DETERMINANTS OF MODERN CONTRACEPTIVE USE IN CAMEROON FROM 1991 TO 2004

By

CONSOLER TENUG TEBOH

Presented to the Faculty of the Graduate School of

The University of Texas at Arlington in Partial Fulfillment

of the Requirements

for the Degree of

DOCTOR OF PHILOSOPHY

THE UNIVERSITY OF TEXAS AT ARLINGTON

December 2011

DEDICATION

This dissertation is dedicated to a few very special people in my life, my mother: Esther Acha Teboh; my beloved wife: Christina Teboh; and the kids: Sheila, Batuo, and Esther.

ACKNOWLEDGEMENTS

The pursuit of studies at the doctoral level requires persistence, dedication and perseverance. In spite of these tenets, the student's social capital in the form of guidance, mentorship and support cannot be overemphasized. Although it is humanely impossible to mention every individual who has financially, physically and emotionally supported me during the course of the program, I would like to acknowledge those who symbolically shaped my life and helped me in the completion of my academic work.

I would like to start by thanking my wife and children without whom I may not have been motivated to finish the program. They have endured the long absences that I took away from quality family time. I would also like to thank my mothers: Mrs. Sophie Teboh and Mrs. Esther Teboh; brothers: Ni Dan, Ni Gabby Ni Alex, John and Emmanuel; my sisters: Ma Eli, Ma Anna, Ma Mado and Ma Bri; my in-laws, Mrs. L. Baiye, Mrs. A. Baiye, Mr. J. Baiye the children, Ni Mike, Manyi Yellow; and my aunt, Ma Grace Ndam, and all my nieces and nephews for their constant support and encouragement throughout the years.

Adequate completion of a dissertation requires direction and support from one's guiding committee. I was especially lucky to have had an uncommonly supportive and understanding committee, who constantly nurtured me throughout the program. I thank my dissertation chair Dr. Vijayan Pillai, who has earned the right to be called my academic father. His dedication, flexibility and support are unquantifiable and far exceeded extraordinary expectations. It is an understatement to say he is the best mentor I could ever ask for. Special thanks also go to rest of my committee members who together worked diligently to help me throughout the program: Dr. Maria

Scannapieco, Dr. Doreen Elliott, Dr. Randy Basham, and Dr. Rashmi Gupta. I would also extend a hand of gratitude to Dr. Emily Spence-Almaguer, Dr. Diane Mitschke, Dr. Danis, Dr. Alex Osborne, Dr. Hegar, Dr. Black, Dr. Jordan, Dr. Moon, Dr. Woody, Dr. Lehmann, Dr. Watson, Dr. Schoech, and Dr. Hernandez, Dr. G. Teboh. Dr. B. Teboh. Dr. E. Mbah, who in one way or another taught me something. I sincerely thank Ms. Nancy Ashenhart, John Dillard, and Rita Hay and other non-academic staff for their constant support throughout the program. I especially thank Maya Porter, for a fantastic editing job.

I am also thankful to friends and colleagues of the PhD Program especially Dr. Diana Opollo and Fangshun Wei have earned their place as my academic sisters; I deeply value their friendship. Ruby Bouie, Sadia Saeed, Dr. Dheeshana Sugandhi, Dr. Sachi Ando, Yasoda Sharma, Bonita Sharma, Dr. Nairtuti Jani, and Mashooq Salehin, Benjamin Grant, Kingsley Chigbu all made my student years worthwhile and helped me without reservations.

Beyond academics, are always friends, mentors and groups that provide an enabling support system; I sincerely thank everyone who, helped, advised and encouraged me to keep on but whose name I cannot be remembered at this time. Last and definitely not least, I would like to give special thanks to my roommate and wife Mrs. Christie Teboh, without whose immeasurable support this work would not have been a success story. Put differently, this dissertation is an apology for my extramarital romance with books and the computer, at the expense of quality family life. Above all else, to God be the Glory!

November 18, 2011

ABSTRACT

DETERMINANTS OF MODERN CONTRACEPTIVE USE

IN CAMEROON FROM 1991 TO 2004

Consoler Tenug Teboh, PhD

The University of Texas at Arlington, 2010

Supervising Professor: Dr. Vijayan K. Pillai

The purpose of this research is to examine the determinants of contraceptive use among women ages 15–49 of childbearing age (WCA) and to describe the compositional and processual changes that have taken place in Cameroon between 1991 and 2004. The study constituted a sample size of 3,871 and 10,656 15 to 49 year old women of childbearing from 1991 and 2004 Cameroon Demographic and Health Survey datasets respectively. Regression results confirmed that there was considerable support for the hypotheses in 1991 and 2004 except for age at first marriage which was significant but contradictory to the direction proposed in the hypothesis. Compositional changes were found to have occurred between 1991 and 2004 with the following variables: audio or visual media, income, married, number of children, older, other forms, primary, Regions 1 to 4, residence, and secondary education, while Christian, income, married, other forms of relationships, old, primary, and residence showed processual changes during the same period. Only levels of education showed compositional as well as effect changes when the variables were decomposed. The study confirmed that social, cultural, political, and legal determinants affect modern contraceptive use. The study also confirmed that modernization & human capital have influenced modern contraceptive use in Cameroon from 1991 to 2004. Unlike age at first marriage, income, place of

residence, and education, supported the hypotheses of the study. Lastly, the study confirmed that there have been compositional and processual changes in Cameroon from 1991 to 2004.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

FIGURE PAGE

LIST OF TABLES

CHAPTER 1

INTRODUCTION

Practitioners and Scholars alike have recently started paying increasing attention to the role that modern contraceptive use plays in population reduction. Issues related to childbearing and birth control in the African continent, especially the sub-Saharan region, are of policy interest because of unusual increases in population growth that this area has experienced in the past decade (USAID, 2009). For instance, according to Olukoya (2004), 68% of the women who live in Africa are women of childbearing age, referred to as WCA. The past three decades saw a 200% increase in population in sub-Saharan Africa, where the growth rate is at 2.4% to 2.5% per year (Population Council, 2005).

The population in the sub-Saharan region has increased dramatically in spite of the large number of deaths due to the Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) pandemic (United Nations Population Fund [UNPFA], 2003) and casualties and fatalities resulting from armed conflicts (Hari, 2008). Cohen (1998) suggests that sub-Sahara is among the major regions of the developing world that have not yet undergone a general decline in fertility. Izugbara and Ezeh (2010) contend that high fertility rates among WCA in northern Nigeria, for example, have been attributed to the deliberate acquisition of many children to discourage divorce and the marriage of additional spouses. As a consequence, the question of how fertility is

expected to decline in the presence of family planning programs that promote modern contraceptive measures is of theoretical as well as policy importance.

The promotion of family planning to reduce unwanted pregnancies and illegal abortions is key to achieving the UN Millennium Development Goals (Belden & Russonello, 1998; Cleland et al., 2006; United States Agency for International Development [USAID], 2009; WHO, 2008). One fourth of the expected 20 million unsafe abortions and 70,000 related deaths occur among WCA and could be prevented by use of effective contraception (Robinson, n.d.; UNFPA, 2004a). In sub-Saharan Africa, 14 million WCA get pregnant each year (Hubacher et al., 2008; Robinson, n.d.). This trend of unintended pregnancies is also witnessed in Cameroon where in a review of 236 women aged 15 to 45, Mbuagbaw et al. (2007) found that 44.5% of these women did not opt to become pregnant while 49.2% had neither heard of family planning programs nor used any type of contraception.

Like most of the countries in the region, Cameroon also has some reproductive health challenges. Prior to the mid-70s, "Cameroon was pro-life and established laws such as (Law no. 29/69 of 20.5.69) prohibiting the public sale of contraceptives" (Ako et al., 2008, p. 3). Legislation encouraged childbearing by providing family and birth allowances and financially supplementing families that had four or more under-age children (Ako et al., 2008). By the mid-70s, policy-makers began to reflect on the unfavorable effects of uncontrolled population growth on the economy, social life, employment, urbanization, health care, and the general livelihood of the citizenry (www.gfmer.ch). As a follow up, the government in 1981 initiated a couples' responsible parenthood awareness program to control births (Ako et al., 2008). As a result, the

government set up a national committee that legalized the prescription of modern contraceptives. In Yaoundé, the capital city of the nation, there was a child-spacing clinic that had been in operation since 1977 in the University Teaching Hospital's (CHU) Maternity Unit (Ako et al., 2008).

The population of Cameroon is currently 19.3 million with an estimated total fertility rate of 4.33 children per woman. According to the CIA World Fact Book (2010), the country ranks 39th in the world in terms of total fertility rates. The country also has a budding population in reproductive age groups (U.S. Census Bureau International Data Base [USCBIDB], 2010), giving it the potential for an increase in population growth. According to the Cameroon Demographic and Health Survey (CDHS), the past 15 years have seen a 0.9% decline in the fertility rate of Cameroonians (5.2% in 1995 to 4.3% in 2010) (CDHS, 2004; USCBIDB, 2010). Despite this decline, the country is still among the high-fertility nations of developing countries (Leke, 1991; Tita et al., 2005). This increase in fertility rates may be rooted in the pre-colonial culture that encouraged different ethnic groups to reproduce as much as possible for fear of future extinction (Ako et al., 2008; Leke, 1991).

According to a study by Donaldson and Tsui (1990), nearly 30% of married couples in developing countries use traditional contraceptive methods such as withdrawal and "counting." For example, in most rural areas of Ghana and Nigeria where traditional values change slowly, there is a positive relationship between traditional methods of contraceptive use and women's educational levels (Bertrand et al, 1993; DaVanzo et al., 1989). Birth control has become more common in less developed countries, and this growth has been in the form of modern methods of contraceptive use (Gille, 1985). The

change in favor of the modern forms of contraception is slow in most countries in the sub-Saharan region. Monjok et al. (2010) found that in some parts of Nigeria that whereas awareness of modern contraceptive use among WCA is 69%, actual use ranges only between 11% and 13%. According to (Robinson, n.d.; Trussel & Kost, 1987) modern contraceptive methods are more effective in preventing pregnancies. Johnson-Hanks (2003) argue that since most traditional contraceptive methods like withdrawal and "counting" are behavioral they remain unpredictable and are considered non-contraceptive methods. Although the use of modern methods has taken precedence in recent years, users in many developing countries have instead shifted toward greater use of traditional methods, such as rhythm, withdrawal, abstinence, and foam (Leke, 1989; Palmore & Bulatao, 1989; Robinson, n.d.).

Only a small proportion of the sexually active WCA in developing countries use modern contraceptives such as pills and condoms (Monjok et al., 2010). Although there is considerable variation between countries, actual use of contraceptives is much lower than in developed countries (Bearinger et al., 2007; Monjok et al., 2010). Case in point: 69% of WCA living in the United Kingdom used some form of contraception during their most recent sex, as compared to 12% in Mali, and in the US, 54% of females reported condom use at most recent sex, compared to 21% in Tanzania (Bearinger et al., 2007). Overall, an estimated 37% sexually active and unmarried, women between 15 and 24 years living in sub-Saharan Africa use contraception but only 8% use non-barrier methods (Cleland et al., 2006). These certainly are low figures for a continent with a growing population problem.

In Cameroon, only 16% of women of reproductive age use modern contraceptives. The rate of detecting potential pregnancy risks and making timely and effective referrals needs to be drastically increased (Ako et al., 2008). Many families in Cameroon are large despite limited resources. The reason is that historically, families delivered many children for fear that some of them would die (Ako et al., 2008; Mbuagbaw et al., 2007), and in such cases families would still be left with some living children (Ako et al., 2008; Leke, 1989). Ako et al. (2008) suggest that a re-evaluation of contraceptive use concerns in Cameroon is necessary since children are highly valued yet pregnancy and delivery are considered to be solely women's issues.

In the past two decades there has been an increased awareness of family planning owing to the support from international organizations in an effort to reduce population growth in sub-Saharan Africa (Ako et al., 2008; Babalola et al., 2001; Belden & Russonello, 1998; Pillai & Teboh, 2010; Tita et al., 2005). In 1991, the amount of foreign aid that went into Cameroon's health care budget was $ 2,185,000, and 5 years later, that sum had risen to $12,797,000 (Ako et al., 2008) amounting to a staggering 486 % increase. Nearly 66% of the outlay for health care in Cameroon in 1996 came from foreign donors, although family planning programs received only about 8% of the total amount (Ako et al., 2008). Since only about 8% of that money goes to promote issues related to family planning programs, levels of contraceptive use tend to be low.

Contraceptive use has shown substantial growth in recent years, yet actual use is not up to par with knowledge of contraceptive methods (Oye-Adeniran et al., 2006; Monjok et al., 2010). In spite of family planning programs (Tita et al., 2005) and adequate foreign aid (Ako et al., 2008; Belden & Russonello, 1998), contraceptive use

levels in Cameroon have lagged behind other countries. In 1998, for example, 81% of WCA in Cameroon were aware of the existence of contraceptive methods; this number increased by 9% in just a stretch of 6 years (Intitute Natinonale des Statistiques [INS], 2005; Libitie, 2004). Interestingly, findings of existing contraceptive use among WCA showed that only 16% in 1991, 19% in 1998, and 26% in 2004 used either traditional or modern contraceptives (INS, 2005). Within the same period, modern contraceptive use was 4% in 1991, 7% in 1998, and 13% in 2004 (INS, 2005).

1.1. Problem Statement and Objectives

Although there have been many studies on contraceptive use in sub-Saharan Africa, few of them have focused on its social determinants in Cameroon (Pillai & Teboh, 2010). Studies on contraceptive use in Cameroon suffer from several drawbacks. First, existing studies focus on infant and maternal mortality, the gynecology of childbearing and less contraceptive use in Cameroon (Ako et al., 2008; Leke, 1992; Tita et al., 2005). Second, in spite of the support of foreign donors and governmental and nongovernmental efforts to promote contraceptive use, relatively little is known about its changes over time (Ako et al., 2008; Pillai & Teboh, 2010). Third, previous studies on contraceptive use have been primarily descriptive (Soh, 2007) and have not adequately assessed or estimated the separate influences of various social and economic variables that influence contraceptive use. Finally, very few of the existing studies are adequately grounded in existing theories that contribute to a framework of contraceptive behavior in Cameroon (Pillai & Teboh, 2010). Such a study calls for the use of multiple perspectives.

In order to address some of the lacunae of previous research on modern contraceptive use in Cameroon, this study draws on recent empirical data and attempts to address several of these drawbacks. The primary objective of the study is to examine the changes in contraceptive use among women of childbearing age (WCA) ages 15 to 49, over two periods, the years 1991 and 2004. In this regard, the dissertation focuses on the factors that influence contraceptive use, as well as the change in contraception use over time. Since a change in the practice of contraception is likely to be an essential component of a range of social changes over time, perspectives on social change may provide valuable theoretical propositions to theoretically locate the existing influences on contraceptive use, and how such influences have affected it diachronically. Additionally, this study is unique in that it compares data from two cohorts so as to describe the factors as well as the compositional and processual changes in modern contraceptive use over time.

1.2. Significance of the Study

The study will add to the existing literature on contraceptive use in Cameroon. It addresses the subject from three theoretical perspectives: modernization (Macunovich, 2000; McGuigan 2003); human capital (Becker, 1964), and social change (Ryder, 1965, 1978; Schuster, 1979). Unlike other studies that have examined contraception during a specific time period, this is a longitudinal study that describes changes between 1991 and 2004. Since few studies on contraception in Cameroon are grounded in theory, use of multiple theories in this research not only gives it an added empirical advantage, but also reduces the limitations that usually arise when only one theory is used. Such a strategy

will allow the full range of challenges to be explored and thus lead to better policy outcomes.

Although there have been several cross-sectional studies on contraceptive use in sub-Saharan Africa, such studies on Cameroon are limited. Ako et al. (2008), Leke (1989, 1991), and Tita et al. (2005) are all medical doctors who have conducted research on gynecological as well as sexual health concerns in general, but have not focused specifically on contraceptive use as did Pillai and Teboh (2010). The theoretical contexts of modernization, human capital, and social change are used to describe the change in modern contraceptive use over the past decade in Cameroon.

CHAPTER 2

LITERATURE REVIEW

Birth control usually involves one or more actions, devices, sexual practices, or medications used to deliberately inhibit the odds of getting pregnant or giving birth (Nordqvist, 2009). The three main methods of birth control include contraception (the prevention of fertilization of the ovum by sperm cells), emergency contraception (preventing the fertilized egg from implantation), chemical and surgical termination of an embryo (Medical Dictionary, 2010; Nordqvist, 2009). Contraception consists of reproductive behavior, forms of sexual relationships, family dynamics, biological abilities or the lack thereof such as ferility and infertility, and the health of mothers, fathers, children, and families (Trovato & Grindstaff, 1994). It also encompasses issues within governmental and cultural as well as legal frameworks (Libite, 2004).

According to some scholars, reproductive technologies and practices are considered very important in determining which type of contraception to use (Halpern, et al., 2008; Handwerker, 1983). While it is important to know what contraception means, this review focuses on the determinants of contraceptive use among women of childbearing age in sub-Saharan Africa with particular reference to Cameroon. This study has broken down the determinants of contraceptive modern contraceptive use into their social, cultural, political, and legal components. Prior to the review, the methods used in collecting the literature are explained.

2.1. Literature Collection Methods

The study is based on computerized as well as manual searches of the Social Sciences Abstracts, JSTOR, Medline, Psych Info, Dissertation Abstracts, textbooks, conference presentations, publications of national and international organizations, and the popular media. Some definitional materials were also retrieved from online lexicons with the exception of all Wiki sources. On the Social Sciences Abstracts, I typed in the following key words: contraceptive use, contraception, reproduction, and reproductive health. This search pulled up 402 peer-reviewed sources. When the search was modified to "contraception in Africa" 111 results came up. Sixty-one sources relating to modern contraceptive use in Asia, Africa, and Latin America were selected. After a brief review of the 61 sources, 26 were maintained for an in-depth review.

Multiple searches were also made on JSTOR. The first entry was "modern contraception and reproduction in Africa." Then I entered "theories of reproduction," and then "theories of political economy," "modernization theories," "social change theories," and "human capital theories." I also put in social factors that influence reproduction, cultural factors that affect reproduction, political factors and legal factors. Out of the more than 1,000 sources that came up, I browsed through 310 and picked 89 for the study. As for Medline, I entered "theories of reproduction" and retrieved six studies; I then browsed through all of them and found two to be acceptable for this study. The search on "reproduction in Africa" from PsychInfo yielded only seven sources, four of which were included in the study. I also retrieved two sources from Dissertation Abstracts on political economy theory and reproductive health. The textbooks used in the

study were subject matter–specific and covered modern contraception, reproduction, theories of modernization, human capital, social change, and other relevant issues needed for the study.

Most of the conference papers came from international as well as intergovernmental organizations like the UNFPA, the United Nations High Commission for Refugees (UNHCR), World Health Organization (WHO), and reports from the United Nations, EDSC III, and INS. Other information and materials on Cameroon came from popular but reliable newspaper sources. On a whole, the sources consulted and used in this literature review were limited to a 10-year period. In the event that materials older than 10 years were use, it is either because they contain very important information on previously used theories and concepts or bring in a perspective or perception that explains something that later sources could not. I tabulated all the literature that used the scientific method into the following categories: author(s), research question and/or hypothesis, sample size, theory, methodology, and findings included. The table has been included in Appendix A.

2.2. Social Determinants

The social milieu within which a person lives more often than not shapes the way that person leads his/her life. The literature reviewed identified several social factors that influence the contraceptive use in Africa and Cameroon in particular. These factors or recurrent themes include but are not limited to population growth, adolescent sexuality, quality of life and socioeconomic status, place of residence, family dynamics, and family

planning, feminization of reproduction, lack or shortages of social services, education, and reproductive rights.

2.2.1. Population Growth

Several scholars have written on the growth in population in Africa. Dickson-Tetteh et al. (2001), McDevitt et al. (1996), and Rivers and Aggleton (1998) posit that there is an unprecedented increase in the number of WCA all over the world. It is also estimated that of the 1.2 billion WCA living in the world today, 68% of them are found in developing countries (Olukoya, 2004). Although the study does not specify what proportion of the 68% lives in Africa, it is obvious that the majority resides in sub-Saharan Africa (Olukoya, 2004). McDevitt et al. (1996) narrow down the issue of population growth in Africa to the high fertility rate of its WCA and give a threefold explanation: the size of the WCA cohort, regional WCA birth rates, and the adverse effects of sexual behavior of WCA. In spite of this observation, other scholars and organizations maintain that with certain factors like education, and/or socioeconomic status (Pillai & Wang, 1999), the physical location be it (urban or rural) where the WCA live (Randall & LeGrand, 2003) or being found within a low fertility belt (Leke, 1991), and the cost of bringing up children (Eloundou-Eyegue, 2004), there is a gradual decline in fertility on the continent in general. Larson (1995) and USCBIDB (2010) identified this pattern of fertility decline in both Nigeria and Cameroon but noted that much still has to be done to meet the UN Millennium Goals.

2.2.2. Sexuality

Agyei et al. (2000), DISH (2002), Rivers and Aggleton (1998), Shittu et al. (2007), and Tenkorang et al. (2009) recognize that WCA start sexual activity early (15.5 years) because of unequal life chances, lack of sex education within the family and community, as well as patterned vulnerability (sexual exploitation) that affects modern contraceptive use among WCA in sub-Saharan Africa. In Cameroon, the average age for boys to commence sexual intercourse is 15.6 while it is 15.8 for girls, and the reason given for this early start is mostly curiosity (Rwenge, 2000). While Tenkorang et al. (2009) determined that socioeconomic and familial factors equally influence timing of sexual debut for both females and males, Speizer and White (2008) found that the desire to have children is at odds with the use of modern contraceptives and hikes sexual activity among women.

One study confirmed that WCA whose mothers were teenagers at first birth were more likely to have had sex by age 16 than those whose mothers had not been teenage mothers (Eshbaugh, 2007). Akinwande and Breiger (2006), Amazigo et at, (1997), and Moronkola and Fakeye (2007) established that more than 70.0% of young women in Nigeria knew about reproductive issues and that contraception was popular with this group. Of the 53% who were already sexually active and had boyfriends and girlfriends, peer pressure and having fun were the most influential factors that led to premarital sex (Akinwande & Breiger, 2006). Another study indicated that 40.3% of respondents in select Nigerian universities had had self-medicated abortions (Moronkola & Fakeye, 2007). Both studies suggested that sex education programs would keep down the spread

of HIV/AIDS and STIs (Akinwande & Breiger, 2006; Moronkola & Fakeye, 2007). Sallar (2008) recognized that in Ghana, the age of sexual debut was higher among in-school than out-of-school women because there was more sexual activity as well as lower condom use among out-of-school WCA.

Khumba, Pillai, and Pillai (1998) suggested that postponing sexual intercourse would evidently increase the quality of life among WCA in Cameroon. In Cameroon, 51.5% of women aged 15–19 live with just a single parent or no parent at all (CDHS, 2004; UNFPA, 2004a). The finding establishes that premarital sex among women in single-parent families is higher than in two-parent families (Leke, 1991) even though these attitudes do vary across ethnic groups. According to other findings (Labor, 2000; Libite, 2004; UN, 2002), while some Islamic groups found especially in the northern region of the country do not condone premarital sex, it is quite common to see early marriages.

2.2.3. Quality Of Life and Socioeconomic Status

The quality of life and socioeconomic status of a person can be crucial in deciding to use contraceptives. According to Dickson-Tetteh et al. (2001), if the quality of life for WCA in South Africa is to be enhanced, their reproductive health problems need to be tackled. This observation resonates with Cameroon where low quality of life and socioeconomic status affect modern contraceptive use among WCA (Kongnyuy et al., 2008). Studies of how socioeconomic factors influence contraceptive use are common. Wealthier girls in Burkina Faso, Ghana, Malawi (Madise et al., 2007), and Cameroon (Kongnyuy et al, 2008) started sexual intercourse later than those in a lower

socioeconomic bracket. Interestingly, this was not the case when Madise et al. (2007) conducted the same study in Uganda. In Cameroon, Kongnyuy et al. (2008) confirmed that there are a lot of geographical dissimilarities in outcomes of modern contraceptive use and pregnancy because of the socioeconomic differences between regions. In the same context, Khumba, Pillai, and Pillai (1998) also identified an association between sexual debut and socioeconomic status among young people in Cameroon, even though their findings were not statistically significant.

Poverty is undoubtedly a factor that shapes modern contraceptive use among WCA in the continent of Africa (Chimere-Dan, 1993; Delivery of Improved Services for Health [DISH], 2002). Given that poverty has been feminized globally and affects a large majority of women, the method of socialization through gift giving has taken on a new dimension (Kaufman & Stavrou, 2004). Women are commonly influenced and increasingly lured to exchange sex for gifts from men who are usually older than they are (Labor, 2000; Madise et al., 2007). Poverty is not just among the women; apparently it affects entire families and communities. Clements et al. (2004) suggest with evidence from their study that women who are poor are least likely to use modern contraceptive methods because they direct their meager earnings toward the upkeep of the family. It is no surprise therefore that poverty in families and communities has led to young women becoming prostitutes in Addis Ababa, Ethiopia, for instance, where economic hardship and living in rural areas reduces modern contraceptive use (Labor, 2000). Even though Pettifor et al. (2000) conclude that lack of awareness causes a rise in the sex worker industry in Johannesburg, the population is increasing because of economic hardships. In the Central African Republic, Khlat et al. (2006) learned that poor living conditions, poor

infrastructure, and most especially poor communities, push WCA into unprotected sex that leads to pregnancy, HIV/AIDS, and STIs. As Rahman and Pine (1995) state, births below age 14, which are rampant in other parts of Africa like northern Nigeria and Malawi, have also been linked to poverty. In Cameroon, Eloundou-Enyegue (2004) and Mosima (2007) also found that WCA engage in unprotected sex because of poverty and economic hardship.

2.2.4. Place of Residence

The place of residence can be important in the lives of WCA; for instance, Kongnyuy et al. (2008) agree that geographical differences can affect contraceptive outcomes. Benefo (2005) determines that community characteristics such as heterogeneity and urbanization increase the likelihood of contraceptive use. This is also the case in Cameroon and Nigeria where increases in the use of contraceptives have been noticed in urban areas (Calves, 1999; Libitie, 2004; Rwenge, 2004). Traditional methods of contraception like birth spacing and douching are usually found in rural areas (Kaye, et al., 2009b; Klaus, 1979), while in the urban areas where the cost of raising children is high (Benefo, 2005), more modern forms of contraceptives are in use (Benefo, 2005; Kaye, et al., 2009b; Klaus, 1979). Leke (2007) explains that in Cameroon 90% of the time, natural child-spacing occurs due to sexual abstinence practiced during extended breast-feeding periods. Kongnyuy et al. (2008) determined distinctions in outcomes of contraceptive use and pregnancies not only because of socioeconomic differences but also because of the geographic dissimilarities between the various regions. The CDHS

(2004) also confirmed that rural dwellers in Cameroon were less likely to be exposed to modern contraceptives.

2.2.5. Family Dynamics

Family dynamics in this chapter encompasses the family unit: parents or the lack of parents and the interaction between parent(s) and the child(ren). Parents' relationship with their children is very vital in the lives of WCA in relation to their sexual behavior; this is especially so for males (Kaye et al., 2009a). Parental communication about reproductive matters with young adults influences people's sexual behavior (Phetla et al., 2008). The importance of fathers' data and the significant role that they play in fertility research and reproductive rights cannot be overestimated (Moore et al., 2009). Eshbaugh's (2008) study has shown that children of adolescent mothers are more likely to commence sexual activity earlier than children of older mothers.

Family dynamics have also been seen to affect the social environment of WCA. In a study based in three communities in Lesotho, South Africa, Mturi (2003) discovered that while parents are aware that young men and women engage in sexual relationships, they were reluctant to talk with these young men and women about sexuality. The study concluded that young people whose parents spoke with them about modern contraception were less likely to indulge in sexual activity, and if they did, they used condoms 89% of the time. Meekers and Klein (2002) identified almost the same pattern in Cameroon where parental support increased condom use. Other studies have also demonstrated that family relations have stronger emotional attachments than service programs (Aka-Dago-Akribi et al., 1999; Sabean, 1983). Pillai and Teboh (2010) posit that increased spousal

interaction enhances modern contraceptive use among WCA in Cameroon. Since social issues like family planning agencies in themselves are not meeting their goals, emotional and relational factors are more important in making the best use of these services (Aka-Dago-Akribi et al., 1999; Sabean, 1983).

2.2.6. Family Planning

Family planning is another recurring topic in the reviewed literature. In his study of couples' issues in Ghana, Kenya, Nigeria, and Senegal, Becker (1996) suggests that couples who work together are more forthcoming with issues like sexual behavior, STD/HIV/AIDS services, family planning, abortion-related services, pregnancy, childbearing and postpartum care, breastfeeding and maternal and infant nutrition, and infertility services. According to Madise et al. (2007), there is evidence that WCA from poor families are vulnerable to infections because they debuted sexual intercourse earlier, did not use condoms and other contraceptives. Isiugo-Abanihe (1994) suggests that factors that affect family size in Nigeria are men's education, monogamy, intention not to rely on children for old-age support, age at marriage, and inter-spousal communication. Rosen (2004) found that people who are more exposed to partner violence are less likely to use modern contraceptives and would get pregnant more often than those whose partners are not violent. Such unfortunate family or friendship bonds consequently lead to decreased use of family planning services (Stephenson et al., 2008).

Wang and Pillai (2001) determined that family planning has no statistical significant effect on women's reproductive rights even though family planning can help reduce population growth. This position is shared with feminists like Agadjanian (2001)

and El Dawla (2004), who concur that men's interaction on fertility and family planning themes is greatly hindered by their perception that fertility-related matters are inappropriate conversation subjects for men to discuss, especially in men's circles. This is another indication that reflects a stigma of discussing sex even among married men and women. In Mozambique, Agadjanian (2002) argues that gender barriers in peer communication affect individuals' perceptions of reproductive and contraceptive matters. In spite of all these barriers, Rutenberg et al. (2000) maintain that family planning programs can potentially reduce perinatal and heterosexual transmission of diseases like HIV/AIDS and STDs, improve the lives of couples that take family planning strategies seriously, and that it influences modern contraceptive decision-making in the long run.

According to Einterz (1994), the most disturbing factor hindering family planning in parts of Cameroon is ignorance. Since illiteracy rates are as high as 90% in some regions of the country, WCA in these areas are still “ignorant, submissive and bound by superstition while girls grow to be women, and know nothing about the biology of their own bodies or the world around them” (Einterz, 1994, pp. 379–380). Although Babalola et al. (2001) found that information on modern contraceptive use and family planning is on the rise, Einterz (1994) states that WCA in Kolofata, Mora, in the extreme north region of Cameroon, do not recognize “overpopulation as a problem or a threat” (p. 378).

2.2.7. Feminization of Reproduction

Feminization of reproduction has been a concern of some scholars, especially African feminists. Unfortunately, as the body of literature on WCA is growing, little is known about male reproductive health and its probable connection to the general well-

being of couples and families. Maine et al. (1995) and Moodley (1995) typically write on reproduction without making mention of men; to them, the basis for reproductive health is purely a prerogative for women. Feldman and Maposhere (2003) realized a certain machismo among Zimbabwe men's refusal to use condoms in spite of the condition of their partners. In a Cameroon study of 1,284 young people aged 14–24 resident in Douala and Yaoundé, however, the odds of young men using a condom reduced as their belief that condom use makes sex less enjoyable (Coren, 2003). Other scholars, Greene and Biddlecom, (2000), Varga, (2003), and Du Lou (1999), advocate for the need to include men in the reproductive health issues. Varga (2001) is changing the landscape as she identifies sexuality as key in the lives of boys and men in sub-Saharan Africa. It is only by including men in reproductive issues, Varga (2001) argues, that the real change in contraceptive attitudes called for at the 1995 Cairo conference will begin to take place.

2.2.8. Lack of Social Services

Shortages of social services are crucially important in modern contraceptive use discourses. These shortages cause severe impediments in the provision of better services. Most social services programs in Africa are not only poorly implemented but are downright bound to fail, although Mantell et al. (2006) relate the failure of programs in South Africa to the fact that the majority of sexually active WCA do not desire to come for services. On one hand, Mantell et al. (2006) as well as Kauffman and Stavrou (2004) maintain that politically conservative policies provide no alternative solutions and put nothing in place to help or deter WCA from making decisions to have sex with older, rich men. The study thus suggests gendered social services that make it easy for young

women to negotiate safer sex and avoid sexual coercion, violence, and increased HIV/AIDS and STIs infections that are prevalent within this group (Mantell et al., 2006). Askew and Berer (2003) and Dickson-Tetteh et al. (2001) argue that sexual and modern contraceptive use programs can make an important contributions to HIV/AIDS/STIs prevention and treatment, especially when such programs integrate, develop, and offer large services with appropriate outreach to vulnerable populations.

With continuous economic crises, failure of structural adjustment plans, and misappropriation of public funds (Schneider, 2006), social services systems in sub-Saharan Africa are bound to be in shambles (Molla et al., 2009). WCA, especially those who are poor, find it difficult to access and acquire the social services needed to enhance their use of modern contraceptives (Myer et al., 2005). Askew and Berer (2003) therefore suggest an integration of programs like those that provide HIV/AIDS services with those that cover contraceptive services. This in a sense will increase the contraceptive choices that clients may have (Wilcher & Cates, 2002). An initiative like that will vastly advance the prevention of mother-to-child transmissions (MTCTs), increase reproductive rights and choices (Wang & Pillai, 2001) and increase modern contraceptive use among marginalized women (Van Ngoh, 2009). In Cameroon, for example, the Chantal Biya (First Lady) Foundation assists with many programs that help with women's reproduction and development (B.Y., 2008; Olatunji, 2008).

2.2.9. Education

Education is another social issue that influences modern contraceptive use. In South Africa, Kauffman et al. (2004) conducted a study and learned that the level of

education of a family shapes the time at which WCA engage in sexual activity. The same study posits that greater participation in community sports increased risk-taking behaviors among boys but decreased it among girls (Kauffman et al., 2004). The time invested in education can affect people differently. Pillai and Wang (1999) and Derose and Kravdal (2007) hold firm to their findings that the fertility of educated women is delayed as their aspirations for a better life come into play. Interestingly, a study conducted in Cameroon embraces a contrary view. Johnson-Hanks (2003), Eloundou-Enyegue and Williams (2006), and Leke (1991) determined that even when the Cameroonian woman is well educated, it does not compromise her desire to bear children because the demands for childbearing outweigh the academic achievements.

Sex education can be said to have its advantages and disadvantages. Sabia (2006) articulates that no single approach about sex education is entirely correct. Her findings indicate that “while sex education is associated with adverse health outcomes, there is little evidence of a causal link after controlling for unobserved heterogeneity via fixed effects and instrumental variables” (Sabia, 2006, p. 94). The findings suggest that every ideological debate over sex education is correct and mistaken (Sabia, 2006). Opponents are correct in "that sex education is associated with negative health outcomes, but are incorrect in interpreting this relationship causally" (Sabia, 2006, p. 96). "Proponents are generally correct in claiming that “sex education does not encourage risky sexual activity, but are incorrect in asserting that investments in typical school-based sex education programs produce measurable health benefits” (Sabia, 2006, p. 96). A Ugandan research determined that modern contraceptive use especially the condom was significantly higher among in-school than out-of-school WCA (Ndyanabangi et al, 2004). Indeed, Meekers

and Klein (2002) found in Cameroon that when parental support for children's education was high, condom use among WCA went up.

In a South African study, Dickson-Tetteh et al. (2001) revealed that only 44% of 796 girls talked about contraception with their partners and 36% actually used some method of contraception during their first sexual encounter. Sabia (2006) proposed that "if education were to begin before puberty, at age 9–10 and in primary school, then many more women would be in a better position to make informed choices about their sexual activities by the time they begin to engage in sex or reach menarche" (p. 44). In spite of the educational factor, when there is a propensity to accept childbearing at an early age and sexual activities are not frowned upon (Rutenberg et al., 2000), WCA may place themselves not only at a high risk of HIV infections but tend not to use contraceptives. Again, as advanced by Johnson-Hanks (2003), Eloundou-Enyegue and Williams (2006), and Leke (1992), the pressure to have children sometimes outweighs the need to use modern contraceptives.

Most WCA in Africa have little or no sex education from institutions or their parents. Speizer et al. (2001) found that parents in the capital city of Togo and many other sub-Saharan countries are not ready to talk to their children about sex education. Even though Mosima (2007) reported recent government efforts in Cameroon to start teaching sex education in schools, the subject is still taboo. The lack of sex education is the leading cause of premarital sex and school dropouts in Cameroon (UNPFA, 2004a). A good example of how education makes positive changes is found in a Nigerian study that gave basic training in business skills; when Odutolu et al. (2003) incorporated

reproduction in the curriculum, findings from the study highlighted that female education and access to economic resources directly contribute to higher levels of modern contraceptive use.

2.2.10. Reproductive Rights

Reproductive rights and choices are still not guaranteed among women in Africa (Bruyn, 2004; El Dawla, 2004); even though the UNPFA (2004b) asserts that most countries in sub-Saharan Africa adopted or upgraded the modalities agreed upon at the Cairo International Conference on Population and Development (ICPD) in 1994. There are several reasons for the failure of ICPD, but El Dawla (2004) and Crossette (2005) blame it on misinterpretation and laxity by various governments in implementing the conference policies. Implementation of policies has always been a problem for many African governments, leading to inequalities in society. Other levels of inequalities found in the literature were gender inequality (Eloundou-Enyegue, 2004), men making contraceptive laws on behalf of women (Braam & Hessini, 2003), reproductive rights for refugees (Austin et al., 2008), and the effects of power in sexual relationships (Blanc, 2001).

Several African societies still practice polygamous marriages. Pillai and Teboh (2010) posit that women in polygamous unions are more likely to use modern contraceptives although their reproductive rights are usually not guaranteed. Irrespective of the marital regime, women still face difficulties as their husbands or partners make almost all the decisions, including reproductive ones (Dodoo, 1999; Eloundou-Enyegue, 2004). In a study that compares women's reproductive rights in polygamous and

monogamous set-ups in Kenya and Ghana, Dodoo (1999) found that females in both systems still have no say about their reproductive choices. The lack of these rights and choices has led to less contraceptive use and thus, rampant illegal abortions among women below the age of 25. In South Africa, Nigeria, and Burkina Faso, Varga (2002), Otoide et al. (2001), Oye-Adeniran et al. (2004), and Iqbal and Ahman (2004) also identified that men were more likely to make decisions regarding modern contraceptive use. Decisions on the use of modern contraceptives in Cameroon may not be very different from those found in South Africa, Nigeria, and Burkina Faso.

Cooper et al. (2005) support the need for medical abortion to reduce illegal abortions that are killing young Africans in the thousands. While Hord and Wolf (2004) suggest that abortion should be free and easily accessible, Myer et al. (2002), and Brady (2003) call for affordable dual and triple methods of modern contraceptive interventions (pill, condom, and hormonal injections) to help reduce the number of deaths by illegal abortions. In Nigeria, the fear that modern contraceptives cause infertility pushed WCA into induced abortions rather than use of contraception (Moronkola & Fakeye, 2007; Otoide et al, 2001). Varkey et al. (2000) also suggested that women were less likely to commit illegal abortions if there was greater enforcement of their rights to choose. The study further revealed that men did not tolerate contraceptive use among married women; much worse was the attitude of both men and women when younger women were involved with abortion (Varkey et al., 2000).

2.3. Cultural Determinants

Every society has its unique culture and all cultures affect the lives and attitudes of its peoples. Cultural factors by extension affect modern contraceptive use among WCA. Variations in the extent and the determinants of modern contraceptive use reflect the costs and benefits to WCA. The models they are using are culturally specific and cannot be generalized from one ethnic group to the other (Clignet & Sween, 1978; Myer et al., 2005). Collective secrecy about abortion, religion, rite of passage into adulthood, age at marriage, blood lineage, stigma, and fear have been identified in the literature and will constitute the discussion of cultural factors in this section.

2.3.1. Collective Secrecy

Most cultural traditions, including governmental laws, frown at and even punish those who commit acts of abortion. In spite of this stern position, illegal abortions are common in many African societies today (Leke, 1991; Iqbal & Ahman, 2004; Otoide et al., 2001; Moronkola & Fakeye, 2007; Varga, 2002). Collective secrecy to abortion has found its way into the culture and tradition of most societies as a way to hide what the majority of people condemn. It is no surprise that in Africa, the melting pot of cultures, cultural influences on modern contraceptive use among WCA are many. As explained by Meekers and Calves (1999), most women hide abortion practices from their parents, partners, and loved ones. Shuster (2005) argues that cultural issues like the fear of infertility, the hidden moral code, religious proscriptions, and a fear of not being buried after dying, affect the reproductive realities and methods of abortion among WCA in Cameroon. Such practices are also found in other sub-Saharan African countries such as

Ghana and Nigeria (Moronkola & Fakeye, 2007; Otoide et al., 2001) where it is the custom for a family to abandon a woman's corpse if she died in the course of aborting. Because of such a harsh tradition, natives practice "collective secrecy" (p. 135) regarding abortion in order to save women and families from the "greatest public shame, that is, the refusal of a burial" (Shuster, 2005, p. 135).

Leke (1989) upholds that having children in Cameroon is the very essence of marriage and that not having children either by choice or by sterility is a curse that brings disgrace and shame to the family and the entire community. Women are therefore under pressure to have children in order to be recognized among their peers and in the community (Leke, 1991; Shuster, 2004). This desire to have children necessarily reduces modern contraceptive use. "Cursed" women suffer tremendous spousal abuse, get divorced, or accept the husband's and his family's decision to bring in a co-spouse who can bear children. Unfortunately, since these couples do not have access to proper medical follow up, it is not concluded whether it was the women who had a fertility problem.

