. Contraception was the most important fertility inhibiting variable in Nairobi and Central regions among women with secondary and higher level of education and least important at the National level and other subgroups.

Contraception and non marriage mainly contributed towards achieving declines in fertility between the periods 1989 to 1993. The prediction of fertility using contraceptive prevalence rate indicated that Eastern Province was the only region with excess fertility of more than one birth. The other regions did not have excess fertility. We can therefore conclude that observed fertility matches with contraceptive prevalence rates in these regions. Therefore projections for future demand on contraceptives can be made for any region once the desired future fertility has been determined. In conclusion he noted that post partum infecundability, higher levels of women's education, late age at marriage, contraception, and non-marriage were associated with lower fertility in Central and Nairobi. However the reverse was true for Western, Nyanza, and Riftvalley. He recommended effectiveness use of contraceptive be made available in the other sub – groups with high fertility like Western, Nyanza and Rift Valley since women with low fertility were those in Nairobi, Central, urban areas and provision of secondary and higher level of education in these regions.

Chepng'eno's (1999) study using Easterlin's and Crimnis (1982) framework and 1998 KDHS data, revealed that education is closely associated with the various aspects of fertility such as desired family size, contraception and potential supply of surviving children.

Because of the importance of marital duration in fertility, a shift from early to late age at marriage occurs within a broad social change involving changes in the role of women education, family and economic structure and more particularly change in the relationship of parents and their children. A higher percentage of women in Central province (81 percent) had not experienced child death while (71 percent) in Western province had not experienced child death. Those who had between 1-3 children dead were 37 percent in Western province and 12 percent in Central province. Women in Western province would have more children ever born as an insurance effect or to replace the lost child. Majority of women in Western and Central preferred between 4 and 5 children, 44 percent in Central and 48 percent in Western province. Those who preferred one child or not to have any children at all were more in Central 4 percent compared to Western 2 percent. Those who preferred 6 or more children as their ideal family size were in Western province 13 percent unlike Central province 4 percent.

According to Shanyisa & Ayiamba (2003) findings using Easterlin's and Crimnis (1982), synthesis framework, and KDHS data of 1993, 1998, and 2003, found out that socio-economic, and socio-cultural characteristics among the women contribute towards variations in fertility. The socio-economic factors correlated with high fertility levels were lack of education, and incomplete primary education, rural residence, low and middle wealth status, working and regional location such as Eastern, Nyanza, Rift Valley, and Western. The social-cultural factors associated with high reproductive preferences were polygamy, Islam, low women's status and ethnic affiliations such as Kalenjin, Kamba, Kisii, Luhya, Luo, Mijikenda, Embu/Meru communities at different times. Low fertility levels associated with socio-economic factors, included complete primary education, secondary and higher, urban residence, high wealth status, Nairobi and Central regions. The social cultural factors associated with high contraceptive use were Christianity, monogamy, high and middle women's status and ethnic affiliations such as Kikuyu, Kisii, Luhya and Kalenjin communities at different times. The socio-economic factors associated with low contraceptive use were lack of education, rural residence, and low wealth status, regional location such as Nyanza, Rift valley, and Western coast at different times.

The socio-cultural factors associated with low contraceptive use were polygamy, Islam, and low women's status.

The socio-economic factors correlated with high fertility were lack of education and incomplete primary education, rural residence, low wealth status, and residing in regions such as Nyanza, Western, Rift valley and Coast province at different times. Low fertility was associated with socio-economic factors which included primary complete education, secondary education, higher education, middle wealth status, and regions Nairobi, Coast, Central, and Eastern at different periods. The socio-cultural factors associated with low fertility were monogamy, Christianity, high women's status, middle women status, and Kikuyu, Kamba and Meru communities at different times.

The age at first marriage has a great effect on the fertility of women both at national and provincial levels. Age at first marriage marks the onset period of exposure to the risk of childbearing, and an early age at marriage implies a longer duration of exposure and consequently higher cumulative fertility. The level of fertility is inversely related to cumulative fertility. This is so because education delays age at first marriage and as level of education rises, so does the use of modern contraception. Cumulative fertility is higher for women with primary education, due to the fact that these women have acquired the necessary knowledge to improve their nutrition and hygiene to prevent any fecundity –impairing diseases but without corresponding use of contraceptives.

Contraceptive use was examined at both national and provincial levels. Contraceptive use was associated with high fertility. This was because contraception was used by older women who have the longest marriage durations and already have large numbers of children use contraception to terminate child bearing. Place of residence (province and rural-urban), marriage disruption, religion and work status have varying effect in cumulative fertility.

The fertility differentials among Kenya's 41 districts and reports was investigated and reports the relationship between selected fertility predictors, especially female primary education, and the total fertility rate in the country. The total fertility was computed by use of the Brass technique from 1979 census data. High fertility middle belt stretched from the east to the Lake Basin. This belt corresponds roughly with agricultural potential areas of the country, suggesting an association between economic development and fertility.

In 4 of 7 provinces, fertility rates peaked with primary level of education attainment and in all the 7 provinces these levels were lowest among women with secondary education. In conclusion their findings revealed that fertility predictors regionally in Kenya included levels of education, religion, ethnicity, place of residence, wealth status, regional location, type of marriage, age at first marriage, and contraception.

Ekisa and Hinde (2006), in a paper entitled;” Fertility Transition in Kenya: A Regional Analysis of Proximate Determinants of Fertility” findings using data from the four Kenya Demographic and Health Surveys of 1989, 1993, 1998 and 2003 and a set of 21 regions. Ekisa used the model of proximate determinants by John Bongaarts (1978). The results found substantial and persistent regional differences in fertility. Generally fertility is lowest in urban areas than rural areas in the centre of the country and higher in both Coastal and Western areas. The results revealed that fertility levels were higher both in Coastal and Western areas. This was so because of low contraceptive use, low age at first marriage, and shorter durations of breastfeeding and low levels of modernization in these two regions. Ekisa further notes that pattern of increasing contraceptive use and a rising age at marriage offsetting the impact of shorter durations of breastfeeding as modernization progresses is only found in a small number of regions in Kenya. These regions include Central, Eastern and Nairobi provinces. Elsewhere a variety of demographic regimes is observed, some associated with fertility declines, and others associated with constant or even increasing fertility. Therefore contraceptive use, age at first marriage, breastfeeding durations and modernization explained regional differences in fertility in Kenya.

## **2.4 Summary of Literature Review**

In conclusion research findings demonstrate that regionally variation in fertility in Kenya can be explained by socio-economic factors, socio-cultural factors, demographic factors, and some proximate determinants. Some factors such as primary education and contraceptive use in some studies reveal positive relationship with fertility and this requires a further investigation according to Henin R.A & Mwobobia (1982) and Shanyisa and Ayiemba (2003).