2.3.2. Religion

Although Africans practice multiple forms of religion, they adhere to three broad religions and beliefs: indigenous beliefs, Islam, and Christianity (Nation Master, 2003). Religion is therefore a very important interrelated factor that influences contraceptive use among WCA in Africa. Heynes (2003) supports the notion that high levels of religious commitment among young women make it less likely that they accommodate attitudes about premarital childbirth, and also makes it less likely for them to become unmarried

single parents during their school years. In Cameroon, for example, the population is composed of 40% Christians, 40% indigenous believers, and 20% Muslims (INS, 2004). Even though children are cherished in all three faiths (Leke, 1991; Shuster, 2005), the faiths prohibit having children outside a proper marriage (INS, 2004; Rwende, 2006). It is assumed that having children out of wedlock blocks ancestral blessings, especially for the mother and child (Leke, 1991; Nation Master, 2003).

2.3.3. Rite of Passage

Rite of passage is a custom that is usually linked to a crisis or change of status (www.merriamwebster.com). According to the Social Learning Theory, passage into adulthood can be observed in almost all cultures of the world (Bandura, 1977b), as it is practiced in the most sophisticated areas as well as the most naive. Usually, there is some form of learning transition from one stage of life to another (Bandura, 1977a). Young people thus go through puberty, have their first intercourse, get married, and start having children. During the transition stage in marriage, for example, each new marriage cohort goes through dissimilar compositional and historical experiences that account for different contraceptive behaviors (Pillai, 1988). Another aspect considered as a rite of passage is the age at which people start to drink alcohol (Johnson-Hanks, 2007).

In Cameroon, the drinking age is 18, but like most policies, the implementation is weak and teens tend to drink earlier than the legal age (Diduk, 1993). Although specific work in the current literature investigates the drinking age among WCA in Cameroon, there is little agreement with regard to outcomes and effects on condom use. Leigh et al. (2008) refute the idea that drinking negatively affects condom use, yet DISH (2002)

identifies substance abuse as affecting the life patterns of WCA in Uganda. Although drinking age is closely tied to rite of passage, religious practices like becoming an altar boy in the Catholic church and being baptized, and social components such as circumcision, getting married, and bearing children, are directly associated with coming of age in most societies (Groce et al., 2006).

In some parts of East and Central Africa, for instance, there are important time-honored rites that prepare young people for their adult role. These young adults are educated in the responsibilities of sex, marriage, and child rearing and how sexuality enhances kinship and affinity, solidarity, reciprocity, and cooperation (Rivers & Aggleton, 1998). Berer (2000) states that such customary procedures empower, inform, and educate youths on sexual behavior. Groce et al. (2006) establish that when sex education is taught at rite of passage transitions, they tend to prevent the spread of HIV/AIDS and increase contraceptive use, although Berer's (2000) findings state that some models of sex education are often misunderstood and not trusted by the community.

The use of Senga as applied by some Ugandan and other East African women to educate young girls about sexual issues has proven to be effective (Muyinda et al., 2003). The Senga (father's sister) concept works because the niece confides in her aunt who is less likely to let the parents of the niece know of their discussions (Muyinda et al., 2003). With the Senga, the young woman taps into the aunt's experience and is exposed to marital expectations, such as what to do on the first night in her husband's house and how to treat her husband (Muyinda et al., 2003). Despite this positive method of traditional sex education, Mantell et al. (2006) argue that gendered social norms such as inequality

among the sexes, sexual coercion, and violence make it difficult for young women to negotiate safer sex.

2.3.4. Age at Marriage

In spite of the importance of marriage in population studies, not much attention has been paid to age at first marriage (Amin & Bajracharya, 2011). The few studies that directly address age at first marriage usually relate it with other constructs like the median age of marriage (Atkinson, 1993), age at first birth, and birth spacing (Amin & Bajracharya, 2011). The few studies that have examined age at first marriage in relation to modern contraceptive use in less developed countries are those by Pillai and Sunil (2004) and Akmam (2002). Unlike in the USA, which in the second half of the 20th century has experienced an increase in the age at first marriage (Goodwin et al., 2002), the age at first marriage in some developing countries still remains low (Umemoto, 2001). In Cameroon, for instance, the age at first marriage among women of childbearing age get married early (EDSC III, 2004). In 2004, 22% of women in Cameroon between the ages of 25 and 49 were already married by the time they turned 15 and by age 18, 50% of this group were in marital relationships (EDSC III, 2004).

When compared to unmarried couples, those who are married show evidence of greater "physical, emotional, and economic well-being, although the association may vary by outcome, sex, and other factors" (Goodwin et al., 2002, p.1) such as family support. This may not be the case with married couples in the developing countries since Umemoto (2001) suggests that girls enter into marriage early because they are either forced into it, or are poor and/or illiterate. Akmam (2002) posits that women who are

more educated tend to have a 2- to 5-year increase in their age at first marriage, and Pillai and Sunil (2004), Pillai and Teboh (2010), and Umemoto (2001) suggest that increase in age at first marriage improves the health and well-being of WCA. Akmam (2002) also confirmed that those who postpone giving birth in order to further their education are more likely to engage in the use of modern contraceptives.

2.3.5. Blood Lineage

Blood lineage defines the inheritance pattern of most African societies. In their study of lineage in Ghana, Takyi and Doodoo (2005) validate the assumption that matrilineal setups imply relatively greater female influence in reproductive decisions. Because this type of lineage provides women with more autonomy than in patrilineal contexts, Takyi and Doodoo (2005) concur that WCA in such societies make better reproductive choices and are at liberty to do so. This maternal decision-making process is also true for the Kom people of northwest Cameroon who practice matrilineal inheritance (Feldman-Savelsberg, 2001).

Closely related to lineage is the gender role. According to a study of the Aka pygmies of the Central African Republic and Cameroon, women who hunt for game were also dominant in making family decisions (Noss & Hewlett, 2001). This was related to the ability to care for and provide for their family. The authors also identify the economic incentive of selling game products instead of lower-paying crops as a motivation for such gender role reversal (Noss & Hewlett, 2001). Irrespective of the motive behind females hunting for game, it was determined that decisions including modern contraceptive use within these communities are often made by women since they controlled the means of

production and earned most of the family income (Noss & Hewlett, 2001). Contrary to the Ghanaian and Cameroonian examples, Tiv women in the middle belt of Nigeria assume male-specific roles like fetching wood and felling trees, but have little or no say in making decisions about family size (Feldman-Savelsberg, 2001). Unlike the previous gender roles, Blanc (2001) confirmed that the cultural structure of the family in most African societies like the Tivs puts the man in the decision-making position in spite of a role change. The male decision-making trend enables the men to influence contraceptive use decisions among their wives or partners (Alubo, 2001; Benefo, 2008).

2.3.6. Stigma and Fear

Attitudes such as stigma and fear stemming from sexual intercourse are inherently imbedded within the cultural framework of most African societies and tend to affect their daily lives as well as their decisions (Bell, 2009; Craig & Stanley, 2006). In Lesotho, for example, although parents confirmed that young people had sex, the parents were unable to freely discuss contraceptive use with these sexually active young adults (Bell, 2009). Within most Lesotho families, Bell (2009) also identified existing dilemmas and stigmas on whose responsibility it is to teach use of modern contraception to young people. Fear of embarrassment and the reluctance to seek advice were the leading causes of low use of condoms among WCA in South Africa (Bell, 2009).

Fear mongering and superstition among Malians also reduced use of modern contraceptives such as pills and injections (Castle, 2003). In Cameroon, it was discovered that among the reasons that women presented as not being able to conceive are superstition, witchcraft (Richards, 2002), and the side effects of modern contraceptives

and vaccines (Feldman-Savelsberg et al, 2000). Oye-Adeniran et al. (2006) suggest that a reversal of taboo subjects, superstition, fear, and embarrassment can reduce illegal abortions and the rumors that modern contraception causes infertility.

2.4. Political Determinants

The ubiquitous word politics connotes many things to different groups of people (Ball, 1990). According to Clemens and Cook (1999), power is structured and enacted in many ways as it manifests itself in almost all activities of human life, including the decision to use contraceptives. This power structure is seen "in relations of kinship, marriage, inheritance patterns, rituals, and exchange systems" (Ginsburg & Rapp, 1991, p. 167). With the growth of a complex and interwoven political atmosphere, it becomes very difficult to separate politics and reproduction (Ginsburg & Rapp, 1991). This review builds on the two-tier classification of modern contraceptive use espoused by Ginsburg and Rapp (1991) that reproduction transcends local and global political levels on which modern contraceptive practices and policies depend. Instead of applying Ginsburg and Rapp's (1991) categorization, this review uses the internal and the external political factors of contraceptive use among WCA.

2.4.1. Internal Political Factors

Internal political factors refer to determinants that are found within the geopolitical boundaries of a nation. Several of these factors can affect contraceptive use among WCA. In most sub-Saharan African countries, ineffective policies, archaic government regimes, and the slow democratization process can negatively affect family

planning programs (Ako et al., 2008; Leke, 1992; Soh, 2007). Other local or internal factors that affect contraceptive use according to Ginsburg and Rapp (1991) are kinship and social organization, cultural understandings of parenthood, self-help networks, infertility, adoption, local reproductive relations, and family policies. The most common feminist issues that Ampofo et al. (2004) identify as hindering contraceptive use are poor health decisions, gender-based violence, sexuality, education, politics, and government laxity.

Internal factors contributing to unsafe abortions and reduced contraceptive use are the lack of public health resources and infrastructure (Hord & Wolf, 2004; Leke, 1989; Soh, 2007), shortages in trained personnel (Hord & Wolf, 2004; Leke, 1989), stigma and fear (Bell, 2009; Craig & Stanley, 2006; Hord & Wolf, 2004), women's lack of empowerment (Hord & Wolf, 2004), and restrictive laws as well as poor implementation of policies (Hord & Wolf, 2004). Hord and Wolf (2004) argue that available and accessible high-quality abortion centers, removal of medically unnecessary policies, and legal restrictions on abortion will increase modern contraceptive use. "Better informing health care professionals, women and communities about the impact of unsafe abortion and the circumstances under which abortion can be legally obtained" (Hord & Wolf, p. 31) will decrease illegal abortions and increase safe contraceptive use. Cooper et al. (2004) suggest that the key area of internal politics that affect modern contraceptive use is therefore gender-based inequalities and sexual violence.

Several failures of the Cairo 1994 conference have been identified. The conference was supposed to be the turning point in the advancement of reproductive

health. Among its shortcomings were the broad nature of the policies (El Dawla, 2000), no specific timetable for member states to implement the decisions, and sanctions meted out to member states that did not follow through with the modalities (Hessini, 2005). Unlike most other scholars who only critiqued its shortcomings, Klugman (2000) recommended that at the national level, spending should be monitored, the public health sector overhauled, and advocacy encouraged. The language used at the conference was misinterpreted, lax, and inadequately implemented (El Dawla, 2000).

Most Magrebian countries could not contextualize the conference language to suit an Islamic framework for WCA and thus selected what they liked and threw away what was not acceptable to their religion (El Dawla, 2000). Hessini (2005) recognize a high degree of patriarchy in shaping the ways power plays out in individual relationships, especially at the political level, that hamper fairness in determining the rights of women to modern contraceptive use or safe abortion. When this happens, thousands of African women die every year because societies and governments ignore the issue of unsafe abortions and therefore refuse to address it (Hessini, 2005).

Politically conservative policies that advocate for abstinence do not put effective programs in place to ensure celibacy (Mantell et al., 2006). Such poor implementation of abstinence programs force WCA to indulge in sexual activity unprepared or unaware of modern contraceptive use (Mantell et al., 2006). Levine and Dubler (1990) argue that public health policies that are designed to prevent HIV-infected women from having children are likely to fail because they are too narrowly cast and have not taken into

consideration the safe medications that are now available to limit mother-to-child transmissions.

Gillespie and Hubbard (1986) portray personal choices about contraception as steeped in power relationships and in economics and politics. Since contraceptive laws are flawed, Maine et al. (1995) regret that programs that provide services are not well informed on reproductive rights. The program managers are usually not aware of available resources and are blind or biased in their assumptions leading them to relate reproductive rights only to women (Maine et al., 1995). Moodley (1995) also identifies the one-sidedness of considering reproductive rights as a concern only for women, and articulates the importance of men in improving reproductive choices and contraceptive use. An example of a feminist who upholds this view is (Barroso, 2002).

Unstable governments usually degenerate into conflicts and wars. The Democratic Republic of Congo, Angola, and Cote D'Ivoire are some of the countries that have recently witnessed wars and conflicts (UNFPA, 2004a). Recently, unrests in Lybia, Syria, and Yemen and other parts of the world (www.warsintheworld.com) are affecting use of modern contraception among WCA. Post-conflict countries result in disrupted and fragmented delivery of health services (Bayard et al., 2008). Displaced women particularly face unmet needs for family planning, complications following unsafe abortions, gender-based violence, sexually transmitted diseases, and HIV/AIDS (Austin, 2008). Even in some governments that have not faced prolonged wars and conflicts, it is usually very difficult to implement policies on contraception. Fasubaa et al. (2002) found in Nigeria that policy makers do not follow through with policies that are contrary to the

beliefs of certain regions. In Cameroon, Feldman-Savelsberg et al. (2005) argue that recent political trends have become increasingly associated with ethnic politics and tribalism, which affects family planning provision. Ellison (2009) suggests that reproductive choices are compromised under poor democratic governments. Sachs et al. (2004) decry the fact that oil-rich countries like Angola, Cameroon, and Congo still have poor reproductive health facilities and conditions; when this happens there is reduction in modern contraceptive use.

2.4.2. External Political Factors

Scholars and policymakers are increasingly aware of the multiple ways in which seemingly distant power relations shape local reproductive experiences (El Dawla, 2000; Ginsburg & Rapp, 1991). The "global lens focuses on the intersection of state interests, multinational corporations, international development agencies, Western medicine, and religious groups as they construct the contexts within which local reproductive relations are played out" (Ginsberg & Rapp, 1991, p. 322). Birth control, family-planning programs, new reproductive technologies, social movements (reproductive rights, reproductive choices, abortion rights, and sterilization); vaccination campaigns, and media campaigns constitute the external factors that affect reproduction and when this happens there is reduction in modern contraceptive use (Ginsburg & Rapp, 1991).

Women's human rights, sexual rights, reproductive health, customary laws and practices, and economic rights make up the external factors that affect modern contraceptive use (Ampofo et al., 2004). While there are laws that govern population and reproduction in many African countries, the new wave of the international players to curb

the growing world population have collaborated to affect when this happens there is reduction in modern contraceptive use (Ampofo et al., 2004). These issues came through the globalization process and rigorous social marketing of contraception, reproductive rights and choices mostly through funding (Klugman, 2000). Klugman (2004) suggests that such funding and the implementation of an international law that sets the pace and ground rules for proper use of modern contraception will fight or curb the fundamentalist movements that slow the pace of reproductive rights.

There are four main areas where scholars debate as concerns modern contraceptive use. Some scholars speak ill of slow anti-family planning programs (Datta & Misra, 2000). Others argue that governments mostly use family planning programs to advocate for more funds for state (Hord & Wolf, 2004). Another group suggests that the best way is to free abortion (Berer, 2000), and the final group thinks that the only way out of the deadlock is the empowerment of all the women in countries that still lag behind with reproductive rights. Gillespie and Hubbard (1986) posit that personal choices about modern contraception are steeped in economic and political power relationships. Pharmaceutical corporations that produce modern contraceptive pills, for instance, usually have more income than most third-world countries and are therefore capable of influencing policy makers and social services to sell what the pharmaceuticals want and not what necessarily works (Gillespie & Hubbard, 1986). In such disadvantaged positions, third-world nations usually succumb to the pressures from international pharmaceutical corporations (Gillespie & Hubbard, 1986).

It has been argued that there was hardly any discussion on macro-economic factors such as the debt burden, inequitable trade relations, and the negative effect of the Structural Adjustment Program (SAP) of the International Monetary Fund (IMF) on the majority of the people in countries of the South (Rao, 2001). On the other hand, Ampofo et al. (2004) pinpoint the effects of international nongovernmental organizations on modern contraceptive use as they interfere in the local politics of African states. Sub-Saharan countries need to rally together to reduce poverty, political and social conflicts that have eroded traditional safety nets and increased the vulnerability of WCA (UNFPA, 2004a) and thus prevent them from using modern contraceptives. Policy makers and program managers have to implement laws and programs that can guarantee reproductive rights and choices for WCA within international and national boundaries.

2.5. Legal Determinants

The legal environment is among the most important factors that influence modern contraceptive use in Africa. The laws of most states in Africa are deeply rooted in their traditional and colonial experiences and values. These experiences and values, especially relating to childbearing, do not readily change. According to the United Nations, "The majority of countries at the beginning of the twenty-first century adhere to one of three major legal systems: civil law, common law and Islamic law" (UN, 2002, p. 1). The legal framework of countries in sub-Saharan Africa is also built on these three major systems. Nigeria, for example, uses the common and the Islamic laws, while Cameroon applies the above-mentioned three systems. In Cameroon, the English-speaking part of the country adopted the common law; the northern part (comprising mostly Muslims) adopted the

Sharia and Islamic law, while the French-speaking section of the country uses the civil law system (Nation Master, 2003). Other countries in Africa have also adopted either one of these systems of laws or a combination depending on their colonial masters and colonial heritage or which religion is practiced within these countries. The legal restrictions, poor implementation of the laws, and the legal status of abortion (examined as an extreme contraceptive) are discussed below.

2.5.1. Legal Restrictions

Legal restrictions constitute one of the strongest reasons why laws and policies on modern contraceptive use are violated in most developing countries. Legal restrictions on abortion, for instance, are the leading causes of unsafe abortions (Hord & Wolf, 2004; Boland & Katzive, 2007). Although Hord and Wolf's study reflects South Africa, it is likely that illegal abortions are practiced in most sub-Saharan countries, as the UN (2005) stated that more than 70,000 WCA in African die of illegal abortions annually. In Cameroon and Nigeria where abortion is a serious crime, WCA constantly violate these laws without any legal consequences (Leke, 1992; Shuster 2005). Of the 50 million documented abortions that are performed in the world annually, 40% of them are done illegally (UN, 2002).

Cooper et al. (2004) suggest that after 10 years of democracy in South Africa in spite of the very well-researched and generally accepted laws on reproduction, many gaps still remain in the implementation of modern contraceptive use and in service delivery. In securing these legislative and policy changes, health activist groups continue to pressure the government to introduce changes in policy and service delivery in concert with the

real contraceptive needs of the people (Mayhew et al., 2000). In the case of Ghana, Kenya, and Zambia, contradictory policies on reproduction leaves service providers confused about advising clients on making modern contraceptive choices (Mayhew et al., 2000).

2.5.2. Government Laxity

There is a laxity within most governments to ratify legislation on contraception since the declaration of reproductive rights in 1994 (Mayhew et al., 2000; WHO, 2007; UN, 2005). “In Cameroon, under provisions of sections 337 and 339 of law No 65/LF/24 of 24 December 1965, and Law No 67/LF/1 of 12 June 1967, abortion is punishable (whether self-inflicted or procured, consented or without consent), except when performed as a medical necessity such as saving the mother from great danger to her health or in the case of pregnancy resulting from rape." In spite of these laws, voluntary abortion remains a problem (UN, 2004), since “it continues to be carried out in increasing numbers in all communities” (Leke, 1992, p.1).

According to (CDHS, 2004), Cameroon adopted the ICPD modalities with the hope of meeting the millennium development goals alongside other nations. Unfortunately, these resolutions are not all put in place because of government laxity and fear of hurting religious interests in the country. Even when the resolutions are put in place, implementation does not occur. The premise of non-implementation of contraceptive policies was captured by Fagge (1997) when he presented a paper on public policy in Nigeria that “government laxity to implement policies is the graveyard of public

policy." Although the paper addresses the Nigerian Public Policy, implementation is also the graveyard of public policy in many countries in the sub region.

2.5.3. Poor Implementation of the Laws

Poor implementation of the laws in the continent of Africa accounts for most of the difficulties that WCA face in obtaining modern contraceptives (Hord & Wolf, 2004). Freedman and Isaacs (1993) and Hessini (2005) also witnessed poor implementation of reproductive laws in Egypt and South Africa and suggested that reproductive rights and choices be placed within legal and historical contexts and adopt international standards for their enforcement. The priorities of making reproductive choices and the dilemma of maintaining international standards versus local customs were identified as the main causes for poor implementation of contraceptive laws (Freeman & Isaacs, 1993; Hessini, 2005). Most governments do not want to interfere with contraception or reproductive rights and tactfully avoid discussing them during important policy meetings (Hessini, 2005). Harries et al. (2007); WHO (2007) also revealed that until recently, politicians in most sub-Saharan African countries still did not take the implementation of laws on contraceptive programs seriously, especially those that fight against HIV/AIDS.

2.5.4. Legal Status of Abortion

Although Pillai and Wang (1999) identify three categories for the legal status of abortion, only one is accepted in Cameroon: abortions "performed as a medical necessity such as saving the mother from great danger to her health or in the case of pregnancy resulting from rape" (Leke, 1992, p.1). As is the case with poor abortion laws,

socioeconomic factors and family honor push WCA to engage in life-threatening illegal abortions, (Iqbal & Ahman, 2004; Leke, 1992; Varga, 2002). Difficult as it may seem, Rahman and Pine (1995); Boland & Katzive (2007) suggest that effective and efficient universal reproductive laws especially for third-world countries need to be implemented if increases in modern contraceptive use are to be met.

CHAPTER 3

THEORETICAL FRAMEWORK

The purpose of this research is to examine the determinants of contraceptive use among women ages 15–49 of childbearing age (WCA) and to describe the compositional and processual changes that have taken place in Cameroon between 1991 and 2004. Although a wide range of modern contraceptive methods such as pills and IUDs are used for birth control, condoms in particular are used for both HIV prevention and birth control (International Planned Parenthood Federation [IPPF], (2010). Within marriage however, the likelihood of condom use for HIV prevention may be assumed to be low. As per the IPPF, (2010) for instance, the main challenge facing WCA in Cameroon is the low prevalence of modern contraceptive use (13%). Consequently, one of the objectives of this study is to test a number of the existing theories of modern contraceptive use for birth control. A second objective is to assess the role of social change on variations in modern contraceptive use over time. Most of the prominent explanations of modern contraceptive use involve the use of modernization theory (Gregory & Campbell, 1976; Pillai & Teboh, 2010). This is because the use of modern contraceptives is associated with a number of social, economic, and psychological conditions that constitute the concepts of modernization (Abraham, 1980; Martinelli, 2005; Salvadori, 2008).

Modernization theory in general offers a method to sort populations in various stages of being modern. In the following section, modernization theory is provided as a grant theory since it is often used to explain almost all aspects of human socioeconomic

behaviors including contraceptive use (Abraham, 1980; Inkeles et al., 1983; Martinelli, 2005; Turner, 1990; Zapf, 2004). Other theories used in this study are human capital and social change. This section identifies a number of variables that are associated with contraceptive use as driven by the forces of modernization and human capital. It also addresses the following question: To what extent does modernization influence contraceptive use among women of childbearing age in Cameroon as measured by (a) other forms contraception, and (b) modern contraceptive use.

3.1. Modernization Theory

Modernization in general represents a societal force that was set in motion by industrialization in the 18th century (Abraham, 1980; Martinelli, 2005). New technological innovations brought about extensive changes in people's way of life (Inglehart & Wetzel, 2005). Such new technology brought about changes in the way goods and services were produced, distributed, and consumed, and also changes in existing value systems and norms supportive of a new way of life (Abraham, 1980; Morgan & Kickham, 1997; Salvadori, 2008; Zapf, 2004). The emergence of new technologies called for new skill sets requiring prolonged durations of preparation for entry into the labor market (Macunovich, 2000; McGuigan, 2003). This brought about changes in the social calendars in terms of age at marriage, when to have children, and desired family size (Macunovich, 2000). The norms of effectiveness and rationality that characterize work life in modern economies enveloped the organization of personal lives as well (Macunovich, 2000). Thus, the modern way of life (Inglehart & Wetzel, 2005) is founded on socioeconomic mobility supported by the growth of industrialization (Martinelli, 2005), based primarily on the values of effectiveness (Macunovich, 2000),

democratization (Abraham, 1980; Inglehart & Wetzel, 2005), and cost-benefit and cost-effective calculations (Macunovich, 2000).

Martinelli (2005) argues that modernization is all encompassing, and also involves technological and scientific advancement (Martinelli, 2005; Zapf, 2004). The developments that follow modernization intentionally or unintentionally affect individuals, groups, and societies (Martelli, 2005). This view is shared by Salvatori (2008), who states that societies are experiencing fast-paced scientific, technological, and developmental processes. While these processes are ongoing (Salvadori, 2008), modernization also tends to affect a wide range of intangible factors such as perceptions, beliefs, attitudes, values, and behaviors (Abraham, 1980; Smith & Inkeles, 1964; Turner, 1990; Zapf, 2004). The classic theory of modernization started in the USA during the post-war period with the purpose of studying underdeveloped countries and finding ways of bringing them economic growth and development (Martinelli 2005).

Modernization can also be examined as both societal and individual. Societal modernization refers to the national state as characterized by increased levels of education, urbanization, industrialization, mechanization, and social mobility (Smith & Inkeles, 1964). According to Smith and Inkeles (1964), attitudes, values, and ways of feeling and acting constitute individual modernization. Inkeles, (1975) believes that exposure to "complex rationalized, technocratic, and even bureaucratic organizations" enables the individual as well as the society to "move from the traditional to the modern attitudes, values, and behavior" (p. 31). Modernization therefore involves the various processes by which societies endeavor to acquire new political, social, and cultural forms (Martinelli, 2005). As regards to its diversified view, Abraham (1980) states that:

> "Economists interpret modernization in terms of growth models comprising indices such as economic indicators, standard of living, and per capita income. Political scientists analyze modernization in terms of political processes, social upheavals and institutional alterations. Sociologists have defined modernization variously but within the framework of an evolutionary perspective which involves multilinear transitions of developing societies from tradition to modernity, (pp. 4–5)"

Modernization theory best explains the kinds of changes that take place over time. The theory seeks to explain how societies progress, what variables affect that progress, and how such societies react to that progress (McGuigan, 2003; Bhambra, 2007). The theory also focuses on social mores and technological achievements and how they play into the new age (McGuigan, 2003). Morgan and Kickham (2007) posit that modernization and development are process oriented and highlight how things have happened as opposed to what happened. According to Martinelli (2005), other main points emphasized in the theory of modernization are (a) the unit of analysis, (b) the characteristics of the societies that are affected by the process of modernization, (c) the factors, mechanisms, and processes, (d) the form sequence and direction of the modernization process, (e) the intentional and unintentional character of the modernization process, and (f) the duration and consequences of modernization. Lerner (1958) argues that modernization is widespread and ranges from "urbanization to literacy to communication (media) to economic and political participation" (p. 24). For example, when people are affected by modernity, they begin to change their thinking patterns; they become rational and make decisions based on opportunity cost (Macunovich, 2000).

Whereas several components of modernization are essential in understanding the processes of change in societies (Inkeles, 1975), only the economic, social, and political traits of modernization theory (Abrahams, 1980) are explained in this study. Economic

modernization brings increased levels of consumption, higher standards of living, and technological as well as capital-intensive innovations (Abrahams, 1980). Seeing it differently, Smith and Inkeles (1964) argue that modernization increases the drive for humans to acquire modern goods and services, which in turn devalues and reduces the desire for traditional goods such as the acquisition of children. The establishment of a monetary policy through processes of technological advancement, capital formation, specialization, and the acquisition of modern goods and services (Abrahams, 1980; Martinelli, 2005, Zapf, 2004) therefore has a reverse effect on family size (Inkeles et al., 1983). Other valuable economic indicators of modernization are income, degree of urbanization, the ratio of capital to labor, and the proportion of the population that is employed (Abraham, 1980).

Social modernization entails "changes in the systematic attributes, institutional patterns and status roles in social structure of developing societies" (Abraham, 1980, p. 7). Morgan and Kickham (2007) and Abraham (1980) posit that modernization and development are process oriented and highlight how socioeconomic as well as technological innovations have evolved. Social modernization is also widespread and ranges from "urbanization to literacy to communication (media) to economic and political participation" (Lerner, 1958, p. 24). Some components that make up social modernization are planned social change, attitudinal and behavioral change, social relationships (Abraham, 1980), and social and occupational mobility (Abraham, 1980; Martinelli, 2005; Zapf, 2004).

Inglehart and Wetzel's (2005) definition of modernization theory agrees with that advanced by Martinelli (2005) and Abraham (1980), but includes the process of

democratization and human development. Inglehart and Wetzel (2005) identify two phases of political modernization, namely, mass involvement of people in the democratization process and the postindustrial epoch when democratized governments accord their citizens the flexibility to make choices regarding active political participation. Democracies support market liberalization and often put less restriction on the process of the production and consumption of goods and services (Inglehart & Wetzel, 2005). Thus, political modernization supports changes in several aspects of people's economic choices and values (Inglehart & Wetzel, 2005).

Abraham (1980) suggests that political modernization can be examined from three perspectives. First, after colonization, developing countries commenced their modernization process with nationalism (Abraham, 1980). Leaders like Kenyatta and Nehru raised national feelings through the establishment of independence and the accelerated process of political mobilization (Abraham, 2005). Second, nations moved toward the formation of political ideologies (communism and democracy) that suited their modernization agendas (Abraham, 1980). Last, Abraham (1980) discusses national planning that involves the preparation of national blueprints. The 5-year development plans such as the green revolution (Borlaug, 1970) and Health for All by the Year 2000 (Habicht, 1981) are examples of these political blueprints that were aimed to ensure political as well as socioeconomic development in developing countries.

Although the theory of modernization has been seriously criticized as a leading cause of dependency in developing nations (Abraham, 1980; Zapf, 2004), it is still relevant today (Martinelli, 2005; Inkeles et al., 1983). Proponents of modernization theory continue applying it in research since they maintain that it is the driving force

behind the changing processes of the world (Smith & Inkeles, 1964; Salvadori, 2008). There are different classifications and definitions of modernization given that scholars disagree on its meaning and approach, yet most if not all of its supporters agree that it can be used to explain almost all aspects of human life (Abraham, 1980). Garonna and Triacca (1999) state that "family structures and life-styles have clearly evolved, affecting patterns of family formation, marriage and cohabitation, sex and friendship, fertility and mobility, divisions of tasks and power in the household, social networks, community work and leisure" (p. 50), and Martinelli (2005), Inkeles (1975), and Lerner (1958) also suggest that modernization affects all aspects of human life. This theoretical framework proposes that modifications in income, place of residence, and age at first marriage affect contraceptive use among WCA in Cameroon. Based on the theory of modernization, this study investigates the effects of income, place of residence, and age at first marriage on contraceptive use.

3.1.1. Income

The process of modernization has increased knowledge of social services programs like family planning and hospitals. The discovery of modern forms of contraceptives in the '60s and '70s (the pill, IUDs, and the diaphragm) has made modern contraception more effective (Goldin & Katz, 1999). Despite relevant data, scientists have not yet pinned down on the social, economic, and techno-programmatic factors that lead to smaller family sizes (Andrew et al., 2003). Income appears to be the most accepted factor that explains smaller family sizes in most parts of the Middle East (Agha, 1985) as well as Africa. The results of the study conducted by Agha (1985) assert that for family planning programs to be successful, prices for modern contraceptives should be

kept at a minimum. With the growing economic hardship, peoples' decision to use modern contraceptives will depend on the amount of money they make (Easterlin, 1978). Based on the assumption that people with higher wages have more purchasing power (Agha, 1985), it can be argued that people with more income will be able to afford modern contraceptives.

As societies undergo the process of modernization, its proponents suggest that additional technological as well as socioeconomic development will transform people's cultures and values (McGuigan, 2003). When this happens, certain cultural values that were upheld will begin to lose their importance (McGuigan, 2003). Improvements in income with socioeconomic mobility, for instance, will decrease the demand for children resulting in increases in contraceptive use (Akmam, 2002; Easterlin, 2003). This study therefore suggests that when the process of modernization affects people's cultural values that lead to changes in socioeconomic mobility, they are likely to devalue childbearing through increased use of modern contraceptives.

Hypothesis 1: Women of childbearing age in Cameroon who earn an income are more likely to use modern contraceptives, than women of childbearing age who do not earn an income.

3.1.2. Place of Residence

Place of residence is the social milieu in which people lead their lives. In this regard, the study addresses the effects of the characteristics found in this social context (place of residence) such as the cost of living. Social, political, economic, and technological modernization leads to the process of urbanization (Morgan & Kickham, 1997) that is sustained by constant migration from rural to urban areas (Libitie, 2004; Martinelli, 2005; Xiao, 2001). As societies develop and advance, rural dwellers who want to live in modernized settings tend to migrate to urban centers (Cochran & O'kane, 1977). The reasons for this migration consist of the demand for more social amenities such as water and electricity and for jobs and tertiary education (Abraham, 1980; Benefo, 2005). In Cameroon, for example, there is a steady growth in its urban population as large numbers of people migrate to the urban areas (Libitie, 2004). In spite of this trend, only 20.6% of its entire population lives in the urban areas (INS, 2005). Douala, Yaoundé, and Maroua account for more than 75% of the entire urban dwellers (INS, 2005).

In a study by Libitie (2004), dwellers in Douala and Yaoundé were more likely to use contraceptives than their counterparts in rural areas because they have more exposure to family planning services, the media, and sex education (Ako et al., 2008; Soh, 2007). There has also been a decline in the birth rates between 1991 and 2004 in these cities compared to the rural areas (Libitie, 2004). Since more people migrate to the urban areas where the cost of living is remarkably high, they tend to adjust their lifestyles according to their means. Over time, these urban dwellers begin making decisions including bearing of children based on cost-benefit calculation (Macunovich, 2000). Becker and Barro

(1988) also argue that since urbanization increases the cost of living, people who live in urban areas are more likely to use modern contraceptives.

Hypothesis 2: Women of childbearing age living in urban areas are more likely to use modern contraceptives than women of childbearing age living in rural areas.

3.1.3. Age at First Marriage

Becker (1973); Becker (1981) suggests that marriage plays a decisive role in social and economic analyses. "Marital patterns have major implications for, among other things, the number of births and population growth, labor-force participation of women, inequality in income, ability, and other characteristics among families…" (Becker, 1973, p. 814). In spite of the importance of marriage in population studies, not much attention has been paid to age at first marriage (Amin & Bajracharya, 2011). The few studies that directly address age at first marriage usually relate it with other constructs like the median age of marriage (Atkinson & Glass 1985), age at first birth, and birth spacing (Amin & Bajracharya, 2011). Results of a study of fertility conducted in 41 countries by Trussell and Kost (1989) indicate that there is a shorter birth interval in societies where people marry late while this interval is longer when people marry early.

Modern trends in attitudes, values, and beliefs tend to alter the way people make choices (Inkeles, 1975; Abrahams, 1980). Such choices involve the decision to get married, the time to get married, and the number of children to have (Amin & Bajracharya, 2011). Couples that choose to have children early may get married much younger than those who wish to postpone having children (Trussell & Kost, 1989). The

time to get married is often influenced by what the couple has to forego in order to have children (Becker, 1973; Easterlin, 1978). Sunil and Pillai (2004) cite the length of time that women spend in school as a contributing factor in the postponement of marriage (Sunil & Pillai, 2004). Postponing marriage has also been linked to the complex nature of the process of modernization (Becker, 1973). As modernization increases, educated women tend to have several options that minimize the importance of marriage and having children (Sunil & Pillai, 2004). Women of childbearing age who choose to postpone marriage are likely to use modern contraceptives because they need to avoid having unwanted children while earning an education, holding a job, or travelling (Sunil & Pillai 2004; Trussell & Kost, 1989).

Hypothesis 3: Women of childbearing age in Cameroon who marry at an early are more likely to use modern contraceptives than women of childbearing age who marry later.

3.2. Human Capital Theory

The concept of human capital originated when economists noticed that company fiscal investments were not up to par with gross annual gains (Becker, 1964; Shultz, 1971). Economists began tracing the reasons behind such imbalances and discovered that the efforts of employees were not included in company balance sheets (Shultz, 1971). Based on these findings, Becker (1964) and Shultz (1971) began including employee efforts as tangible investments in the production process. Scholars like Olaniyan and Okemakinde (2008), Xiao (2001), Shultz (1971), and Becker (1964) began considering

factors like education, on-the-job-training, health care, and experience owing to longevity of service as the building blocks of human capital. Shultz (1974) postulates that since human capital expenditures like on-the-job training and education are expensive and have a currency value, they should be considered as economic investments.

Human capital is the economic value that an employee provides to an employer (McGuigan, 2003). These values include skill, knowledge, and the experience that an employer expects from an employee (Marshall, 1998; McGuigan, 2003). Factors such as formal education, on-the-job-training, and even healthcare related to benefits enhance human capital (McGuigan, 2003). Human capital theory suggests that the more people are educated and trained the more likely an increase in their productivity (Becker, 1964). Human capital imparts employees with useful knowledge and skills that raise their revenue and lifetime earnings (Becker, 1964).

Critics of the human capital theory argue that measuring key concepts such as future income (Becker, 1964; Marshall, 1998) fail to authenticate the theory. Human capital theory can be viewed in general as well as specific terms (Becker, 1964). First, Becker (1964) identifies the ability to read and write and second, the acquisition of a particular skill as important components of human capital. Xiao (2001) and Rustenbach (2010) suggest that formal education, on-the-job training provided by employers, and informal education pursued by employees on their own are also forms of human capital. Olaniyan and Okemakinde (2008) sum up the importance of the human capital theory by suggesting that the theoretical framework most responsible for the wholesale adoption of education and development as economic investments has come to be known as human capital theory.

3.2.1. Education

Human capital represents the knowledge and skills that individuals bring to an organization (Dimov & Shepherd, 2005). It also includes the collective effort of a group of people or society (Becker, 1964). Human capital is "developed through both education and personal experience and contributes to both the explicit and tacit knowledge of the firm" (Dimov & Shepherd, 2005, p. 64). The acquisition of human capital involves making choices. The longer a person stays in school, for instance, the more knowledge and experience that person acquires. Although Pillai and Wang (2007) suggest that the more time women of childbearing age spend in school, the higher their chances of using contraceptives, the economic theory of fertility proffers a suitable stance to further examine the effects of education on modern contraceptive use.

Becker (1964) states that there is a complementary link between learning and work as well as between learning and time that helps to differentiate each career from another. For instance, the length of time that a medical doctor spends in school is not the same as that of a barber (Becker, 1964). "The difference between what could have been and what is earned (including any value placed on foregone leisure) is an important indirect cost to schooling" (Becker, 1964, p. 30). Acquiring human capital through the process of being educated also means giving up or postponing having children (Akmam, 2002; Easterlin, 2003; Macunovich, 2005; Olaniyan & Okemakinde, 2008). Some of the costs that educated women forego, for example, are ignorance, dependence, fewer life choices, and reduced family sizes (Akmam, 2003; Herd, 2010). In return, educated women develop educational skills that bring about positive change, increased financial,

emotional as well as increased life choices (Akmam, 2002; Olaniyan & Okemakinde, 2008).

The more a person invests in education, the more valuable time is given up for educational benefits (Becker, 1964). Akmam (2002) also argues that increased education leads to increased opportunities that can reduce family size. In a study in Thailand, Akmam (2002) observed that whereas 1.9% of uneducated women did not get married, 14.6% of educated women were unmarried and had no children. Education has a direct effect on time and time is money; educated women are likely to forego, postpone, or acquire fewer children (Akmam, 2002) in order to earn more income since the market value for education is likely to increase. Looked differently, the more women are educated, the less their desire of getting married and having children, therefore the higher their chances of using modern contraceptives (Akmam, 2002).

Hypothesis 4: Women of childbearing age in Cameroon with higher levels of education are more likely to use modern contraceptives than women of childbearing age in Cameroon with lower levels of education.

3.3. Social Change Theory

Social change usually occurs over time, ranging from behavior patterns and cultural values and norms to long-term effects of sociopolitical movements like the industrial revolution, the abolition of slavery, and the feminist movement (Encyclopedia Britannica, 2009). Social change has existed and evolved over a long period (Gartman, 2002). Classical sociological thinkers such as Weber, Durkheim, and Parsons, among others, are still considered the founding fathers of social change perspectives (Gartman, 2002). The concept became prominent in analyzing not only the French and English Industrial Revolutions but also events that took place before these revolutions (Haferkamp & Neil, 1992). "Contemporary theories of social change have become more generalized in order to explain far-reaching processes of change," (Haferkamp & Neil, 1992, pp. 1, 2). Magnitude of change, time span of change, direction of change, rate of change, and amount of violence involved in change are examples of contemporary areas of social change (Strasser & Randall, 1981). Haferkamp and Neil (1992) posit that any theory of social change must contain three key elements: structural determinants, processes and mechanisms, and directions.

Perspectives of social change will provide useful theoretical premises to describe previous and current influences on contraceptive use over time. People's values and beliefs, even those that provide a sense of community identity, are constantly changing (Schuster, 1989). Socioeconomic changes that have taken place in societies since the turn of the century have expanded people's involvement in public health issues (LaRossa 1988). Changes in the size of populations are essential in determining current and future family planning and parenting needs (Pebley, 2002). Knowledge of modern contraceptive

use is an important component of the process of change (Pillai & Teboh, 2010). To describe the process and composition of changes in modern contraceptive use, this dissertation makes use of Ryder's theory of social change.

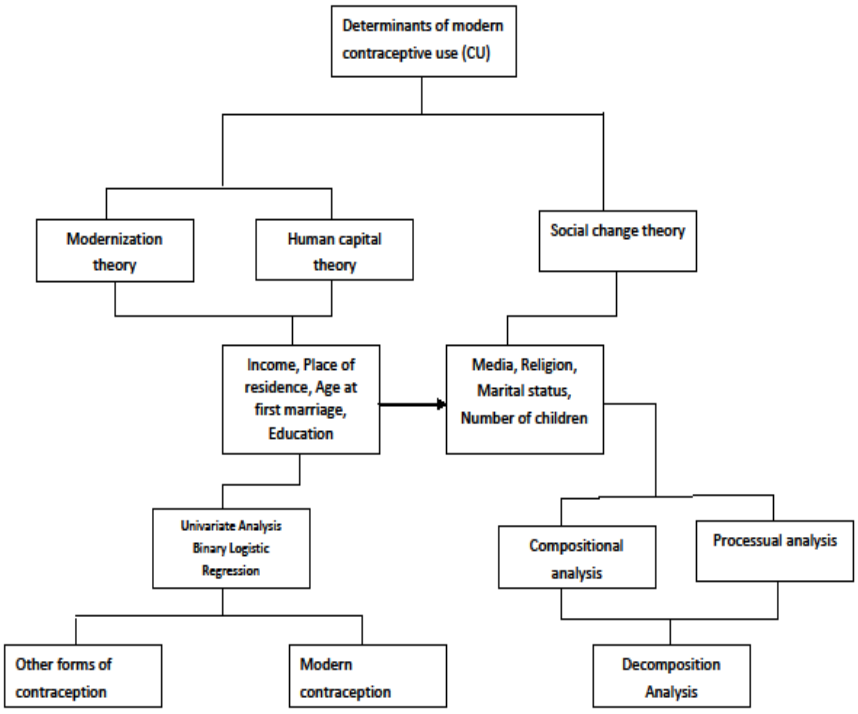
Norman Ryder is one of the leading demographers who began the study of cohorts in population studies. A cohort is the combined number of individuals in a population who experience the same events within the same timeframe (Ryder, 1965). Unlike other works that limit demographic studies to the "growth, change, and structure of the human population" (Pebley, 2002, p. 1), Ryder (1965) suggests that "successive cohorts are differentiated by the changing content of formal education, by peer group socialization, and by idiosyncratic historical experiences" (p. 843).

This research makes use of the processual and compositional premises advanced by Ryder's (1965) research on cohorts. In this study, these two components (processual and compositional) are used to describe the changes in the determinants of modern contraception between 1991 and 2004 in Cameroon. The compositional explanation concentrates on the differences in composition of members of each cohort (Pillai, 1987; Pillai & Teboh, 2010). Successive cohorts often vary in terms of their circumstances as they each belong to various social categories such as education and place of residence (Pillai & Barton, 1998). The differences in the make-up of such social attributes are often referred to as cohort compositional changes (Pillai & Sunil, 2007). On the other hand, the processual interpretation addresses the effects of the variables that affect modern contraceptive use across cohorts (Pillai, 1987; Pillai & Teboh, 2010). The processual explanation also suggests that "even if cohort composition with respect to the determinants of modern contraceptive use remains stable across cohorts, changes in

contraception would result in changes in the effects of the selected determinants" (Pillai & Teboh, 2010, p.7). Pillai & Sunil (2007) suggest that compositional as well as processual changes are expected to contribute to increases in modern contraceptive use.

3.4. Conclusion

The purpose of this theoretical framework is to describe factors that have influenced contraceptive use among women of childbearing age (WCA) in Cameroon. Another important component of the research is that it examines value changes that have led to the use of modern contraceptives from 1991 to 2004. The modernization theoretical perspective is used to explain the effects of income, place of residence, old age at first marriage, older age at first marriage on modern contraceptive use over time. The human capital theory suggests the effects of education (primary, secondary) on the use of modern contraceptives within the same timeframes. These perspectives provide useful theoretical frameworks that explain the association between these structural variables (income, place of residence, age at first marriage, and education) and contraceptive use among WCA over a decade. The study also uses Ryder's perspective of the theory of social change to describe the effect and compositional changes that have taken in Cameroon from 1991 to 2004.



3.1. Diagram of Theoretical Framework

CHAPTER 4

METHODOLOGY

The purpose of this study is to explain the determinants of modern contraceptive use among women of childbearing age (15–49 years) (WCA) in Cameroon. While a wide range of modern contraceptive methods such as pills and IUDs are used for birth control, condoms are used particularly for both HIV prevention and birth control (International Planned Parenthood Fund, 2010). Within marriage, however, the likelihood of condom use for HIV prevention is assumed to be low. First, this study tests a number of the existing theories of modern contraceptive use for birth control. Second, the study assesses the role of social change on variations in modern contraceptive use over time. Most of the prominent explanations of contraceptive use involve the use of modernization theory (Gregory & Campbell, 1976; Pillai & Teboh, 2010), because the use of modern contraceptives is associated with a number of social, economic, and psychological conditions that constitute inalienable concepts of modernization (Abraham, 1980; Martinelli, 2005; Salvadori, 2007). This section addresses the hypotheses, the source of the data, the samples, operationalization, and the data analysis.

4.1. Data Source and Sampling

The data used in this research come from two Cameroon demographic and health surveys (CDHS), or the Enquete Demographique et de Sante au Cameroun (EDSC), that were conducted in Cameroon in 1991 and 2004 respectively. The CDHS of 1991was one

of the first surveys that were carried out in Cameroon, and like its most recent predecessor, the CDHS of 2004 is the most comprehensive research that has been conducted in the country. Each of the surveys attempted to gather information from the whole country. They both provided information on several aspects of reproductive health such as fertility, sexual knowledge and sexual activities, use of family planning methods, and attitudes and behavior towards HIV/AIDS and other STDs (Pillai & Teboh, 2010), and spousal attitudes towards contraceptive use.

The main difference of the two surveys is that DHS 2004 is an update of the demographic and health indicator previously collected in 1991 and 1998. The CDHS of 1991 was made up of a sample of 3,871 women between the ages of 15 and 49. It is worthy of note that a survey was also conducted based on a subsample of the women interviewed. Thirteen years later, another CDHS for 2004 was carried out constituting 10,462 households, 10,656 women aged 15–49 and 5,280 men (Pillai & Teboh, 2010). The 1998 CDHS has not been considered in this study because the 7-year gap between these first two surveys is not long enough to reveal significant changes in modern contraceptive use over time. Noteworthy is the fact that EDSC and CDHS have been used interchangeably in this study.

4.2. Operationalization

In order to examine modern contraceptive trends in Cameroon over time, the study uses several social, economic, political, and demographic variables that influence the use of modern contraceptives. This section of the study defines the variables selected and describes how each of the constructs is measured. The dependent variable in this study is *modern contraceptive use.* The study breaks down contraceptive use into two

measureable units, namely, other forms of contraception and modern contraception. In this study, *income, place of residence, age at first marriage,* and *education* have been selected as the predictive variables while *religion, media, type of marriage marital status, number of children, and region* constitute the control variables. The study uses occasional definitions and measurements adopted from the1991 and 2004 CDHS since this is where the data for were drawn. In cases where an adaptation of variable operationalization arises, definitions outside those provided by the 1991 and 2004 CDHS have been used.

4.3. Operationalization of the Dependent Variable

4.3.1. Contraceptive Use

Table 4.1. shows the translation and the operationalization of the variable *modern contraceptive use*.

Table 4.1. Contraceptive Use

Original Question	Translation
En ce moment, faites-vous quelque chose ou utilisez-vous une méthode pour éviter de tomber enceinte?	At this moment, are you doing something or using a contraceptive method to avoid getting pregnant?
OUI……..1	YES…….1

Table 4.1-*Continued*

NON…….2	NO……..…….2
Quelle méthode utilisez-vous?	Which method are you using?
STÉRILISATION FÉMININE…….. 1	FEMININE STERILIZATION.....1
STÉRILISATION MASCULINE….....2	MASCULINE STERILIZATION..... ……..2
PILULE.....3	PILL..... 3
DIU.....4	IUD..... 4
INJECTIONS.....5	INJECTIONS..... 5
IMPLANTS.....6	IMPLANTS.....6
CONDOM.....7	CONDOM.....7
CONDOM FÉMININ.....8	FERMINE CONDOM.....8
DIAPHRAGME.....9	DIAPHRAGM.....9
MOUSSE/GELÉE.....10	FOAM/JELLY.....10
MAMA.....11	BREASTFEEDING ……..11
ABSTINENCE PÉRIODIQUE.....12	PERIODIC ABSTINENCE……..12

Table 4.1-*Continued*

RETRAIT.....13	WITHDRAWAL.....13
AUTRE..……..14	OTHER……..……14
(PRÉCISER)	(SPECIFY)

Modern contraceptive use in this study has been defined as any form of birth control (modern or traditional) that WCA in Cameroon use to postpone or prevent the process of fecundity. In response to the question "At this moment, are you doing something or using a contraceptive method to avoid getting pregnant?" (EDSC, 2004, p. 132), a positive response indicates use of both the traditional and modern contraceptives. Since this research examines two different categories of contraceptive use (no use of contraception/traditional use, and use of modern contraception), those who said no and said yes to traditional contraception will constitute users of other forms of contraceptives, while those who said yes to modern contraceptives will be considered as users of modern contraceptives. The pill, IUD, injections, diaphragm, jelly, condoms, and sterilization are considered in this study as modern contraceptives (Libitie, 2004). On the other hand, periodic abstinence, withdrawal, douching (Leke, 1993), and use of other traditional concoctions made out of leaves and tree barks (Cheung, 2011), and no contraception are all referred to as *'others'*. This study thus measures modern contraceptive use among women of childbearing age in Cameroon as shown on table 4.2 below.

Table 4.2. Modern contraceptive Use Measurements

Contraceptive Measurement	Outcome Groups
Other contraceptives	Reference Group
Modern Contraceptives	Comparative Group

4.4. Operationalization of Independent Variables

4.4.1. Income

Table 4.3. is the translation and the operationalization of the variable *income.*

Table 4.3. Income

Original Question	Translation
En dehors de votre travail domestique, est-ce que vous travaillez actuellement?	Outside of your domestic work, do you actually work (for compensation)?
OUI.....1	YES……1
NON 2	NO……..……...2
Pour ce travail, touchez-vous de l'argent, êtes-vous payée en nature ou n'êtes-vous pas du tout payée?	For this work, do you earn a salary, paid in kind, or not paid at all?

Table 4.3-*Continued*

ARGENT SEULEMENT 1	CASH ONLY….....1
ARGENT ET NATURE.....2	IN CASH AND KIND……...……..2
EN NATURE SEULEMENT...3	IN KIND ONLY……..…….....3
PAS PAYÉE 4	NOT PAID……4

Income has been defined in this study as referring to money earned from regular work done consistently for at least one year by WCA in Cameroon other than on a farm or in a business run by the family. The data to measure the effects of income are derived from the country-specific four-tier wealth index provided by CDHS, namely, cash only, in cash and kind, in kind only, and not paid. This study uses a two-tier method of measurement as indicative of cash only and other forms of payment and/or no payment. To this end, those who said they are paid in cash are coded 1 and those who said they are not paid are considered the reference group and are coded 0. Note that cash has been replaced with the variable *income* in this study. Below is the hypothesis for *income* in relation *to modern contraceptive use*.

Table 4.4. Income Hypothesis

No.	Hypothesis	Direction

Table 4.4-*Continued*

1.	The likelihood of using modern contraceptives compared to other contraceptives is higher for women earning an income than women not earning an income.	Positive (+)

4.4.2. Place of Residence

Table 4.5. is the translation and the operationalization of the variable *place of residence.*

Table 4.5. Place of Residence

Original Question	Translation
Pour commencer, je voudrais vous poser des questions sur vous-même et sur votre ménage. Jusqu'à l'âge de 12 ans, avez-vous vécu la plupart du temps à Yaoundé/Douala, à Garoua/Maroua/Bafoussam/Bamenda, dans une autre ville, en milieu rural ou à l'etranger?	First, I would like to ask some questions about you and your household. For most of the time until you were 12 years old, did you live in Yaoundé/Douala, in Garoua/Maroua/Bafoussam/Bamenda, or in another town, in a rural area or abroad?
SI « ETRANGER », PRECISER LE Table	IF (ABROAD), SPECIFY YOUR

4.5-*Continued*

MILIEU DE RESIDENCE.	RESIDENT AREA.
YAOUNDE/DOUALA/AUTRE CAPITALE.....1	Y'DE/D'LA/OTHER CAPITALS.....1
GAROUA/MAROUA/BAFOUSSAM/ BAMENDA/GRDE. VILLE ETRANGER …….....2	GAROUA/MAROUA/BAFOUSSAM/ B'DA/LARGE TOWN ABROAD…….....2
AUTRE VILLE/PTE. VILLE ETRANGER.....3	OTHER SMALL TOWNS/SMALL TOWNS ABROAD…….....3
RURAL/RURAL ETRANGER….....4	RURAL/RURAL AREAS ABROAD.....4
ETRANGER SANS PRECISION…….....5	ABROAD WITHOUT SPECIFICATION.…….…….....5

For purposes of the study, the terms "urban" and "rural" have been used as defining place of residence. Like the UN (2010) that defines a rural area as having under 100,000 inhabitants and urban areas as having more than 100,000 people, this study refers to towns and cities with populations greater than 100,000 inhabitants as being urban, while rural areas (small towns and villages) as having fewer than 100,000 people.

The population of the place notwithstanding, considering WCA as residents of a particular place is based on the length of stay in that area. WCA are considered residents of a particular place if they have been living permanently in that place for more than a year. Thus said, the urban place of residence is coded 1 while the rural place of residence, considered the reference group, is coded 0. Below is the hypothesis for *place of residence* in relation to *modern contraceptive use*.

Table 4.6. Place of Residence Hypothesis

No.	Hypothesis	Direction
1.	The likelihood of using modern contraceptives compared to other contraceptives is higher for urban women than rural women.	Positive (+)

4.4.3. Age at First Marriage

Table 4.7. is the translation and the operationalization of the variable *age at first marriage.*

Table 4.7. Age at First Marriage

Original Question	Translation
Quel âge aviez-vous lorsque vous avez commencé à vivre avec lui?	How old were you when you started living with him (your husband)?
ÂGE.....	AGE……....

Age at first marriage in this study is defined as the time at which a woman of childbearing age takes up residence with her husband or partner. To determine this time period, the question asked was "How old were you when you started living with him?" with him referring to husband or partner (EDSC, 2004, p. 21). The study breaks down *age at first marriage* into three groups: 15–20, classified as young women; 21–25 classified as old women; and 26–49 classified as older women. Since the variables have been dummy coded, the 21–25 age group, *old* is coded 1 and the age group classified as young is coded 0 and considered as the reference group. Also, the 26–49 age group, *older* is coded 1, and the age group 15–20 is coded 0 because it is the reference group. Below are hypotheses for *age at first marriage* in relation to *modern contraceptive use*.

Table 4.8. Age at First Marriage Hypotheses

No.	Hypothesis	Direction
1.	The likelihood of using modern contraceptives compared to other contraceptives is higher for women who marry between 21 and 25 than women who marry between 15 and 20	Positive (+)
2.	The likelihood of using modern contraceptives compared to other contraceptives is higher for women who marry between 26 and 49 than women who marry between 15 and 20	Positive (+)

4.4.4. Education

Table 4.9. is the translation and the operationalization of the variable *education*.

Table 4.9. Education

Original Question	Translation
Êtes-vous jamais allé à l'école?	Have you ever attended school?
OUI……1	YES……1
NON……..2	NO…….2
Quel est le plus haut niveau d'études que vous avez atteint: Primaire, secondaire ou supérieur?	What was the highest level of school you attended: primary, secondary, or higher?
PRIMAIRE..... 1	PRIMARY……..1
SECONDAIRE..... 2	SECONDARY……2
SUPÉRIEUR.....3	HIGHER…….…….3

This research considers education to mean the ability for WCA in Cameroon to have attended some form of school, either the primary and secondary schools or higher and tertiary institutions. The definition does not include informal methods of learning like adult literacy classes. Uneducated WCA in Cameroon are those who have not attended any of the kinds of institutions outlined above. This study attempts to describe the effects

of education on contraceptive use. The question "Have you ever attended school?" (EDSC, 2004, p. 24) was used to measure education. Those who said no will be considered as having no education. In response to the question "What was the highest level of school you attended?" (Primary, secondary, or higher), two other categories of education have been derived. The categories arrived at are as follows: primary and secondary (secondary and higher) education. As is the case with dummy coded variables, *education* is therefore measured as follows: Those with primary education are coded 1, while those with no education are coded as 0 and maintained as the reference group. Again, those with secondary education are coded 1, and those with no education are coded 0 as this is the reference group. Below are hypotheses for *education* in relation to *modern contraceptive use*.

Table 4.10. Education Hypotheses

No.	Hypothesis	Direction
1.	The likelihood of using modern contraceptives compared to other contraceptives is higher among women with primary education than women with no education.	Positive (+)
2.	The likelihood of using modern contraceptives compared to other contraceptives is higher among women with secondary education than women with no education.	Positive (+)

4.5. Hypotheses to be tested

Table 4.11. presents the main hypotheses that are to be tested in the study.

Table 4.11. Study Hypotheses

	Hypothesis	Direction
Income	The likelihood of using modern contraceptives compared to other contraceptives is higher among women earning an income than women not earning an income.	Positive (+)
Place of residence	The likelihood of using modern contraceptives compared to other contraceptives is higher among women living in urban areas than women living in rural areas.	Positive (+)
Old age at first marriage	The likelihood of using modern contraceptives compared to other contraceptives is higher for women who marry between 21 and 25 than women who marry between 15 and 20	Positive (+)
Older age at first marriage	The likelihood of using modern contraceptives compared to other contraceptives is higher for women who marry between 26 and 49 than women who marry between 15 and 20	Positive (+)
Primary education	The likelihood of using modern contraceptives compared to other contraceptives is higher among women with primary education than women with no education.	Positive (+)

Secondary education	The likelihood of using modern contraceptives compared to other contraceptives is higher among women with secondary education than women with no education.	Positive (+)

4.6. Operationalization of Control Variables

This section operationalizes select variables and specifies the methods by which these constructs have been measured. In doing so, the original questions from the questionnaire are written and since they are in French, the questions are translated into English and then operationalized (See questions and their translations on the tables below).

4.6.1. Religion

Table 4.12. shows the translation and the operationalization of the variable *religion*.

Table 4.12. Religion

Original Question	Translation
Quelle est votre religion?	What is your religion?
CATHOLIQUE 1	CATHOLIC 1
PROTESTANT 2	PROTESTANT 2
MUSULMAN.....3	MUSLIM.....3
ANIMISTE.....4	ANIMIST.....4
AUTRE _____6	OTHER _____6
(PRECISER)	(SPECIFY)
AUCUNE----------7	NONE----------7

Religion in this research is defined as the belief in a supreme being that may influence use of modern contraceptive use among Cameroonian women aged 15–49. In order to measure the effects of religion on modern contraceptive use, this variable is measured as follows: Christians coded 1, while Muslims and others, henceforth called "others," is coded as 0. There are no hypotheses for control variables.

4.6.2. Media

Table 4.13. Media

Original Question	Translation
Au cours des derniers mois, avez-vous entendu parler de planification familiale: À la radio? À la télévision? Dans des journaux ou magazines? Affiche/Dépliant	In the last six months, have you heard or read about family planning: On the radio? On the television? In a newspaper or magazine? From a poster? From friends or relatives?
OUI NON	YES NO
RADIO.....1 2	RADIO . . . . . I 2
TÉLÉVISION.....1 2	TELEVISION . . . . . I 2
JOURNAUX OU	OR NEWSPAPER,
MAGAZINES… 1 2	MAGAZINE 1 2
AFFICHE/DÉPLIANT.....1 2	POSTER/ FOLDER . . . . . I 2

Media is defined as any public or private, conventional (print, audio, or visual) or unconventional (word of mouth) method of information dissemination through which WCA in Cameroon have learned of family planning. The constructs taken into consideration in the study are radio, television, print media, and other unconventional forms of information dissemination. This variable is therefore measured as "audio or visual" and "others" categories. In order to measure the effects of the media on contraceptive use, this variable is measured as follows: audio or visual is coded 1 while the category "others" is coded 0. There are no hypotheses for control variables.

4.6.4. Type of Marriage

Table 4.15 shows the translation and the operationalization of the variable *type of marriage*.

Table 4.14. Type of Marriage

Original Question	Translation
Est-ce que votre mari/partenaire a d'autres épouses, /femmes en plus de vous-même ?	Does your husband/ partner have other wives/ women besides you?
OUI..... 1	YES…….1
NON..... 2	NO……..2

Type of marriage refers to polygamy (marriage of one man to two or more women) and monogamy (marriage between one man and one woman). The measurement method for the variable *type of marriage* is derived from the question: "Does your husband/partner have any other wives besides yourself?" (EDSC, 2004 p. 20). A categorical response (yes and no) were the only options. A yes response signifies the presence of polygamy in the household while a no response indicates the presence of monogamy in the household. In order to measure the effects of *type of marriage* on *modern contraceptive use*, respondents in monogamous relationships were coded 0 and maintained the reference groups and those in polygamous relationships were coded 1. There are no hypotheses for control variables.

4.6.5. Marital Status

Table 4.15 shows the translation and the operationalization of the variable *marital status.*

Table 4.15. Marital Status

Original Question	Translation
Êtes-vous actuellement mariée ou vivez-vous actuellement avec un homme comme mari et femme?	Are you currently married or living together with a man as if married?
OUI, ACTUELLEMENT MARIÉE..... 1	YES, ACTUALLY MARRIED……..1
OUI, VIT AVEC UN HOMME..... .2	YES, LIVING WITH A MAN……2
NON, PAS EN UNION..... 3	NO, NOT IN ANY UNION……3

Marital status refers to the type of marital establishment that WCA are in. In this study, the data to measure marital status are derived from the question "Are you currently married or living together with a man as if married?" (EDSC, 2004, p. 48). Three categories of responses were registered: (a) yes, actually married; (b) yes, living with a man as if married; (c) no, not in any union. In this study *marital status* has been used to measure modern contraceptive use as a control variable. In order to measure the effects of type and status of marriage on modern contraceptive use, this variable is dummy-coded into married, other forms, never married, and is measured as follows: married coded 1, while never married is coded as 0. Again, other forms of relationships are coded as 1 and never married is coded 0. There are no hypotheses for control variables.

4.6.6. Number of Children

Table 4.16 shows the translation and the operationalization of the variable *number of children.*

Table 4.16. Number of Children

Original Question	Translation
Combien de fils vivent avec vous? Combien de filles vivent avec vous? SI AUCUN, ENREGISTRER '00'……. FILS À LA MAISON..... FILLES À LA MAISON.....	How many sons live with you? How many daughters live with you? IF NONE, ENTER '00'…… SONS AT HOME…… DAUGHTERS AT HOME……..

Number of children can be said to be the total number of living boys and girls that a woman of childbearing age between the ages 15 and 49 in Cameroon gave birth to. These children would have been born alive and are currently living at home or somewhere else. This variable has not been dummy-coded and has been maintained as a metric or continuous. In order to measure the effects of *number of children* on *modern contraceptive use*, this variable is measured using statistical tests that measure continuous variables such as the *t*-tests. There are no hypotheses for control variables.

4.6.7. Region

Table 4.17 shows the translation and the operationalization of the variable *Region*.

Table 4.17. Region

Original Question	*Translation*
Province d'origine	Province of origin

Prior constitutional provisions in Cameroon divided the country into 7 and then several years later, three other provinces were created out of the 7 provinces to make 10 provinces. Later, Presidential Decree N° 2008/376 of November 12, 2008, transformed the 10 provinces into 10 semi-autonomous regions (www.prc.cm). A region is an area or division, especially part of a country or the world having definable characteristics but not always fixed boundaries (www.merriam-webster.com). In order to determine the differences in modern contraceptive use among regions, this study regroups Cameroon's 10 regions into 5 based on their cultural, linguistic, or economic homogeneity. In order to measure the variable, the regions were dummy-coded and 1 region left out as the

reference group. The rest are measured as follows: Region 1 (Center, South and East regions) is coded as 1 while Douala and Yaoundé, the reference group, are coded as 0. Region 2 (Far North, North and Adamawa regions) is coded 1, while Douala and Yaoundé are coded 0 and maintained as the reference group. Region 3, made up of Littoral and West regions, is coded 1 while Douala and Yaoundé are coded 0. Lastly, Region 4, which constitutes the North West, South West regions, is coded 1, while the reference group, Douala and Yaoundé, are coded as 0. There are no hypotheses for control variables.

4.7. Data Analysis

This section examines the research designs used in the study. Three main designs used in this dissertation are univariate, multinomial, and decomposition analyses.

4.7.1. Univariate Analysis

Univariate analysis in this study refers to the statistical process of analyzing the distribution of cases of single variables only (Vogt, 2005). Under univariate analysis, the study presents the standard deviation, mean variation, and the distribution of each variable. The distribution is described in terms of the skewness and kurtosis of the variables.

4.7.2. Binary Logistic Regression

The various hypotheses in this study are tested using binary logistic regression. This is because the outcome variable of interest in this study, the *use of modern contraception*, is a binary variable. Binary logistic regression is defined as the statistical process of

predicting the probabilities of the different possible outcomes of a categorically distributed dependent variable, given a set of independent variables (Mertler & Vannatta, 2005; Whitley & Ball, 2002).

4.7.3. Decomposition Analysis

The focus of this study on the contributions of various selected determinants on changes in modern contraceptive use is decomposition analysis. Decomposition analysis is the process by which time series data are split into component parts (Vogt, 2005). In this study, Ryder's social change approach is used to describe the processual and compositional changes in contraceptive use that have taken place in Cameroon between 1991 and 2004. The compositional description focuses on the differences in composition of members of each cohort (Pillai & Teboh, 2010). On the other hand, the processual explanation addresses the effects of the variables that affect modern contraceptive use across cohorts (Pillai & Teboh, 2010). Pillai and Sunil (2007) suggest that compositional as well as processual changes are expected to contribute to increases in modern contraceptive use. The decomposition analytic formula used in this study is derived from Pillai and Teboh's (2010) article "A Decade of Contraceptive Use in Cameroon." The formula is as follows: $Ln[P_i/1-P_i] = \Sigma\beta_i x_i$, where $Ln[P_i/1-P_i]$ is the logit of contraceptive use, x_i is a vector of determinants and β_i is a vector of regression coefficients.

The difference in logit of modern contraceptive use is the difference between the logit of modern contraceptive use in 2004 and the logit of modern contraceptive use in

1991. That is, C04 – C91, where C04 is the 2004 EDSC III variable proportion and C91 is the 1991 coded EDSC I variable proportions, as explained in the formula below.

$$Logit(C04) - Logit(C91) = [\beta_{0(04)} - \beta_{0(91)}] + \Sigma P_{ij(91)}(\beta_{ij(04)} - \beta_{ij(91)})$$
$$+\Sigma\beta_{ij(91)}(P_{ij(04)} - P_{ij(91)}) + \Sigma(P_{ij(04)} - P_{ij(91)})(\beta_{ij(04)} - \beta_{ij(91)})$$

$P_{ij(91)}$ = Proportion of the jth category of the ith determinant in DHS 1991

$P_{ij(04)}$ = Proportion of the jth category of the ith determinant in DHS 2004

$\beta_{ij(91)}$ = Coefficient of the jth category of the ith determinant in DHS 1991

$\beta_{ij(04)}$ = Coefficient of the jth category of the ith determinant in DHS 2004

$\beta_{0(91)}$ = Intercept in the regression equation fitted to DHS 1991

$\beta_{0(04)}$ = Intercept in the regression equation fitted to DHS 2004

4.8. Conclusion

In chapter four, the endeavor was to outline the methods by which the dependent variable, the independent variables, and lastly the control variables are to be measured. After dummy coding, the following list of variables have been maintained and shall be used all through the study; dependent variable: *modern contraceptive use,* independent variables: *income, old, older, primary education, residence,* and *secondary education;* control variables: *audio or visual media, Christian, married, number of children, old, older, other forms, Region 1, Region 2, Region 3, Region 4,* and *type of marriage.* All the four independent variables had related hypotheses through which their effects on modern contraceptive use would be measured. The control variables have no related hypotheses. Since the data and variables were originally in French, such data and variables were translated into English before they were operationalized. The last section of the chapter

presented the statistical methods that are employed in the study. These methods are: univariate or descriptive analyses, binary logistic regression, compositional analysis, processual analysis and lastly, decompositional analysis. All these techniques have been used in various combinations to measure the effects of the variables on modern contraceptive use, and to describe the compositional and processual changes that have taken place in Cameroon from 1991 and 2004.

CHAPTER 5

DATA ANALYSES AND RESULTS

5.1. Introduction

This chapter presents the empirical analysis and results of the proposed statistical models of modern contraceptive use in Cameroon. The population under study is made up of women of childbearing age, from15–49 years. A systematic approach to the empirical test of hypothesis necessitates several progressive analysis steps. In this study, the data analysis progresses through various stages such as *descriptives,* to bivariate association between independent variables and the outcome variable, modern contraceptive use, to examinations of the hypothesized net effects of selected independent variables on modern contraceptive use. This approach is pursued through the course of data analysis for this study. The results from various stages of analysis are presented in the following sections of this chapter.

The first section presents a statistical description of the selected variable in this study. Since almost all the variables are categorical, the variables are described in terms of the proportions in various categories such as urban and rural. The description of all the variables is performed separately for the time periods 1991 and 2004. The second section presents the association between the selected variables and the outcome, modern contraceptive use. The associations are examined through chi-squared analysis of variables and presented separately for the two time periods, 1991 and 2004. The third

section presents the results from several regression analyses assessing the empirical validity of the proposed hypotheses. The fourth section examines the contributions of the selected variables to changes in modern contraceptive use between time periods, 1991 and 2004. The chapter ends with a roundup of the main tenets discussed. Said differently, the section therefore presents frequencies and percentages of the categorical descriptive variables and the means, medians, modes, skewness, and kurtosis for the continuous variables. To test the hypothesis, binary logistic regression analysis is carried out. To determine the processual and compositional changes in contraceptive use that have taken place from 1991 to 2004, the phi and interaction effects are used.

5.2. Data Analyses and Results

The study uses frequencies and percentages in reporting categorical variables. It also reports the means, modes, and medians for the continuous variable. Tables are presented for all the variables; bar charts and histograms are presented below. The skewness and kurtosis have been provided for continuous variables.

5.2.1. Descriptive Statistics

This section provides a general description of all the variables used in the study: *audio or visual media, Christian, income, married, number of children, old, older, other forms, primary education, Region 1, Region 2, Region 3, Region 4, residence, secondary education,* and *type of marriage* between 1991 and 2004. Each determinant in 1991 is described independent of its 2004 counterpart.

5.2.1.1. Audio or Visual Media

Tables 1 and 2 show descriptive statistics for respondents who reported that they heard of family planning programs through audio or visual means, that is, radio or television rather than by other means of communication. Frequencies and percentages of the variable are presented below. The data come from the 1991 and 2004 Cameroon Demographic and Health Survey Datasets.

Table 5.1. 1991 Audio or Visual frequencies and percentages

1991 *Audio or Visual Media*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Others	3,244	83.8	83.8	83.8
	Audio or visual	627	16.2	16.2	100.0
	Total	3,871	100.0	100.0	

Figures 5.1–5.4 represent bar charts and histograms of the variable audio or visual media for 1991 and 2004. They present a visual representation of frequencies and percentages of this variable.

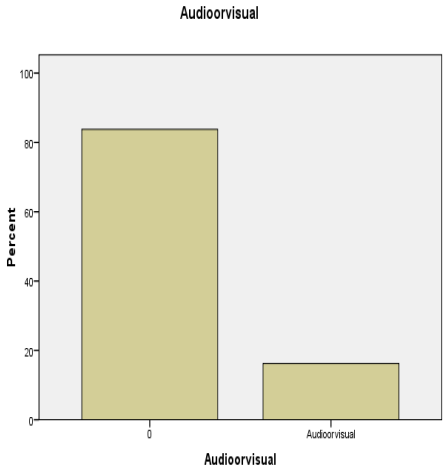


Figure 5.1. 1991 Bar Chart

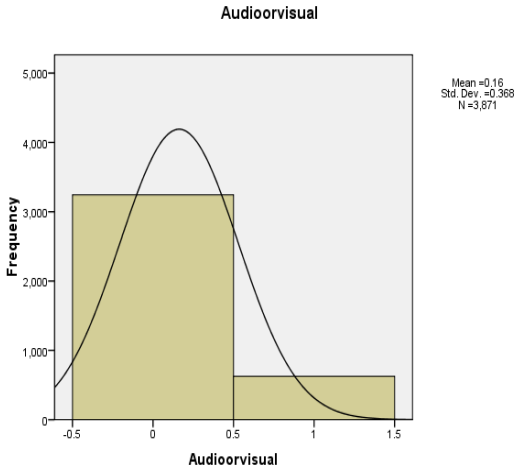


Figure 5.2. 1991 Histogram

In 1991, whereas 16.2% of the 3,871 respondents said they heard of family planning from either television or the radio programs, 83.8% said they had never heard of family planning or have heard of it from other sources like the newspapers, posters, and word of mouth.

Table 5.2. 2004 Audio or Visual frequencies and percentages

2004 *Audio or Visual Media*					
		Frequency	Percent	Valid Percent	Cum. Percent
Valid	Others	7,871	73.9	73.9	73.9
	Audio or visual	2,785	26.1	26.1	100.0
	Total	10,656	100.0	100.0	

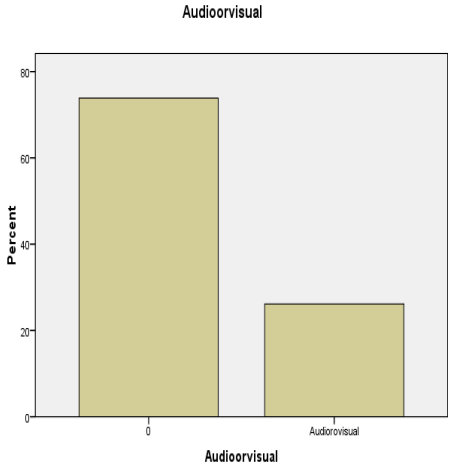


Figure 5.3. 2004 Bar Chart

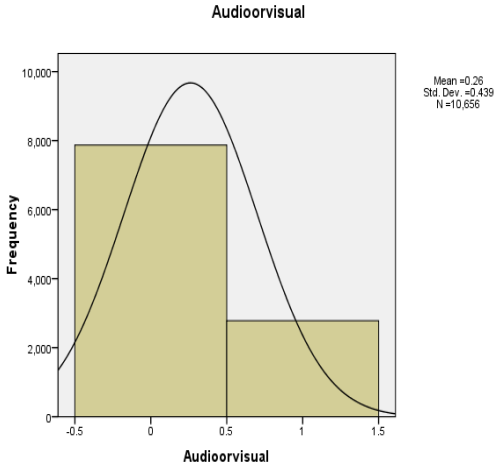


Figure 5.4. 2004 Histogram

In 2004, 28.6% of the 10,656 respondents confirmed they heard of family planning from television or radio while 71.4% got this information from other sources like posters, newspapers, and word of mouth.

5.2.1.2. Christian

Tables 5.3 and 5.4 show descriptive statistics for *Christian.* Frequencies and percentages of the variable are presented below. The data come from the 1991 Cameroon Demographic and Health Survey Datasets.

Table 5.3. 1991 Christian frequencies and percentages

1991 *Christian*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Others	1,045	27.0	27.0	27.0
	Christian	2,826	73.0	73.0	100.0
	Total	3,871	100.0	100.0	

Religion is a credible factor that determines contraceptive use even though this section describes only the percentages of religious beliefs in 1991. In 1991, 27.0% of the population under study said that they practiced other forms of beliefs. Respondents who said they were Christians accounted for 73.0% of the population.

Figures 5.5–5.8 below represent bar charts and histograms of the variable *Christian* for 1991 and 2004. They present a visual representation of the frequencies and percentages.

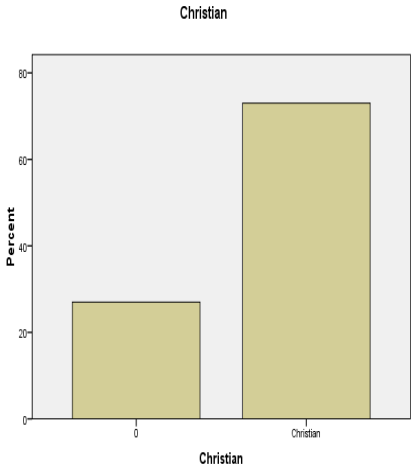


Figure 5.5 1991 Bar Chart

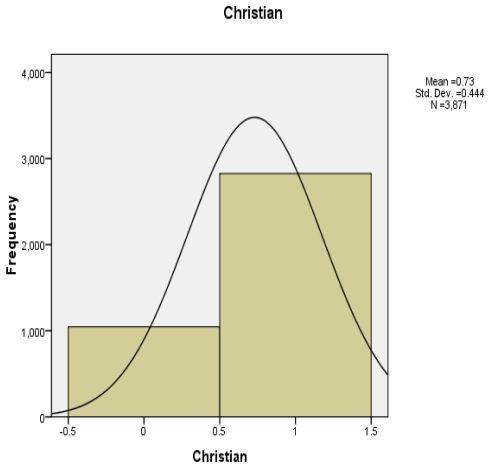


Figure 5.6 1991 Histogram

Table 5.4. 2004 Christian frequencies and percentages

2004 *Christian*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Others	2,912	27.3	27.3	27.3
	Christian	7,744	72.7	72.7	100.0
	Total	10,656	100.0	100.0	

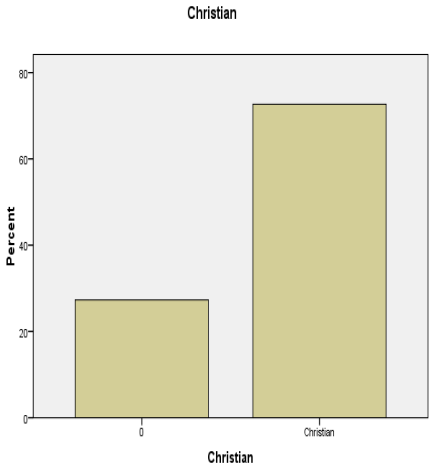


Figure 5.7. 2004 Bar Chart

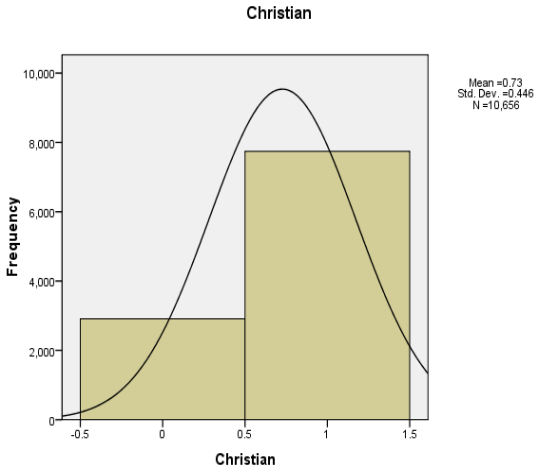


Figure 5.8. 2004 Histogram

In 2004, persons with other forms of religious practices accounted for 27.3% of the population. Christians represented 72.7% of the total number of respondents.

5.2.1.3. Contraceptive Use

Tables 5.5 and 5.6 show descriptive statistics for *contraceptive use* (dependent variable). Frequencies and percentages of the variable are described below in greater detail. The data come from the 1991 and 2004 Cameroon Demographic and Health Survey Datasets.

Table 5.5. 1991 Contraceptive Use frequencies and percentages

1991 *Contraceptive Use*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other contraceptives	3,101	80.1	80.1	80.1
	Modern Contraceptives	770	19.9	19.9	100.0
	Total	3,871	100.0	100.0	

Figures 5.9–5.12 represent bar charts and histograms of the variable *modern contraceptive use*. They present a visual representation of the 1991 frequencies and percentages.

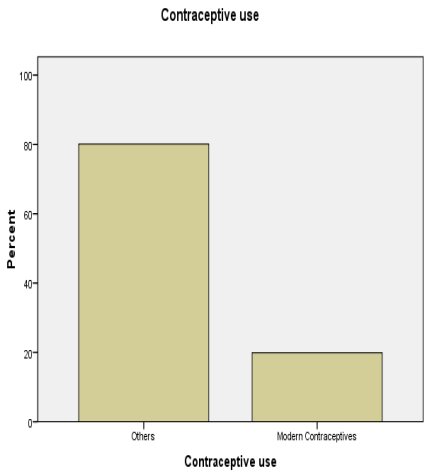


Figure 5.9. 1991 Bar Chart

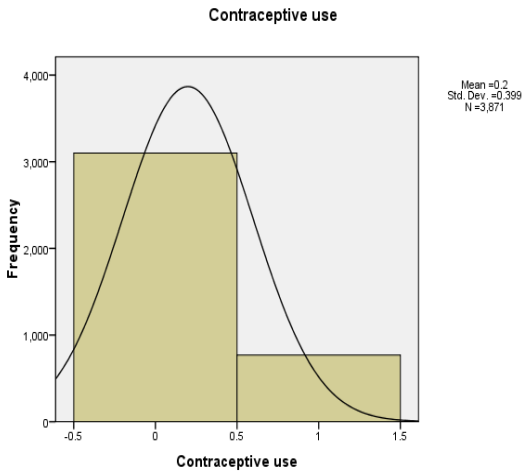


Figure 5.10. 1991 Histogram

Modern contraceptive use in this study is the dependent variable. As has been stated earlier, this study attempts to determine the factors that have shaped the use of modern contraception from 1991 to 2004 in Cameroon. Results of the data state that in 1991, 19.9% of women of childbearing age (WCA) used modern contraceptives, while 80.1% acknowledged that they had never used contraceptives or had used traditional methods of contraception.