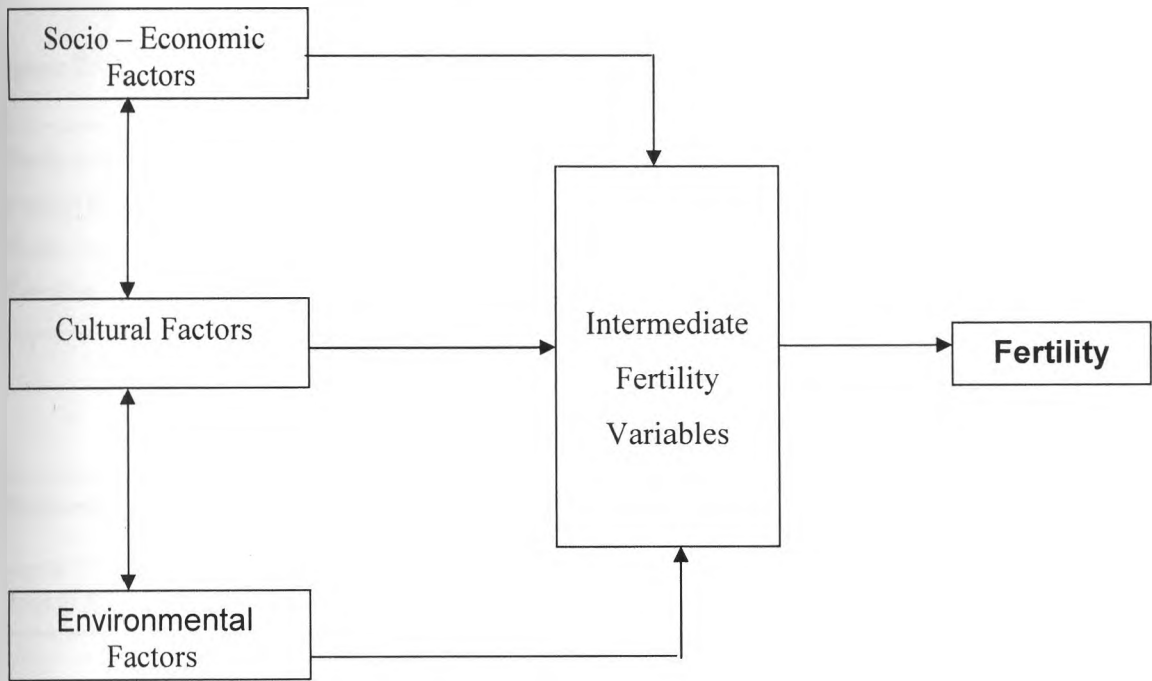


These determinants operate through intermediate variables that influence fertility levels. The key factors pointed out in the literature that contribute towards fertility variation in Kenya include education level, marriage age and patterns, contraceptive use, religion, type of place of residence, region of residence, age at first birth, ideal family size, work status, postpartum infecundability and wealth index. However a further investigation is required at regional levels to establish factors that contribute to differentials in fertility between Western and Central provinces in Kenya since these factors are not clearly known.

## **2.5 Conceptual Framework**

This study is conducted within Bongaarts (1978) framework. According to this framework, socio-economic, environmental and cultural factors which influence fertility operate through proximate determinants. To explain fertility differentials among populations as well as the trends in fertility over time, we need to look at variations in one or more of the proximate determinants. Bongaarts (1978) enumerated eight proximate determinants of fertility. Among them, the four most important ones are; marriage patterns, post-partum infecundability, contraceptive use and induced abortion. The other four include sterility levels, spontaneous intra- uterine mortality, frequency of intercourse, and duration of fertility period. He noted that not all the intermediate variables are equally important in explaining level of fertility. Cultural, psychological, economic, and social, health and environmental factors affect fertility indirectly through these proximate determinants. Changes in fertility are the direct results entirely of changes in these proximate determinants, which thus mediate the effect of changes in social, economic, and cultural factors. However this idea was not original to Bongaarts; 53 years ago, Kingsley Davis and Judith Blake (1956) described the concept of intermediate variables as a set of factors through which and only through which, social, economic, and cultural conditions can affect fertility. However Bongaarts quantified the concept into a model. This study will examine socio cultural, socio economic and demographic factors at regional level that influence fertility levels in Western and Central provinces in Kenya. The proximate determinants of fertility are the biological and behavioral factors through which socio-economic and environmental variables affect fertility, the principal characteristics of a proximate determinants being its direct influence on fertility.

**Figure 1: The Bongaarts Framework**



**Background Variables**

**Intermediate Variables**

**Outcome**

Source: J. Bongaarts (1978).

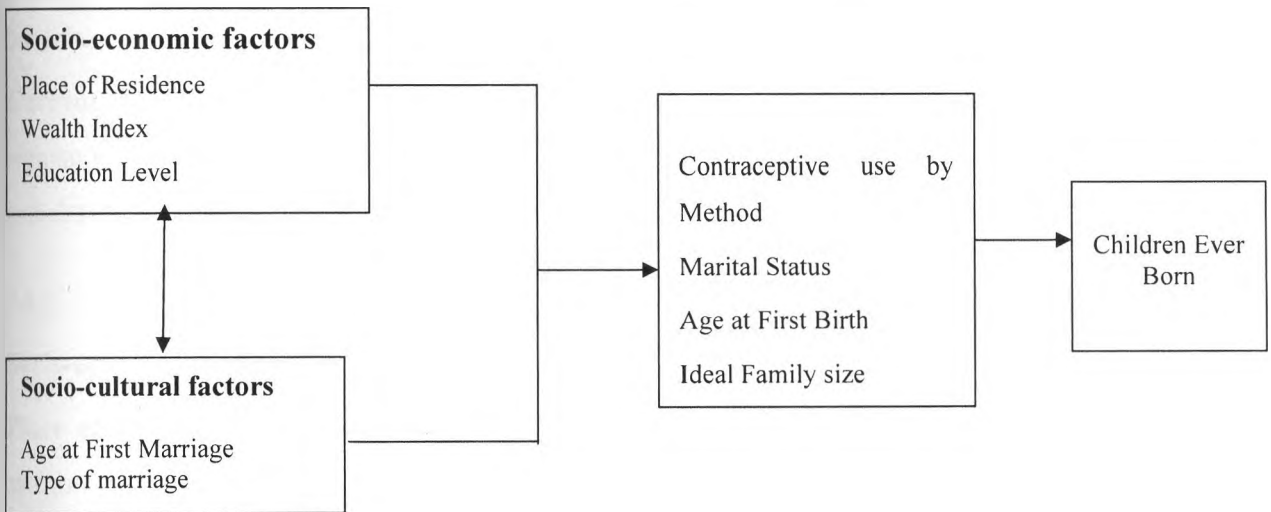
The framework depicts the operations of the socio-economic, cultural, environmental and demographic factors affecting fertility through intermediate fertility variables. The empirical evidence supporting the concepts has been given in the literature review.

### 2.5.1 Conceptual Hypotheses

- a. Socio-economic factors are likely to influence fertility
- b. Socio-cultural factors are likely to influence fertility
- c. Environmental factors are likely to influence fertility

## 2.5.2 Operational Framework

Figure 2: An illustration of Bongaarts Framework



### Background Variables

### Intermediate Variables

### Outcome

Source: Adopted from J. Bongaarts Framework (1978)

## 2.5.3 Operational Hypotheses

The hypothetical relationships tested by this study were:

- Place of residence influences levels of fertility in Western and Central province
- Wealth index is likely to influence levels of fertility in the two regions
- Work status of women is likely to affect levels of fertility in the two regions
- Differences in levels of education influences fertility level in the two regions
- Age at first marriage and Polygamous marriages influence fertility levels in these regions
- Differences in marital status are likely to bring about differences in levels of fertility in Western and Central Province.
- Age at first birth is likely to influence fertility levels.
- Differences in ideal family size are likely to influence fertility levels in the two regions.

## 2.6 Definition of Variable

### 2.6.1. Dependent Variable

**Children Ever Born-**Refers to the total number of children a woman has ever given birth to in her life.

**Current age of the respondent-** This refers to the number of years at the time of interview the woman will have lived since she was born. It will be categorized as less than 20, 20-24, and 25 and above.

### 2.6.2 Independent Variables

#### **Socio-economic factors**

**Place of residence-** This variable refers to the place where the woman resides. It has two categories; rural and urban areas. Those in the rural areas, in developing countries, are expected to exhibit higher fertility than those in the urban areas.

**Wealth index-**Wealth index is based on household ownership of material possessions such as radio, television, telephone, refrigerator, bicycle, motorbike, and car. It also includes the housing quality, whether the house has electricity, a finished floor, and a permanent roof, that is, corrugated iron or tiles. It serves as a proxy for household wealth and disposable income. It was classified as low, medium, or high. Those in the high wealth index were expected to experience lower fertility.

**Education level-**Highest level of education refers to the highest formal schooling attained by the women. It was categorized into; no education, primary education, and secondary plus. The expected usual trend was that the number of children ever born reduces with the increase in the level of woman's education

**Work Status-** Refer to whether the woman was working during the time of survey. It was categorized into working and not working. It is expected that working women have fewer children ever born compared to those not working.

## **Socio-cultural factors**

**Age at first marriage**-Refers to the age at which the woman first entered into marital union. Women who are married at younger ages are expected to have more children ever born compared to those who are married at older age.

**Type of marriage**-Refers to the kind of marital union of a woman. It is expected that polygamous marriages have more children as compared to monogamous marriages.

## **Intermediate variables**

**Contraceptive use**-Refers to the type of method of fertility control a woman uses. Women who use contraceptive are expected to have lower fertility compared to those who do not use any form of contraceptive.

**Marital status**-Refers to whether the respondent is currently married, never married or formerly married. Those who have ever been married are expected to have more children ever born compared to those who have never been married.

**Age at first birth**- Refers to age at which a woman had her first child. Younger age at first birth is expected to be associated with higher fertility compared to older age at first birth.

**Ideal family size**-Refers to number of children a woman would like to have during her reproductive life time.

## 2.6.4 Description of Variables and Specification

The variables that were used in the study were classified and measured as illustrated below:

**Table 2: Variables, Description and their Specification**

Variable Classification	Variable Name	Categories
Dependent Variable	Fertility (Children Ever Born)	Measured on a continuous/interval scale
Variables of Study		
1	Current Age of Respondent	1 = <=19 2 = 20-24 3 = 25+
2	Place of Residence	1 = Urban 2 = Rural
3	Wealth Index	1 = Low 2 = Medium 3 = High
4	Education Level	1 = No education 2 = Primary 3 = Secondary +
5	Work Status	1 = Not Working 2 = Working
6	Age at First Marriage	1 = <=19 2 = 20-24 3 = 25+
7	Type of Marriage	1 = Monogamous 2 = Polygamous
8	Contraceptive Use by Method	1 = No Method 2 = Non-Modern 3 = Modern
9	Marital Status	1 = Never married 2 = Currently Married 3 = Formerly married
10	Age at First Birth	1 = <=19 2 = 20-24 3 = 25+
11	Ideal Family Size	1 = 0-2 2 = 3-5 3 = 6+

## CHAPTER THREE

### DATA AND METHODOLOGY

#### 3.1 Introduction

This chapter presents a description of the source of data used for the study and the analytical procedures that were employed.

#### 3.2 Data Source

The data used in the study were drawn from the Kenya Demographic and Health Survey (KDHS, 2003). This was a fourth survey of the DHS series undertaken in Kenya, others being in 1989, 1993, and 1998. The survey was implemented by the Central Bureau of Statistics (CBS), now Kenya National Bureau of Statistics (KNBS), in collaboration with the Ministry of Health including national AIDS and STIS control programme (NASCOP), the Kenya Medical Research Institute (KEMRI) and the National Co-coordinating Agency for Population and Development (NCAPD).

The sample size involved was of 8,195, women aged 15-49 and 3,578 men aged 15-54 selected from sample clusters throughout Kenya. The survey utilized a two stage sample based on the 1999 Population and Housing Census and was designed to produce separate estimates for the key indicators for each of the eight provinces in Kenya. The survey obtained detailed information on fertility levels, marriage, sexual activity, fertility preferences, awareness and use of family planning methods, breastfeeding practices, nutritional status of women and young children, childhood and maternal mortality, maternal and child health, awareness and behavior regarding HIV/AIDS and other Sexually Transmitted Infections (STI's). The type of information collected relevant to this study include; fertility levels, age at first marriage and birth, contraceptive prevalence, religion, Region of residence, type of marriage, and women's education level. The segment of population involved includes women aged 15-49 in Western and Central provinces. Total women interviewed in Western province were 991 and in Central were 1,413.

### 3.3 Methods of Analysis

This section presents methods of data analysis. Section 3.3.1 describes descriptive statistics of the study population using frequency distribution and percentages. Section 3.3.2 describes simple linear regression that established gross effect of every independent variable on dependent variable and multiple linear regression that established net effect of independent variable on dependent variable. The dependent variable was children ever born.

#### 3.3.1 Descriptive Statistics

Descriptive statistics measures such as frequency distribution and percentages were used to describe variables used in the study. These descriptive statistics were used to examine the basic distribution characteristics of the variables and the differences in Western and Central provinces.