Table 5.6. 2004 Modern Contraceptive Use frequencies and percentages

2004 *Modern Contraceptive Use*				
	Frequency	Percent	Valid Percent	Cumulative Percent

Table 5.6-*Continued*

Valid	Other contraceptives	6,127	57.5	57.5	57.5
	Modern Contraceptives	4,529	42.5	42.5	100.0
	Total	10,656	100.0	100.0	

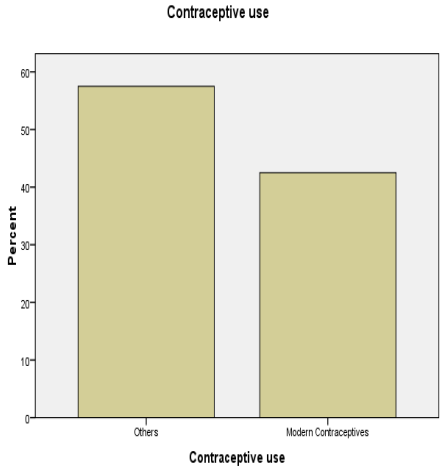


Figure 5.11. 2004 Bar Chart

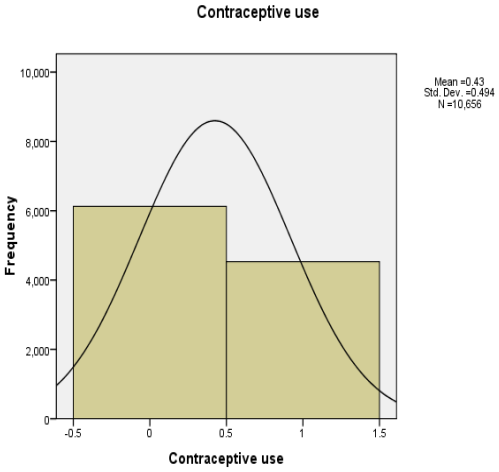


Figure 5.12. 2004 Histogram

By 2004, the percentage of WCA using modern contraceptives was 42.5%, whereas respondents that never used or have used only traditional forms of contraception were 57.5%.

5.2.1.4. Income

Tables 5.7 and 5.8 show descriptive statistics for the variable *income*. Frequencies and percentages of the variable are described below in greater detail. The data come from the 1991 and 2004 Cameroon Demographic and Health Survey Datasets.

Table 5.7. 1991 Income frequencies and percentages

1991 *Income*				
	Frequency	Percent	Valid Percent	Cumulative Percent

Table 5.7-*Continued*

Valid	No				
	Cash	2,280	58.9	58.9	58.9
	Cash	1,591	41.1	41.1	100.0
	Total	3,871	100.0	100.0	

Figures 5.13–5.16 represent bar charts and histograms of the variable *contraceptive use*. They present a visual representation of the 1991 and 2004 frequencies and percentages.

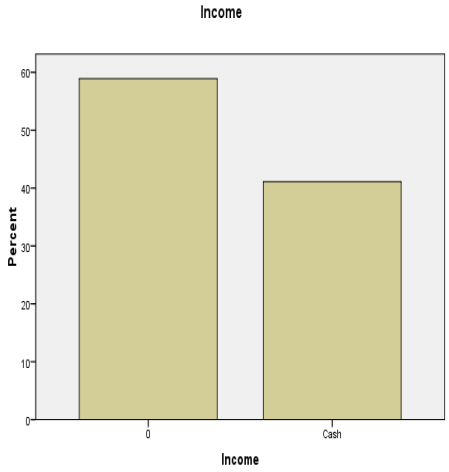


Figure 5.13. 1991 Bar Chart

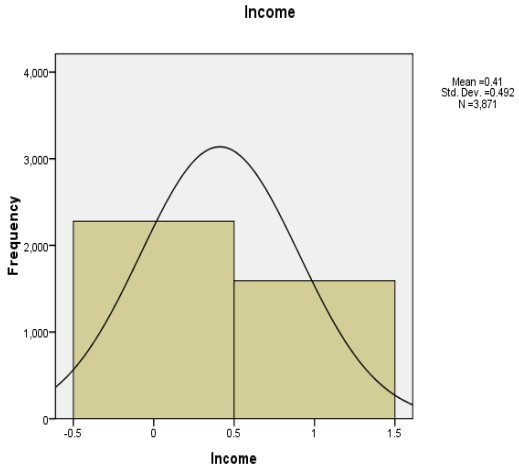


Figure 5.14. 1991 Histogram

According to the 1991 results, 58.8% of the respondents reported as not earning an income while 41.1% were earning an income.

Table 5.8. 2004 Income frequencies and percentages

2004 *Income*				
	Frequency	Percent	Valid Percent	Cumulative Percent

Table 5.8-*Continued*

Valid	No Cash	5,660	53.1	53.1	53.1
	Cash	4,996	46.9	46.9	100.0
	Total	10,656	100.0	100.0	

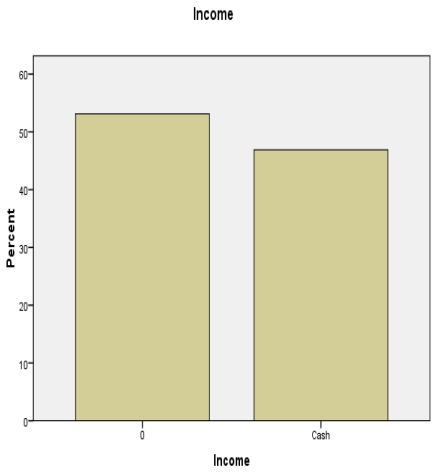


Figure 5.15. 2004 Bar Chart

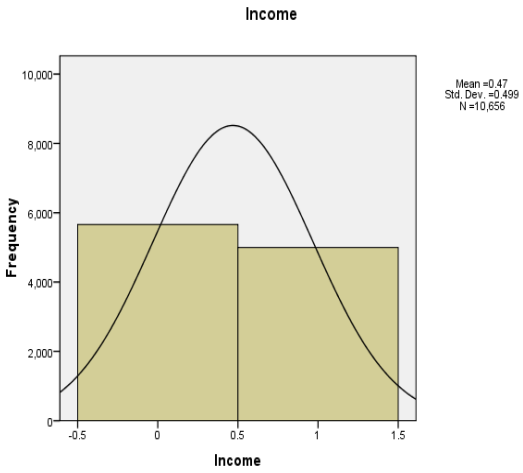


Figure 5.16. 2004 Histogram

In 2004, 53.1% of the respondents reported earning an income while 46.9% of the rest of the respondents said that they were not earning an income. This is indicative of the fact that there was a 5.7% decrease in the number of respondents earning an income.

5.2.1.5. Married

Tables 5.9 and 5.10 show descriptive statistics for the variable *married*, under the subheading *marital status*. Frequencies and percentages of the variable are described below. The data come from the 1991 and 2004 Cameroon Demographic and Health Survey Datasets.

Table 5.9. 1991 Married frequencies and percentages

1991 *Married*

Table 5.9-*Continued*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never				
	Married	1,640	42.4	42.4	42.4
	Married	2,231	57.6	57.6	100.0
	Total	3,871	100.0	100.0	

Figures 5.17–5.20 represent bar charts and histograms of the variable *married*. They present a visual representation of the 1991 and 2004 frequencies and percentages.

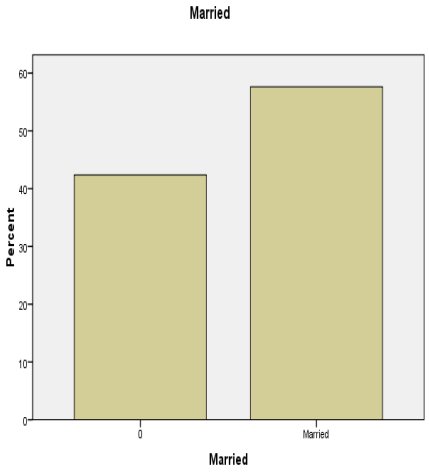


Figure 5.17. 1991 Bar Chart

Figure 5.18. 1991 Histogram

The 1991 data for marital status indicates that 42.4% of the respondents said that they had never been married while 57.6% stated that they were married.

Table 5.10. 2004 Married frequencies and percentages

2004 *Married*

	Frequency	Percent	Valid Percent	Cumulative Percent

Table 5.10-*Continued*

Valid	Never				
	Married	5,233	49.1	49.1	49.1
	Married	5,423	50.9	50.9	100.0
	Total	10,656	100.0	100.0	

Figures 5.17–5.20 represent bar charts and histograms of the variable *married*. They present a visual representation of the 1991 and 2004 frequencies and percentages.

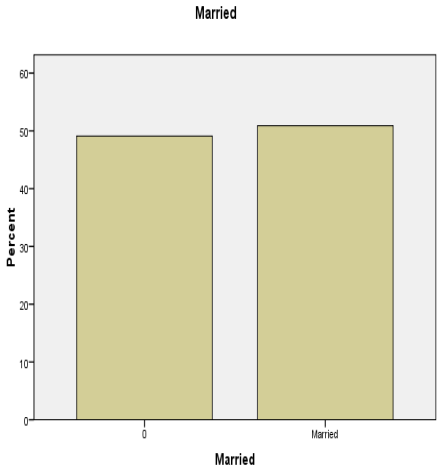


Figure 5.19. 2004 Bar Chart

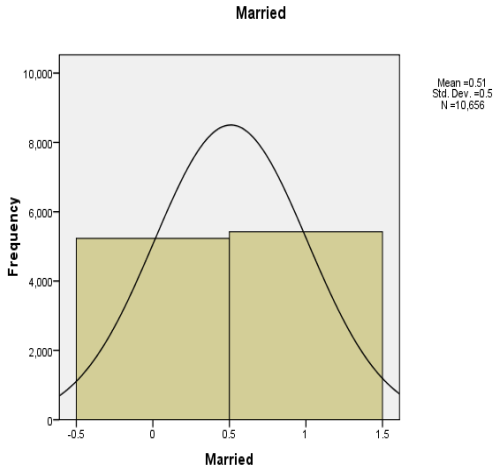


Figure 5.20. 2004 Histogram

In 2004, the number of women who reported that they had never married was 41.9% and women of childbearing age who said that they were married was 50.9%.

5.2.1.6. Number of Children

Tables 5.11 and 5.12 show descriptive statistics for the variable *number of children*. The mean, median, mode, skewness, and kurtosis of the variable are described below. The data come from the 1991 and 2004 Cameroon Demographic and Health Survey Datasets.

Table 5.11. 1991 Number of Children frequencies and percentages

1991 *Number of Children*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1,032	26.7	26.7	26.7
	1	582	15.0	15.0	41.7
	2	475	12.3	12.3	54.0
	3	370	9.6	9.6	63.5
	4	320	8.3	8.3	71.8
	5	285	7.4	7.4	79.2
	6	240	6.2	6.2	85.4
	7	190	4.9	4.9	90.3
	8	151	3.9	3.9	94.2
	9	90	2.3	2.3	96.5
	10	71	1.8	1.8	98.3
	11	34	.9	.9	99.2
	12	18	.5	.5	99.7
	13	10	.3	.3	99.9
	15	1	.0	.0	99.9
	16	2	.1	.1	100.0
	Total	3,871	100.0	100.0	

Figures 5.21–5.24 represent bar charts and histograms of the variable *number of children*. They present a visual representation of the 1991 and 2004 frequencies and percentages this variable presented above. The skewness and kurtosis have been provided because this variable is continuous. The distributional properties of the variables in terms of skewness and kurtosis will be determined by the following rules. Variables with kurtosis values between -3 and +3 are considered to have kurtosis properties of a normal distribution. For skeweness, the following rules apply: if it is less than -1 and greater than +1 it is highly skewed. If it is between -1 and -.5 or between 0.5 and 1, the distribution is considered moderately skewed. If the values are between -.5 and +.5, the distribution is considered approximately symmetrical.

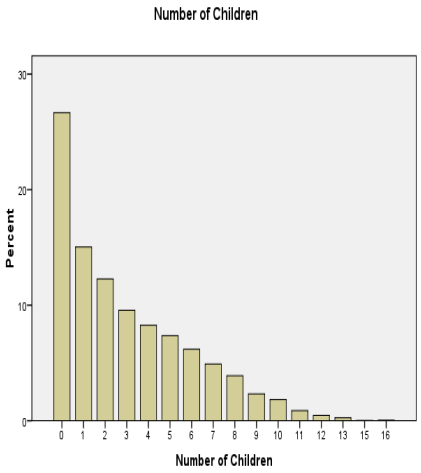


Figure 5.21. 1991 Bar Chart

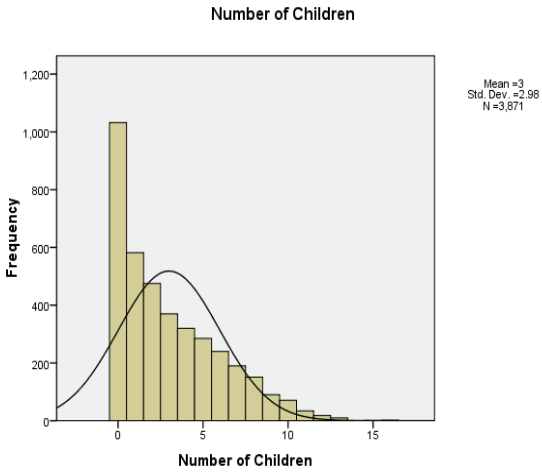


Figure 5.22. 1991 Histogram

As indicated above, all continuous variables are described using the means, medians, and modes. In 1991, respondents reported as having averaged three children per woman of childbearing age (WCA). The median for number of children was two, while the mode was 0. In 1991, the skewness for the variable *number of children* was at .954

with a standard error of .039 while the kurtosis of the same year was .225 with a .079 standard error. By the norms provided earlier, the distribution of *number of children* is moderately skewed while the kurtosis is normally distributed.

Table 5.12. 2004 Number of Children frequencies and percentages

2004 *Number of Children*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	3,099	29.1	29.1	29.1
	1	1,689	15.9	15.9	44.9
	2	1,325	12.4	12.4	57.4
	3	1,042	9.8	9.8	67.1
	4	850	8.0	8.0	75.1
	5	684	6.4	6.4	81.5
	6	608	5.7	5.7	87.2
	7	446	4.2	4.2	91.4
	8	358	3.4	3.4	94.8
	9	250	2.3	2.3	97.1
	10	158	1.5	1.5	98.6
	11	92	.9	.9	99.5
	12	36	.3	.3	99.8
	13	11	.1	.1	99.9
	14	4	.0	.0	100.0
	15	3	.0	.0	100.0
	18	1	.0	.0	100.0
	Total	10,656	100.0	100.0	

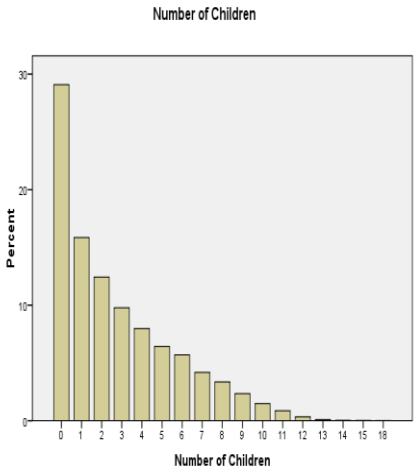


Figure 5.23. 2004 Bar Chart

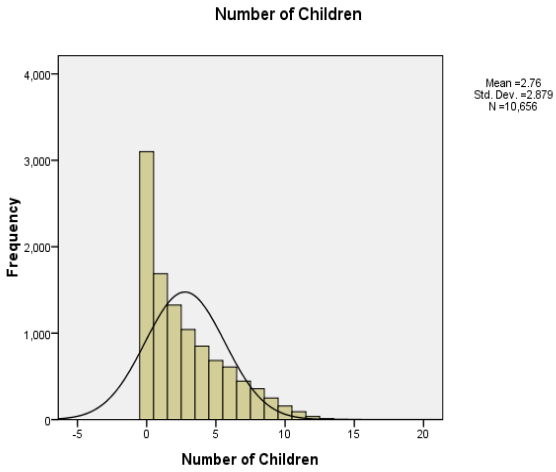


Figure 5.24. 2004 Histogram

By 2004, each woman of childbearing age averaged 2.76 children. The median number of children was 2, while the mode for this variable was 0. In 2004, the skewness for number of children was 1.049 with a standard error of .024, while the kurtosis for the same year was .414 with a standard error of .047. By the norms provided earlier, the distribution of *number of children* is highly skewed while the kurtosis is normally distributed.

5.2.1.7. Old age at first marriage

Tables 5.13 and 5.14 that follow show descriptive statistics for the variable age at marriage classified as *old*. Frequencies and percentages of the variable are described below. The data come from the 1991 and 2004 Cameroon Demographic and Health Survey Datasets.

Table 5.13. 1991 Old frequencies and percentages

1991 *Old*				
	Frequency	Percent	Valid Percent	Cumulative Percent

Table 5.13-*Continued*

Valid	21 to 25	1,671	43.2	43.2	43.2
	15 to 20	2,200	56.8	56.8	100.0
	Total	3,871	100.0	100.0	

Figures 5.25–5.28 represent bar charts and histograms of the variable *old*. They present a visual representation of the 1991 and 2004 frequencies and percentages.

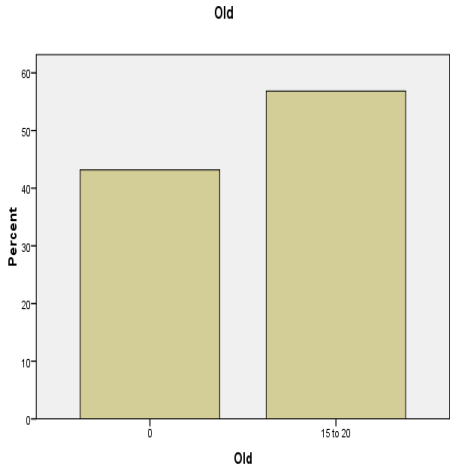


Figure 5.25. 1991 Bar Chart

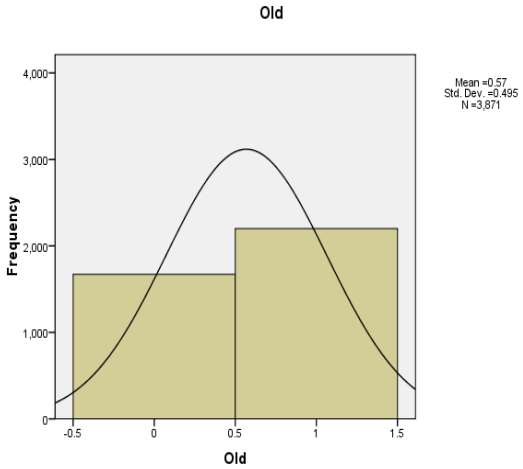


Figure 5.26. 1991 Histogram

In 1991, women of childbearing age classified as old (21–25) accounted for 43.2% of the population. Women of childbearing age classified as young (15–20) represented 56.8% of the total number of respondents.

Table 5.14. 2004 Old frequencies and percentages

2004 *Old*				
	Frequency	Percent	Valid Percent	Cumulative Percent

Table 5.14-*Continued*

Valid	21 to 25	4,655	43.7	43.7	43.7
	15 to 20	6,001	56.3	56.3	100.0
	Total	10,656	100.0	100.0	

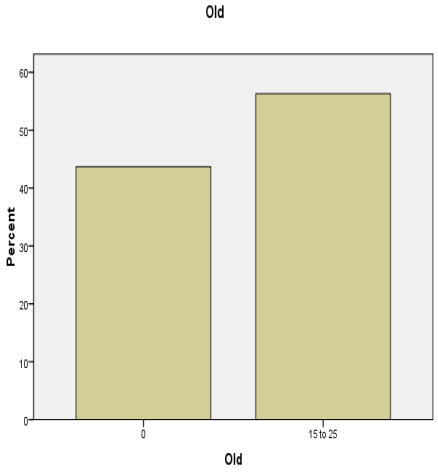


Figure 5.27 2004 Bar Chart

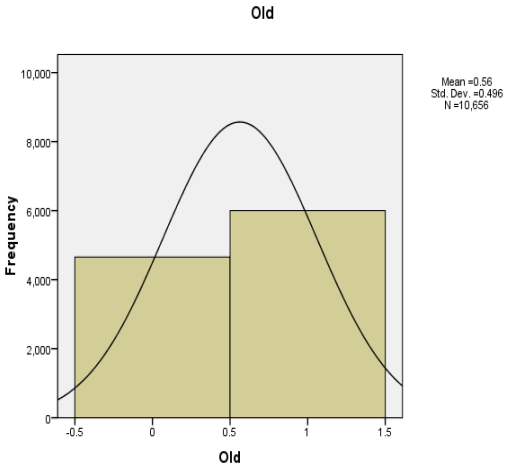


Figure 5.28 2004 Histogram

By 2004, the respondents of childbearing age classified as old (21–25) were 43.7%; meanwhile, respondents of childbearing age classified as young (15–20) represent 56.3% of the population under study.

5.2.1.8. Older age at first marriage

Tables 5.15 to 5.16 show descriptive statistics for the variable age at marriage classified as *older.* Frequencies and percentages of the variable are described below. The data come from the 1991 and 2004 Cameroon Demographic and Health Survey Datasets.

Table 5.15. 1991 Older frequencies and percentages

1991 *Older*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	15 to 20	3,825	98.8	98.8	98.8
	26 to 49	46	1.2	1.2	100.0
	Total	3,871	100.0	100.0	

Figures 5.29–5.32 represent bar charts and histograms of the variable *older* (subgroup of the variable marital status). They present a visual representation of the 1991 and 2004 frequencies and percentages.

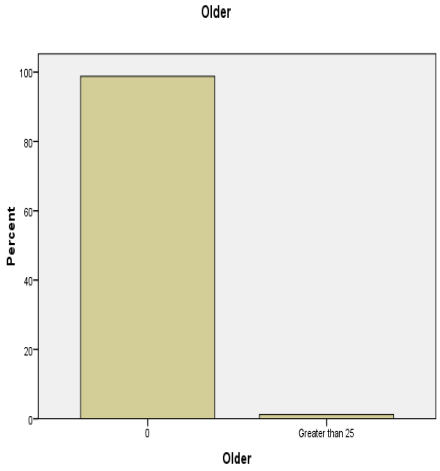


Figure 5.29. 1991 Bar Chart

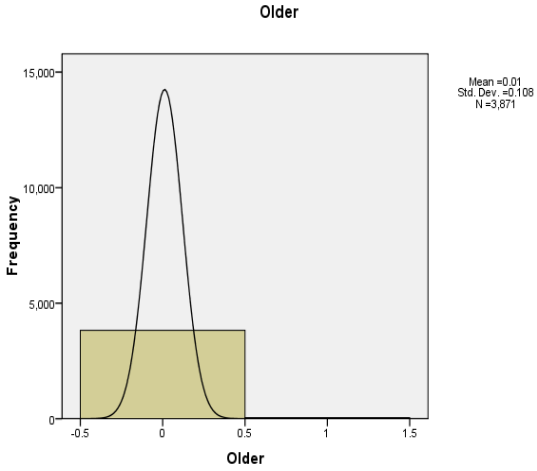


Figure 5.30. 1991 Histogram

In 1991, women of childbearing age classified as old (21–25) accounted for 98.8% of the population. Women of childbearing age classified as older (26–49) represented 1.2% of the total number of respondents.

Table 5.16. 2004 Older frequencies and percentages

2004 *Older*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21 to 25	10,366	97.3	97.3	97.3
	26 to 49	290	2.7	2.7	100.0
	Total	10,656	100.0	100.0	

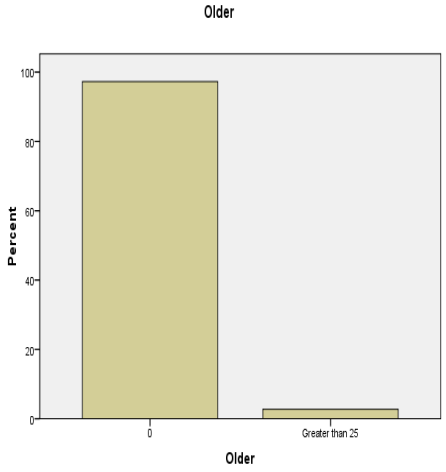


Figure 5.31. 2004 Bar Chart

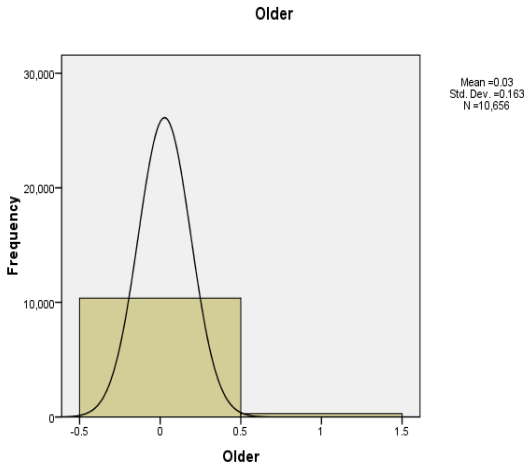


Figure 5.32. 2004 Histogram

By 2004, the respondents of childbearing age classified as old (21–25) were 97.3%; meanwhile, respondents of childbearing age classified as older (26–49) represent 2.7%.

5.2.1.9. Other Forms of relationships

Tables 5.17 and 5.18 show descriptive statistics for the variable marital status classified as *other forms.* Frequencies and percentages of the variable are described below. The data used comes from the 1991 and 2004 Cameroon Demographic and Health Survey Datasets.

Table 5.17 1991 Other Forms frequencies and percentages

1991 *Other Forms*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never married	3,065	79.2	79.2	79.2
	Living together, widow, divorce, not living together	806	20.8	20.8	100.0
	Total	3,871	100.0	100.0	

Figures 5.33–5.36 represent bar charts and histograms of the variable *other forms*. They present a visual representation of the 1991 and 2004 frequencies and percentages.

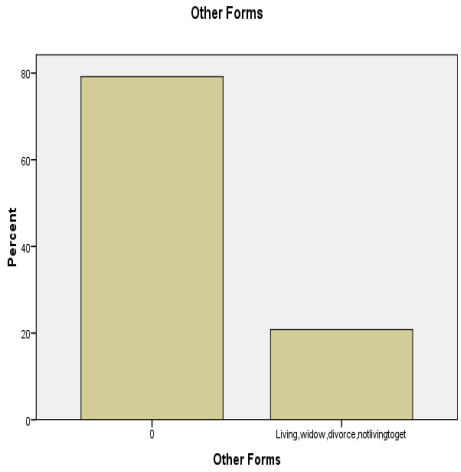


Figure 5.33. 1991 Bar Chart

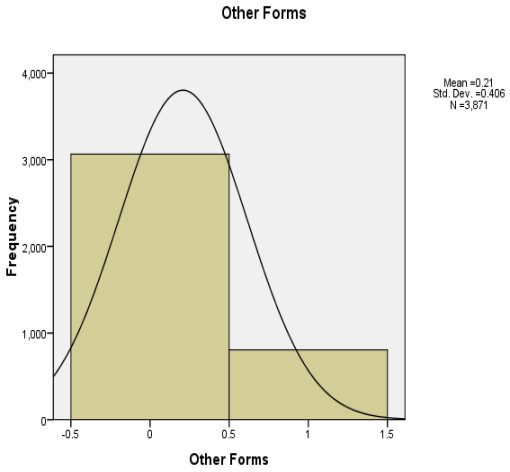


Figure 5.34. 1991 Histogram

The 1991 data indicate that 20.8% of the respondents were in *other forms* of relationships while 79.2% of the respondents said that they had never been married.

Table 5.18. 2004 Other Forms frequencies and percentages

2004 *Other Forms*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never married	7,957	74.7	74.7	74.7
	Living together, widow, divorced, not living together	2,699	25.3	25.3	100.0
	Total	10,656	100.0	100.0	

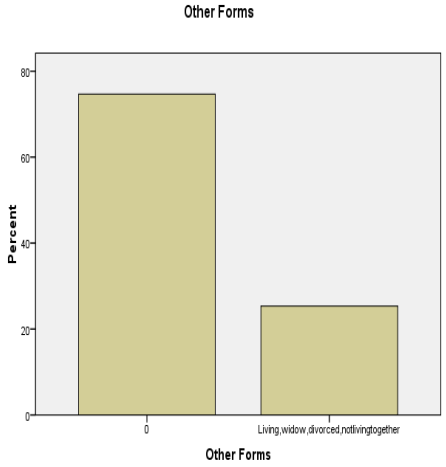


Figure 5.35. 2004 Bar Chart

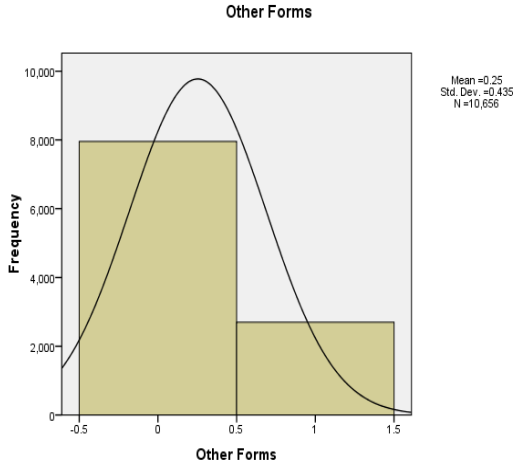


Figure 5.36. 2004 Histogram

` The 2004 data for other forms of marital status indicate that 25.3% of the respondents said that they were in other forms of relationships while 74.7% stated that they were married.

5.2.1.9. Primary Education

Tables 5.19 and 5.20 show descriptive statistics for the variable *primary education*. Frequencies and percentages of the variable are described below. The data come from the 1991 and 2004 Cameroon Demographic and Health Survey Datasets.

Table 5.19. 1991 Primary Education frequencies and percentages

1991 *Primary Education*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No edu	2,596	67.1	67.1	67.1
	Primary	1,275	32.9	32.9	100.0
	Total	3,871	100.0	100.0	

Figures 5.37–5.40 represent bar charts and histograms of the variable *primary education*. They present a visual representation of the 1991 and 2004 frequencies and percentages.

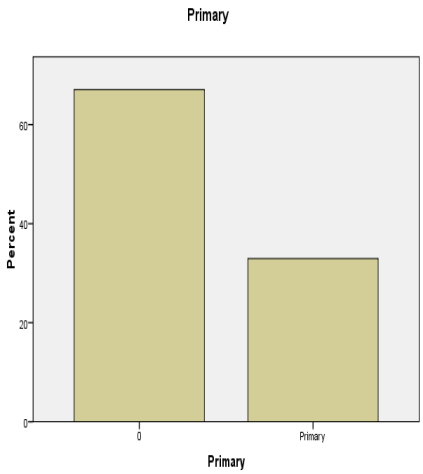


Figure 5.37. 1991 Bar Chart

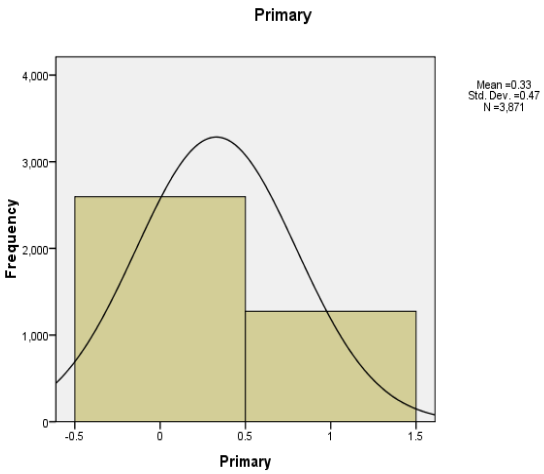


Figure 5.38. 1991 Histogram

The literature reviewed was replete with studies stating that education is a determinant of contraceptive use. This section describes the percentages and frequencies of primary education in 1991. In 1991, a total of 67.1% indicated that they have had no form of education while 32.9% stated that they had acquired primary education.

Table 5.20. 2004 Primary Education frequencies and percentages

2004 *Primary Education*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No edu	6,349	59.6	59.6	59.6
	Primary	4,307	40.4	40.4	100.0
	Total	10,656	100.0	100.0	

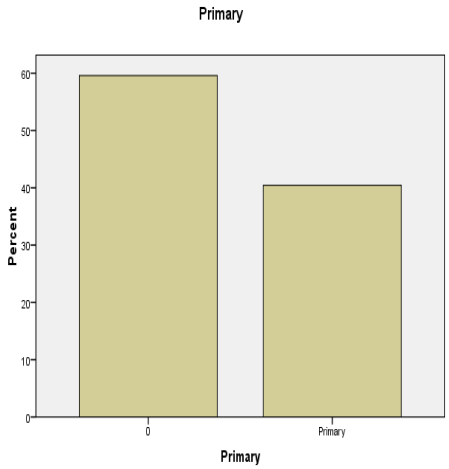


Figure 5.39. 2004 Bar Chart

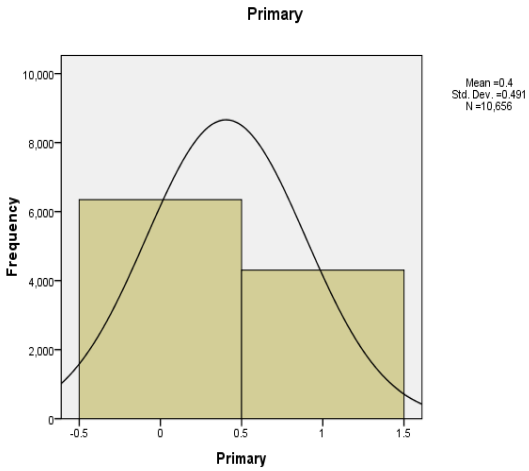


Figure 5.40. 2004 Histogram

In 2004, 59.6% of the respondents had no education while 40.4% of the total respondents stated that they had attended primary schools or acquired a primary education.

5.2.1.10. Region 1

The region where a person comes from has also been determined as important in this study. Tables 5.21 and 5.22 show descriptive statistics for the variable *Region 1*. The frequencies and percentages of the variable are described below. The data come from the

1991 and 2004 Cameroon Demographic and Health Survey Datasets.

Table 5.21. 1991 Region 1 frequencies and percentages

1991 *Region 1*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dla/Yde	2,720	70.3	70.3	70.3
	Region 1	1,151	29.7	29.7	100.0
	Total	3,871	100.0	100.0	

Figures 5.41–5.44 represent bar charts and histograms of the variable *Region 1*. They present a visual representation of the 1991 and 2004 frequencies and percentages.

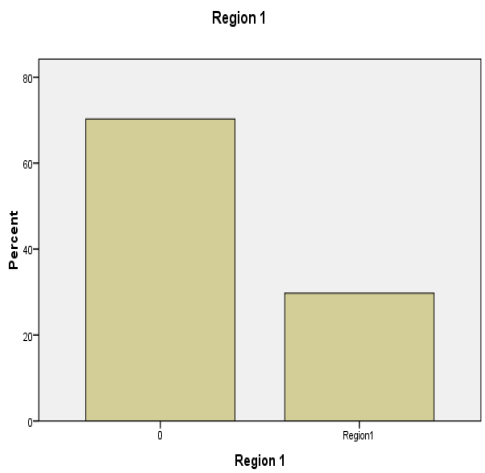


Figure 5.41. 1991 Bar Chart

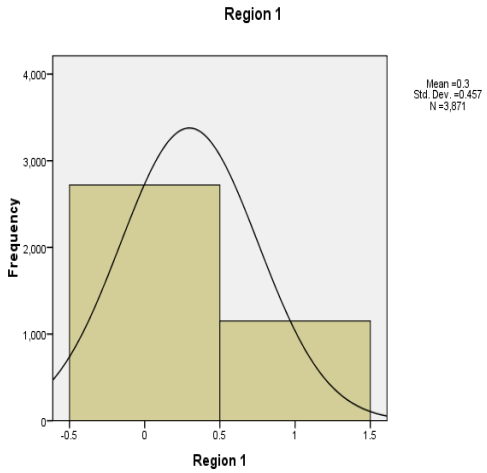


Figure 5.42. 1991 Histogram

In 1991, 70.3% of the respondents reported that they lived in Douala and Yaounde. In the same year, 27.7% of the respondents reported that they lived in Region 1, representative of Center, South, and East Regions.

Table 5.22. Region 1 frequencies and percentages

2004 *Region 1*				
	Frequency	Percent	Valid Percent	Cumulative Percent

Table 5.22-*Continued*

Valid	Dla/Yde	8,721	81.8	81.8	81.8
	Region 1	1,935	18.2	18.2	100.0
	Total	10,656	100.0	100.0	

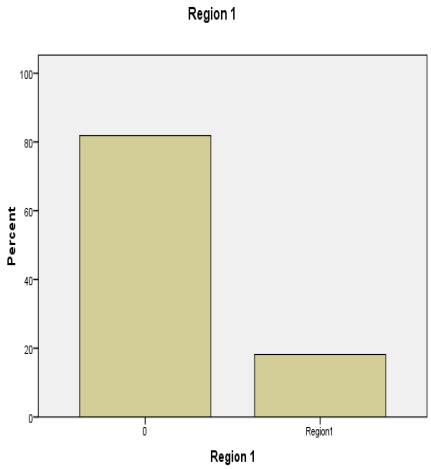


Figure 5.43. 2004 Bar Chart

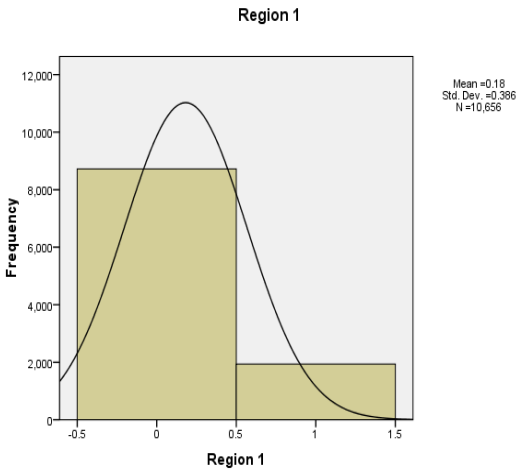


Figure 5.44. 2004 Histogram

In 2004, 81.8% of the respondents lived in Yaounde and Douala; in the same year, 18.2% of the respondents reported that they lived in Region 1, meaning Center, South, and East Regions.

5.2.1.11. Region 2

Tables 5.23 and 5.24 show descriptive statistics for the variable *Region 2*. The frequencies and percentages of the variable are described below. The data come from the 2004 Cameroon Demographic and Health Survey Datasets.

Table 5.23. 1991 Region 2 frequencies and percentages

1991 *Region 2*				
	Frequency	Percent	Valid Percent	Cumulative Percent

Table 5.23-*Continued*

Valid	Dla/Yde	2,838	73.3	73.3	73.3
	Region2	1,033	26.7	26.7	100.0
	Total	3,871	100.0	100.0	

Figures 5.45–5.48 represent bar charts and histograms of the variable *Region 2*. They present a visual representation of the 1991 and 2004 frequencies and percentages.

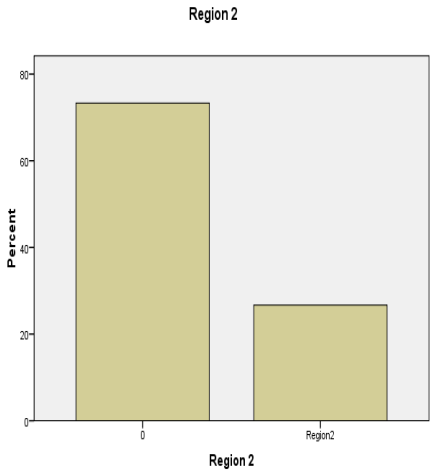


Figure 5.45. 1991 Bar Chart

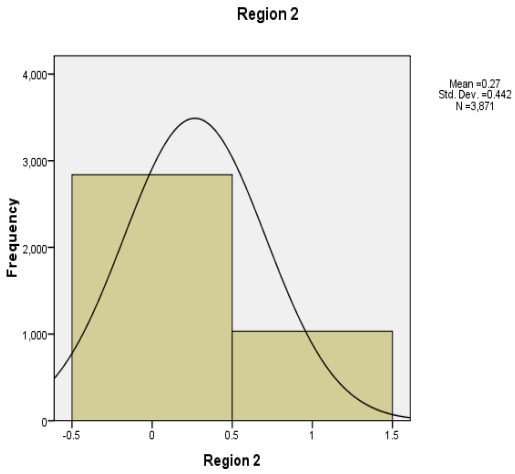


Figure 5.46. 1991 Histogram

In 1991, 73.3% of the respondents reported that they lived in Douala and Yaounde. In the same year, 26.7% of the respondents reported that they lived in Region 2, representing Extreme North, North, and Adamwa.

Table 5.24. 2004 Region 2 frequencies and percentages

2004 *Region 2*				
	Frequency	Percent	Valid Percent	Cumulative Percent

Table 5.24-*Continued*

Valid	Dla/Yde	8,834	82.9	82.9	82.9
	Region 2	1,822	17.1	17.1	100.0
	Total	10,656	100.0	100.0	

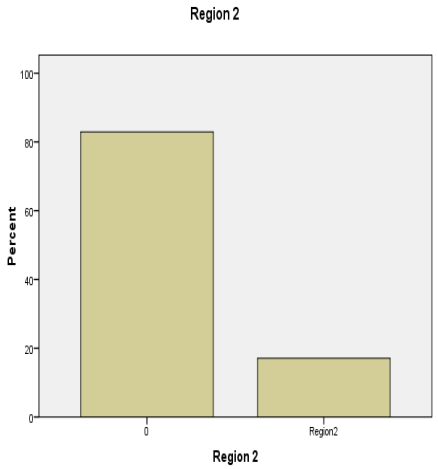


Figure 5.47. 2004 Bar Chart

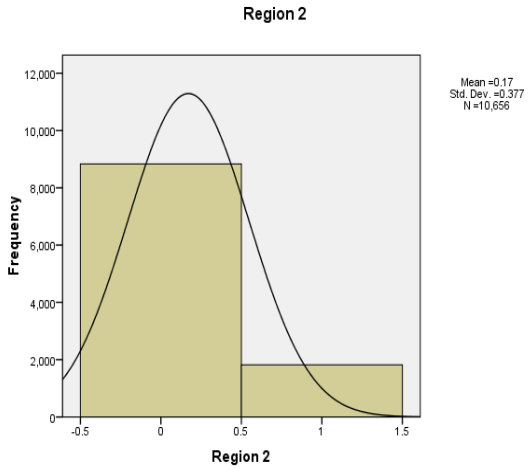


Figure 5.48. 2004 Histogram

In 2004, 82.9% of the respondents reported that they lived in Douala and Yaounde. In the same year, 17.1% of the respondents reported that they lived in Region 2, representating Exterme North, North, and Adamwa.

5.2.1.12. Region 3

Tables 5.25 and 5.26 show descriptive statistics for the variable *Region 3*. The frequencies and percentages of the variable are described below. The data come from the 1991 and 2004 Cameroon Demographic and Health Survey Datasets.

Table 5.25. 1991 Region 3 frequencies and percentages

1991 *Region 3*				
	Frequency	Percent	Valid Percent	Cumulative Percent

Table 5.25-*Continued*

Valid	Dla/Yde	3,262	84.3	84.3	84.3
	Region 3	609	15.7	15.7	100.0
	Total	3,871	100.0	100.0	

Figures 5.49–5.52 below represent bar charts and histograms of the variable *Region 3*. They present a visual representation of the 1991 and 2004 frequencies and percentages of this variable presented above.

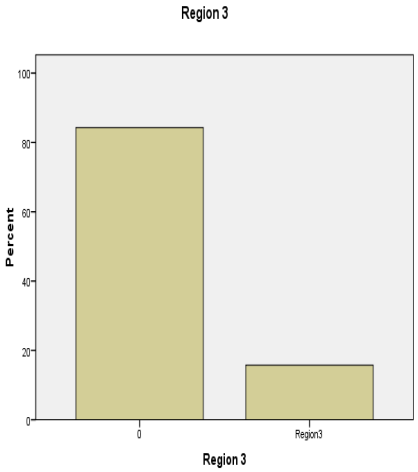


Figure 5.49. 1991 Bar Chart

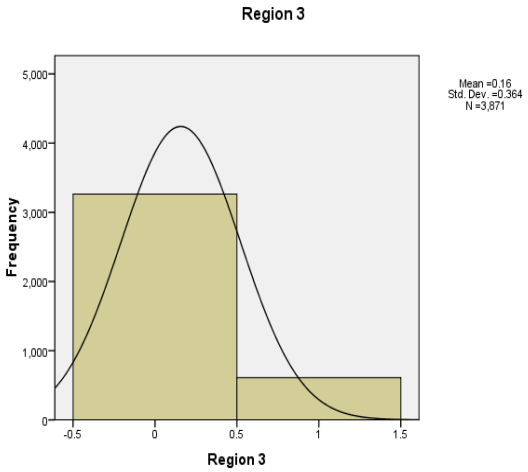


Figure 5.50. 1991 Histogram

In 1991, 84.3% of the respondents reported that they lived in Douala and Yaounde. In the same year, 15.7% of the respondents reported that they lived in Region 3, representating Littoral and West Regions.

Table 5.26. 2004 Region 3 frequencies and percentages

2004 *Region 3*				
	Frequency	Percent	Valid Percent	Cumulative Percent

Table 5.26-*Continued*

Valid	Dla/Yde	7,337	68.9	68.9	68.9
	Region 3	3,319	31.1	31.1	100.0
	Total	10,656	100.0	100.0	

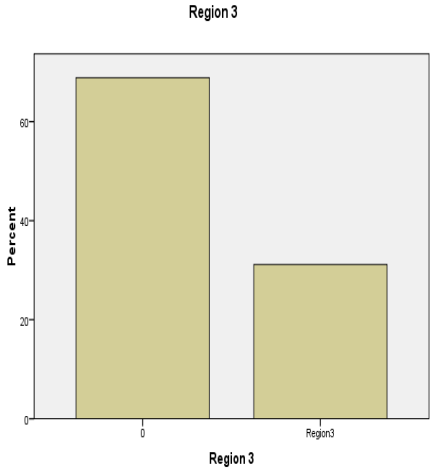


Figure 5.51. 2004 Bar Chart

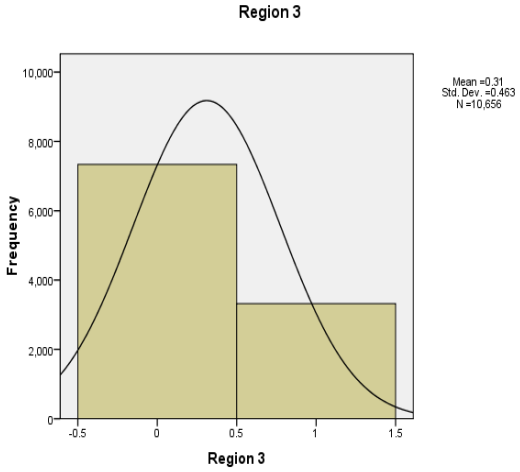


Figure 5.52. 2004 Histogram

In 2004, 68.9% of the respondents reported that they lived in Douala and Yaounde. In the same year, 31.1% of the respondents reported that they lived in Region 3, representating Littoral and West Regions.

5.2.1.13. Region 4

Tables 5.27 and 5.28 show descriptive statistics for the variable *Region 4*. The frequencies and percentages of the variable are described below. The data come from the 2004 Cameroon Demographic and Health Survey Datasets.

Table 5.27. 1991 Region 4 frequencies and percentages

1991 *Region 4*				
	Frequency	Percent	Valid Percent	Cumulative Percent

Table 5.27-*Continued*

Valid	Dla/Yde	3,273	84.6	84.6	84.6
	Region 4	598	15.4	15.4	100.0
	Total	3,871	100.0	100.0	

Figures 5.53–5.56 represent bar charts and histograms of the variable *Region 4*. They present a visual representation of the 1991 and 2004 frequencies and percentages this variable presented.

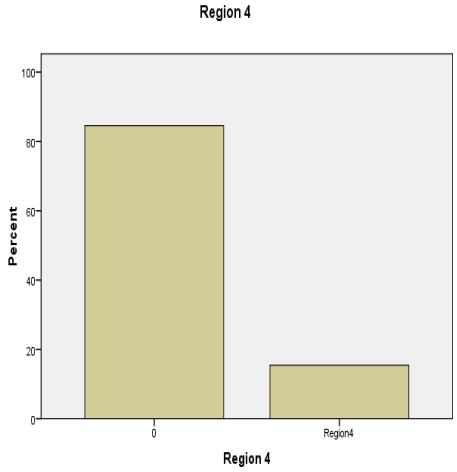


Figure 5.53. 1991 Bar Chart

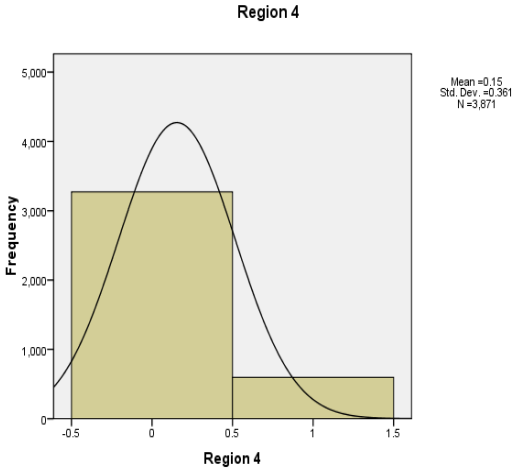


Figure 5.54. 1991 Histogram

In 1991, 84.6% of the respondents reported that they lived in Douala and Yaounde. In the same year, 15.4% of the respondents reported that they lived in Region 4, representing North West and South West Regions.

Table 5.28. 2004 Region 4 frequencies and percentages

2004 *Region 4*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dla/Yde	8,723	81.9	81.9	81.9
	Region 4	1,933	18.1	18.1	100.0
	Total	10,656	100.0	100.0	

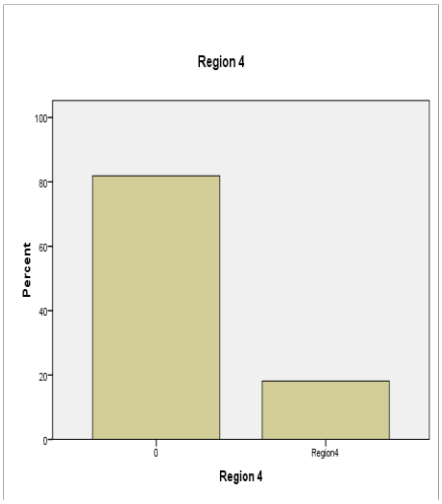


Figure 5.55. 2004 Bar Chart

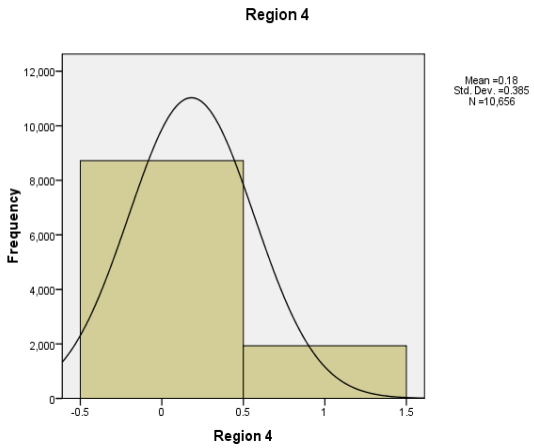


Figure 5.56. 2004 Histogram

In 2004, 81.9% of the respondents reported that they lived in Douala and Yaounde. In the same year, 18.1% of the respondents reported that they lived in Region 4, representing North West and South West Regions.

5.2.1.14. Residence

Tables 5.29 and 5.30 show descriptive statistics for the variable *place of residence.* The frequencies and percentages of the variable are described below. The data come from the 2004 Cameroon Demographic and Health Survey Datasets.

Table 5.29. 1991 Residence frequencies and percentages

1991 *Residence*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rural	1,685	43.5	43.5	43.5
	Urban	2,186	56.5	56.5	100.0
	Total	3,871	100.0	100.0	

Figures 5.57–5.60 represent bar charts and histograms of the variable *place of residence*. They present a visual representation of the 1991 and 2004 frequencies and percentages of this variable.

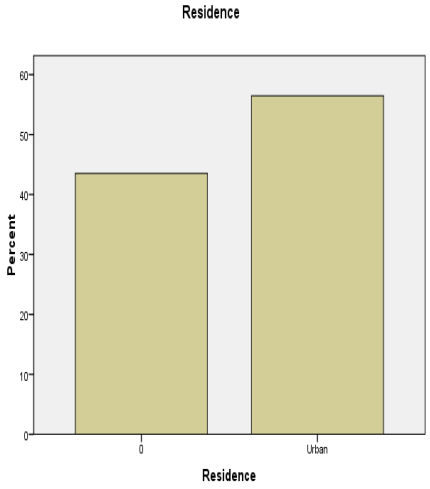


Figure 5.57. 1991 Bar Chart

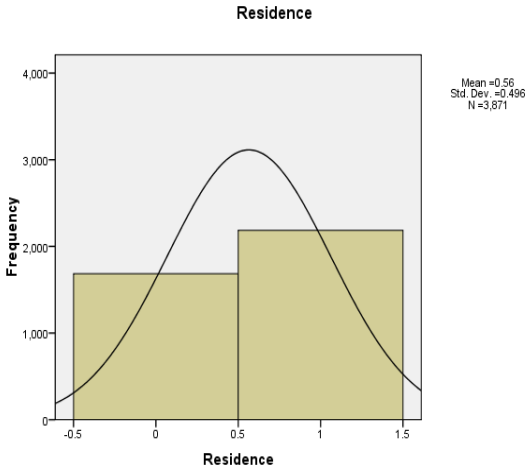


Figure 5.58. 1991 Histogram

Place of residence, which also has an important role to play in determining use of modern contraceptives, was broken down into urban and rural areas. In 1991, respondents living in rural areas accounted for 43.5% of the population while 56.5% lived in urban areas.

Table 5.30. 2004 Residence frequencies and percentages

2004 *Place of Residence*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rural	5,386	50.5	50.5	50.5
	Urban	5,270	49.5	49.5	100.0
	Total	10,656	100.0	100.0	

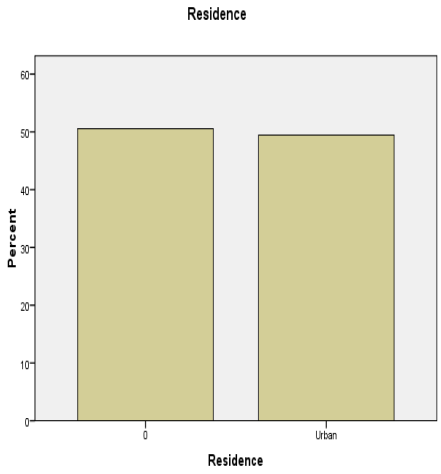


Figure 5.59. 2004 Bar Chart

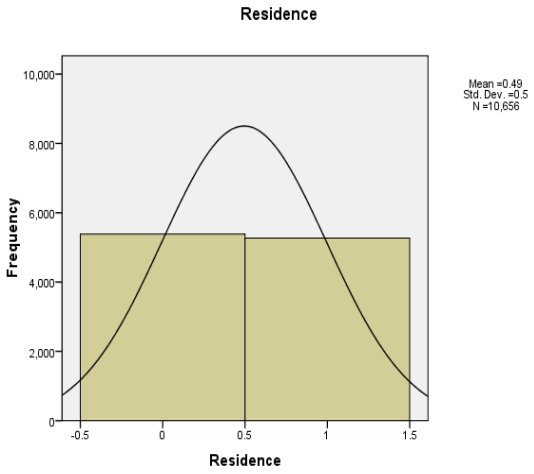


Figure 5.60. 2004 Histogram

By 2004, 50.5% of the respondents said they lived in rural areas while 49.5% lived in urban areas.

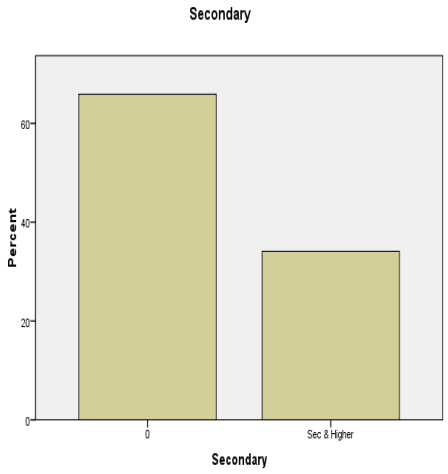
5.2.1.15. Secondary Education

Tables 5.31 and 5.32 show descriptive statistics for the variable *secondary education*. Frequencies and percentages of the variable are described below. The data come from the 1991 and 2004 Cameroon Demographic and Health Survey Datasets.

Table 5.31 1991 Secondary Education frequencies and percentages

1991 *Secondary Education*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No edu	2,551	65.9	65.9	65.9
	Sec & Higher	1,320	34.1	34.1	100.0
	Total	3,871	100.0	100.0	

Figures 5.61–5.64 represent bar charts and histograms of the variable *secondary education*. They present a visual representation of the 1991 and 2004 frequencies and percentages of this variable.



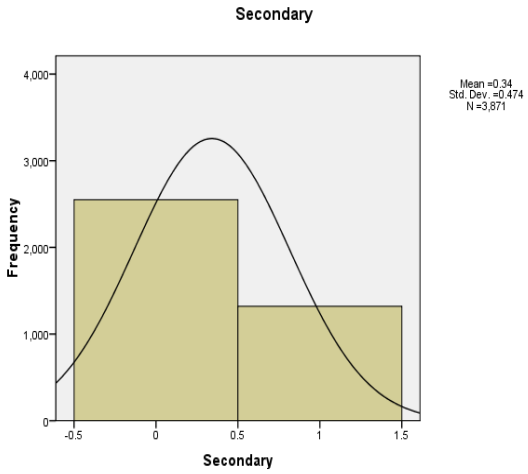


Figure 5.61. 1991 Bar Chart

Figure 5.62. 1991 Histogram

In 1991, 65.9% of the respondents accepted to have had no education while 34.1% stated that they had attended school through secondary and higher or tertiary institutions.

Table 5.32. 2004 Secondary Education frequencies and percentages

2004 *Secondary Education*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No edu	6,448	60.5	60.5	60.5
	Sec & Higher	4,208	39.5	39.5	100.0
	Total	10,656	100.0	100.0	

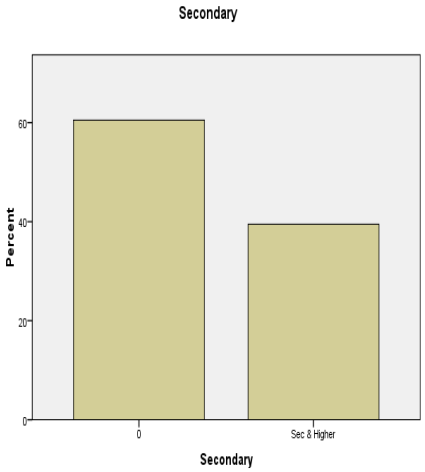


Figure 5.63. 2004 Bar Chart

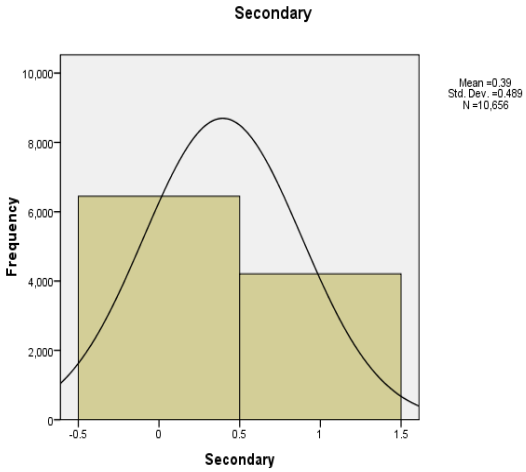


Figure 5.64. 2004 Histogram

In 2004, 60.5% of the respondents said they have had no education while 39.5% stated that they had attended school through secondary and higher or tertiary institutions.

5.2.1.16. Type of Marriage

Tables 5.33 and 5.34 show descriptive statistics for the variable *type of marriage*. Frequencies and percentages of the variable are described below. The data come from the 2004 Cameroon Demographic and Health Survey Datasets.

Table 5.33 1991 Type of Marriage frequencies and percentages

1991 *Type of Marriage*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Monogamy	2,097	54.2	54.2	54.2
	Polygamy	1,774	45.8	45.8	100.0
	Total	3,871	100.0	100.0	

Figures 5.65–5.68 represent bar charts and histograms of the variable *type of marriage*. They present a visual representation of the 1991 and 2004 frequencies and percentages of this variable.

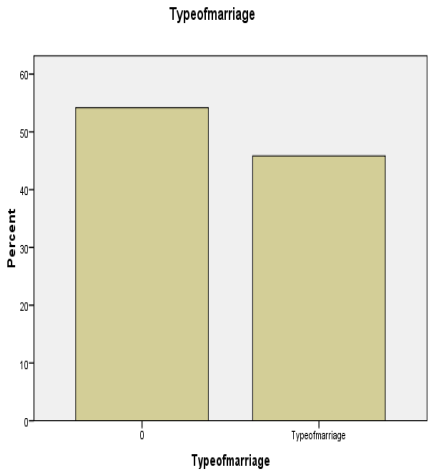


Figure 5.65. 1991 Bar Chart

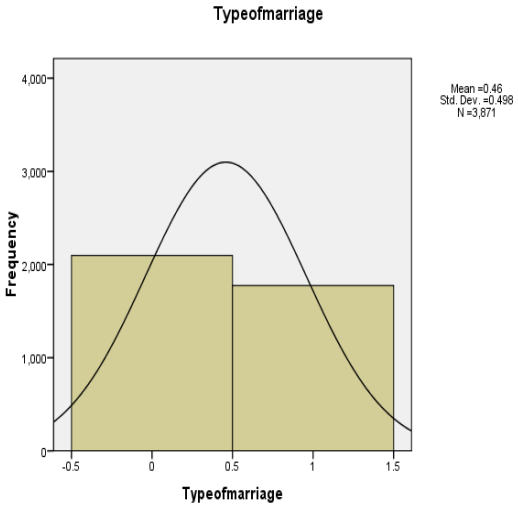


Figure 5.66. 1991 Histogram

In 1991, 54.2% of the respondents accepted to have been in monogamous types of marriage while 45.8% stated that their husbands had more than one wife or were in polygamous set ups.

Table 5.34. 2004 Type of Marriage frequencies and percentages

2004 *Type of Marriage*					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Monogamy	5,624	52.8	52.8	52.8
	Polygamy	5,032	47.2	47.2	100.0
	Total	10,656	100.0	100.0	

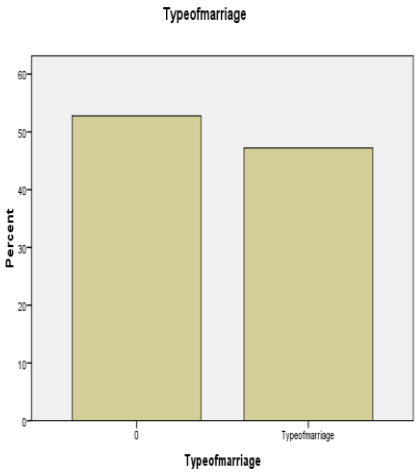


Figure 5.67. 2004 Bar Chart

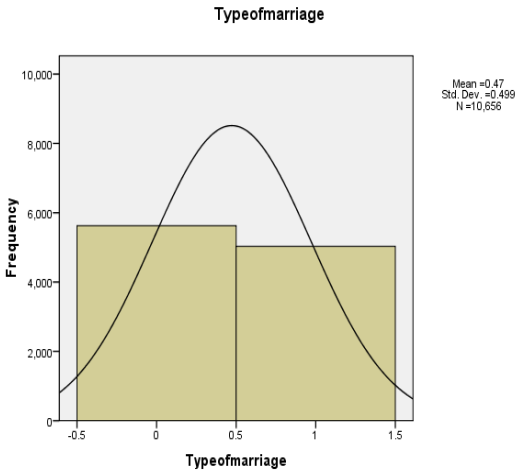


Figure 5.68. 2004 Histogram

In 2004, 52.8% of the respondents stated that they have been in monogamous arrangements while 47.2% stated that they had co-spouses in their households.

5.3. Association of Modern Contraceptive Use with Independent Variables Using Chi Square Analysis

This section uses the chi square test to determine the association of contraceptive use with the independent variables, namely, *income, place of residence, primary and secondary education, old and older respondents* between 1991 and 2004.

5.3.1. Income

A chi square test was conducted to determine the association between *contraceptive use* and *income* between 1991 and 2004. The results were statistically significant for both years, (chi square with one degree of freedom for 1991 = 4.364, 2004 = 1.412, $p < .05$). These results imply that there is a statistically significant correlation between contraceptive use and income in 1991 and 2004.

5.3.2. Place of Residence

A chi square test was conducted to determine the correlation between *contraceptive use* and *place of residence* between 1991 and 2004. The results were statistically significant for both years (chi square with one degree of freedom for 1991 = 2.165, 2004 = 5.496, $p < .05$). These results suggest that there is a statistically significant correlation between contraceptive use and place of residence in 1991 and 2004.

5.3.3. Primary Education

A chi square test was conducted to determine the association between *contraceptive use* and *primary education* between 1991 and 2004. The results were statistically significant for both years (chi square with one degree of freedom for 1991 = 9.310, 2004 = 25.540, $p < .05$). These results signify that there is a statistically significant correlation between contraceptive use and primary education in 1991 and 2004.

5.3.4. Secondary Education

A chi square test was conducted to determine the association between *contraceptive use* and *secondary education* between 1991 and 2004. The results were statistically significant for both years (chi square with one degree of freedom for 1991 = 445.255, 2004 = 1.303, $p < .05$). These results indicate that there is a statistically

significant correlation between contraceptive use and secondary education in 1991 and 2004.

5.3.5. Old age at first marriage

A chi square test was conducted to determine the association between *contraceptive use* and *old women* between 1991 and 2004. The results were statistically significant for both years (chi square with one degree of freedom for 1991 = 38.558, 2004 = 2.987, $p < .05$). These results suggest that there is a statistically significant correlation between contraceptive use and old women in 1991 and 2004.

5.3.6. Older age at first marriage

A chi square test was conducted to determine the correlation between *contraceptive use* and *older women* between 1991 and 2004. The results were statistically significant for both years (chi square with one degree of freedom for 1991 = 6.478, 2004 = 37.351, $p < .05$). These results imply that there is a statistically significant correlation between contraceptive use and older women in 1991 and 2004.

The table below shows chi square values along with their associated significance levels for the independent variables and modern contraceptive in 1991 and 2004.

Table 5.35. Chi-square scores and significance for 1991 and 2004

	Chi Square		*Significance*	
Year	1991	2004	1991	2004

Table 5.35-*Continued*

Variables				
Income	4.364	1.412	.037	.000
Residence	2.165	5.496	.000	.000
Primary	9.310	25.540	.002	.000
Secondary	445.255	1.303	.000	.000
Old	38.558	2.987	.000	.000
Older	6.478	37.351	.011	.000

The table below shows the mean differences and significance of the number of children for respondents that said they use modern contraceptives and those that use other methods for 1991 and 2004.

Table 5.36 1991/2004 Contraceptive use mean differences for number of children

Contraceptive use	1991 NOC1 Mean	2004 NOC1 Mean
Others	3.00*	2.82*
Modern	2.99*	2.69*

NOC1 = number of children
*Significance level (.05)

The results from the table indicate that women of childbearing age who in 1991 reported as using other forms of contraception or no contraception tended to have more children than other who said they used modern contraceptives. Others, $M = 3.00$; modern $M = 2.99$; $p < .05$. On the other hand, the results from the table indicate that women of

childbearing age who in 2004 reported as using other forms of contraception or no contraception tended to have more children than other who said they used modern contraceptives. Others, $M = 2.82$; modern $M = 2.69$; $p < .05$.

5.4. Regression Analysis

5.4.1. Binary Logistic Regression for 1991

This section examines the 1991 net effects of the independent variables (*income, old, older, primary education, secondary education, residence*). The regression analysis is conducted as follows. First, modern contraceptive use is regressed on each of the independent variables proposed in this study. The gross effects of the variables are presented on Table 36. Next, modern contraceptive use is regressed on all variables (independent variables) proposed in this study. The net effect of each independent variable is evaluated in terms of its hypothesized direction as well as the level of significance. Finally, the net effects of the proposed independent variables on modern contraceptive use are examined with the addition of control variables such as region.

Stated differently, the gross effects and the net effects with the control variables make use of all the variables, namely, *audio or visual media, Christian, income, married, number of children, old, older, other forms, primary education, Region 1, Region 2, Region 3, Region 4, residence, secondary education,* and *type of marriage.* The variables whose net effects are considered without the control variables are as follows: *income, Christian, old, older, primary and secondary education,* and *residence*. The differences in the B exponentiations or the odds ratio (OR) and the .05 level of significance are used to determine whether the hypotheses suggested in the study have been supported or not.

The Hosmer and Lemeshow test to determine the goodness of fit are presented. The Hosmer and Lemeshow formally checks whether the predicted probabilities for a covariate (independent variables) match the observed probabilities (dependent variables). A large *p*-value indicates a good fit. A small *p*-value indicates a poor fit. In the case of this study, the results of the Hosmer and Lemeshow test for the 1991 logistic regression are as follows: the chi-square with eight degrees of freedom = 12.910, $p = .115$, indicating a good fit.

In order to test the hypotheses advanced in this study, a five-tier rubric, namely, strong, moderate, weak, contradictory, and not supportive, has been used. If the gross effect of the variable is not significant and the odds ratio is in the wrong direction, it means that the hypothesis for that variable is not supported. In the same vein, if the gross effect of the variable is significant but the odds ratio is in the wrong direction, the hypothesis is said to be contradictory. If the net effects of the independent variables with the control variables or without the control variables are significant but the odds are in the wrong direction, the hypotheses are also termed as contradictory. If the gross effects of the variable are statistically significant at the .05 level and the odds ratio is in the right direction, then the net effects of the independent variables with the control variables and without the control variables are then taken into consideration. If the net effect with and without control of the variable is significant and the odds ratio is in the right direction, then the hypothesis is said to be very strongly supported. In the event that either of the variables is significant and the other one is not significant but both odds are in the right direction, the hypothesis is moderately supported. When both are not significant but have odds are in the right direction, the relationship is said to be weak. Explanations as to why

each hypothesis falls within any of these categorizations have been provided below. A summary table comparing the 1991 and 2004 hypotheses is also provided below.

The diagram that follows is made up of a rubric or parameters that have been used in testing the hypotheses that have been used in this study.

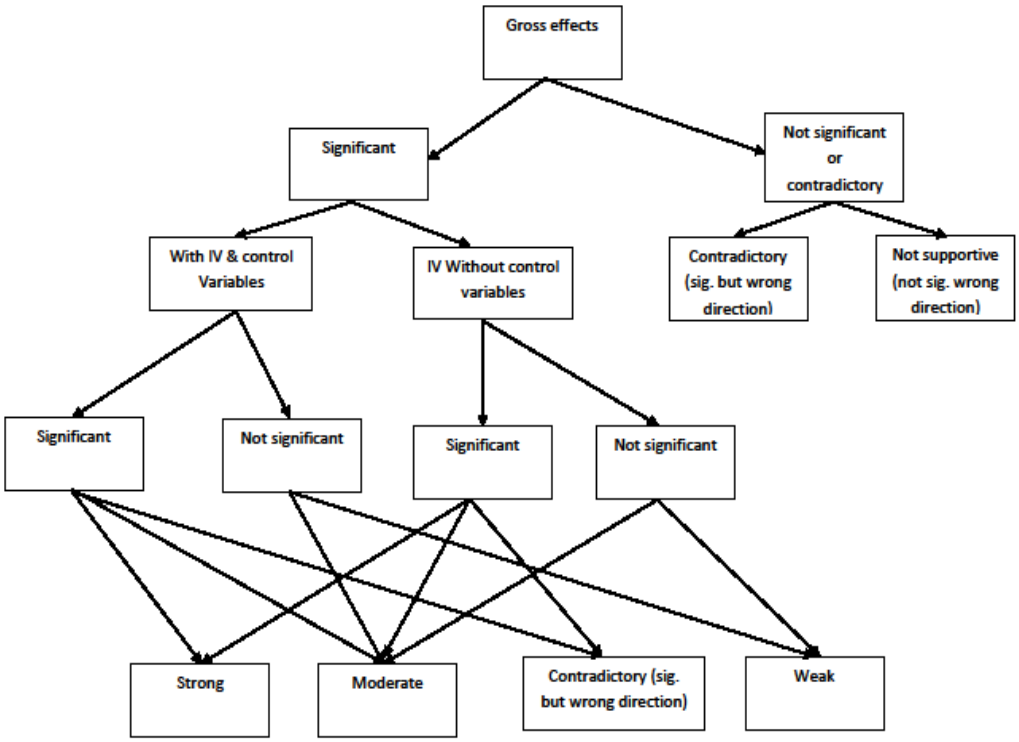


Figure 5.69. Hypothesis Rubric

Table 37 is made up of the results of regressing modern contraceptive use on contraceptive determinants using the 1991 of the Cameroon Demographic and Health Survey Dataset.

Table 5.37. 1991 Binary Logistic Regression Results

1991 Data									
	Regression Net Effects without control variables			Regression Net Effects with control variables			Regression Gross Effects		
Variables	B	S.E.	Odds Ratio	B	S.E.	Odds Ratio	B	S.E.	Odds Ratio
Income	.595*	.096	1.813	.379*	.102	1.460	.170*	.081	1.185
Old	.592*	.097	1.808	.095	.162	1.100	.522*	.085	1.685
Older	.455	.354	1.577	-.071	.393	.931	.776*	.312	2.172
Primary	1.679*	.178	5.359	1.327*	.203	3.769	-.270*	.089	.764
Secondary	2.840*	.177	17.117	2.521*	.217	12.445	1.721*	.087	5.590
Residence	.762*	.107	2.142	.450*	.135	1.568	1.361*	.097	3.901
Audioorvisual	-	-	-	.551*	.109	1.735	1.236*	.095	3.443
Christian	-	-	-	.677*	.202	1.968	2.169*	.167	8.751
Married	-	-	-	.102	.233	1.107	-.648*	.081	.523
Otherforms	-	-	-	.622*	.212	1.863	.829*	.090	2.292

Table 5.37-*Continued*

Numberofchildren	-	-	-	.146*	.021	1.157	-.001	.014	.999
Region1	-	-	-	.063	.167	1.065	1.436*	.084	4.204
Region2	-	-	-	-.873*	.252	.418	-2.331*	.180	.097
Region3	-	-	-	-.595*	.176	.552	-.233*	.116	.792
Region 4	-	-	-	-.228	.176	.796	-.075	.113	.928
Typeofmarriage	-	-	-	.110	.120	1.116	.333*	.081	1.395

Notes. * on B scores = statistically significant results at the level of .05.
Control variables are italicized.

5.5. Regression of Modern Contraceptive Use on Contraceptive Determinants Using the 1991 Cameroon Demographic and Health Survey Dataset

5.5.1. Income

A regression analysis was performed using the 1991 dataset to determine the net effects of *income* without control variables, with control variables, and the gross effects of both the independent and control variables. Without the control variables, the results were statistically significant, $p < .05$, and showed that the odds ratio for the predictor *income* was as follows: $OR = 1.813$. The net effect of income with control variables included was statistically significant, $p < .05$, and showed that the odds ratio for the predictor *income* when the control variables were included was as follows: $OR = 1.460$. The gross effect of *income* was also statistically significant, $p < .05$, and showed that the odds ratio for the predictor *income* alone on contraceptive use was as follows: $OR = 1.185$. Since all three results are statistically significant and go in the same direction, the

hypothesis “The likelihood of using modern contraceptives compared to other contraceptives is higher among women earning an income than women not earning an income” is strongly supported. Thus said, it can be predicted that the odds of using modern contraceptives among women who earn an income is 1.460 times the odds of using modern contraception among women of childbearing age who do not earn an income.

5.5.2. Old age at first marriage

A regression analysis was run using the 1991 dataset to determine the net effects of the subgroup *old* without control variables, with control variables, and the gross effects of both the independent and control variables. Without the control variables, the results were not statistically significant, $p = .558$, and showed that the odds ratio for the predictor *old* was as follows: $OR = 1.808$. The net effects of women classified as *old* with independent variables included was statistically significant, $p < .05$ and showed that the odds ratio for the predictor *old* when the control variables were included was as follows: $OR = 1.100$. The gross effect of the subgroup *old* was also statistically significant, $p < .05$, and showed that the odds ratio for the predictor *old* alone on contraceptive use was as follows: $OR = 1.685$. Based on the hypothesis-testing rubric, the hypothesis “The likelihood of using modern contraceptives compared to other contraceptives is higher for women who got married between ages 21–25 than women who got married between 15–20 years” is moderately supported. The results therefore predict that the odds of using modern contraceptives among women of childbearing age known as *old* are 1.100 times less likely the odds of women of childbearing age between the ages of 15 to 20.

5.5.3. Older age at first marriage

A regression analysis was run using the 1991 dataset to determine the net effects of *older* without control variables, with control variables, and the gross effects of both the independent and control variables. The results were statistically not significant, $p = .199$, without the control variables, and showed that the odds ratio for the predictor *older* was as follows: *OR = 1.577*. The net effects of *older* with independent variables included was not statistically significant, $p = .857$, and showed that the odds ratio for the predictor *older* when the control variables were included was as follows: *OR = .931*. The gross effects of *older* was statistically significant, $p < .05$, and showed that the odds ratio for the predictor *older* alone on modern contraceptive use was as follows: *OR = 2.172*. Since the net effects of *older* are not significant but in the right direction, the net result of both the independent and control groups were not significant and in the opposite direction, and the gross effects were significant and in the right direction, it can be said that the results of *older* are contradictory to the hypothesis "The likelihood of using modern contraceptives compared to other contraceptives is higher for women who married between 26–49 than women who married between 15–20." Based on these results, it can then be predicted that the odds of using modern contraceptives among women of childbearing age known as older are .931 times less likely the odds of women of childbearing age between the ages of 15 to 20.

5.5.4. Primary Education

A regression analysis was run using the 1991 dataset to determine the net effects of the subgroup *primary education* without control variables, with control variables, and the gross effects of both the independent and control variables. The results were

statistically significant, $p < .05$, without the control variables, and demonstrated that the odds ratio for the predictor income was as follows: *OR* = 5.359. The net effects of respondents with primary education including the independent variables was statistically significant, $p < .05$, and showed that the odds ratio for the predictor *primary education* when the control variables were included was as follows: *OR = 3.769*. The gross effects of respondents with *primary education* was also statistically significant, $p < .05$, and showed that the odds ratio for the predictor *primary education* alone on contraceptive use was as follows: *OR = .764*. Since the net effects of *primary education* are significant and in the right direction, the net result of both the independent and control groups are significant and in the right direction, and the gross effects were significant and in the opposite direction, the hypothesis "The likelihood of using modern contraceptives compared to other contraceptives is higher for women with primary education than women with no education" is contradicted. The results indicate that the odds of using modern contraceptive among women of childbearing age with primary education are 3.769 times the odds of women of childbearing age with no education.

5.5.5. Secondary Education

A regression analysis was run using the 1991 dataset to determine the net effects of *secondary education* without control variables, with control variables, and the gross effects of both the independent and control variables. Without the control variables, the results were statistically significant, $p < .05$, and showed that the odds ratio for the predictor *secondary education* was as follows: *OR = 17.117*. The net effects of *secondary education* with control variables were statistically significant, $p < .05$, and showed that the odds ratio for the predictor *secondary education* when the independent variables were

as follows: *OR = 12.445.* The gross effects of *secondary education* was also statistically significant, $p < .05$, and showed that the odds ratio for the predictor *secondary education* alone on contraceptive use was as follows: *OR = 5.590.* Since the net effects of *secondary education* are significant and in the right direction, the net result of both the independent and control groups are significant and in the right direction, and the gross effects were significant and in the right direction, the hypothesis "The likelihood of using modern contraceptives compared to other contraceptives is higher for women with secondary education than women with no education" is strongly supported. These findings predict that the odds of using modern contraceptives among women of childbearing age who have a secondary and higher education are 12.445 times the odds of using modern contraceptives among women of childbearing age with no education.

5.5.6. Place of Residence

A regression analysis was run using the 1991 dataset to determine the net effects of the urban *place of residence* without control variables, with control variables, and the gross effects of both the independent and control variables. Without the control variables, the results were statistically significant, $p < .05$, and showed that the odds ratio for the *place of residence* predictor was as follows: *OR = 2.142.* The net effects of *place of residence* with independent variables included was statistically significant, $p < .05$, and showed that the odds ratio for the predictor *place of residence* when the control variables were included was as follows: *OR = 1.568.* The gross effect of *place of residence* was also statistically significant, $p < .05$, and showed that the odds ratio for this predictor alone on contraceptive use was as follows: *OR = 3.901.* Since the net effects of residence are significant and in the right direction, the net result of both the independent and control

groups are significant and in the right direction, and the gross effects were significant and in the right direction, the hypothesis "The likelihood of using modern contraceptives compared to other contraceptives is higher among women living in urban areas than women living in rural areas" is strongly supported. The results signify that the odds of using modern contraceptives among women of childbearing age living in urban areas are 1.568 times the odds of using modern contraceptives among women of childbearing age living in rural areas.

5.6. Binary Logistic Regression for 2004

This section examines the 2004 net effects of the independent variables only (*income, old, older, primary and secondary education, residence*), the net effects of both the independent variables and control variables (*audio or visual media, Christian, income, married, number of children, old, older, other forms, primary education, Region 1, Region 2, Region 3, Region 4, residence, secondary education, type of marriage*), and then the gross effects of both sets of independent and control variables. Note that the first regression was performed only for the independent variables without the control group. The last two regressions are carried out for both the independent and control variables, the only difference being that whereas the variables for the net effects for both the independent and control groups are regressed as a block, the variables for the gross effects are regressed one at a time with the main effects included. The differences in exponentiations of the B coefficient or odds ratio at the .05 level of significance are used to determine whether the hypotheses have been supported or not.

The Hosmer and Lemeshow test to determine the goodness of fit are presented. The Hosmer and Lemeshow formally checks whether the predicted probabilities for a

covariate (independent variables) match the observed probabilities (dependent variables). A large *p*-value indicates a good match. A small *p*-value indicates a poor match, which tells you that you should look for some alternative ways to describe the relationship between this covariate and the outcome variable. The Hosmer and Lemeshow test results for the 2004 logistic regression are as follows: the chi-square with eight degrees of freedom = 11.402, p= .180, indicating a good match.