#### 3.3.2 Simple and Multiple Linear Regression

Simple linear regression is a method of data analysis in which the dependent variable and one independent variable are examined simultaneously to find out whether they are related to each other. It indicates the association of an independent and dependent variable, it tests whether two variables are empirically associated and it lays foundation for multivariate analysis. Simple linear regression analysis involves finding the best fitting straight line to describe a set of data. The linear model,  $Y = a + bx + e$ ; indicates that every  $Y$  score is made up of two components:  $a + bx$  which is the linear effect of  $X$  upon  $Y$ , the value of  $Y$  given  $X$  if  $X$  and  $Y$  were perfectly correlated in linear fashion, and  $e$  which stands for error. Error is simply the difference between the actual value of  $Y$  and that value we would predict from the best fitting straight line that is,  $e = Y - \hat{Y}$ . Under this analysis every independent variable was regressed against dependent variable to establish gross effect of each variable on children ever born.

Multivariate analysis is an extension of simple linear regression that attempts to predict a dependent variable from any number of independent variables (Blalock, 1972). It is used to test the joint effect of two or more variables upon a dependent variable.



The equation for the relationship is given as:

$$Y_i = \beta_0 + \beta_1 X_{1j} + \beta_2 X_{2j} + \dots + \beta_k X_{kj} + e_j$$

Where Y = independent variable

$\beta_0, \beta_1, \dots, \beta_k$  = Partial regression coefficients.

$X_{1j}, X_{2j}, \dots, X_{kj}$  = observed values of the independent variables  $X_1, X_2, \dots, X_k$ .

This study employed multiple linear regression to explain variations in number of children ever born. The results of multiple regression explained the magnitude contribution of every factor to children ever born. The intermediate variables used were all regressed at once against dependent variable to show the net effect of all the variables on children ever born. F- test, a statistical tool that indicates the ratio of two scaled sums of squares was used to reflect different sources of variability. It was used in this study for individual and overall model to assess whether expected values of quantitative variable within pre-defined groups differ from each other in the analysis

## CHAPTER FOUR

### DETERMINANTS OF FERTILITY IN WESTERN AND CENTRAL PROVINCES

#### 4.1 Introduction

This chapter presents the study findings. Section 4.2 describes the characteristics of the study population while section 4.3 presents the results of simple analysis. Section 4.4 presents the results of multivariate analysis and section 4.5 concludes the chapter by giving a summary.

#### 4.2 Characteristics of the Study Population

Table 4.1 shows the characteristics the study variables for the two provinces. Women in Western province had more children ever born. In particular; 55 percent of women in Western province had between 0-2 children number of children ever born compared to Central Province that recorded about 60 percent; 20 percent of 6 and above children ever born in Western as compared to Central Province that recorded 9 percent. The results further show that, older women were more in Central compared to Western. In particular those who were aged less than 20 years, Central province recorded about 20 percent while Western province recorded about 28 percent. Western province recorded 20 percent compared to Central province that recorded 19 percent for those aged 20-24 years.

The findings also revealed that Western province is more urbanized with 24 percent living in urban areas compared 15 percent of women in Central Province. The distribution by wealth index shows that majority of households in Western province are poorer with a low wealth index at 45 percent compared to Central province that recorded 15 percent. With respect to high wealth index Central recorded almost 24 percent while Western recorded a low percent of about 15. This shows that more wealth is in Central province compared to Western province. The distribution by education level indicates that women in Central province are more educated than those in Western province. About 56 percent of women in Central province compared to about 64 percent in Central had primary education. Furthermore 42 percent of women in Central had at least secondary education and above compared to 28 percent of women in Western province who had at least secondary and above education.

The proportion of women who were reported to be working was nearly the same in the two provinces at 64 percent for Western and 63 percent for Central. These differences in socio-economic characteristics of these two regions may perhaps explain the differences in fertility levels in the two regions.

Majority of women in Western Province; almost 65 percent got married at younger age bracket of less than 20 years compared to 48 percent for Central province, 29 percent got married at age 20-24 years in Western compared to 41 percent of women in Central at the same age. The difference is noted particularly with younger age at first marriage in which a higher percent in Western than Central perhaps explaining why higher fertility is in Western than Central.

Polygamous marriages are more in Western as compared to Central province. Whereas almost all women in Central, 97 percent were in monogamous marriages only 78 percent were in such unions in Western province. Therefore more women in Western province were in polygamous marriages as compared to women in Central province.

Examining contraceptive use by method, the results show that contraceptive use was more in Central than Western; at about 36 percent compared to 19 percent in Western province for modern contraceptive use. Non-modern method of contraceptive use was at low percent of 6 and 5 for Central and Western respectively. From this it's clear that contraceptive use is more prevalent in Central than Western maybe explaining why the difference in children ever born.

With respect to marital status, the findings revealed that the two regions recorded almost the same percent of women who were never married; about 33 percent for Central and 31 percent for Western. However the percent of currently married respondent was higher in Western; about 60 percent than Central that recorded about 55 percent. This results show that Western had more women who had ever been married as compared to Central province thus a possible explanation to why the difference in children ever born in these regions.

**Table 4.1: Percentage Distribution of Study Variables in Central and Western Province**

Variables	Central (n=1314)	Western (n=991)
<b>Total Children Ever Born</b>		
0-2	59.7	55.1
3-5	31.2	25.3
6+	9.1	19.6
<b>Current Age of Respondent</b>		
<=19	19.6	27.7
20-24	19.4	20.3
25+	61.0	52
<b>Place of Residence</b>		
Urban	15.4	24.5
Rural	84.6	75.5
<b>Wealth Index</b>		
Low	15.1	45.0
Medium	61.0	40.5
High	23.8	14.5
<b>Education Level</b>		
No Education	2.4	8.3
Primary	55.6	63.7
Secondary +	42.1	28.1
<b>Work Status</b>		
Not Working	36.9	36.2
Working	63.1	63.8
<b>Age at First Marriage</b>		
<=19	32.4	64.8
20-24	41.4	29.2
25+	10.3	6.0
<b>Type of Marriage</b>		
Monogamy	96.6	77.9
Polygamy	3.4	22.1
<b>Contraceptive Use by Method</b>		
No Method	57.8	75.6
Non-Modern	6.3	5.0
Modern	35.8	19.4
<b>Marital Status</b>		
Never Married	32.9	31.2
Currently Married	54.8	59.9
Formerly Married	12.3	8.9
<b>Age at First Birth</b>		
<=19	51.6	61.8
20-24	39.6	33.7
25+	8.9	4.5
<b>Ideal Number of Children</b>		
0-2	33.6	19.9
3-5	59.5	64.3
6+	6.9	15.8
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

The distribution by age at first birth shows that child bearing starts early in Western compared to Central. About 52 percent of women in Central had their first child before age 20 compared to almost 62 percent in Western. For the age bracket 20-24, 40 percent of women in Central and 34 percent of women in Western gave birth for the first time within this age group. Younger age at first birth in Western than in Central could possibly explain why the difference in fertility. The findings of ideal number of children desired were different in the two regions. On average higher number of children are desired in Western compared to Central. In Central Province about 34 percent of women desired between 0-2 while almost 20 percent was recorded for Western. About 60 percent of women in Central desired a family size of between 3-5 children as compared to over 64 percent in Western region. Therefore more desire for a larger family size by women in Western than those in Central perhaps explains differentials in number of children ever born.