Table 5.38 shows the results of regression of modern contraceptive use on contraceptive determinants using the 2004 of the Cameroon Demographic and Health Survey Dataset.

Table 5.38. 2004 Binary Logistic Regression Results

2004 Data									
	Regression Net Effects without control variables			Regression Net Effects with control variables			Regression Gross Effects		
Variables	B	S.E.	Odds Ratio	B	S.E.	Odds Ratio	B	S.E.	Odds Ratio
Income	.393*	.047	1.482	.231*	.051	1.260	.468*	.039	1.597
Old	.923*	.049	2.517	.238*	.073	1.269	.695*	.040	2.004
Older	.840*	.135	2.316	.035	.149	1.036	.728*	.122	2.070

Table 5.38-*Continued*

Primary	2.112*	.095	8.264	1.653*	.103	5.224	-.203*	.040	.817
Secondary	3.152*	.097	23.372	2.664*	.110	14.353	1.489*	.042	4.433
Residence	.507*	.047	1.661	.514*	.056	1.672	.936*	.040	2.550
Audioorvisual	-	-	-	.507*	.053	1.661	.951*	.045	2.588
Christian	-	-	-	.485*	.064	1.624	1.352*	.051	3.867
Married	-	-	-	.314*	.112	1.368	-.666*	.040	.514
Otherforms	-	-	-	1.170*	.102	3.222	1.313*	.047	3.718
Numberofchildren	-	-	-	.074*	.011	1.076	-.015*	.007	.985
Region 1	-	-	-	.020	.083	1.021	.986*	.052	2.680
Region 2	-	-	-	-.773*	.103	.462	-1.92*	.075	.147
Region 3	-	-	-	-.031	.070	.969	-.050	.042	.952
Region 4	-	-	-	.155*	.077	1.168	.466*	.050	1.594
Typeofmarriage	-	-	-	.284*	.061	1.328	.494*	.039	1.638

Notes. * on B scores = statistically significant results.
Control variables are italicized.

5.7. Regression of Modern Contraceptive Use on Contraceptive Determinants Using the 2004 Cameroon Demographic and Health Survey Dataset

5.7.1. Income

A regression analysis was run using the 2004 dataset to determine the net effects of *income* without control variables, with control variables, and the gross effects of both the independent and control variables. Without the control variables, the results were statistically significant, $p < .05$, and showed that the odds ratio for the predictor *income* was as follows: *OR = 1.482*. The net effects of *income* with control variables included was statistically significant, $p < .05$, and showed that the odds ratio for the predictor *income* when the control variables were included was as follows: *OR = 1.260*. The gross effect of i*ncome* was also statistically significant, $p < .05$, and showed that the odds ratio for the predictor *income* alone on contraceptive use was as follows: *OR = 1.597*. Since all three 2004 results are statistically significant and go in the same direction, the hypothesis "The likelihood of using modern contraceptives compared to other contraceptives is higher among women earning an income than women not earning an income" is strongly supported. Based on the results, it can be predicted that the odds of using modern contraceptives among women who earn an income is 1.260 times the odds of using modern contraception among women of childbearing age who do not earn an income.

5.7.2. Old age at first marriage

A regression analysis was run using the 2004 dataset to determine the net effects of the subgroup *old* without control variables, with control variables, and the gross effects of both the independent and control variables. Without the control variables, the results

were statistically significant, $p < .05$, and showed that the odds ratio for the predictor *old* was as follows: *OR = 2.517*. The net effects of *old* with control variables included was statistically significant, $p < .05$, and showed that the odds ratio for the predictor *old* when the control variables were included was as follows: *OR = 1.269*. The gross effect of the subgroup *old* was statistically significant, $p < .05$, and showed that the odds ratio for the predictor *old* alone on contraceptive use was as follows: *OR* = 2.004. Since all three 2004 results are statistically significant and go in the same direction, the hypothesis "The likelihood of using modern contraceptives compared to other contraceptives is higher for women who got married between 21–25 than women who got married between 15–20" is strongly supported. Based on these results, it can then be predicted that the odds of using modern contraceptives among women of childbearing age between the ages known as old are 1.269 times the odds of women of childbearing age between the ages of 15–20.

5.7.3. Older age at first marriage

A regression analysis was run using the 2004 dataset to determine the net effects of *older* without control variables, with control variables, and the gross effects of both the independent and control variables. The results were statistically significant, $p < .05$, without the control variables, and showed that the odds ratio for the predictor *older* was as follows: *OR* = 2.316. The net effects of *older* with control variables included was not statistically significant, $p = .814$, and showed that the odds ratio for the predictor *older* when the control variables were included was as follows: *OR* = 1.036. The gross effects of *older* was also statistically significant, $p < .05$, and showed that the odds ratio for the predictor *older* alone on contraceptive use was as follows: *OR* = 2.070. Since the 2004 net effects of *older* are not significant but in the right direction, the net result of both the

independent and control groups were significant and in the right direction, and the gross effects were significant and in the right direction, it can be said that the hypothesis "The likelihood of using modern contraceptives compared to other contraceptives is higher for women who married between 26–49 than women who married between 15–20" is moderately supported. Looked at differently, it can be predicted that the odds of using modern contraceptives among women of childbearing age between the ages of 26 and 49 are .055 times less likely the odds of women of childbearing age between the ages of 15 and 20.

5.7.4. Primary Education

A regression analysis was run using the 2004 dataset to determine the net effects of the subgroup p*rimary education* without control variables, with control variables, and the gross effects of both the independent and control variables. The results were statistically significant, $p < .05$, without the control variables, and demonstrated that the odds ratio for the predictor *primary education* was as follows: *OR = 8.264*. The net effects of respondents with primary education including the control variables was statistically significant, $p < .05$, and showed that the odds ratio for the predictor *primary education* when the control variables were included was as follows: *OR = 5.224*. The gross effects of respondents with *primary education* was also statistically significant, $p < .05$, and showed that the odds ratio for the predictor *primary education* alone on contraceptive use was as follows: *OR = .817*. Since the 2004 net effects of *primary education* are significant and in the right direction, the net result of both the independent and control groups are significant and in the right direction, and the gross effects were significant and in the opposite direction, the hypothesis "The likelihood of using modern contraceptives

compared to other contraceptives is higher for women with primary education than women with no education" is contradictory. The results predict that the odds of using modern contraceptives among women of childbearing age with *primary education* is *5.224* times more likely the odds of using modern contraceptives among women of childbearing age with no education.

5.7.5. Secondary Education

A regression analysis was run using the 2004 dataset to determine the net effects of *secondary education* without control variables, with control variables, and the gross effects of both the independent and control variables. Without the control variables, the results were statistically significant, $p < .05$, and showed that the odds ratio for the predictor *secondary education* was as follows: *OR = 23.372.* The net effects of *secondary education* with control variables was statistically significant, $p < .05$, and showed that the odds ratio for the predictor *secondary education* when the control variables were included was as follows: *OR = 14.353.* The gross effects of *secondary education* was also statistically significant, $p < .05$, and showed that the odds ratio for the predictor *secondary education* alone on contraceptive use was as follows: *OR = 4.433.* Since the 2004 net effects of *secondary education* are significant and in the right direction, the net result of both the independent and control groups are significant and in the right direction, and the gross effects were significant and in the right direction, the hypothesis "The likelihood of using modern contraceptives compared to other contraceptives is higher for women with secondary education than women with no education" is strongly supported. The results are indicative of the prediction that the odds of using modern contraceptives among women of childbearing age *secondary education* is *14.353* times

less likely the odds of using modern contraceptives among women of childbearing age with no education

5.7.6. Place of Residence

A regression analysis was run using the 2004 dataset to determine the net effects of the urban *place of residence* without control variables, with control variables, and the gross effects of both the independent and control variables. Without the control variables, the results were statistically significant, $p < .05$, and showed that the odds ratio for the *place of residence* predictor was as follows: *OR = 1.661*. The net effects of *place of residence* with control variables included was statistically significant, $p < .05$, and showed that the odds ratio for the predictor *place of residence* when the control variables were included was as follows: *OR = 1.672*. The gross effects of *place of residence* were also statistically significant, $p < .05$, and showed that the odds ratio for this predictor alone on contraceptive use was as follows: *OR = 2.550*. Since the 2004 net effects of residence are significant and in the right direction, the net result of both the independent and control groups are significant and in the right direction, and the gross effects were significant and in the right direction, the hypothesis "The likelihood of using modern contraceptives compared to other contraceptives is higher among women living in urban areas than women living in rural areas" is strongly supported. This therefore suggests that the odds of using modern contraceptives among women of childbearing age living urban areas are 2.550 times the odds of using modern contraceptives among women of childbearing age living in rural areas

5.8. Summary of the Empirical Test of the Hypotheses across 1991 and 2004 Cohorts

Table 5.39 shows the strength of the hypotheses in 1991 and 2004. The remarks are based on a downsizing premise. For example, if the strength of a hypothesis is strong in 1991 and moderate in 2004, the overall remark for that hypothesis over the course of 13-year period under study will be considered as moderate.

Table 5.39. 1991 and 2004 Hypotheses Summary

Variables	Hypotheses	1991	2004	Remarks
Income	The likelihood of using modern contraceptives compared to other contraceptives is higher among women earning an income than women not earning an income	Strong	Strong	Strong

Table 5.39-*Continued*

Residence	The likelihood of using modern contraceptives compared to other contraceptives is higher for women living in urban areas than women living in rural areas	Moderate	Strong	Moderate
Old age at first marriage	The likelihood of using modern contraceptives compared to other contraceptives is higher for women who marry between 21 and 25 than women who marry between 15 and 20.	Contradictory	Moderate	Contradictory

Table 5.39-*Continued*

Older age at first marriage	The likelihood of using modern contraceptives compared to other contraceptives is higher for women who marry between 26 and 49 than women who marry between 15 and 20.	Contradictory	Contradictory	Contradictory
Primary eduaction	The likelihood of using modern contraceptives compared to other contraceptives is higher among women with primary educated than women with no education.	Strong	Strong	Strong

Table 5.39-*Continued*

Secondary education	The likelihood of using modern contraceptives compared to other contraceptives is higher among women with secondary educated than women with no education.	Strong	Strong	Strong

Based on the results on the table, it can be concluded that the overall support of the hypotheses in 1991 and 2004 is that the hypotheses for *income* and *education* tended to have been strongly supported across cohorts, *place of residence* moderately supported the hypothesis while a*ge at first marriage* was contradictory to the hypothesis. In other words, *income, primary education,* and *secondary education* all strongly support the hypotheses, while *residence* moderately supported the hypothesis. Also, o*ld* and *older* over the course of 13 years indicated a contradiction to the hypotheses suggested in the study.

5.9. Compositional Analyses

5.9.1. Compositional Analysis Using the Phi Test

This section attempts to determine if there have been significant compositional and proportional changes among the determinants of contraceptive use in Cameroon over a period of 13 years. The compositional description focuses on the differences in composition of members of each cohort (Pillai & Teboh 2010). In order to determine the compositional changes of the determinants of contraceptive use between 1991 and 2004, two statistical tests are applied. The phi is used to perform a crosstabs on SPSS for dichotomous variables, namely, *audio or visual media*, *contraceptive use*, *income, and place of residence* while the *t*-test is used to determine the correlation between modern contraceptive use and the continuous variable, *number of children*. Before proceeding with the analysis, it is necessary to define these statistical measures. The phi test is usually used to measure associations between two variables when these variables are categorical or when one or both of them are dichotomous (Vogt, 2005).

5.9.1.1. Audio or Visual Media

Table 5.40 is a 2 x 2 SPSS crosstab output of *audio or visual media* and "*others*" that helps to determine the compositional changes if any, that have taken place between the 1991 and 2004 cohorts.

Table 5.40 1991/2004 Audio or Visual Media Association Results

Count	*Audio or visual and Others*		
	Others	Audio or visual	Total

Table 5.40-*Continued*

Data	1991 Data	3,244	627	3,871
	2004 Data	7,871	2,785	10,656
	Total	11,115	3,412	14,527

Table 5.41 1991/2004 Audio or Visual Media Phi Results

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.104	.000
	N of Valid Cases	14,527	

A phi association coefficient was run to determine the relationship between *audio or visual media* and other sources of information in 1991 and 2004. Results were statistically significant, $p < .05$, with little or no association, Phi = .104. These results suggest that there have been statistically significant compositional changes in hearing of family planning through the radio or television as opposed to other sources of information in 1991 compared to hearing of family planning through the radio or television as opposed to other sources of information in 2004.

Other compositional changes that have taken place are based on descriptive statistics explained earlier. In 1991, whereas 16.2% of the 3,871 respondents said they heard of family planning from either television or radio programs, 83.8% said they had never heard of family planning or have heard of it from other sources like the newspapers,

posters, and the word of mouth. In 2004, 28.6% of the 10,656 respondents confirmed they heard of family planning from the television or radio while 71.4% got this information from other sources. These scores indicate that although the radio and television remain the most effective method of informing people of family planning, the majority of the respondents still depend on the informal method of information dissemination. On a whole, there was a 12.4% increase in the number of respondents who heard of family planning from either the television or the radio while word of mouth and other sources of information dissemination are still very common.

5.9.1.2. Christian

Table 5.42 1991/2004 Christian Association Results

Count		*Christian*		
		Others	Christian	Total
Data	1991 Data	1,045	2,826	3,871
	2004 Data	2,912	7,744	10,656
	Total	3,957	10,570	14,527

Table 5.43 1991 and 2004 Phi Value for Christian

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	-.003	.691
	N of Valid Cases	14,527	

A phi association coefficient was run to determine the relationship between Christians and respondents of other denominations in 1991 and 2004. Results were not statistically significant, p = .691 with little or no association, phi = -.003. These results are indicative of the fact that there have not been statistically significant compositional changes in Christians as opposed to other religious denominations in 1991 compared to Christians as opposed to other religious denominations in 2004.

Other compositional changes that have taken place are based on descriptive statistics explained earlier. In 1991, 27.0% of the population under study said that they practiced other forms of beliefs. Respondents who said they were Christians accounted for 73.0% of the population. In 2004, persons with other forms of religious practices accounted for 27.3% of the population. Christians represented 72.7% of the total number of respondents. From the results, it can be said that in Cameroon from 1991 to 2004, 7.0% of nondenominational respondents had either become Christians or Muslims. On the other hand, it can be said that a .3% reduction of Christians was observed by 2004 while a .6% increase was observed among the Muslim respondents in 2004.

5.9.1.3. Contraceptive Use

Table 5.44 1991/2004 Contraceptive Use Association Results

Count		*Contraceptive use*		
		No Contraception	Modern Contraceptives	Total
Data	1991 Data	3,101	770	3,871
	2004 Data	6,127	4,529	10,656
	Total	9,228	5,299	14,527

Table 5.45 1991/2004 Contraceptive Use Phi Results

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.208	.000
	N of Valid Cases	14,527	

A phi association coefficient was run to determine the relationship between respondents using modern contraceptives and those not using contraceptives in 1991 and 2004. The result were statistically significant, $p = .05$, with little or no association, phi = .208. These results show that there have been statistically significant compositional changes in modern contraceptive use as opposed to no contraception in 1991 compared to modern contraceptive use as opposed to no contraception in 2004.

Other compositional changes that have taken place are based on descriptive statistics explained earlier. In 1991, 19.9% of women of childbearing age (WCA) used modern contraceptives while 80.1% acknowledged that they had never used contraceptives or had used traditional methods of contraception. By 2004, the percentage of WCA using modern contraceptives was 42.5% while respondents who never used or have used only traditional forms of contraception were 57.5%. Based on the results, it can be said that there has been a 22.6% increase in the use of modern contraception in Cameroon over the course of 13 years.

5.9.1.4. Income

Table 5.46 1991/2004 Income Association Results

Count		*Income*		
		No cash	Cash	Total
Data	1991 Data	2,280	1,591	3,871
	2004 Data	5,660	4,996	10,656
	Total	7,940	6,587	14,527

Table 5.47. 1991/2004 Income Phi Results

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.051	.000
	N of Valid Cases	*14,527*	

A Phi association coefficient was run to determine the relationship between respondents earning an income and those not earning an income in 1991 and 2004. The results were statistically significant, $p < .05$, with little or no association, phi = .051. These results are an indication that there have been statistically significant compositional changes in earning an income as opposed to not earning an income in 1991 compared to changes in earning an income as opposed to not earning an income in 2004.

Other compositional changes that have taken place are based on descriptive statistics

explained earlier. According to the 1991 results, 58.8% of the respondents reported as not earning an income while 41.1% were earning an income. In 2004, 53.1% of the respondents reported earning an income while 46.9% of the rest of the respondents said that they were not earning an income. This is indicative of the fact that there was a 5.7% decrease in the number of respondents earning an income.

5.9.1.5. Place of Residence

Table 5.48 1991/2004 Residence Association Results

Count		*Residence*		
		Rural	Urban	Total
Data	1991 Data	1,685	2,186	3,871
	2004 Data	5,386	5,270	10,656
	Total	7,071	7,456	14,527

Table 5.49. 1991/2004 Residence Phi Results

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	-.062	.000
	N of Valid Cases	14,527	

A phi association coefficient was performed to determine the relationship between the urban and rural *places of residence* in 1991 and 2004. The results were statistically

significant, $p < .05$, with little or no association, phi = -.062. These results point to the fact there have been statistically significant changes among respondents living in urban areas as opposed to those living in the rural areas in 1991 compared to respondents living in urban areas as opposed to those living in rural areas in 2004.

Other compositional changes that have taken place are based on descriptive statistics explained earlier. In 1991, respondents living in rural areas accounted for 43.5% of the population while 56.5% lived in urban areas. By 2004, 50.5% of the respondents said they lived in rural areas while 49.5% lived in urban areas. These scores show that while there was a 7.0% increase in the number of respondents residing in the rural areas from 1991 to 2004, there was a proportionate decrease in the number of urban residents within the same period.

5.9.1.6. Type of Marriage

Table 5.50. 1991/2004 Type of Marriage Association Results

Count		*Type of marriage*		
		Monogamy	Polygamy	Total
Data	1991 Data	2,097	1,774	3,871
		5,624	5,032	10,656
	Total	7,721	6,806	14,527

Table 5.51 1991/2004 Type of Marriage Phi Results

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.012	.137
	N of Valid Cases	14,527	

A phi association coefficient was run to determine the relationship between the monogamous and polygamous types of marriage in 1991 and 2004. Results were not significant, $p = .137$, with little or no association, phi = .012. These results are pinpointing the fact that there have not been significant compositional changes in the monogamous type of marriage as opposed to the polygamous type of marriage in 1991 compared to the monogamous type of marriage as opposed to the polygamous type of marriage in 2004.

Other compositional changes that have taken place are based on descriptive statistics explained earlier. In 1991, 54.2% of the respondents indicated that they were in monogamous types of marriage while 45.8% stated that their husbands had more than one wife or were in polygamous arrangements. In 2004, 52.8% of the respondents stated that they were in monogamous situations while 47.2% stated that they had co-spouses in their households. The results show that within a period of 13 years (1991–2004), there was a 1.4% reduction in polygamous marriages.

5.9.1.7. Married

Table 5.52 1991/2004 Married Association Results

Count		*Married*		
		Never Married	Married	Total
Data	1991 Data	1,640	2,231	3,871
	2004 Data	5,233	5,423	10,656
	Total	6,873	7,654	14,527

Table 5.53 1991/2004 Married Phi Results

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	-.060	.000
	N of Valid Cases	14,527	

A phi association coefficient was run to determine the relationship between married couples and those who have never married in 1991 and in 2004. Results were statistically significant, $p < .05$, with little or no association, phi = -.060. These results suggest that there have been statistically significant compositional changes in married couples as opposed to women who have never married in 1991 compared to married couples as opposed to women who have never married in 2004.

Other compositional changes that have taken place are based on descriptive statistics explained earlier. The 1991 data for marital status indicate that 42.4% of the respondents said that they had never been married while 57.6% stated that they were married. In 2004, the number of women who reported that they had never married was 41.9% and women of childbearing age that said that they were married was 50.9%. These percentages indicate that there was a 7.0% decrease in the number of marriages in Cameroon over a period of 13 years.

5.9.1.8. Other Forms of relationships

Table 5.54 1991/2004 Other Forms Association Results

Count		*Other Forms*		
		Never Married	Living together, widowed, divorced, not living together	Total
Data	1991 Data	3,065	806	3,871
	2004 Data	7,957	2,699	10,656
	Total	11,022	3,505	14,527

Table 5.55 1991/2004 Other Forms Phi Results

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.047	.000
	N of Valid Cases	14,527	

A phi association coefficient was run to determine the relationship between other forms of relationships and those who have never married in 1991 and 2004. Results were statistically significant, $p < .05$, with little or no association, phi = .047. These results are indicate that there have been statistically significant compositional changes in other forms of relationships as opposed to respondents who have never married in 1991 compared to other forms of relationships as opposed to respondents who have never married in 2004.

Other compositional changes that have taken place are based on descriptive statistics explained earlier. The 1991 data for other forms of marital status indicate that 20.8% of the respondents said that they had never been married while 79.2% stated that they were married. The 2004 data for other forms of marital status indicate that 25.3% of the respondents said that they had never been married while 74.7% stated that they were married. These results show that there has been a 4.5% increase in respondents who are in other forms of relationships.

5.9.1.9. Old age at first marriage

Table 5.56 1991/2004 Old Independence Results

Count		*Old*		
		15 to 20	21 to 25	Total
Data	1991 Data	1,671	2,200	3,871
	2004 Data	4,655	6,001	10,656
	Total	6,326	8,201	14,527

Table 5.57 1991/2004 Old Phi Results

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	-.005	.578
	N of Valid Cases	14,527	

A phi association coefficient was run to determine the relationship between old women and young women in 1991 and 2004. Results were not statistically significant, $p = .578$, with little or no association, phi = -.005. These results signify that there have not been statistically significant compositional changes among old women as opposed to young women in 1991 compared to old women as opposed to young women in 2004.

Other compositional changes that have taken place are based on descriptive statistics explained earlier. In 1991, women of childbearing age classified as old (21–25) accounted for 43.2% of the population, and women of childbearing age classified as young (15–20) represented 56.8% of the total number of respondents. By 2004, the respondents of childbearing age who have been classified as old (21–25) were 43.7%; meanwhile, respondents of childbearing age who have been classified as young (15–20) represent 56.3%. These results are indicative of a 5% decrease in the age at first marriage for women classified as old, over the course of 13 years.

5.9.1.10. Older age at first marriage

Table 5.58 1991/2004 Older Independence Results

Count		*Older*		
		15-20	26-49	Total
Data	1991 Data	3,825	46	3,871
	2004 Data	10,366	290	10,656
	Total	14,191	336	14,527

Table 5.59. 1991/2004 Older Phi Results

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.045	.000
	N of Valid Cases	14,527	

A phi association coefficient was run to determine the relationship between older women and young women in 1991 and 2004. Results were statistically significant, $p <$ .05, with little or no association, phi = .045. These results are indicative of the fact that there have been statistically significant compositional changes among older women as opposed to young women in 1991 compared to older women as opposed to young women in 2004.

Other compositional changes that have taken place are based on descriptive statistics explained earlier. In 1991, women of childbearing age classified as old (21–25) accounted for 98.8% of the population, and women of childbearing age classified as older (26–49) represented 1.2% of the total number of respondents. These results show that there was a 97.6% reduction in the age at marriage among women classified as older between 1991 and 2004. By 2004, the respondents of childbearing age who have been classified as old (21–25) were 97.3%; meanwhile, respondents of childbearing age who have been classified as older (26–49) represent 2.7%. These results are indicative of a 94.6% decrease in the age at first marriage for women classified as older, over the course of 13 years.

5.9.1.11. Primary Education

Table 5.60. 1991/2004 Primary Education Association Results

Count		*Primary*		
		No education	Primary	Total
Data	1991 Data	2,596	1,275	3,871
	2004 Data	6,349	4,307	10,656
	Total	8,945	5,582	14,527

Table 5.61. 1991/2004 Primary Education Phi Results

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.068	.000
	N of Valid Cases	14,527	

A phi association coefficient was run to determine the relationship between *primary education* and no education in 1991 and 2004. Results were statistically significant, $p < .05$, with little or no association, phi = .068. These results determine that there have been statistically significant compositional changes in primary education as opposed to no education in 1991 compared to primary education as opposed to no education in 2004.

Other compositional changes that have taken place are based on descriptive statistics explained earlier. In 1991, 67.1% stated they have had no form of education while 32.9% stated that they had acquired primary education. In 2004, 59.6% of the respondents had no education while 40.4% of the total respondents stated that they had attended primary schools or acquired a primary education. The results indicate that there has been a 7.5% increase in primary education between 1991 and 2004.

5.9.1.12. Secondary Education

Table 5.62. 1991/2004 Secondary Education Association Results

Count		*Secondary*		
		No education	Sec & Higher	Total
Data	1991 Data	2,551	1,320	3,871
	2004 Data	6,448	4,208	10,656
	Total	8,999	5,528	14,527

Table 5.63. 1991/2004 Secondary Education Phi Results

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.049	.000
	N of Valid Cases	14,527	

A phi association coefficient was run to determine the relationship between *secondary education* and no education in 1991 and 2004. Results were significant, $p < .05$, with little or no association, phi = .104. These results imply that there have been statistically significant compositional changes in secondary education as opposed to no education in 1991 compared to secondary education as opposed to no education in 2004.

Other compositional changes that have taken place are based on descriptive statistics explained earlier. In 1991, 65.9% of the respondents accepted to have had no education

while 34.1% stated that they had attended school through secondary and higher or tertiary institutions. In 2004, 60.5% of the respondents said they had no education while 39.5% stated that they had attended school through secondary and higher or tertiary institutions. The results show that over the course of 13 years there was a 5.4% increase in secondary education.

5.9.1.13. Region 1

Table 5.64. 1991/2004 Region 1 Association Results

Count		*Region 1*		
		Dla/Yde	Region1	Total
Data	1991 Data	2,720	1,151	3,871
	2004 Data	8,721	1,935	10,656
	Total	11,441	3,086	14,527

Table 5.65. 1991/2004 Region I Phi Results

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.125	.000
	N of Valid Cases	14,527	

A phi association coefficient was run to determine the relationship between respondents living in Region 1 and people living in Douala and Yaoundé in 1991 and 2004. Results were statistically significant, $p < .05$, with little or no association, phi = -.125. These results denote that there have been statistically significant compositional changes in among respondents living in Region 1 as opposed to those living in Douala and Yaoundé in 1991 compared to respondents living in Region 1 as opposed to those living in Douala and Yaoundé in 2004.

Other compositional changes that have taken place are based on descriptive statistics explained earlier. In 1991, 70.3% of the respondents reported that they lived in Douala and Yaounde. In the same year, 27.7% of the respondents reported that they lived in Region 1, representing Center, South, and East Regions. In 2004, 81.8% of the respondents lived in Yaounde and Douala in the same year, 18.2% of the respondents reported that they lived in Region 1, meaning Center, South, and East Regions. These reults show that 11/5% of the respondents in 13 years reported that they no longer live in Region 1.

5.9.1.14. Region 2

Table 5.67. 1991/2004 Region 2 Association Results

Count	Region 2		
	Dla/Yde	Region2	Total

Table 5.67-*Continued*

Data	1991 Data	2,838	1,033	3,871
	2004 Data	8,834	1,822	10,656
	Total	11,672	2,855	14,527

Table 5.68. 1991/2004 Region 2 Phi Results

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.107	.000
	N of Valid Cases	14,527	

A phi association coefficient was run to determine the relationship between respondents living in Region 2 and people living in Douala and Yaoundé in 1991 and 2004. Results were statistically significant, $p < .05$, with little or no association, phi = -.107. These results are imply that there have been statistically significant compositional changes in respondents living in Region 2 as opposed to those living in Douala and Yaoundé in 1991 compared to respondents living in Region 2 as opposed to those living in Douala and Yaoundé in 2004.

Other compositional changes that have taken place are based on descriptive statistics explained earlier. In 1991, 73.3% of the respondents reported that they lived in Douala and Yaounde. In the same year, 26.7% of the respondents reported that they lived in Region 2, representing Extreme North, North, and Adamwa. In 2004, 82.9% of the

respondents reported that they lived in Douala and Yaounde. In the same year, 17.1% of the respondents reported that they lived in Region 2, representing Extreme North, North, and Adamwa. These resluts show that there was a 9.6% decrease in the number of respondents residing in Region 2 between 1991 and 2004.

5.9.1.15. Region 3

Table 5.69.1991/2004 Region 3 Association Results

Count		Region 3		
		Dla/Yde	Region 3	Total
Data	1991 Data	3,262	609	3,871
	2004 Data	7,337	3,319	10,656
	Total	10,599	3,928	14,527

Table 5.70. 1991/2004 Region 3 Phi Results

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.153	.000
	N of Valid Cases	14,527	

A phi association coefficient was run to determine the relationship between respondents living in Region 3 and people living in Douala and Yaoundé in 1991 and 2004. Results were statistically significant, $p < .05$, with little or no association, phi =.

153. These results connote that there have been statistically significant compositional changes in respondents living in Region 3 as opposed to those living in Douala and Yaoundé in 1991 compared to respondents living in Region 3 as opposed to those living in Douala and Yaoundé in 2004.

Other compositional changes that have taken place are based on descriptive statistics explained earlier. In 1991, 84.3% of the respondents reported that they lived in Douala and Yaounde. In the same year, 15.7% of the respondents reported that they lived in Region 3, representing Littoral and West Regions. In 2004, 68.9% of the respondents reported that they lived in Douala and Yaounde. In the same year, 31.1% of the respondents reported that they lived in Region 3, representing Littoral and West Regions. The scores on the table show that respondents living in Region 3 increased by 15.4%.

5.9.1.16. Region 4

Table 5.71. 1991/2004 Region 4 Association Results

Count		Region 4		
		Dla/Yde	Region 4	Total
Data	1991 Data	3,273	598	3,871
	1	8,723	1,933	10,656
	Total	11,996	2,531	14,527

Table 5.72. 1991/2004 Region 4 Phi Results

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.031	.000
	N of Valid Cases	14,527	

A phi association coefficient was run to determine the relationship between respondents living in Region 4 and people living in Douala and Yaoundé in 1991 and 2004. Results were statistically significant, $p < .05$, with little or no association, phi = .031. These results are suggestive of the fact that there have been statistically significant compositional changes in respondents living in Region 4 as opposed to those living in Douala and Yaoundé in 1991 compared to respondents living in Region 4 as opposed to those living in Douala and Yaoundé in 2004.

Other compositional changes that have taken place are based on descriptive statistics explained earlier. In 1991, 84.6% of the respondents reported that they lived in Douala and Yaounde. In the same year, 15.4% of the respondents reported that they lived in Region 4, representing North West and South West Regions. In 2004, 81.9% of the respondents reported that they lived in Douala and Yaounde. In the same year, 18.1% of the respondents reported that they lived in Region 4, representing North West and South West Regions. The scores on the table show that respondents living in Region 4 increased by 2.7%.

5.10. Compositional Analysis Using the *T*-Tests

A *t*-test statistic in this study is a statistic of significance that is used to describe the difference between two group means (Vogt, 2005). In other words, the *t*-test is usually used to find out whether the average or means of two or more groups of people or things differ (Hair et al, 2006; Rosenthal, 2001). The following tables are *t*-test results as determined from the continuous variables used in this study.

5.10.1. Number of Children

Table 5.73. 1991/2004 Number of Children Mean Scores

Group Statistics

	Data	N	Mean	Std. Deviation	Std. Error Mean
Number of Children	1991 Data	3,871	3.00	2.980	.048
	2004 Data	10,656	2.76	2.879	.028

Table 5.74 Independent Samples Test for Number of Children

		Number of Children	
		Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F	8.117E0	
	Sig.	.004	

Table 5.74-*Continued*

t-test for Equality of Means	*T*		4.319E0	4.251E0
	Df		1.E4	6.661E3
	Sig. (2-tailed)		.000	.000
	Mean Difference		.236	.236
	Std. Error Difference		.055	.055
	95% Confidence Interval of the Difference	Lower	.129	.127
		Upper	.342	.344

An independent *t*-test was conducted to compare the mean scores of *number of children* between 1991 and 2004. The samples *t*-test showed that the scores of the 1991 *number of children* (*N* = 3871; *M* = 3.00; *SD* = 2.980) and the 2004 *number of children* (*N* = 10656; *M* = 2.76; *SD* = 2.879) significantly differed from each other (*t* (14525) = 4.319, $p < .05$), with the 1991 *number of children* showing higher scores. These results are indicative of the fact that there have been significant changes in the number of children born per woman of childbearing age in 1991 compared with the number of children born per woman in 2004. Other compositional changes that have taken place are based on descriptive statistics explained earlier, namely, there has been a .24 decrease in the number of children that each woman of childbearing age in Cameroon has, within the past 13 years.

5.11. Summary of 1991 and 2004 Compositional Changes

Table 5.75 shows the summary of compositional changes among women of childbearing age that have taken place in Cameroon between 1991 and 2004.

Table 5.75 1991/2004 Compositional Change P-value Summary

Variables	Composition changes in 1991 and 2004
Audio or visual	.000
Christian	.691
Income	.000
Married	.000
Number of children	.004
Old age at first marriage	.578
Older age at first marriage	.000
Other forms	.000
Primary education	.000
Region 1	.000
Region 2	.000
Region 3	.000
Region 4	.000
Residence	.000
Secondary education	.000
Type of marriage	.137

In summary, based on the phi test results at the.05 level of significance of the variables, it can be stated that several of the variables demonstrate that significant compositional changes have taken place in Cameroon between 1991 and 2004. In this regard, it can be said that 13 variables (*audio or visual media, income, married, number of children, older, other forms, primary education, Regions1–4, residence,* and *secondary*

education) have undergone compositional changes over the course of 13 years, while 3 variables (*Christian, old, and type of marriage*) did not have any significant compositional changes during the course of the study.

5.12. Processual Analysis Using Regression Interaction

This part of data analysis pertains to the processual changes that have taken place from 1991 to 2004. Looked at differently, the processual explanation addresses the effects of the variables that affect modern contraceptive use across cohorts (Pillai & Teboh, 2010). Pillai and Sunil (2007) suggest that processual changes are expected to contribute to increases in modern contraceptive use over time. In determining the processual changes, the interaction effect of each of the selected determinants with the two time periods or cohorts (1991 and 2004) is examined. Each independent variable was multiplied with a dummy variable representing the two cohorts to obtain the interaction term. The outcome variable *modern contraceptive use* is regressed on the interaction term along with the main effects, the independent variable and the dummy variable representing the two cohorts. Tests taken into consideration in determining the processual effects are the regression coefficients, standard errors, and significance.

It is worthy of note that in performing the interaction between 1991 and 2004 variables, these variables were each recoded and then run independently to get the interaction of the variables. For instance, the variable income was multiplied by data (income*data) to create a new interaction term, incomeinter; this process was done with all the variables, alternately, until all the variables were covered. Table 75 shows the

coefficients, standard errors, significances at the .05 level, and the Exp (B) or odds ratio.

Table 5.76 1991/2004 Interaction Results

Interaction variables	B	S.E.	Sig
Audiorovisualinter	-.285	.105	.007
Christianinter	-.817	.174	.000
Incomeinter	.298	.090	.001
Marriedinter	.350	.116	.002
Otherformsinter	.731	.129	.000
Numberofchildreninter	-.014	.015	.362
Oldinter	.212	.096	.027
Olderinter	.067	.341	.845
Primaryinter	.440	.199	.027
Secondaryinter	.316	.193	.102
Region1inter	-.198	.149	.183
Region2inter	.198	.228	.385
Region3inter	.043	.171	.802
Region4inter	.322	.171	.060
Residenceinter	-.425	.105	.000
Typeofmarriageinter	.161	.090	.073

*H&L Test = Hosmer and Lemeshow Test
*B = Coefficient
*S.E = Standard Error
*Sig. = Significance

5.12.1. Audioorvisualinter

A binary regression analysis was conducted to determine the effects of modern contraceptive use on the interaction of audio or visual media for 1991 and 2004. The results of audioorvisualinter were statistically significant, ($p < .05$, $B = -.285$, $SE = .105$). These results indicate that effects of *audio or visual media* as opposed to *others* in using modern contraceptives is significantly different in 1991 compared to the effect of *audio or visual media* as opposed to *others* in using modern contraceptives in 2004.

5.12.2. Christianinter

A binary regression analysis was conducted to determine the effects of modern contraceptive use on the interaction of christianinter for 1991 and 2004. The study results indicate that christianinter was also significant ($p < .05$, $B = -.817$, $S.E. = .442$). These results indicate that the effects of being a Christian as opposed to other forms of religious practices in using modern contraceptives is significantly different in 1991 compared to the effect of being a Christian as opposed to others forms of religious practices in using modern contraceptives in 2004.

5.12.3. Incomeinter

A binary regression analysis was conducted to determine the effects of modern contraceptive use on the interaction of incomeinter for 1991 and 2004. The study results indicate that incomeinter is significant ($p < .05$, $B = .298$, $S.E. = .090$). These results indicate that effects of earning an income as opposed to not earning an income in using modern contraceptives is significantly different in 1991 compared to the effect of earning an income as opposed to not earning an income in using modern contraceptives in 2004.

5.12.4. Marriedinter

A binary regression analysis was conducted to determine the effects of modern contraceptive use on the interaction of marriedinter for 1991 and 2004. The study results indicate that marriedinter was not statistically significant ($p < .05$, $B = .350$, *S.E.* = .116). These results indicate that the effects of being married as opposed to not being married in using modern contraceptives was not different in 1991 compared to the effect of being married as opposed to not being married in using modern contraceptives in 2004.

5.12.5. Otherformsinter

A binary regression analysis was conducted to determine the effects of modern contraceptive use on the interaction of otherforms for 1991 and 2004. The study results indicate that otherformsinter was not statistically significant ($p < .05$, $B = .731$, *S.E.* = .129). These results indicate that the effects of other forms of relationships as opposed to never being married in using modern contraceptives is not significantly different in 1991 compared to the effect of other forms of relationships as opposed to never being married, in using modern contraceptives in 2004.

5.12.6. Numberofchildreninter

A binary regression analysis was conducted to determine the effects of modern contraceptive use on the interaction of numberofchildreninter for 1991 and 2004. The study results indicate that numberofchildreninter was not statistically significant ($p = 362$, $B = -.014$, *SE* = .015). These results indicate that effects of the numbers of children in using modern contraceptives was not significantly different in 1991 compared to the effect of number of children in using modern contraceptives in 2004.

5.12.7. Oldinter

A binary regression analysis was conducted to determine the effects of modern contraceptive use on the interaction of oldinter for 1991 and 2004. The scores point out that oldinter was not statistically significant ($p < .05$, $B = .212$, $SE = .096$). Based on these results it can be said that effects of being old as opposed to being young in using modern contraceptives was not significantly different in 1991 compared to the effect of being old as opposed to being young in using modern contraceptives in 2004.

5.12.8. Olderinter

A binary regression analysis was conducted to determine the effects of modern contraceptive use on the interaction of olderinter for 1991 and 2004. The results show that olderinter was significant ($p = .845$, $B = .067$, *S.E.* = .341). These results indicate that effects of being older as opposed to being young in using modern contraceptives was significantly different in 1991 compared to the effect of *older* as opposed to *others* in using modern contraceptives in 2004.

5.12.9. Primaryinter

A binary regression analysis was conducted to determine the effects of modern contraceptive use on the interaction of primaryinter for 1991 and 2004. The study results indicate that primaryinter is statistically significant, ($p < .05$, $B = .440$, *S.E.* = .199). Based on these findings, it can be stated that the effects of primary education as opposed to no education in using modern contraceptives was significantly different in 1991 compared to the effect of primary education as opposed to no education in using modern contraceptives in the past 13 years.

5.12.10. Secondaryinter

A binary regression analysis was conducted to determine the effects of modern contraceptive use on the interaction of secondaryinter for 1991 and 2004. The results indicate that secondaryinter is not statistically significant (p = .102, B = .316, *S.E.* = .193). Going by the results, it can be said that effects of secondary education as opposed to no education in using modern contraceptives were not significantly different in 1991 compared to the effect of secondary education as opposed to no education in using modern contraceptives in 2004.

5.12.11. Region1inter

A binary regression analysis was conducted to determine the effects of modern contraceptive use on the interaction of region1inter for 1991 and 2004. The study results indicate that region1inter is not statistically significant, (p = 183, B =. -.198, *S.E.* = .149). These results are indicative of the fact that effects of living in Region 1 (Adamawa, North, and Extreme North Regions) as opposed to Douala and Yaoundé in using modern contraceptives were not significantly different in 1991 compared to the effect of living in Region 1 (Adamawa, North, and Extreme North Regions) as opposed to Douala and Yaoundé in using modern contraceptives in 2004.

5.12.12. Region2inter

A binary regression analysis was conducted to determine the effects of modern contraceptive use on the interaction of region2inter for 1991 and 2004. The study results indicate that region2inter is not statistically significant (p = .385, B = .198, *S.E.* = .205). These results are indicative of the fact that effects of living in Region 2 (Center, South,

and East Regions) as opposed to Douala and Yaoundé in using modern contraceptives were not significantly different in 1991 compared to the effect of living in Region 2 (Center, South, and East Regions) as opposed to Douala and Yaoundé in using modern contraceptives in 2004

5.12.13. Region3inter

A binary regression analysis was conducted to determine the effects of modern contraceptive use on the interaction of region3inter for 1991 and 2004. The study results indicate that region2inter is not statistically significant, (p = .802, B = .043, *S.E.* = .171). These results are indicative of the fact that effects of living in Region 3 (West and Littoral Regions) as opposed to Douala and Yaoundé in using modern contraceptives were not significantly different in 1991 compared to the effect of living in Region 3 (West and Littoral Regions) as opposed to Douala and Yaoundé in using modern contraceptives in 2004.