### **4.3 Factors Associated with Children Ever Born in Western and Central Provinces**

Table 4.2 below presents the results of the simple linear regression. These results show relationship between socio-economic, socio-cultural and demographic factors and children ever born. The results show the gross effect of a unit change in selected independent variable on children ever born. All the socio-economic, socio-cultural and demographic factors were found to be significant in both Central and Western region. However, the results show a variation in the level of significance in the two regions.

#### **Current Age of Respondent**

Current age of respondent is a significant factor associated with children ever born. Children ever born depend on the age of the woman. In both regions children ever born are highest among women aged 25 years and above; 4.8 in Western and 3.4 in Central. Women aged 20-24 years had 3.2 fewer children ever born in Western compared to 2.5 fewer births in Central compared to those aged 25 years and above. Women less than 20 years had 4.6 children ever born fewer in Western and 3.2 fewer in Central compared to those aged 25 years and above.

## **Socio Economic Factors**

The results of the study showed that respondent's place of residence is an important determinant of children ever born in the two regions. In the two regions, urban residence had a negative and significant effect on children ever born. Women in Western region living in urban area had 0.9 fewer children ever born as compared to those living in rural area while 0.5 fewer births in Central. This could be attributed to accessibility to family planning services and information in urban areas compared to rural areas in both regions. Therefore the results confirm the hypothesis that women living in rural areas have a higher fertility than their counterparts in urban areas as already indicated by previous studies. However the levels are higher in rural Western than rural Central a possible explanation to fertility differentials in the two regions.

Wealth is also significantly associated with children ever born. In Western women from low wealth index households had 1.5 more children ever born compared to those in the higher wealth category while in Central they had 1.1 more births. Further more women of medium wealth index from Western had 0.7 more children ever born compared to those from high wealth category as Central had 0.9 more children ever born. This is so because of constraints faced by household incomes and time, its relative preference for children as compared to other goods, the costs and benefits of children as compared to other goods. Therefore for rich households' children become economic burdens. Thus poorer households have higher number of children ever born than their counterparts from rich households. The difference is noted with fertility being higher in Western than Central province in each category possibly explaining the observed differentials in number of children ever born.

Education level is an important determinant of number of children born to a woman. Education level has a negative and significant effect on children ever born in the two regions. In Western province, women with primary level of education had 2.9 fewer children ever born compared to those with no education while in Central they had 1.6 fewer children. Having secondary education and above a woman had less 3.4 children ever born in Western compared to women with no education while in Central they had less by 2.3. Therefore high levels of education are associated with low levels of number of children ever born. This is so because education delays age at first marriage and birth; it empowers a woman to make decisions about number of children to give birth to, women are informed about contraceptive use and they prefer quality children as compared to quantity.

**Table 4.2 Results of Bivariate Analysis Showing Relationship between Socio Economic, Socio-Cultural, Demographic Factors and Children Ever Born**

Variable of Study	Western		Central	
	B	Std Error	B	Std Error
<b>Current age</b>				
Constant	4.775***	(.089)	3.429***	(.059)
25+ (Ref)				
20-24	-3.203***	(.151)	-2.516***	(.119)
<=19	-4.557***	(.169)	-3.274***	(.120)
<b>Place of Residence</b>				
Constant	3.084***	(.104)	2.826***	(.066)
Rural (Ref)				
Urban	-.911***	(.211)	-.546***	(.167)
<b>Wealth Index</b>				
Constant	1.896***	(.236)	1.565***	(.122)
High (Ref)				
Medium	.720**	(.275)	.937***	(.196)
Low	1.497***	(.271)	1.063***	(.144)
<b>Education Level</b>				
Constant	5.695***	(.303)	4.161***	(.387)
No Education (Ref)				
Primary	-2.936***	(.322)	-1.617***	(.395)
Secondary+	-3.440***	(.345)	-2.291***	(.397)
<b>Work Status</b>				
Constant	3.502***	(.109)	2.826***	(.072)
Working (Ref)				
Not working	-1.769***	(.182)	-1.434***	(.119)
<b>Age at First Marriage</b>				
Constant	2.672***	(.104)	1.993***	(.074)
<=19 (Ref)				
20-24	.820***	(.228)	.947***	(.135)
25+	.571	(.459)	.611**	(.238)
<b>Type of Marriage</b>				
Constant	1.921***	(.117)	1.393***	(.079)
Polygamy (Ref)				
Monogamy	2.033***	(.172)	1.767***	(.111)
<b>Contraceptive use by method</b>				
Constant	4.281***	(.200)	2.227***	(.062)
Modern (Ref)				
No Method	-1.850***	(.225)	1.773*	(.892)
Non-Modern	-.441	(.441)	1.071***	(.256)
<b>Marital status</b>				
Constant	.152	(.127)	.410***	(.084)
Never Married (Ref)				
Currently	3.974***	(.156)	2.762***	(.107)
Formerly	3.677***	(.269)	3.041***	(.161)
<b>Age at First Birth</b>				
Constant	2.577***	(.105)	2.100***	(.075)
>=19 (Ref)				
20-24	1.145***	(.213)	.681***	(.134)
25+	.423	(.521)	.018	(.248)
<b>Ideal Number of children</b>				
Constant	2.37***	(.197)	1.286***	(.096)
6+ (Ref)				
0-2	.173	(.225)	1.333***	(.121)
3-5	2.394***	(.295)	3.165***	(.233)

Ref: Reference category, \*\*\* p=0.00, \*\* p=0.01, and \* p<= 0.05

Further more its through mass education that children become the object of expenses rather than producing resources for their parents benefit and number of children born will decline. However it's in order to note that higher levels of education are in Central province than they are in Western province. This could be a possible explanation to why fertility is higher in Western than in Central province. Work Status has significant relationship with children ever born. Not working has negative and significant effect on children ever born in both regions. In Western province women who were not working had 1.8 children fewer as compared to women who were working whereas in Central they had 1.4 fewer births. However the results were not consistent with theory since the hypothesized relationship is that women who are working are likely to have fewer children as compared to those who are not working because of time constraint of raising more children.

### **Socio Cultural Factors**

Age at first marriage is an important predictor of children ever born in these two regions. In both regions the age category of 20-24 years was positively and significantly related to children ever born. In this category a woman in Western had 0.8 more children ever born as compared to women who had not completed 20 years while Central province had 0.9 more children ever born. However the study did not establish any significant relationship for the category of women who got married at age 25 years and above in Western but in Central they had 0.6 more births. Lower age at first marriage is associated with more children ever born since women have a longer exposure to the risk of pregnancy as compared to a woman who gets into marital union at an elderly age. Lower age at first marriage is indicated more in Western than it is in Central province.

The study revealed that being married monogamously or polygamously has an effect on children ever born. In Western a woman had 2.0 more children ever born when monogamously married compared to those married polygamously while Central had 1.8 more children ever born. However this is not consistent with the theory. According to Shanyisa and Ayiemba (2003) among the social-cultural factors associated with high reproductive preferences was polygamy. Children ever born are so perhaps because of low proportions of polygamy marriages and more so in Central than Western. As much as polygamy practice is disappearing in both regions, however high fertility is being manifested in monogamous marriages where children ever born per woman is high more so in Western than Central region as indicated by this study.



## **Intermediate Variables**

The study established that contraceptive use by method revealed significant relationship with children ever born. Women in Western province who were not using any contraceptive method had 1.9 fewer children ever born compared to those who were using modern methods while in Central they had more children by 1.8. This relationship seems not to be consistent with the theory which holds that low number of children ever born is associated with contraceptive use particularly for Western. The study did not establish any significant relationship for the category of women who were not using modern contraceptive methods in Western though in Central they had 1.1 more births compared to those using modern contraceptives. However those using modern contraceptive in Central had fewer children ever born as compared to Western thus reason to why children ever born are more in Western. Further more the results of the study revealed that marital status is an important predictor of children ever born in the two regions. Examining Western province, currently married women had children ever born more by 4.0 as compared to never married category whereas in Central they had 2.8 more births. For the formerly married category, women in this category had 3.7 more children ever born in Western as compared to women who had never been married while Central had 3.0 more children. Central province established a lower number of children ever born in all the categories as compared to Western province.

In relation to age at first birth the study established it to be another important determinant of children ever born in the two regions. In Western province women who gave birth at 20-24 years old, had 1.1 more children ever born as compared to those who had their first born before age 20 while Central had 0.7 more children. This study did not establish any significant relationship with women who gave birth for the first time at age 25 years and above. Therefore younger age at first birth is associated with high number of children to be born due to long period of exposure to risk of pregnancy. This is exhibited more in Western than Central. Ideal number of children in this study was positively and significantly related to number of children ever born in the two regions. Category of women who desired 0-2 children in Western was not significant; however in Central they had 1.3 more children compared to women who desired a family size of 6 and above.

In Western province, the category of women who preferred family size of 3-5, had 2.4 more children as compared to those who desired at least 6 children and above, however in Central they had 3.2 more children. In Western province women still desire more children than in Central province. This is so because of cultural beliefs such as naming, preference of son, dowry and bride price as well as land inheritance more so in Western than Central.

#### **4.4 Determinants of children ever born in Western and Central Provinces**

Table 4.3 below presents results of multivariate analysis. It reveals relationship between socio-economic, socio-cultural and demographic factors and children ever born based on study sample.

In both regions, determinants of children ever born were the same; however, there was a differential in the levels of significance. The results indicated that socio-economic variables such as wealth index and education level were significant determinants of children ever born in both regions. In terms of socio-cultural factors, only age at first marriage was found to be significantly related to children ever born in the two regions. In terms of intermediate variables, contraceptive use, marital status, age at first birth and ideal number of children had a significant effect on children ever born in both regions. The results further show that place of residence, work status, and type of marriage were not significant factors associated with children ever born.

##### **Current Age**

The age of respondent is an important of fertility. The number of children ever born depends on the age of a woman. Older women have more children ever born compared to younger women. In Western province the category of women aged less than 20 years had 3.3 fewer children ever born compared to those aged 25 years and above when other factors are controlled for while in Central they had 2.4 fewer births. For the category 20-24 in Western these women had 2.8 fewer births as compared to women aged 25 years and above whereas in Central they had 2 children less. Women in Western had more children ever born as compared to women in Central.

Table 4.3 Comparison of Determinants of Children ever born in Western and Central Provinces

Variable of Study	Western		Central	
	B	Std Error	B	Std Error
<b>Constant</b>	3.622***	(.391)	2.273***	(.301)
<b>Current age</b>				
25+ (Ref)				
20-24	-2.779***	((.214)	-1.972***	(.114)
<=19	-3.298***	.163)	-2.395***	(.147)
<b>Place of Residence</b>				
Rural (Ref)				
Urban	-.039	(.170)	.058	(.123)
<b>Wealth Index</b>				
High (Ref)				
Low	.955***	(.226)	.937***	(.142)
Medium	.837***	(.209)	.658***	(.112)
<b>Education Level</b>				
No Education (Ref)				
Primary	-.956***	(.215)	-.682**	(.259)
Secondary+	-1.055***	(.246)	-.929***	(.263)
<b>Work Status</b>				
Yes (Ref)				
No	-.045	(.128)	-.041	(.091)
<b>Age at First Marriage</b>				
<=19 (Ref)				
20-24	-.807***	(.177)	-.547***	(.116)
25+	-1.073***	(.346)	-.686**	(.197)
<b>Type of Marriage</b>				
Polygamy (Ref)				
Monogamy	-.217	(.173)	.106	(.212)
<b>Contraceptive Use by Method</b>				
Modern (Ref)				
No Method	-.438***	(.152)	.503	(.573)
Non-Modern	.171	(.279)	.344*	(.166)
<b>Marital status</b>				
Never (Ref)				
currently	2.038***	(.239)	1.447***	(.237)
Formerly	1.500***	(.268)	1.628***	(.156)
<b>Age at First Birth</b>				
<=19 (Ref)				
20-24	-.502***	(.166)	(.394)	-.288**
25+	-.875*			-.725***
<b>Ideal Number of children</b>				
6+(Ref)				
0-2	.206	(.143)	.436***	(.088)
3-5	1.051***	(.191)	1.600***	(.166)

Ref: Reference Category, \*\*\* p=0.00, \*\* p=0.01, and \* p<=0.05

## **Socio-Economic Factors**

Wealth index according to this study is significantly associated with children ever born. Women from low wealth index households in Western had about one more child compared to women from high wealth index households whereas in Central they had more by 0.9. Examining medium wealth index, women from Western who belonged to this category had 0.8 more children compared to high wealth index households while Central had 0.7 more births.

Becker (1960) argues that the number of children required by modern household depends on constraints faced by household incomes and choice between quantity and quality of children because of time factor. He points out the most empirical evidence is an inverse relationship between income and children ever born. The findings of this study agree to this. Poor families are bound to have high number of children ever born than rich families. However Western province recorded high number of children ever born of the three categories of wealth index explaining why children ever born are more in Western compared to Central province. This is so because socio-economic development that brings about wealth creation is reflected more in Central than Western.