5.12.13. Region4inter

A binary regression analysis was conducted to determine the effects of modern contraceptive use on the interaction of region4inter for 1991 and 2004. The study results indicate that region4inter is not statistically significant (p .060, B = .322, *S.E.* = .171). These results are indicative of the fact that effects of living in Region 4 (North West and South West Regions) as opposed to Douala and Yaoundé in using modern contraceptives were not significantly different in 1991 compared to the effect of living in Region 4 (North West and South West Regions) as opposed to Douala and Yaoundé in using modern contraceptives in 2004.

5.12.14. Residenceinter

A binary regression analysis was conducted to determine the effects of modern contraceptive use on the interaction of residenceinter for 1991. The results indicate that residenceinter is significant ($p < .05$, $B = -.425$, *S.E.* = .105). These results indicate that the effects of respondents living in an urban place of residence as opposed to a rural place of residence in using modern contraceptives were significantly different in 1991 compared to the effect of respondents living in an urban place of residence as opposed to a rural place of residence in using modern contraceptives in 2004.

5.12.15. Typeofmarriageinter

A binary regression analysis was conducted to determine the effect of contraceptive use on the interaction of typeofmariageinter for 1991 and 2004. The study results indicate that typeofmariageinter was not statistically significant ($p = .073$, $B = .043161$, *S.E.* = .090). These results signify that effects of polygamy as opposed to monogamy in using modern contraceptives were not significantly different in 1991 compared to the effect of polygamy as opposed to monogamy in using modern contraceptives in 2004.

5.13. A Comparison of 1991 and 2004 Compositional and Processual Changes

Table 5.77 shows the processual and compositional changes among women of childbearing age that have taken place in Cameroon between 1991 and 2004.

Table 5.77. 1991/2004 P-value summary for Compositional and Processual changes

Variables	*p*-Values for 1991 and 2004 Composition changes	*p*-Values for 1991 and 2004 Prosessual changes	Remarks
Audioorvisual	.000	.007	Both are sig.
Christian	.691	.000	Pros sig.
Income	.000	.001	Both are sig.
Married	.000	.002	Both are sig.
Numberofchildren	.004	.000	Both are sig.
Old age at first marriage	.578	.362	Both not sig.
Older age at first marriage	.000	.027	Both are sig.
Otherforms	.000	.845	Comp sig.
Primary education	.000	.027	Both are sig.
Region 1	.000	.102	Comp sig.
Region 2	.000	.183	Comp sig.
Region 3	.000	.385	Comp sig.
Region 4	.000	.802	Comp sig
Residence	.000	.060	Comp sig
Secondary education	.000	.000	Both are sig.
Type of marriage	.137	.073	Both not sig.

The results from the table indicate that at the .05 level of significance, a substantial number of compositional changes have taken place in Cameroon between

1991 and 2004. On the other hand, based on the .05 level of significance, half of the variables indicate that some significant processual changes have taken place in Cameroon between 1991 and 2004. In other words, it can be said that the following compositional and processual variables were statistically significant and therefore had changed over time, *audio or visual media, income, married, and number of children, older, primary education,* and *secondary education. Old* and *type of marriage* were both not significant and had neither undergone compositional nor processual changes over the course of 13 years. Whereas *Christian* was processually significant and therefore had changed over time, *other forms, residence* and *Regions 1-4* were compositionally significant and therefore changed over time.

5.14. Decomposition Analysis

This section describes the compositional and processual changes of the determinants of modern contraceptive use that have taken place in Cameroon over the course of 13 years using the statistical method known as decomposition analysis. Decomposition analysis in this study is a statistical technique that is used to identify and quantify the contribution of each of the variables to the changes in modern contraceptive use during 1991 and 2004. The magnitudes of the compositional as well as processual changes that have occurred in Cameroon between 1991 and 2004 have been determined using decomposition analyses. The formula to calculate decomposition analysis is as follows: $Ln[P_i/1-P_i] = \Sigma\beta_i x_i$, where $Ln[P_i/1-P_i]$ is the logit of contraceptive use, x_i is a vector of determinants and β_i is a vector of regression coefficients. The logit, shall be the difference between the 2004 data and the 1991 data or C04 – C91 where C04 is the 2004

EDSC III variable proportion and C91 is the 1991 coded EDSC I variable proportions as explained in the formula below.

$$Logit(C04) - Logit(C91) = [\beta_{0(04)} - \beta_{0(91)}] + \Sigma P_{ij(91)}(\beta_{ij(04)} - \beta_{ij(91)})$$
$$+\Sigma\beta_{ij(91)}(P_{ij(04)} - P_{ij(91)}) + \Sigma(P_{ij(04)} - P_{ij(91)})(\beta_{ij(04)} - \beta_{ij(91)})$$

Figure 5.70. Formula for Decompositional Analysis

$P_{ij(91)} =$ Proportion of the jth category of the ith determinant in DHS 1991

$P_{ij(04)} =$ Proportion of the jth category of the ith determinant in DHS 2004

$\beta_{ij(91)} =$ Coefficient of the jth category of the ith determinant in DHS 1991

$\beta_{ij(04)} =$ Coefficient of the jth category of the ith determinant in DHS 2004

$\beta_{0(91)} =$ Intercept in the regression equation fitted to DHS 1991

$\beta_{0(04)} =$ Intercept in the regression equation fitted to DHS 2004

Table 5.78 shows the calculated results of the contribution processual, compositional as well as the interaction, of each of the determinants of contraceptive use in Cameroon from 1991 and 2004.

Table 5.78. 1991/2004 Summary of Magnitudes of Processual, Compositional Changes, their Interactions

Variables	Processual changes in magnitude	Compositional changes in magnitude	Interaction changes in magnitude
Audioorvisual	-0.007*	0.252*	0.020
Christian	-0.140*	-0.002	0.000

Table 5.78-*Continued*

Income	-0.060*	0.021*	-0.012
Married	0.122*	-0.001*	-0.014
Number of children	-0.000*	0.039*	-0.019
Old	0.081	-0.000	-0.000
Older	-0.000*	-0.001*	-0.001
Other forms	0.113	0.027*	0.024
Primary	0.107*	0.099*	0.024
Region 1	-0.012	-0.007*	0.004
Region 2	0.026	0.083*	0.009
Region 3	-0.098	0.015*	0.016
Region 4	-0.058	-0.006*	-0.010
Residence	0.036	-0.031*	-0.000
Secondary	0.048*	0.136*	0.007
Type of marriage	0.079	0.001	0.002

Variables with * = significant at the .05 level

Decompositional analyses results are based on .05 statistically significant processual and compositional results, and positive calculations of the changes in magnitude. Thus said, results from the table indicate that *audio or visual media, income, number of children, other forms, primary, Region 2,* and *secondary education*, underwent statistically significant compositional changes with positive magnitudes after. On the other hand, *married, primary* and *secondary education* showed statistically significant processual changes with positive magnitudes over the course 13 years. Based on these

findings therefore, it can be suggested that there were more compositional than processual changes that occurred in Cameroon from 1991 to 2004. The table also portrayed that only education tended to have had both compositional and processual changes over the course of 13 years. The variables with negative interaction values were *income, married, number of children, old, older, Region 4,* and *residence.*

5.15. Conclusion

Chapter 5 of this study has accomplished a lot in terms of testing the hypotheses and describing the compositional changes in contraceptive use that have taken place in Cameroon between 1991 and 2004. Study results determined that the hypotheses for income and education were strongly supported between 1991 and 2004. Regarding place of residence, the hypothesis was moderately supported. There were contradictory outcomes in terms of the hypotheses for age at first marriage for both women of childbearing age classified as old and older. From the results gathered so far, it can be said that except for the contradictory results in old, all the outcomes of the hypotheses are the same for 1991 and 2004, demonstrating some degree of consistency across cohorts.

The study also confirmed that there have been marked compositional as well as some effect changes that have taken place in Cameroon from 1991 to 2004. The results from the compositional and the processual analyses indicate that at the .05 level of significance, substantial amounts of compositional changes have taken place in Cameroon between 1991 and 2004. On the other hand, based on the .05 level of significance, half of the variables indicated that some significant processual changes have taken place in Cameroon between 1991 and 2004. Decompositional analyses results are

were also determined. Findings suggested that there were more compositional than processual changes that occurred in Cameroon from 1991 to 2004 after decomposing the variables.

CHAPTER 6

DISCUSSION AND SOCIAL WORK IMPLICATIONS

Chapter 6 reviews and discusses findings of the entire study. The chapter has been divided into four main sections: discussion and summary of research findings, the limitations of the study, its social work implications, and the conclusion. First it is imperative to recap the objective and importance of the study. Considering the universal desire to have children (Izugbara & Ezeh, 2010), the question of how much fertility rates are expected to decline in the presence of family planning programs that promote modern contraceptive measures is of theoretical as well as policy importance.

The objective of the study was first to describe the determinants of contraceptive use, and then examine the compositional and processual or effect changes that have taken place in Cameroon between 1991 and 2004.The study is important in that it fills existing gaps in the area of modern contraceptive use in sub-Saharan African. First, few of the many studies on contraceptive use in this area have focused on the social determinants of contraceptive use in Cameroon (Pillai & Teboh, 2010). Second, existing studies focus on infant and maternal mortality, the gynecology of childbearing (Ako et al., 2008; Leke, 1992; Tita et al., 2005), while few have focused on modern contraceptive use in Cameroon (Pillai & Teboh, 2011). Third, in spite of the support of foreign donors, and governmental and nongovernmental efforts to promote contraceptive use, relatively little is known about changes in contraceptive use over time (Ako et al., 2008; Pillai & Teboh,

2010). Fourth, previous studies on contraceptive use have been primarily descriptive (Soh, 2007) and have not adequately assessed or estimated the separate influences of various social and economic variables that influence contraceptive use. Fifth, very few of the existing studies are adequately grounded in extant theories that contribute to a framework of modern contraceptive behavior in Cameroon (Pillai & Teboh, 2010).

6.1. Summary of Findings

Contraceptive use usually involves one or more actions, devices, sexual practices, or medications used to deliberately prevent or reduce the likelihood of pregnancy or childbirth (Nordqvist, 2009). The literature reviewed was aimed at identifying the social, cultural, political and legal determinants of modern contraceptive use. Sources from the review were replete with several factors that influence modern contraceptive use in Cameroon. The most recurrent factors were population growth, sexuality, quality of life or socioeconomic status referred in the study as income, place of residence, feminization of reproduction, lack of services, education, reproductive rights, religion, and age at marriage. These factors became the basic premises for the selection of theories hypotheses and the research methodologies used in the study.

The variables selected were put into three categories. The dependent variable for the study was modern contraceptive use. The independent variables included income, place of residence, education (secondary and primary), and age at first marriage (old and older). The control variables considered for the study were religion (Christian), media (audio or visual), type of marriage, marital status (married and other forms), number of

children, and Region (Regions 1-4). Several statistical tests were used to identify the effects or the association between contraceptive use and the selected variables.

Four main hypotheses were tested in the study. Regression results confirmed that there was considerable support for the hypotheses in 1991 and 2004. Hypotheses related to income and education were strongly supported across cohorts, place of residence moderately supported both the 1991 and 2004 hypotheses, while age at first marriage was contradictory to the hypotheses in 1991 and 2004. The three theories used were modernization theory, human capital theory, and social change theory. Specific variables were used to illustrate support for these theories. In testing modernization theory, hypotheses for income, place of residence, and age at first marriage were used. Human capital theory was explained and supported with the hypotheses on education. Social change theory addresses changes over time. This study used descriptive statistics and compositional and processual analyses, in testing changes that have taken place between 1991 and 2004. Chapter 3 has a full explanation of support or the lack thereof for each of these theories.

The study also aimed at describing the compositional and processual changes that have taken place in Cameroon between 1991 and 2004. Compositional changes were found to have occurred with the following variables: audio or visual media, income, married, number of children, older, other forms, primary, Regions 1 to 4, residence, and secondary education, while Christian, old, and type of marriage did not have any significant compositional changes during the course of the study. Some processual changes also took place between 1991 and 2004. Whereas Christian, income, married, other forms of relationships, old, primary, and residence showed significant effect

changes over time, number of children, older, secondary, Regions 1 to 4, and type of marriage did not show significant effect changes between cohorts. Only education tended to have significant processual and compositional change after the variables were decomposed.

The empirical nature of the study cannot be overemphasized. The statistics used are univariate analysis, associations (chi-squared and the phi test), and tests for mean difference (t-test) for compositional analysis, binary logistic regression in testing the hypotheses, and (interaction) in determining effect changes that have occurred between 1991 and 2004. Another benefit of the study is that it examined modern contraceptive use over two periods. Like most longitudinal studies, the results can therefore used to best predict future contraceptive behavior in Cameroon on the long term. In the main, study findings are as follows:

- The study confirmed that social, cultural, political, and legal determinants affect modern contraceptive use.
- The study confirmed that modernization & human capital have influenced modern contraceptive use.
- Age at first marriage was significant in the wrong direction of the hypothesis.
- Income, place of residence, and education, were statistically significant and in the right direction of the hypotheses of the study.
- The study confirmed that there have been compositional and processual changes in Cameroon from 1991 to 2004.

6.2. Limitations of the Study

Although empirical studies have very many advantages, there are usually some limitations that occur during scientific research. The main biases identified in this study are that the dataset did not have information on women's reproductive rights and information on women using modern and traditional (mixed) contraception. These are constructs of interest to the study. Although Martinelli (2005) argues that people in societies do not usually accept modernization when it is first introduced, modernization theory has been strongly supported in the study. In spite of the criticism of modernization and the lack of available data on relevant indicators of modern contraceptive, these drawbacks do not threaten the validity and reliability of the study.

In operationalizing the variables, it was obvious that personal biases may have come into play. Elder (1994) posits that "change has become an appreciation for several forms of thinking about human personality and its social pathways in changing societies" (p. 4). This means that variables under study can be coded and examined in many ways. Seen differently, Elder (1994) suggests that that there is always a human limitation in the way that variables are operationalized. For example, education could have been categorized to include the early informal learning process of the child. Again this limitation is not monumental in such a way as to compromise the empirical reliability and validity of the study.

6.3. Social Work Implications

Most countries in sub-Saharan Africa are trying to make modern contraceptive use more accessible and available (Population Council, 2010a). Unfortunately, these

countries are unable to create and implement far-reaching policies because of health, economic, and environmental problems (Population Council, 2010a). In many of these developing countries "population policy remains focused on family planning and reproductive health programs, but increasingly it embraces social and economic issues affecting reproductive behavior as well as the developmental consequences of demographic change" (Population Council, 2010a, p.1). Another prominent approach is to improve understanding of modern contraceptive use for individuals, families, groups, and communities (Pillai & Teboh, 2010), and to assist governments in the region and particularly Cameroon to develop research, practice, and policies that can bring about wide improvements in modern contraceptive accessibility and use. This section addresses the implications of social work along research, policy, practice and education lines.

6.3.1. Research

Research is the process by which social scientists are involved in the measurement of phenomena by assigning numbers or classifications to observations or data (Rosenthal, 2001). As required by the code of ethics, social workers have the obligation to promote and facilitate evaluation and research in the development of knowledge (NASW, 2006). This section examines the research implications of the study. The study revealed that modern contraceptive use, especially with women of childbearing age (WCA), is becoming more and more important, but a person's location and where he or she lives can hinder that person's use of modern contraception. The place of residence can be important in the lives of WCA; for instance, Kongnyuy et al. (2008) agree that geographical differences can affect contraceptive outcomes. Benefo (2005) determines

that community characteristics such as heterogeneity and urbanization increase the likelihood of contraceptive use.

Since results confirmed that WCA are usually more likely to use modern contraceptives when they live in urban areas, research on spreading modern contraceptives in the rural areas needs to be done (RamaRao, et al., 2007). In the rural areas, these women are not forthcoming with information about their sexual activities, including use of contraceptives; the issue of sexuality is also considered taboo and is rarely talked about. For these reasons Mensch et al. (2008) suggest that more research needs to be done to reach out to these rural areas. In order to achieve this, Mensch et al. (2008) proposes that computer-assisted self-interviews can be used to enable WCA to be more forthcoming with their responses during research procedures. The problem with this suggestion is that in some parts of sub-Saharan Africa, such studies cannot be carried out because results determined that in 1991, 65.9% and in 2004, 60.5% of the respondents were illiterate.

According to Einterz (1994), the most disturbing factor hindering family planning in parts of Cameroon is ignorance. Such ignorance can be reduced through research. Stephenson et al. (2008) suggest that research can be enhanced through the collection of community-based data on structure, behavior, and culture to help explain variations in large-scale studies like contraceptive use. This is in conformity with the study in that most respondents said that they heard of family planning from information sources like word-of-mouth. The CDHS for 1991 and 2005 have large-scale data that is ready for use. Social workers should use such information to enhance more traditionally-based research

perspectives that can reduce family planning ignorance and foster culturally competent empirical work especially among ignorant and rural populations.

6.3.2. Policy

Policy involves the process of studying social, political, economic, and educational policies and looking for alternate ways of solving societal problems (Vogt, 2005). Usually, policy is viewed as social policy in the field of social work. This section observes the policy implications for social work. The code of ethics states that social workers promote practices and policies that demonstrate respect for differences, support the expansion of cultural awareness, resources, and advocate for programs and institutions that guarantee social justice and the rights of all peoples (NASW, 2006).

The study divulges that 83.8% of the respondents heard of contraceptive use from word-of-mouth while 16.2% got this information from the television and radio in 1991. Social workers should take advantage of this information so as to shape policy on modern contraceptive use. This can be done if social workers ask policymakers and government officials to adopt this local means of communication and pass laws that permit broadcast on the radio and television using local languages. Such a move can greatly, improve outreach and thus benefit the large majority of the target population that still rely on word of mouth.

There was clear evidence found in the study that increased education increases modern contraceptive use (Oye-Adeniran et al., 2003). A good example of how education makes positive changes is found in a Nigerian study that gave basic training in business skills; when Odutolu et al. (2003) incorporated reproductive health information in the

curriculum, findings from the study highlighted that female education and access to economic resources directly contributed to higher levels of contraceptive use. Social workers can reexamine school programs and advise government officials on how to institute sex education in schools. They can also sensitize these officials of the need to create schools in the rural areas so that more people can have at least a primary education. Note that results from the study confirmed that people with primary education were more likely to use modern contraceptives than people with no education. On a whole, policy makers with the help of social workers should shape policies to fit the needs of the target population especially in the rural areas.

Another area of policy interest is the age at which women get married. The age at first marriage in some developing countries still remains low (Umemoto, 2001). In Cameroon, for instance, women of childbearing age get married early (EDSC III, 2004). In 2004, 22% of women in Cameroon between the ages of 25 and 49 were already married by the time they turned 15 and by age 18, 50% of this group was in marital relationships (EDSC III, 2004). The results of the study showed that older women were more likely to use modern contraceptives than young women. This was contrary to the expectations in that younger women should have been more interested in using modern contraception. These results are a pointer to the fact that this youthful population is not using enough modern contraceptives. It is therefore of policy importance to galvanize increased use of modern contraceptives with the 15 to 20 age group.

6.3.3. Practice

Social workers have to practice according their area of competence and develop their professional skill (NASW, 2006). Social workers also need to strive to increase their professional knowledge and expertise and to put them into practice (NASW, 2006). From the practice point of view, the literature enriches social work practitioners with much macro-level information about modern contraceptive use among WCA in sub-Saharan Africa. This information can also be narrowed down to help with micro practice with individuals, families, and groups in the region.

The income of a person can be crucial in deciding to use contraceptives. According to Dickson-Tetteh et al. (2001), if the quality of life for WCA in South Africa is to be enhanced, their reproductive health problems need to be tackled. This observation resonates with Cameroon where low quality of life and socioeconomic status affect modern contraceptive use among WCA (Kongnyuy et al., 2008; Leke, 2007). Results of the study confirmed that respondents who earned an income were more likely to use modern contraceptives. The information gathered from the study can assist social workers to use social self-help support groups to start group businesses popularly known as the "njangi". The "njanji" is a trust-based informal micro financial support system used by most Africans to pool "their resources together" and "help each other achieve set financial" goals. (www.africanvibes.com). Another way that social work practice can help in this area is to link such groups to micro-finance banks that provide short-term, low-interest loans and economic advice on how to expand in various areas of business. Through such groups awareness campaigns and lectures on contraception (Odutolu et al., 2003) for parents and sexually adolescents can also be taught.

There is a serious problem of getting married early in Cameroon. It is common practice especially in the northern part of the country to see girls as young as 10 already married (Einterz, 1994). Frequency results showed that some respondents indicated that they got married as early as 7. Social workers need to inform and educate individuals, families, groups and the community about the disadvantages of marrying at a very tender age. Since most of the respondents confirmed that they heard of family planning through word of mouth, the word of mouth method can be used disseminate the ills of early marriage within local communities. This has to include the especially the well-to-do men who perpetrate such practices.

6.3.4. Education

Tenkorang et al. (2009) recognize that WCA start sexual activity early (15.5 years) because of unequal life chances and lack of sex education within the family and community. Modernization, however, is proving to affect this concept negatively in that families tend to lose their value and the importance of children, as these children are no longer dependable (Akmam, 2002, Macunovich, 2000). As the value and importance of children is decreasing, WCA are likely to want to reduce the number of children they have (McGuigan, 2003). This trend is likely to increase people's use of modern contraceptives. But how can a notion like this expand without the role of education? The code of ethics suggests that social workers who function as educators, field instructors should instruct according to their competence and most recent research-based information (NASW, 2006).

The idea of instituting family planning and sex education in school curricula has faced a lot of criticism (Marsman, & Herold, 1986). This study supports formal and informal methods of teaching beneficial family planning practices to students as well as people within local communities in order to improve modern contraceptive use across regions. The region where a person comes from can be important in the use of contraceptives; for instance, Kongnyuy et al. (2008) agree that geographical differences can affect contraceptive outcomes. Study results confirmed that respondents who lived in Douala and Yaoundé were more likely to use modern contraceptives than those from Regions 1 to 4. Since the study revealed that modern use of contraception was different between the regions, taking family planning and sex education to the classroom (Mukoma & Flisher, 2003) and within self-support groups, will help reduce the difference in modern contraceptives between regions.

Education has proven to be instrumental in several areas of human development and growth. Although some scholars contend that most parents think sex education is inappropriate in schools (Alexander, 1984), research shows that children who were taught sexual reproduction were less likely to indulge in risky sexual behaviors (Marsman & Herold, 1986). Such education should transfer to adults who sometimes find it painful to discuss modern contraception with their children (Mturi, 2003). Coulshed (1993) suggests that adult learning could provide standard and uniform framework for professional training and that this educational approach could be used to benefit social work practice and education.

As the study showed that those with a secondary education were more likely to use modern contraceptives, it seems reasonable that teaching family planning and sex

education from junior high school to adult literacy classes will greatly enhance the use of modern contraceptives in Cameroon. To this end, social workers should garner support to influence African government officials concerned with educational matters, to dialogue on the introduction of sex education in schools (Berer, 2000; Mturi, 2003; Mosima, 2007).

In spite of the suggestions to further the findings of this study through research, policy, practice, and education, the profession of social work is not as developed in Cameroon as it is in the USA and other parts of the world. Aside from the National Institute of Administration and Magistracy that trains social welfare workers, schools and colleges do not have a social work curriculum USA-style. Although this study is not aimed to advocate for the institution of a social work curriculum in Cameroon schools, it is obvious that for modern contraceptive use to be expanded in the country, there is the need to put social work boots on the ground. How this can be achieved is grounds for further research.

6.4. Directions for Future Work

6.4.1. Men's Participation in Family Planning

Since the main objective of family planning programs has always excluded men and instead focused primarily on women, it is important to stress men's shared responsibility and promote their active participation in responsible parenthood and sexual and reproductive behavior, including family planning and other reproductive rights (Maharaj, 2000; Yazbeck, 2004). Although Maharaj's, (2000) study is based in India, its recommendations can be replicated in Cameroon. Maine et al. (1995) and Moodley

(1995) typically write on reproduction without mentioning men; to them, the basis for reproductive health is purely a prerogative for women. These are attitudes that need to drastically change in Cameroon because the more men are involved with the discussion on family planning and contraceptive use, the more likely women are to use modern contraception (Pillai & Teboh, 2010). It is only by including men in reproductive issues, Varga (2001) argues, that the real change in contraceptive attitudes called for at the 1995 Cairo conference will begin to take place. As this study mostly covers modern contraceptive use among women of childbearing age, a study on contraceptive use among men is of future research interest.

6.4.2. Applying the Senga

From an informal point of view, the Senga rite of passage commonly used in East and Southern Africa can be modeled and applied in Cameroon using the community-based participatory research (CBPR) model. The Senga (father's sister) concept works because the niece confides in her aunt, who is less likely to let the parents of the niece know of their discussions (Muyinda et al., 2003). With the Senga, the young woman taps into the aunt's experience and is exposed to marital expectations, such as what to do on the first night in her husband's house and how to treat her husband (Muyinda et al., 2003). The Senga is ideal in that it bypasses the stigma and fear attributed with sex education and enables aunts and nieces to engage in informal sex education.

The CBPR, which encourages informal linkages between professionals and nonprofessionals, bests suit this method of spreading information in that it enables "scientific professionals and members of a specific community to work together as equal

partners in the development, implementation, and dissemination of research that is relevant to the community" (Israel, 2000, p. 1). Other areas where informal techniques can be applied are local self-help groups, churches, and community events. A move in this direction will greatly help to increase modern contraceptive use among uneducated women of childbearing age who are usually at risk of unplanned and unwanted pregnancies (Akinwande & Breiger, 2006; Belden & Russonello, 1998; Cleland et al., 2006; Moronkola & Fakeye, 2007).

6.4.3. Increase Social Services and Participation

Results of the study showed that respondents who earned an income were more likely to use modern contraceptives. Unfortunately, most social services programs in Africa are not only poorly implemented but are downright bound to fail, because, as Mantell et al. (2006) relate, the majority of sexually active WCA do not want to come for services, and the reason most of the women who need these services do not use them is a lack of money. In order to encourage participation, social self-help support groups can be empowered through the process of starting businesses, which would put more income in women's hands.

The problem of the lack of social services is quite noticeable especially in the rural areas where results determined that respondents in the more remote areas are less likely to use or have access to modern contraceptives. Kongnyuy et al. (2007) also saw drastic disparities between regions in Cameroon. Sometimes there are no roads to get to the urban areas and no infrastructure in the rural areas to house social services. Even when there are roads, they are usually inaccessible during the rainy season, and people

who need services are unable to get to them (Soh, 2007). The other problem is that women do not think they can go for these services. The main problem with not going for services is that most of these women do not know their rights and are unaware of reproductive choices like the mixed methods of contraception that they can use. This is an area of further research for future studies.

6.4.4. Introduction of High-Tech

The results of the study showed that 83.8% of the respondents said they heard of family planning though word-of-mouth. This percentage can be greatly reduced if cell phones and the Internet are introduced as tools to disseminate information. Although the pace is slow, Cameroon is changing, and in the more urban centers, there are Internet cafés and people are using cell phones more than ever before. The use of high-tech in reaching out to people is beginning to gain ground. Most local banks are using cell phones to reach out to their customers. It is likely that family planning and sex education can be spread through high-tech. Additionally, the UTA Teleherence (computer generated reminding system) can be explored to see if it is applicable in Cameroon in the foreseeable future. An approach like this can increase modern contraceptive use. The notion of using high-tech in this area of study has also been supported by Halpern et al. (2008); and Schoech (1999).

6.4.5. Increasing income and education

The study confirmed that the overwhelming reasons women of childbearing age use modern contraceptives are income and increased education. Based on these findings, social workers and policy makers in Cameroon should endeavor to advance the education

of not only the girl child but the entire population in order to sustain the effects of education on modern contraceptive use. Income independence which significantly increases modern contraceptive use can be achieved through the creation of social and financial capital among women. Such financial self-sufficiency as exemplified by the "njangi" (www.africanvibes.com) in Cameroon and the micro financial programs that have been widely used in Ghana and India (Getu, 2006) are best practice models that directly give women increased purchasing power, and opportunity to buy goods and services including modern contraceptives.

6.5. Conclusion

The study confirmed that social, cultural, political, and legal determinants affect modern contraceptive use. The dissertation also found that modernization & human capital have influenced modern contraceptive use. Hypothesized variables; income, place of residence, and education, were empirically supported. However, the variable age at first marriage was found to have a significant effect in the direction opposite to the hypothesized. Lastly, findings of the study confirmed that there have been compositional and processual changes in Cameroon from 1991 to 2004. In spite of the study findings, considerable amount of work needs to be done in the area of increasing modern contraceptive in the sub region and in Cameroon in particular because of the young age structure, illiteracy, and lack of quality family planning programs and other health services related to reproduction (Population Council, 2010b; WHO, 2009). Since population growth will continue in the coming decades, increasing individual as well as community levels of education remains central to ensuring increase in modern contraceptive and the general well-being of women and men worldwide (Population

Council, 2010b). Also, the "more than 130 million women in developing countries not wanting to get pregnant" (Population Council, 2010b, p.2) and yet not practicing family planning are mostly poor and needy. Satisfying the unmet need for modern and more effective contraceptive services in developing countries can be carried out through best practices and grassroots programs such as the “njangi” (www.africanvibes.com) and micro financing (Getu, 2006). Increasing financial independence and modern contraceptive use through these grassroots means could therefore avoid millions of unintended pregnancies that occur in most developing countries (Population Council, 2010b; UNFPA, 2003). With such mounting challenges, the role of the social worker as well as that of policymakers in the endeavor to increase contraceptive use in sub-Saharan African and Cameroon in particular cannot be overemphasized.

APPENDIX A

ACRONYMS

ACRONYM	MEANING
AIDS	Acquired Immune Deficiency Syndrome
CDHS	Cameroon Demographic and Health Survey
DISH	Delivery of Improved Services for Health
EDSC	Enquetes Demographiques et de la Sante au Cameroun
HIV	Human Immunodeficiency Virus
ICPD	International Conference on Population and Development
IMF	International Monetary Fund
IPPF	International Planned Parenthood Foundation
MTCTs	Mother To Child Transmissions
NGOs	Non-Governmental Organizations
PET	Political Economy Theory
PMTCT	Prevention of Mother to Child Transmission
SAP	Structural Adjustment Program
STIs	Sexually Transmitted Infections
UN	United Nations

UNPD	United Nations Population Division
UNFPA	United Nations Fund for Population Activities
UNHCR	United Nations High Commission for Refugees
USCBIDB	U.S. Census Bureau's International Data Base
WCA	Women of Childbearing Age
WHO	World Health Organization

APPENDIX B

SUMMARY OF THE LITERATURE REVIEWED

Author (s) and date of publication	Research Hypothesis or Question	Sample Size	Method(s)	Theory	Findings
Pillai & Teboh, 2010	Does modern contraceptive use increase over time?	CDHS 1991 = 3871 women 15 - 49 years of age CDHS 2004 = 10,656 women15–49 years of age	Multinomial Logistic Regression Analysis Compositional Analysis Processual Analysis	Modernization Theory Social Change Theory	Factors that increase in family planning acceptance are: Having an education Residing in urban areas Having husbands with positive attitudes toward family planning use Engaging in spousal communication However, being a Muslim reduced the likelihood of using FPP
Vijayan K.. Pillai & T.S. Sunil, 2007	What is the role of modernization on the	5687 women aged 15-49 were	Multivariate regression analysis/standard	Modernization theory	The study revealed that the process of

	current use of contraception in the Republic of Yemen?	interviewed	regression decomposition		modernization that brings about economic development inevitably promote the use of contraception in Yemen and that women's level of education impacts contraceptive use
Johnson-Hanks, Jennifer, Oct. 2003	Why do educated women in southern Cameroon both condemn abortion and practice it with some regularity?	Demographic life history survey (N=184), open-ended narrative interviews (N=37), and participant observation over 10 months	Ethnographic Study	Transition Theory	abortion persists in southern Cameroon because it is the lesser shame compared to socially unplanned motherhood
Christine A. Varga, 2002	The study looks at the procedure of illegal abortion and its prominence in the lives of adolescents	11- to 24-year-old rural and urban Zulu adolescents.	The study approach was based on the narrative re-search method developed by the World	none	Factors contributing to the commonplace nature of backstreet procedures among adolescents include:

	and the pathways that lead to their reliance upon it.		Health Organization (WHO 1993), and included focus-group discussions, workshop role playing, questionnaires, and in-depth interviews		social stigma, inadequate knowledge of the legal status of abortion, and a complex group decision-making process
Jennifer Johnson-Hanks, 2003, Cameroon	In Cameroon, when the educational level of women rises, they bear more children; why?	5,501 women	Descriptive statistics are calculated using ordinary methods, and most rates, including total and marital fertility rates, are based on one year of data	cognitive theories ethnographic materials	Cameroonians can marry in several ways, including bride wealth marriage, civil or legal marriage, and religious marriage (either Muslim or Christian). Most couples, at least in the south, marry in several different ways over time, and the order of transitions is highly

					variable. Long-term cohabitation, socially recognized as being similar to marriage, is also common. This loose structure coupled with the constitutionality of polygamy also encourages extra-marital relationships.
Laurie F. Derose and Øystein Kravdal, 2007	If the higher the educational level reduces the rate of conception, can the education reversal increase fertility?	16 sub-Saharan African countries with multiple survey	Multivariate Fixed-Effects Models	None	Thus we conclude that education reversals do seem to speed up entry into parenthood.
Pamela Feldman-Savelsberg, Flavien T.	This article addresses ways that reproductive	Political parties have become increasingly	None	None	While Cameroon is part of the central

Ndonko, Song Yang, 2005	insecurity, ethnic conflict and collective memory are linked in the experience of Bamileke women in Cameroon.	associated with ethnic groups and/or regions. Individuals have become more self-consciously aware of lineage, ethnic, and regional identities, and more demonstrative about boundary maintenance.			African infertility belt, the Bamileke have higher rates of fertility than do their average Cameroonian compatriots. Apparently, while past and present Bamileke political and reproductive insecurity are linked, not all collective memories are equally relevant for reproductive concerns.
John Cleland, Mohamed M Ali, 2006	to assess trends in a set of behaviors sexual abstinence, contraceptive use, and condom use that are known to affect the	18 African countries (132 800 women	Descriptive statistics	None	Between about 1993 and 2001, the percentage of women reporting no sexual experience changed little. During the

	rates of HIV transmission				same period, the percentage of sexually experienced women who reported no sexual intercourse in the previous 3 months (secondary abstinence) rose significantly in seven of 18 countries and the median for all 18 countries increased from 43·8% to 49·2%. Use of condoms for pregnancy prevention rose significantly in 13 of 18 countries and the median proportion increased from 5·3% to 18·8%. The median

					rate of annual increase of condom use was 1·41 percentage points (95% CI 1·12–2·25). In the 13 countries with available data, condom use at most recent coitus rose from a median of 19·3% to 28·4%. Over half (58·5%) of condom users were motivated, at least in part, by a wish to avoid pregnancy
Pamela Feldman-Savelsberg, 1994	Why do palavers prevent babies?	None	Ethnographic study	theories of procreation	The analysis suggests that infertility anxiety in Bangangte

					reflects women's feelings of vulnerability in the context of rural female poverty and the gender-specific consequences of political change in Cameroon
Michael Soh, 2007	The major objective is to explore women's limited access to healthcare facilities.	40 women in Munyengue, Cameroon	Descriptive statistics	None	This study has explored the impact of limited access to healthcare facilities on women's reproductive health in Munyenge and revealed intriguing findings that can be generalized to reflect similar situations in rural areas in Cameroon. The findings

					revealed the following: ♦ The government is to blame for women's limited access to healthcare facilities; ♦ Health units are poor and under equipped; ♦ Rude medical personnel; ♦ Very expensive diagnoses and treatment; ♦ Poor road infrastructure; ♦ Patriarchal structures which subordinate women; ♦ Women's lack of financial

					independence; ♦ Women's callous attitude towards their own health matters; ♦ Women's vulnerability and proclivity to remain under their husbands' perpetual protection though traumatic.
Schuster, 2005	The paper demonstrates how a hidden moral code on abortion helps women to exercise individual agency despite prevailing moral values. women's	In-depth interviews were conducted with 65 Cameroonian Grasslands women within a hospital-based study	Qualitative study	None	There is a large gap between what is permitted under the current law, which is colonial in origin, and women's need for legal abortion on broad

	desire to keep abortion secret can impede adequate medical treatment, which in turn can increase the risk of complications and mortality				socio-economic grounds. This calls for reflection on liberalization of the present law
Robert J. I. Leke, 1989	None	None	None	None	Reduce major complications from abortions performed by unskilled practitioners . improve adolescent reproductive heath by persuading parents to break their silence and stop ignoring

					adolescent sexuality; developing reproductive health education programs (especially for the S-M-year-old age groups and for out-of-school youth); . Prohibit such practices as female circumcision, which is Common in some parts of Cameroun and throughout Africa; . Provide social welfare structures for single mothers; . Launch

					.Gynecological outreach
Enow R Mbu, Eugene J Kongnyuy FX Mbopi-Keou Rebecca N Tonye, Philip N Nana1 and Robert JI Leke,	None	Two thousand and eight (2008) women participated in the study.	Descriptive statistics such as proportions were analyzed and presented. Univariate analyses, using odds ratio (OR) and Chisquare test	None	We conclude that (i) STIs are common in both HIV positive and HIV negative women in Cameroon, and (ii) STIs and pre-invasive cervical lesions are more prevalent in HIV-infected pregnant women compared to their non-infected compatriots. We recommend routine screening and treatment of STIs during antenatal care in

					Cameroon and countries with similar social profiles
Robert J. I. Leke, 1991	None	None	None	None	Vertical programs Only one or two methods available in a clinic Lack of qualified personnel Lack of adequate supervision and coordination Isolated programs Religious impediments Insuffici

					ent information and publicity Lack of expressed political will and commitment Lack of education Lack of good management of family planning program High perinatal and infant mortality in the environment Insufficient compensation of personnel
GZ Wang &	Women's	125	Path	Reproductiv	Female

V. K. Pillai 2001	Reproductive Health: A Gender Sensitive Human Rights Approach	"developing countries" as identified by WHO	Analysis	e rights, fertility ,social inequality and female share of income	share and ferity rates significantly impacts both reproductive rights and reproductive health of women GINI index did not significantly effect reproductive rights or reproductive health

REFERENCES

Abraham, M. F. (1980). *Perspectives on modernization: Toward a general theory of third world development.* Washington, DC: University Press of America.

African Vibe Magazine (2008). *Money Matters: The Njangi*. Retrieved on November 1, 2011

from http://africanvibes.com/wordpressnew/2008/09/25/the-njangi-an-african-financial-support-system/

Agadjanian, V. (2001). Negotiating through reproductive change: Gendered social interaction and fertility regulation in Mozambique. *Journal of Southern African Studies, 27*(2), 291–309.

Agadjanian, V. (2002). Men's talk about "women's matters": Gender, communication, and contraception in urban Mozambique. *Gender and Society, 16(2),* 194–215.

Agha, H. (1985). Study on Fertility in Iran and its relation with socio-economic indicators based on Iran Fertility Survey. Population study Center, University of Shiraz.

Agyei, W. K. A., Biritwum, R. B., Ashitey, A. G., & Hill, R. B. (2000). Sexual behaviour and contraception among unmarried adolescents and young

adults in greater Accra and eastern regions of Ghana. *Journal of Biosocial Science, 32*(4), 495–512. Retrieved from www.csa.com

Aka-Dago-Akribi, H. Du Lou, A. D. Msellati, P. Dossou, R. & Welffens- Ekra, C. (1999). Issues surrounding reproductive choice for women living with HIV in Abidjan, Cote d'Ivoire. *Reproductive Health Matters, 7(*13), 20–29.

Akinwande, O., & Brieger, W. R. (2006). Predictors of Sexual Behavior among Out-of-school Adolescents in Nigeria. *International Quarterly of Community Health Education, 26*(3), 233-46.

Akmam, W. (2002). Women's Education and Fertility rates in Developing Countries, with special reference to Bangladesh. *Eubios Journal of Asian and International Bioethics, 12*, 138–143.

Ako, S., Fokoua, S., Sinou, M. T., & Leke, R. (2008). *Reproductive health in Cameroon:* Retrieved on February 2, 2011 from http://www.gfmer.ch/Endo/Reprod_health/Cameroon/Net_Reproduction_Cameroun.htm

Alexander, S.J. (1984). Improving sex education programs for young adolescents: Parents' views. *Family Relations*, *33*(2), 251–257.

Alubo, O. (December, 2001). Adolescent Reproductive Health Practices in Nigeria. *African Journal of Reproductive Health, Vol. 5, No. 3, pp. 109-119*

Amazigo, U., Silva, N., Kaufman, J., & Obikeze, D. S. (1997). Sexual activity and contraceptive knowledge and use among in-school adolescents in Nigeria. *International Family Planning Perspectives, 23*(1), 28–33. Retrieved from www.csa.com

Amin, S., & Bajracharya, A. (2011). *Marriage and first birth intervals in early and late marrying societies: An exploration of determinants.* Population Council. Paper prepared for the 2011 Annual Meetings of the Population Association of America, Washington, DC.

Ampofo, A. A., Beoku-Betts, J., Njambi, W. N., & Osirim, M. (Dec., 2004). Women's and gender studies in English-speaking sub-Saharan Africa: A review of research in the social sciences. *Gender and Society, 18*(6), 685–714.