Education level is an important determinant of children ever born according to this study. All the categories of education level had negative and significant effect on children ever born. Having primary level of education in Western implied that a woman had about 1 child less as compared to women with no education while in Central they had 0.7 fewer children. Further more having secondary education and above implied that a woman will have children lesser by 1.1 as compared to women with no education in Western region whereas in Central they will have fewer by 0.9 children. As Caldwell (1985) notes that there are five ways in which education acts to reduce number of children ever born. Education reduces child potential for work inside and outside home, because of the absence of the child from the family and home industries while at school. It increases the cost of children for fees, uniform, stationery and others. Education indoctrinates rational way of thinking. Schooling speeds up cultural change and imposes middle class value; these includes having few children but one's in which heavy investments is made; and more specifically in the contemporary world the school serves as the means for propagating

the specific values of the Western middle class and transmitting the idea and knowledge of family planning. These include the view that girls are as important as boys and just as much to be educated and that white collar work is better than farming. Through mass education children become the object of expenses rather than producing resources for their parents benefit and number of children ever born is likely to decline. This study is in support to this; thus education is inversely related to number of children ever born as established by previous studies. However higher levels of education are more in Central province than Western leading to lower number of children ever born in Central than Western.

### **Socio-cultural Factors**

The results show that age at first marriage is an important predictor of children ever born in the two regions. The relationship is negatively and significantly related to children ever born. In Western, women had 0.8 children ever born fewer as compared to women who got married before age 20 while in Central they had 0.5 lesser births. Examining women who got married at age 25 years and above they had children ever born less by 1.1 in Western as compared to women who got into marital union before 20 years old while in Central they had children less by 0.7. Therefore early marriages are associated with more children ever born as compared to later marriages. According to Shanyisa and Ayiamba (2003) findings, age at first marriage has a great effect on the children ever born of women both at national and provincial levels. Age at first marriage marks the onset period of exposure to the risk of childbearing, and an early age at marriage implies a longer duration of exposure and consequently higher number of children ever born. This study is in view to these findings. However the difference is noted where women in Western province married at early ages leading to higher number of children ever born as compared to women from Central province.

### **Intermediate Variables**

The results show that using contraception has an effect on children ever born. In Western province, women not using any contraceptive had children ever born less by 0.4 as compared to women who were using modern contraceptive but no significant relationship was established in Central region.

Further more no significant relationship was established for Western for women who were using non- modern method but in Central they had 0.3 more children compared to those using modern method. As pointed out by Shanyisa and Ayiamba (2003), the possible explanation was that women in this region who were using contraceptive had been married for long period of time, had attained the required family size thus they used contraceptive particularly to terminate child bearing. Another possible reason could be because of secondary data use that was collected for various uses other than for this analysis. However use of contraceptive was more prevalent in Central than Western thus more children ever born in Western as compared to Central.

The results of the study revealed that respondent's marital status is a key determinant of the number of children ever born in these two regions. All the categories were positively and significantly related to children ever born. In Western province, the currently married women had children ever born more by 2.0 as compared to women who had never been in marital union while in Central they had 1.4 more children. The category of formerly married women in Western had 1.5 more children ever born compared to women who belonged to never married category whereas in Central they had more births by 1.6. According to Bongaarts (1978), marriage is one of the four key intermediate determinants of children ever born. This is so because it's through marriage that number of children born is determined. This study finding agrees to this, since results show that children ever born are more in the categories of women who were currently married or formerly married than women who had never been married. However in Western province all the three categories of marital status had higher number of children ever born compared to Central province explaining why Western has higher children ever born than Central province.

This study revealed that child bearing at younger age is associated with higher number of children ever born than having children for the first time at older age. In Western province those who began child bearing at 20-24 meant that a woman had 0.5 children ever born lower compared to those who began child bearing before age 20 while in Central they had 0.3 fewer births.

Examining age 25 and above, women in Western had children ever born lower by 0.9 compared to women who began childbearing before age 20 whereas in Central they had 0.7 fewer births. Anker (1976) asserts to the fact that marriage customs, norms about marriage and marriageable age determine the entry into childbearing period hence early child bearing is associated with more children ever born. This is in line with the findings of this study. Central has a higher age at first birth as compared to Western reflecting higher number of children ever born compared to Central.

The study revealed that ideal number of children is an important predictor of children ever born. Ideal family size of 3-5 children had a positive and significant effect on children ever born. With respect to this, Western recorded 1.1 more children ever born as compared to women who desired 6 and above children while Central recorded 1.6 more births. However no significant relationship was established for women who preferred family size of 0-2 children in Western as compared to women who preferred 6 and above, but in Central it was significant with women preferring 0.4 more children. According to Mutetei's (1998) findings, in Central Province, the number of children desired could be equal or almost equal the actual number of children ever born. Women in Central province desire smaller families because they spend more years in school and are more exposed to mass media than in Nyanza and Western Provinces. This is consistent to this study's findings. More of women in Central province prefer a small family size of 0-2 as compared to women in Western who prefer relatively large family size on average accounting to higher number of children ever born in Western than Central province. This is so because of more use of contraceptive and higher levels of education in Central than it is in Western province. Further more, more support to this conclusion is drawn from Chepng'eno (1998) study findings who established that those who preferred one child or not to have any children at all were more in Central 4 percent compared to Western 2 percent. Those who preferred 6 or more children as their ideal family size were more in Western province 13 percent unlike Central province at 4 percent. The study however, did not establish any significant relationship in relation to place of residence, type of marriage and work status in the two regions.

#### 4.5 Summary

This chapter explored factors determining number of children ever born in Western and Central provinces. Simple linear regression was conducted to determine gross effects of each study variable with dependent variable. Multivariate model was fitted to identify net effect of study variable on children ever born.

Simple linear regression indicated that marital status, place of residence, wealth index, education level, contraceptive use by method, type of marriage, age at first marriage, age at first birth and work status were significantly associated with number of children ever born in the two regions. Age 25 and above with respect to age at first marriage and birth in Western province was not significant. Age 25 and above with respect to age at first birth in Central as well was not significant. Considering ideal number of children born, women in Western province who desired family size of 0-2 children, the study revealed it not to be significant.

The multivariate results indicated that marital status, wealth index, education level, age at first birth, age at first marriage, and ideal number of children (apart from category 0-2 in Western), were significant factors associated with number of children ever born in the two regions. The factors that seem to be responsible for differences in children ever born between the two provinces were marital status, wealth index, education level age at first birth, age at first marriage and ideal number of children. This is consistent with previous similar findings established by previous studies. The results of contraceptive use (not using category in Western) were not consistent with expected outcome. This could be due to study sample used as well as secondary data used that was collected for other uses other than for this analysis. Therefore further investigation is required in line with this. However work status, type of marriage and place of residence were found not to be key determinants of children ever born though this had also been established by other studies.

The main objective of this study was to determine factors that have contributed to fertility differentials in Western and Central province. The specific objectives of the study were to



establish the influence of socio-economic, socio-cultural and demographic factors on fertility levels in Western and Central provinces.

This study established that socio-economic factors associated with differences in fertility levels in the two regions were wealth index and level of education. Examining wealth index, most of the households of low wealth were in Western at 45 percent compared to Central at 15 percent thus explaining why higher numbers of children ever are in Western compared to Central. Differences in levels of education that brought about differences in the number of children ever born in the two regions were established by this study. Central province had higher proportions of women who had secondary and above education at 42 percent while Western had barely 28 percent. Since more educated women are bound to have fewer children this is evident in Central where number of children ever born are fewer compared to Western bringing about differentials in number of children ever born.

The socio-cultural factor responsible fertility differential between Western and Central was age at first marriage. According to this study, more women in Western province enter into marital unions before age 20 compared to Central. This is so because, Western recorded 65 percent of such category of women compared to Central that recorded 32 percent. Therefore early age at first marriage is associated with higher number of children ever born in Western compared to Central resulting to higher fertility in Western than Central. This is so since such women have a longer reproductive period compared to those who are married at older age. This clearly explains why number of children ever born is more in Western compared to Central.

The demographic factors that explain differentials in fertility in these two regions were age at first birth, marital status and desired family size. The proportion of currently married women was higher in Western at 60 percent compared to Central province at 55percent. Fertility is enhanced in marriages and since marriage is more common in Western than Central, it accounts for more children ever born in Western compared to Central. Further more differences in age at first birth brought about observed differences in number of children ever born in these regions. The

proportion of women who had their first child before age 20 was higher in Western at 62 percent compared to Central at about 52 percent.

Younger age at first birth in Western Is rampant compared to central bringing about differences in children ever born in these regions. On average women in Western province preferred larger family size as compared to those from central province. This is so because in Western those who preferred 3-5 children were about 64 percent while 60 percent for Central. Only 6 percent of women in Central preferred 6 and above children while in Western it was 16 percent. This difference in fertility preference brings about differences in number of children ever born in these two regions. However place of residence, type of marriage and work status were found not to be key determinants of fertility in the two regions.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter presents the summary of the study findings, conclusions and recommendations for policy and further research.

#### 5.2 Summary

The main objective of the study was to determine factors that may have contributed to the differentials in children ever born between Central and Western provinces in Kenya. Specifically the study sought to examine the relationship between marital status, place of residence, wealth index, education level, age at first birth, age at first marriage, ideal number of children, current contraceptive use, work status, type of marriage and number of children ever born. Fertility level measured in terms of children ever born was the dependent variable. The data for the study was obtained from KDHS 2003. The study population consisted of women aged 15-49 drawn from Central and Western provinces; who had given numerical response to the question of total children ever born. The study was guided by John Bongaarts (1978) conceptual model.

Simple linear regression was used to establish the gross effect of each study variable on children ever born while multivariate analysis by fitting linear regression model established net effect of study variables on children ever born. The results revealed that marital status, wealth index, education level, age at first birth, age at first marriage, ideal number of children and contraceptive use by method are predictors of children ever born. However place of residence, type of marriage and work status were all found not to be significant predictors of number of children ever born. The results of multivariate analysis showed that age at first birth, age at first marriage, marital status, wealth index, ideal family size, education level, to some extent contraceptive use were all important determinants of children ever born in the two regions. However place of residence, type of marriage, and work status were not significantly related to children ever born.

### **5.3 Conclusions**

From the study findings, it is important to conclude that socio-economic, socio-cultural, and demographic factors are important determinants of children ever born in these two regions in Kenya. The study established that marital status, wealth index, education level, age at first birth, age at first marriage, ideal number of children and contraceptive use influence number of children ever born in these two regions.

Marriage is common in the two regions setting a positive effect on children ever born. Lower levels of education achievement, early and nearly universal marriages, lower levels of modern contraceptive use, higher preference of number of children ever born, young age at first marriage and birth explained why women in Western province have more children ever born compared to Central province. In Western province inconsistency results of contraceptive use according to Shanyisa and Ayiamba (2003) findings, explained that contraceptive was used by women who had had longest marriage duration and already had had large numbers of children hence used contraceptive purposely to terminate child bearing. However type of marriage, work status and place of residence had no significant effect on children ever born.

### **5.4 Recommendations**

This section discusses recommendations drawn from the study both for policy and further research. This are discussed in light of the study findings and conclusions.

#### **5.4.1 Implications for Policy**

From the study findings, secondary and above education was found to have the greatest effect on children ever born. The government should put more emphasis on Population, Development and Education policy that is aimed at increasing the time spent in school by women population in education especially secondary education and above especially in Western. Examining distribution of education, Western recorded a lower percent of 28 while Central recorded 42 percent of women who had secondary and above education. Therefore expansion of education opportunities would also decline high rates of early marriages and early age at first birth.

It is therefore recommended that as a way of reducing number of children ever born, access to education (especially secondary and above) for girls, more so those from rural and socially disadvantaged backgrounds, should be encouraged in both regions.

Because of differences in wealth status in the two regions, support to policies that aim at integration of population into the development process to foster rapid socio-economic development that result to wealth creation and stressing on education as well as equitable distribution of resources to improve standards of living which will trigger a further decline in number of children ever born in these regions should be encouraged since the two regions registered a relatively low percent of 24 for Central and 15 for Western for the high wealth index households.

Modern contraceptive use was low in both regions. Therefore the ongoing efforts to reposition family planning by the government should be supported by various Non-Governmental Organizations (NGOS), community campaigns involving local institutions and community resources like youth groups, Maendeleo ya Wanawake and members of parliament to ensure resources and services are available in order to encourage adoption of family planning practices. This is so because modern contraceptive use is still low in these regions at about 36 percent in Central and 19 percent in Western province.

#### **5.4.2 Recommendation for Further Research**

Qualitative studies should be carried in these regions in relation to number of children ever born to gain in depth understanding as to why difference in number of children ever born. Study on factors that influence young men's number of children preferred should be done and a comparison drawn with results of young women since our society is patriarchal and women's decision is over ruled by men hence ensuring concerted efforts by both men and women applied in reducing total number of children ever born.

Modern contraceptive use is still low especially in Western province at 19 percent and Central at 36 percent. Inferring to contraceptive prevalence rate in Kenya at 39 percent (in 2003 though at 46 according to KDHS 2008) is still low compared to some African countries such as South

Africa that has 56 percent and 54 percent for Zimbabwe; therefore further studies should be conducted in these regions to put in place strategies that will stimulate increase in contraceptive use to trigger decline in number of children ever born. Further information about low contraceptive use is with regional differences in unmet needs of contraceptive use. Central province has a lower percent of 11 compared to Western that has 32 percent. Therefore further studies should be undertaken to establish why the differences exist and be able to put in place appropriate programs to address it. Future studies to be carried out should focus on variations of children ever born using other sources of data like census data to understand more about number of children ever born in these two regions.

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