Andrew, G., Patel, V., & Ramakrishna, J. (2003). Sex, studies or strife? What to integrate in adolescent health services. *Reproductive Health Matters, 11*(21), 120–129.

Askew, I., & Berer, M. (2003). The contribution of sexual and reproductive health services to the fight against HIV/AIDS: A review. *Reproductive Health Matters, 11*(22), HIV/AIDS, 51–73.

Atkinson, P. M., & Glass, B. (1985). "Marital age Heterogamy and Homogamy, 1900

to 1980" *Journal of Marriage and Family* 46(3): 685-691.

Austin, J., Guy, S., Lee-Jones, L., McGinn, T., & Schlecht, J. (2008). Reproductive health: A right for refugees and internally displaced persons. *Reproductive Health Matters, 16*(31), 10–21. Retrieved from www.csa.com

Babalola, S., Vondrasek, C., Brown, J., & Traoré, R. (2001). The impact of a regional family planning service promotion initiative in sub-Saharan Africa: Evidence from Cameroon. *International Family Planning Perspectives, 27*(4), 186-193.

Balatao, R., Palmore, J. Ward, S. (1989). *Choosing a Contraceptive method choice in Aisa and the United States (Eds.).* Boulder, Colorado: Westview Press.

Bandura, A. (1977b). *Social learning theory.* New York, NY: General Learning Press.

Bandura, A. (1977a). *Social learning theory. Learning theories knowledgebase.* (2010). Learning-Theories.com. Retrieved April 25th, 2010 from http://www.learning-theories.com/social-learning-theory-bandura.html

Barroso, C. (2002) Family planning programs: Feminist perspective. *International Encyclopedia of the Social and Behavioral Sciences,* 5336–5340.

Bayard, R., Kaducu, F. O., Browne. J., Oyok, T., & Sondorp, E. (May 2008). "Factors associated with post-traumatic stress disorder and depression amongst internally displaced persons in northern Uganda." *BMC Psychiatry*, 8:8-38. Doi: 10.1186/1471-244X-8-38.

Bearinger, L.H., Sieving, R.E., Ferguson, J. & Sharma, V. (2007). "Global perspectives on the sexual and reproductive health of adolescents: Patterns, prevention, and potential." *Lancet* 369(9568):1,220-1,231.

Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education.* National Bureau of Economic Research, New York. New York, NY: Colombia University Press.

Becker, G. S. (1973). A theory of marriage: Part I. *The Journal of Political Economy, 81*(4), 813–846. Accessed on 20 March 2011.

Becker, G. S. (1981). *A treatise on the Family*. Cambridge, MA: Harvard University Press.

Becker, G. S.; Barro, R. J. (1988). A Reformulation of the Economic Theory of Fertility. *The Quarterly Journal of Economics, Vol. 103, No. 1, pp. 1-25*

Becker, S. (1996). Couples and reproductive health: A review of couple studies. *Studies in Family Planning, 27*(6), 291–306.

Belden & Russonello. (1998). Attitudes about World Population Growth. *World Public Opinion.Org.* Retrieved on September 11, 2011 from: http://www.americansworld.org/digest/global_issues/population/population1.cfm

Bell, J. (2009). Why embarrassment inhibits the acquisition and use of condoms: A qualitative approach to understanding risky sexual behaviour. *Journal of Adolescence, 32*(2), 379–391.

Benefo, K. D. (2008). Determinants of Zambian men's extra-marital sex: A multi-level analysis. *Archives of Sexual Behavior, 37*(4), 517–529.

Berer, M. (2000). HIV/AIDS, sexual and reproductive health at AIDS 2000, Durban. *Reproductive Health Matters, 8*(16), 160–169.

Betrand, J., Bauni, E., Lesthaeghae, R., Montgomery, M., Tambashe, O., & Wawer, M. (1993). Factors Affecting Contraceptive Use in Sub Saharan Africa. Washington DC: National Research Council, National Academy Press.

Bhambra, G. K. (2007). Rethinking Modernity: Postcolonialism and the Sociological Imagination. Palgrave Macmillan, New York, NY.

Blanc, A. K. (2001). The effect of power in sexual relationships on sexual and reproductive health: An Examination of the evidence. *Studies in Family Planning, 32*(3), 189–213.

Borlaug, N. E. (1970). *The Green Revolution: A symposium on science and foreign policy.* Proceedings before the Subcommittee on National Security Policy and Scientific Developments of the Committee on Foreign Affairs, House of Representatives, 91st Congress, First Session, December 5, 1969 (#38-612) J. Washington, DC: U.S. Government Printing Office.

Boland R and Katzive L, (2008). Developments in laws on induced abortion: 1998-2007, *International Family Planning Perspectives,* 2008, 34(3): 110-120.

Braam, T., & Hessini, L. (2004). The power dynamics perpetuating unsafe abortion in Africa: A feminist perspective. *African Journal of Reproductive Health, 8*(1), 43–51.

Brady, M. (2003). Preventing sexually transmitted infections and unintended pregnancy, and safeguarding fertility: Triple protection needs of young women. *Reproductive Health Matters, 11*(22), 134–141. Retrieved from www.csa.com

B.Y. (2008). Orphans of 'Children First Centre' on stage. *Cameroon Tribune.* Retrieved on April 7, 2010, from http://allafrica.com/stories/200806161673.html

Calvés, A. (1999). Marginalization of African single mothers in the marriage market: Evidence from Cameroon. *Population Studies, 53*(3), 291–301.

Castle, S. (2003). Factors influencing young Malians' reluctance to use hormonal contraceptives. *Studies in Family Planning, 34*(3), 186–199. Retrieved from www.csa.com

Cheung, I. (2011). 10 Ancient Methods of Birth Control. Retrieved on May 29, 2011 from http://www.cruxbuzz.com/10-ancient-methods-of-birth-control/

Chimere-Dan, O. (1993), Population policy in South Africa. *Studies in Family Planning, 24*(1), 31–39.

Cleland, J, Bernstein, S., Ezeh, A, Faundes, A., Glasier, A., & Innis, J. (2006). Family planning: The unfinished agenda. *Lancet* 368, 1810-1827.

Clemens, E. S., & Cook, J. M. (1999). Politics and institutionalism: Explaining durability and change. *Annual Review of Sociology, 25,* 441–466.

Clements, S., & Madise, N. (Aug., 2004). Who Is Being Served Least by Family Planning Providers? A Study of Modern Contraceptive Use in Ghana, Tanzania and Zimbabwe. *African Journal of Reproductive Health, Vol. 8, No. 2 pp. 124-136*

Clignet, R., & Sween, J. A. (1978). Ethnicity and fertility: Implications for population programs in Africa. *Journal of the International African Institute, 48*(1), 47–65.

Cochran, L. T., & O'kane, J. M. (1977). Urbanization-Industrialization and the theory of demographic transition. *The Pacific Sociological Review*, *20*(1), 113–134. Accessed 20 March 2011.

Cohen, B. 1998. "The emerging fertility transition in sub-Saharan Africa", *World Development 26*(8):1431-1461.

Cooper, D., Dickson, K., Blanchard, K., Cullingworth, L., Mavimbela, N., von Mollendorf, C., van Bogaert, L., & Winikoff, B. (2005). Medical abortion: The possibilities for introduction in the public sector in South Africa. *Reproductive Health Matters, 13*(26), 35–43.

Cooper, F. (1981). Africa and the world economy. *African Studies Review, 24*(2/3), 1-86.

Coren, C. (2003). For Cameroonian youth, perceived risk and parental support boost condom use. *International Family Planning Perspectives*, *29*(2), 97–98. Accessed 11 April 2011.

Coulshed, V. (1993). Adult learning: Implications for teaching in social work education. *British Journal of Social Work (1993), 23*(1), 1–13.

Craig, G., & Stanley, N. (2006). Visibility, immobility and stigma: Young people's use of sexual health services in rural areas. *Children & Society, 20*(3), 171-182.

Crossette, B. (2005). Reproductive health and the millennium development goals: The missing link. *Studies in Family Planning, 36*(1), 71–79.

Datta B., & Misra, G. (2003). Advocacy for sexual and reproductive health: The challenge in India. *Reproductive Health Matters, 8*(16), 24–34.

Da Vanzo, J., Ann, T.B., Othman, R. (1989). *Determinants of Contraceptive Method choice in peninsular, Malaysia, 1961-1975*. Boulder, Colorado: Westview Press.

De Bruyn, M. (April, 2004). Living with HIV: Challenges in Reproductive Health Care in South Africa. *African Journal of Reproductive Health, Vol. 8, No. 1, pp. 92-98*

Décret N° 2008/376 du 12 novembre 2008 portant organisation administrative de la République du Cameroun (2008). Retrieved from

http://www.prc.cm/index_fr.php?link=les_actes/lecture_act&id=79&lang=fr&quoi=D%E9cret

Delivery of Improved Services for Health (DISH) Project. (2002). Retrieved on March 13, 2010, from http://www.ugandadish.org/

Derose, L. F., & Kravdal, O. (2007). Educational reversals and first-birth timing in sub-Saharan Africa: A dynamic multilevel approach. *Demography, 44*(1), 59–77.

Dickson-Tetteh, K., Pettifor, A., & Moleko, W. (*May,* 2001). Working with public sector clinics to provide adolescent-friendly services in South Africa. *Reproductive Health Matters, 9*(17), 160–169.

Diduk, S. (1993). European alcohol, history, and the state in Cameroon. *African Studies Review, 36*(1), 1–42. Accessed March 1, 2011.

Dimov, P. D., & Shepherd, P.D. (2005). "Human Capital Theory and Venture Capital Firms: exploring "home runs" and "strike outs." *Journal of Business Venturing, Vol. 20,* 1-22.

Dodoo, F. N. (1999). Marriage type and reproductive decisions: A comparative study in sub-Saharan Africa. *Journal of Marriage and Family, 60*(1), 232–242.

Donaldson, P.J. & Tui, A.O. (Nov. 1990). The international family planning movement.

Population Bulletin; 45(3):1-46.

Dufty, D. (2007). *StatGun statistics consulting: Advantages and disadvantages of logistic regression.*

Retrieved on April 12, 2010 from http://www.statgun.com/tutorials/logistic-regression.html

Du Lou, A. D. (1999). Reproductive Health and AIDS in Sub-Saharan Africa. Problems and Prospects. *Population: An English Selection, Vol. 11 pp. 61-87*

Easterlin, R. A. (1978). The economics and sociology of fertility: A synthesis. In C. Tilly (Ed.), *Historical studies of changing fertility.* Princeton, NJ: Princeton University Press.

Einterz, E. M. (1994). Family planning and tradition: A view from northern Cameroon. *World Health Forum 15*, 378–382.

El Dawla, A. S. (2000). Reproductive rights of Egyptian women: Issues for debate. *Reproductive Health Matters*, *8*(16), 45–54.

Elder, G. H. (1994). Time, human agency, and social change: Perspectives on the life course. *Social Psychology Quarterly*, *57*(1), 4–15.

Ellison, J. (2009). Governmentality and the family: Neoliberal choices and emergent kin relations in southern Ethiopia. *American Anthropologist*, *111*(1), 81–92.

Eloundou-Enyegue, M., & Williams, L. M. (*February*, 2006). Family size and schooling in sub-Saharan African settings: A reexamination. *Demography, 43(1), 25–52.*

Eloundou-Enyegue, P. M. (2004). Pregnancy-related dropouts and gender inequality in education: A life-table approach and application to Cameroon. *Demography*, *41*(3), 509–528.

Enquête Démographique Et De Santé EDSC. (1991). [Cameroon Demographic and Health Survey, CDHS].*Reproduction.* Ministere Des Affaires Economiques, De La Programmation Et De L'amenagement Du Territoire. [Cameroon Demographic and Health Survey, CDHS] [*Reproduction.* Ministry of Economic Affairs, Town Planning and Housing].

Enquête Démographique Et De Santé EDSC. (2004). *Questionnaire Ménage.* Ministere Des Affaires Economiques, De La Programmation Et De L'amenagement Du Territoire. [*Household Questionnaire*. Ministry of Economic Affairs, Town Planning and Housing].

Eshbaugh, E. M. (2008). Sexuality-related outcomes of adolescent children of teen mothers. *Journal of Family Social Work, 11*(4), 373–388.

Fagge, K.S. (1997). *Public Policy in Nigeria.* Bayero University Kano, Nigeria. A Symposium Presentation.

Fasubaa, O. B., Akindele, S. T., & Ezechi, O. C. (2003). Illegal induced abortion in Nigeria: An examination of its consequences and policy implications

for social welfare and health policy makers. *Journal of Human Ecology, 14*(6), 433–443. Retrieved from www.csa.com

Feldman, R., & Maposhere, C. (2003). Safer sex and reproductive choice: Findings from "Positive Women: Voices and Choices" in Zimbabwe. *Reproductive Health Matters, 11*(22), HIV/AIDS, 162–173.

Feldman-Savelsberg, P. (2001). Encyclopedia entry: Cameroon. Retrieved on April, 06, 2010, from http://www.highbeam.com/doc/1G2-3401700046.html

Feldman-Savelsberg, P., Ntoko, F. T., & Schmitz-Ehry, B. (2000). Sterilizing vaccines or the politics of the womb: Retrospective study of a rumor in Cameroon. *Medical Anthropology Quarterly*, *14(*2), 159–179.

Feldman-Savelsberg, P., Ndonko, F. T., & Yang, S. (2005). Remembering 'The Troubles': Reproductive insecurity and the management of memory in Cameroon. *Journal of the International African Institute, 75*(1) 10–29.

Freedman, L. P., & Isaacs, S. L. (1993). Human rights and reproductive choice. *Reproductive Health Matters, 11*(22), HIV/AIDS, 173–184.

Garonna, P., & Triacca, U. (1999). Social change: Measurement and theory. *International Statistical Review, 67*(1), 4–62. Stable URL: http://libproxy.uta.edu:2055/stable/1403565

Gartman, D. (2002). Bourdieu's theory of cultural change: Explication, application, critique. *Sociological Theory*, *20*(2), 255–277. Accessed March 20, 2011.

Gay, L. R., & Airasian, P. (2003). *Educational research: Competencies for analysis and applications.* Columbus, OH: Merrill Prentice Hall.

Getu, M. (2006). Human Trafficking and Development: The Role of Microfinance. *Transformation,* Vol. 23, No. 3.

Ghossoub, E.A., & Reed, R. R. (2005). Money and specialization in a neoclassical growth model. *Journal of Money, Credit, and Banking*, *37*(5), 969-975

Gille, H. (1985). The World Fertility Survey: Implications for Developing Countries. *International Family Planning Perspective. Vol., 11,* No. 1, 9-17.

Gillespie, R. M., & Hubbard, R. (1986). Contraception in context. *A Journal of Women Studies*, *9*(1), 3–8.

Ginsburg, F., & Rapp, R. (1991). The politics of reproduction. *Annual Review of Anthropology*, *20,* 311–343.

Goldin, C. Katz, L.F. (1999). Decreasing (and then Increasing) Inequality in America: A Tale of Two Half-Centuries. National Bureau of Economic Research: Harvard University.

Goodwin, P., McGill, B., & Chandra, A. (2002). Who marries and when? Age at first marriage in the United States: 2002. *NCHS Data Brief*, No. 19.

Goody, S. N. (1982). *Parenthood and social reproduction: Fostering and occupational roles in West Africa.* Cambridge University Press, New York.

Gordon, M. (1998). "Human-capital theory." *A Dictionary of Sociology*. Retrieved April 05, 2011 from Encyclopedia.com: http://www.encyclopedia.com/doc/1O88-Humancapitaltheory.html

Greene, M. E., & Biddlecom, A. E. (2000). Absent and problematic men: Demographic accounts of male reproductive roles. *Population and Development Review, 26*(1), 81–115.

Gregory, P. R., Campbell Jr, J. M. (1976). Fertility interactions and modernization turning points. *The Journal of Political Economy*, Part 1, *84*(4), 835–848. Accessed March 20, 2011.

Groce, N., Mawar, N., & Macnamara, M. (2006) Inclusion of AIDS educational messages in rites of passage ceremonies: Reaching young people in tribal communities. *Culture, Health & Sexuality, 8*(4), 303–315. Accessed March 2, 2011.

Habicht, J. (1981). Health for all by the year 2000. *American Journal of Public Health, 71*(5), 459–461.

Haferkamp, H., & Neil, J. S. (Eds.). (1992). *Social change and modernity.* Berkeley,CA: University of California Press. Retrieved on March 23, 2011, from http://ark.cdlib.org/ark:/13030/ft6000078s/

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). Multivariate data analysis. Upper Saddle River, NJ: Pearson/Prentice Hill.

Halpern, C. T., Mitchell, E. M. H., Farhat, T., & Bardsley, P. (2008). Effectiveness of web-based education on Kenyan and Brazilian adolescents' knowledge about HIV/AIDS, abortion law, and emergency contraception: Findings from TeenWeb. *Social Science & Medicine, 67*(4), 628-637.

Handwerker. W. P. (1983). The first demographic transition: An analysis of subsistence choices and reproductive consequences. *American Anthropologist, New Series, 85(1), 5–27.*

Hari, D. (2008). *The translator: A memoir*. New York, NY: Random House Trade Papers.

Harries, J., Cooper, D., Myer, L., Bracken, H., Zweigenthal, V., & Orner, P. (2007). Policy maker and health care provider perspectives on reproductive decision-making amongst HIV-infected individuals in South Africa. *BMC Public Health, 7,* 282–289.

Heard, N. J., Larsen, U., & Hozumi, D. (2004). investigating access to reproductive health services using GIS: Proximity to services and the use of modern contraceptives in Malawi. *African Journal of Reproductive Health, 8*(2) 164-179.

Hearst, N., & Chen, S. (2004). Condom promotion for AIDS prevention in the developing world: Is it working? *Studies in Family Planning, 35*(1), 39-47. Retrieved from www.csa.com

Heeren, G. A., Jemmott, J. B., Mandeya, A., & Tyler, J. C. (2009). Sub-Saharan African University students' beliefs about condoms, condom-use intention, and subsequent condom use: A prospective study. *AIDS and Behavior, 13*(2), 268–276.

Herd, P. (2010). Psychological Aspects of Human Capital Education and Health in Late-life among High School Graduates: Cognitive versus Psychological Aspects of Human Capital. *Journal of Health and Social Behavior*. Vol. 51: No. 4, 478-497.

Hessini, L. (May, 2005). Global progress in abortion advocacy and policy: An assessment of the decade since ICPD. *Reproductive Health Matters, 13*(25), 88–100.

Heynes, W. H. (2003). The effects of religious commitment on the attitudes and behavior of teens regarding premarital childbirth. *Journal of Health & Social Policy, 17*(1), 1–17. Retrieved from www.csa.com

Hord, C., & Wolf, M. (2004). Breaking the cycle of unsafe abortion in Africa. *African Journal of Reproductive Health, 8*(1), 29–36.

Hubacher D, Mavranezouli I, McGinn E. (2008). Unintended pregnancy in sub-Saharan Africa: magnitude of the problem and potential role of contraceptive implants to alleviate it. *Contraception*; 78: 73-78.

Inglehart, R., & Welzel, C. (2005). *Modernization, cultural change, and democracy: The human development sequence.* New York, NY: Cambridge University Press.

Inkeles, A. (Jul., 1975). The Emerging Social Structure of the World. *World Politics, Vol. 27,* No. 4, pp. 467-495.

Inkeles, A., Smith, D. H., Miller, K. A., Singh, A. K., Bengston, V. L., & Dowd, J. J. (1983). *Exploring individual moderinty*. New York, NY: Columbia University Press.

Institut National De La Statistique (2005). *Annuaire Statistique du Cameroun Du Cameroun.* [National Institute of Statistics (2005). Cameroon Statistical Annual]. Retrived on September 13, 2010 from: Http://Www.StatisticsCameroon.Org/Downloads/Annuaire2010/Chap7.Pdf

International Planned Parenthood Federation. (2010). Cameroon National Association for Family Welfare: Family Planning. Retrieved on November

1, 2011, from: http://www.ippf.org/en/Resources/Guides-toolkits/Family+Planning.htm

Iqbal, S., & Ahman, E. (2004). Age patterns of unsafe abortion in developing country regions. *Reproductive Health Matters, 12*, 9-17. Retrieved from www.csa.com

Isiugo-Abanihe, U. C. (1994). Reproductive motivation and family-size preferences among Nigerian men. *Studies in Family Planning, 25*(3), 149–161.

Israel, B. A. (2000). Community-based participatory research: Principles, rationale and policy recommendations. *Successful Models of Community-Based Participatory Research*, pp. 16-22, Washington, DC.

Izugbara, C. O., & Ezeh, A. C. (2010). Women and high fertility in Islamic Northern Nigeria. *Studies in Family Planning, 41*(3), 193–204.

Jevons, W. S. (1871). *The theory of political economy*. Retrieved on April, 15, 2010, from http://www.dominiopublico.gov.br/download/texto/mc000138.pdf

Johnson-Hanks, J. (2003). Education, ethnicity, and reproductive practice in Cameroon. *Population 58*(2), 153–179.

Johnson-Hanks, J. (2007). Women on the Market: Marriage, Consumption, and the Internet in Urban Cameroon. *American Ethnologist. Vol. 34, No. 4, pp. 642-658*

Kaufman, C. E.; Clark, S.; Manzini, N.; May, J. (Dec., 2004). Communities, Opportunities, and Adolescents' Sexual Behavior in KwaZulu-Natal, South Africa. *Studies in Family Planning, Vol. 35, No. 4 pp. 261-274*

Kaufman, C. E., & Stavrou, S. E. (2004). "Bus Fare Please": The economics of sex and gifts among young people in urban South Africa. *Culture, Health & Sexuality*, *6*(5), 377–391.

Kaye, K., Moore, K. A., Hair, E. C., Hadley, A. M., Day, R. D., & Orthner, D. K. (2009). Parent marital quality and the parent-adolescent relationship: Effects on sexual activity among adolescents and youth. *Marriage & Family Review*, *45*(2-3), 270-288.

Kaye, K., Suellentrop, K., and Sloup, C. (2009). *The Fog Zone: How Misperceptions, Magical Thinking, and Ambivalence Put Young Adults at Risk for Unplanned Pregnancy.* Washington, DC: The National Campaign to Prevent Teen and Unplanned Pregnancy.

Khlat, M., Pictet, G., & Le Coeur, S. (*Apr*., 2001). Maternal mortality re-visited in the AIDS era: Brazzaville, 1996. *African Journal of Reproductive Health, 5*(1), 56–65.

Klaus, H. (1979). Natural family planning: The contribution of fertility awareness to body-person integration. *Social Thought, 5*(1), 35-42. Retrieved from www.csa.com

Khumba, P; Pillai, M., Pillai, V. K. (1998) Adolescent Sexual Activity, Early pregnancy and Quality of Life in Cameroon. *International Journal of Sociology of the Family*, 28(2): 23-33

Klugman, B. (2004). Organising and financing for sexual and reproductive health and rights: The perspective of an NGO activist turned donor. *Reproductive Health Matters, 12*(24),14–24.

Kongnyuy, E. J., Nana' N. P., Fomulu, N., Wiysonge, S. C., Kouam; L., & Doh, A. S. (March, 2008). Adverse Perinatal Outcomes of Adolescent Pregnancies in Cameroon. *Maternal and Child Health Journal, Vol*.(2), 1092–7875.

Labor, K. J. (2000). The victimization of juvenile prostitutes in Ethiopia. *International Social Work, 43*(2), 227–242. Retrieved from www.csa.com

LaRossa, R. (1988). Fatherhood and social change: The contemporary family and consequences of change. *Family Relations, 37*(4), 451–457.

Larsen, U. (1995). Differentials in infertility in Cameroon and Nigeria. *Population Studies, 49(2), 329–346.*

Leke, R.J. I. (1989) Family Planning in Africa South of the Sahara: *International. Journal of Gynaecology and Obstetrics,* 3:33-35

Leke, R.J.I. (1991): *Infertility and the African Environment*. Paper presented at International Meeting on Environment and Infertility. Copenhagen.

Leke, R.J.I. (2007). Postgraduate Training in Reproductive Health Research. *Faculty of Medicine,* University of Yaoundé 2007.

Leke, R.J.I.(1992). Evolution of Reproductive Health in Cameroon. Foundation for Medical Education and Research, Geneva. Retrieved from: http://www.gfmer.ch/Endo/Reprod_health/Cameroon/Net_Reproduction_Cameroun.htm

(Accessed date: July 21, 2010).

Leigh, B. C., Vanslyke, J. G., Hoppe, M. J., Rainey, D. T., Morrison, D. M., & Gillmore, M. R. (2008). Drinking and condom use: Results from an event-based daily diary. *AIDS and Behavior*, *12*(1), 104–112.

Lerner, D. (1958).*The passing of traditional society: Modernizing the Middle East*. New York, NY: Macmillan Publishing Company.

Levine C., & Dubler, N. N. (1990). Uncertain risks and bitter realities: The reproductive choices of HIV-infected women. *The Milbank Quarterly*, *68*(3), 321–351.

Libite, P. R. (2004). *Fécondité.* Enquête Démographique et de Santé, Cameroun 2004. [*Fertility.* Demographic and Health Survey, Cameroon, 2004]. Retrieved on February 24, 2010, from http://www.measuredhs.com/pubs/pdf/FR163/FR163-CM04.pdf

Livingstone, D. W. (1997). The limits of human capital theory: Expanding knowledge, informal learning and underemployment. *Policy Options*, pp.

9–13. Retrieve on October 14, 2011, from: http://www.irpp.org/po/archive/jul97/livingst.pdf

Macunovich, M. (2000). Relative cohort size: Source of a unifying theory of global fertility transition? *Population and Development Review, 26*(2), 235–261.

Madise, N., Zulu, E., & Ciera, J. (2007). Is poverty a driver for risky sexual behaviour? Evidence from National Surveys of Adolescents in Four African Countries. *African Journal of Reproductive Health, 11*(3) 83–98.

Maharaj, P. (2000). Promoting male involvement in reproductive health. *Agenda, No. 44, AIDS: Global Concerns for Women*, pp. 37-47.

Maine, D., Freedman, L., Shaheed, F., Frautschi, S., & Akalin, M. Z. (1995). Risks and rights: The uses of reproductive health data. *Reproductive Health Matters, 3*(6), 40–51.

Mantell, J. E., Harrison, A., Hoffman, S., Smit, J. A., Stein, Z. A., & Exner, T. M. (2006). The Mpondombili project: Preventing HIV/AIDS and unintended pregnancy among rural South African school-going adolescents. *Reproductive Health Matters, 14*(28), 113–122. Retrieved from www.csa.com

Manzini, N. (2001). Sexual initiation and childbearing among adolescent girls in KwaZulu Natal, South Africa. *Reproductive Health Matters, 9*(17), 44–52.

Margolis, S. P. (1997). Population policy research and the Cairo plan of action: New directions for the Sahel. *International Family Planning Perspectives, 23*(2), 86-89. Retrieved from www.csa.com

Marsman, J. C., & Herold, E. S. (1986). Attitudes toward sex education and values in sex education. *Family Relations, 35*(3), 357–361.

Martinelli, A. (2005). *Global modernization: Rethinking the project of modernity*. Thousand Oaks, CA: Sage.

Mayhew, S. H., Lush, L., Cleland, J., & Walt, G. (2000). Implementing the integration of component services for reproductive health. *Studies in Family Planning, 31*(2), 151–162.

Mbuagbaw, L. C., Okwen, P. M., Enyama, D. & Mayouego, J. K. (2007). Preconception care in Cameroon: Where are we? *The Internet Journal of Gynecology and Obstetrics. 8*(2)

McDevitt, T. M., Adlakha, A., Fowler, T. B., & Harris-Bourne, V. (1996). *Trends in adolescent fertility and contraceptive use in the developing world.* Retrieved on April 17, 2010, from http://www.census.gov/ipc/prod/ipc95-1/ipc95_1a.pdf

McGuigan, B. (2003). *Modernization theory.* Retrieved on February 5, 20, from http://www.wisegeek.com/what-is-modernization-theory.htm

Meeker, D., & Klein, M. (2002). Determinants of condom use among young people in urban Cameroon. *Studies in Family Planning*, *33*(4), 335–346. Accessed April 11, 2011.

Meekers, D. (2000). The effectiveness of targeted social marketing to promote adolescent reproductive health: The case of Soweto, South Africa. *Journal of HIV/AIDS Prevention & Education for Adolescents & Children, 3*(4), 73-92. Retrieved from www.csa.com

Meekers, D., & Calvès, A. (1999). Gender differentials in adolescent sexual activity and reproductive health risks in Cameroon. *African Journal of Reproductive Health, 3*(2), 51-67.

Mensch, B. S., Hewett, P. C., Gregory, R., & Helleringer, S. (2008). Sexual behavior and STI/HIV status among adolescents in rural Malawi: An evaluation of the effect of interview mode on reporting. *Studies in Family Planning, 39*(4), 321-334.

Merriam-Webster Dictionary (2009). Rite of Passage. Retrieved on April 20, 2011 from http://www.merriam-webster.com/dictionary/rite%20of%20passage

Merriam Webster Dictionary (2011). Region. Retrieved on July 19, 2011 from http://www.merriam-webster.com/dictionary/region

Mertler, C. A., & Vannatta, R. A. (2002). *Advanced and multivariate statistical methods* (2nd ed.). Los Angeles, CA: Pyrczak publishing.

Molla, M., Emmelin, M., Berhane, Y., & Lindtjorn, B. (2009). Readiness of youth in rural Ethiopia to seek health services for sexually transmitted infections. *African Journal of AIDS Research, 8*(2), 135-146.

Monjok, E., Smesny, A., Ekabua, J. E., & Essien, E. J. (2010). Contraceptive practices in Nigeria: Literature review and recommendation for future policy decisions. *Open Access Journal of Contraception, 1*, 9–22.

Moodley, A. (1995). Defining reproductive rights. *Agenda, No. 27, Reproductive Rights, pp. 8–14.*

Moore, K. A., Ryan, S., Manlove, J., Mincieli, L., & Schelar, E. (2009). High-risk subsequent births among co-residential couples: The role of fathers, mothers, and couples. *Fathering, 7*(1), 91–102.

Morgan, D. R., & Kickham, K. (1997). Modernization among the U.S. States: Change and continuity from 1960 to 1990. *Publius (1997), 27*(3), 23–40.

Moronkola, O. A., & Fakeye, J. A. (2007). Reproductive health knowledge, sexual partners, contraceptive use and motives for premarital sex among female sub-urban Nigerian secondary students. *International Quarterly of Community Health Education, 28*(3), 229–238.

Mosima, E. (2007). Sexuality education curriculum launched. *Cameroon Tribune.* Retrieved on April 7, 2010, from http://allafrica.com/stories/200705030601.html

Mturi, A. J. (2003). Parents' attitudes to adolescent sexual behaviour in Lesotho. *African Journal of Reproductive Health, 7*(2), 25–33.

Mukoma, W. & Flisher, A. J. (2008). *Promoting adolescent sexual and reproductive health in east and southern Africa,* (1st ed.). Cape Town, South Africa: HSRC Press.

Mulatu, M. S., Adamu, R., & Haile, S. I. (2000). Psychosocial and contextual determinants of past and intended condom use among Ethiopian secondary school students. *Northeast African Studies, 7*(1), 85-108. Retrieved from www.csa.com

Muyinda, H., Nakuya, J., Pool, R., & Whitworth, J. (2003). Harnessing the Senga institution of adolescent sex education for the control of HIV and STDs in rural Uganda. *AIDS Care, 15*(2), 159–167.

Myer, L., Morroni, C., Mathews, C., & Little, F. (2002). Dual method use in South Africa. *International Family Planning Perspectives, 28*(2), 119–121.

Myer, L., Rabkin, M., Abrams, E. J., Rosenfield, A., & El- Sadr, W. M. (2005). Focus on women: linking HIV care and treatment with reproductive health services in the MTCT-Plus initiative. *Reproductive Health Matters, 13*(25), 136–146.

Nation Master (2003). *Cameroon religious statistics*. Retrieved on April 18, 2010, from http://www.nationmaster.com/country/cm-cameroon/rel-religion

National Association of Social Workers.(2006). *Code of ethics*. Washington, DC: NASW.

Ndyanabangi, B., Kipp, W., & Diesfeld, J. (2004). Reproductive health behaviour among in-school and out-of-school youth in Kabarole District, Uganda. *African Journal of Reproductive Health, 8*(3), 55–67.

Nordqvist, C. (2009). What is contraception? What is birth control? *Medical News Today*. Retrieved from http://www.medicalnewstoday.com/articles/162762.php

Noss, A. J., & Hewlett, B. S. (2001). The contexts of female hunting in central Africa. *American Anthropologist, New Series, 103*(4), 1024–1040.

Nsom, K. (2007). Population data is basis for development planning - UN official. *The Post Online.* Retrieved on April 7, 2010, from http://allafrica.com/stories/200706070826.html

Odutolu, O., Adedimeji, A., Odutolu, O., Baruwa, O., & Olatidoye, F. (2003). Economic empowerment and reproductive behaviour of young women in Osun State. *African Journal of Reproductive Health, 7*(3), 92–100.

Olaniyan. D. A., & Okemakinde, T. (2008). Human capital theory: Implications for educational development. *Journal of Scientific Research. 24*(2), 157–162.

Olatunji, O. (2008). CEDPA, Exxonmobil train women. *This Day*. Retrieved on April 7, 2010, from http://allafrica.com/stories/200807020738.html

Olukoya, P. (April, 2004). Reducing Maternal Mortality from Unsafe Abortion among Adolescents in Africa. *African Journal of Reproductive Health, Vol. 8, No. 1, pp. 57-62.*

Otoide, V. O., Oronsaye, F., & Okonofua, F. E. (2001). Why Nigerian adolescents seek abortion rather than contraception: Evidence from focus-group

discussions. *International Family Planning Perspectives, 27*(2), 77–81. Retrieved from www.csa.com

Oye-Adeniran, B. A., Adewole, I. F., Umoh, A. V., Oladokun, A., Ghadegesin, A., Ekanem, E. E., Yusuf, B., Odeyemi, K. A., Iwere, N., & Mahmoud, P. (2006). Community-based study of contraceptive behavior in Nigeria. *African Journal of Reproductive Health, 10*(2), 90–104. Accessed March 2, 2011.

Oye-Adeniran, B. A., Long, C. M., & Adewole I. F. (2003) Advocacy for reform of the abortion law in Nigeria. *Reproductive Health Matters*, *12*(24), 209–217.

Pebley, A. R. (2002). Demography. *Encyclopedia of Public Health*. *2002.* Retrieved on April 06, 2011, from encyclopedia.com: http://www.encyclopedia.com/doc/1G2-3404000259.html

Pettifor, A. E., Beksinska, M. E., & Rees, H. E. (*Oct.*, 2000). High knowledge and high risk behaviour: A profile of hotel-based sex workers in inner- city Johannesburg. *African Journal of Reproductive Health, 4*(2), 35–43.

Phetla, G., Busza, J., Hargreaves, J. R., Pronyk, P. M., Kim, J. C., Morison, L. A., Watts, C., & Porter, J. D. H. (2008). "They have opened our mouths": Increasing women's skills and motivation for sexual communication with young people in rural South Africa. *AIDS Education and Prevention, 20*(6), 504–518. Retrieved from www.csa.com

Pillai, V. K., & Barton, T. (1998). Modernization and teenage sexual activity in Zambia: A multinomial logit model. *Youth and Society, 29*(3), 293–310.

Pillai, V.K. & Teboh, C. (2010). A decade of Contraceptive Use in Cameroon: Influences of Structural Changes. *Open Access Journal of Contraception, 2011*:2 5-11.

Pillai, V. K., & Pillai. M.K. (1998). Adolescent sexual activity, early pregnancy and quality of life in Cameroon. *International Journal of Sociology of the Family, 28*(2), 23–33.

Pillai, V. K., & Sunil, T. S. (2007). Contraceptive use in Yemen: A component analysis. *World Health and Population. 9*(4),65–78.

Pillai, V. K., & Wang, G. (1999). Social structural model of women's reproductive rights: A cross-national study of developing countries. *The Canadian Journal of Sociology, 24*(2), 255–281.

Population Council. (2010b). Access to Contraceptive Methods. Retrieved on June 10,

2010 from: http://www.popcouncil.org/topics/fps_contra.asp

Population Council. (2010a). Family Planning Services. Retrieved on June 10, 2010 from: http://www.popcouncil.org/topics/fps.asp

Population Council. (2004). Investing in development: A practical plan to achieve the millennium development goals. *Studies in Family Planning, 36*(2), 145–147.

Population Council. (2005). *Population Briefs: Reports on Population Council Research* 11(1). New York: The Population Council.

Rahman, A., & Pine, R. N. (1995). An international human right to reproductive health care: Toward definition and accountability. *Health and Human Rights, 1*(4), 400–427.

RamaRao, S.; Friedland, B.; Townsend, J. W. (Dec., 2007). A Question of Ethics: Research and

Practice in Reproductive Health. Studies in Family Planning, Vol. 38, No. 4, pp. 229-241

Randall, S., & LeGrand, T. (2003). Reproductive strategies and decisions in Senegal: The role of child mortality. *Population (English Edition, 2002-), 58*(6), 687–715.

Rao, M. (Jun. 9-15, 2001). Review: Politics of reproduction. New reproductive technologies, women's health and autonomy: Freedom or dependency. *Economic and Political Weekly, 36*(23), 2046–2047.

Richards, S. C. (2002). "Spoiling the womb": Definitions, aetiologies and responses to infertility in North West Province, Cameroon. *African Journal of Reproductive Health, 6*(1), 84–94.

Rivers, K., & Aggleton, P. (1998). Gender and the HIV Epidemic: Adolescent Sexuality, Gender and the HIV Epidemic. *Thomas Coram Research Unit Institute of Education,* University of London.

Robinson, K. M. (n.d.). Education and Traditional Contraceptive Use: An Analysis of Nine Countries Using Demographic and Health Survey Data. Retrieved from: http://cgi.unc.edu/uploads/media_items/education-and-traditional-contraceptive-use-an-analysis-of-nine-countries-using-demographic-and-health-survey-data.original.pdf.

Rosen, D. (2004). "I just let him have his way": Partner violence in the lives of low-income, teenage mothers. *Violence Against Women, 10*(1), 6–28.

Rosenthal, J. A. (2005). Statistics and data interpretation for the helping professions. Belmont, CA: Wadsworth/Thompson Learning.

Rustenbach, E. (2010). Sources of negative attitudes toward immigrants in Europe: A multi-level analysis. *International Migration Review, 44*(1), 53–77.

Rutenberg, N., Biddlecom, A. E., & Kaona, F. A. D. (2000). Reproductive decision-making in the context of HIV and AIDS: A qualitative study in Ndola, Zambia. *International Family Planning Perspectives, 26*(3), 124–130.

Rwenge, M. J. (2000). Sexual risk behaviors among young people in Bamenda, Cameroon. *International Family Planning Perspectives, 26*(3), 118–130.

Rwenge, M. J. (2004). Genre et sexualité des Jeunes à Bafoussam et Mbalmayo, Cameroun. [Youth Gender and Sexuality in Bafoussam and Mbalmayo,

Cameroon], *African Journal of Reproductive Health, Vol. 8, No. 2, pp. 145-163.*

Ryder, N. B. (1965). The cohort as a concept in the study of social change. *American Sociological Review, 30*(6), 843–861.

Ryder, N.B. (1978). On the Time Series of American Fertility. *Population and Development Review, Vol. 4,* No. 2 , pp. 322-325. Accessed: 01/11/2011 09:58

Sabean, D. W. (1983). The history of the family in Africa and Europe: Some comparative perspectives. *The Journal of African History, 24*(2), 163–171.

Sabia, J. J. (2006). Does sex education affect adolescent sexual behaviors and health? *Journal of Policy Analysis and Management, 25*(4), 783–802.

Sachs, J. D., McArthur, J. W. Schmidt-Traub, G., Kruk, M., Bahadur, C., Faye, M., & McCord G. (2004). Ending Africa's poverty trap. *Brookings Papers on Economic Activity, Vol 1,* (1),117–216.

Sallar, A. M. (2008). Sexual behavior and attitude toward condoms among unmarried in-school and out-of-school adolescents in a high-HIV prevalence region in Ghana. *International Quarterly of Community Health Education, 29*(2), 161–181.

Salvadori, M. L. (2008). *Progress: Can we do without it?* New York, NY: Palgrave Macmillan, a division of St Martin's Press, LLC.

Sangalang, B. B., Barth, R. P., & Painter, J. S. (2006). First-birth outcomes and timing of second births: A statewide case management program for adolescent mothers. *Health & Social Work, 31*(1), 54-63. Retrieved from www.csa.com

Schaalma, H., & Kaaya, S. (2008). Promoting adolescent sexual and reproductive health in East and Southern Africa (1st ed.). Cape Town, South Africa: HSRC Press.

Schneider, H., Blaauw, D., Gilson, L., Chabikuli, N., & Goudge, N. (2006). Health systems and access to antiretroviral drugs for HIV in southern Africa: Service delivery and human resources challenges. *Reproductive Health Matters, 14*(27), 12–23.

Schoech, D. (1999). *Human Services Technology: Understanding Designing and Implementing Computer and Internet Applications in the Social Services.* The Haworth Press: NY, New York.

Schuster, I. M. (1979). *New Women of Lusaka*. Mayfield Publishing Company, Mountain View, CA.

Schuster, S. (2005). Abortion in the Moral World of the Cameroon Grassfields. Reproductive Health Matters, Vol. 13, No. 26, 130-138.

Shittu, L.A.J., Zachariah, M.P., Ajayi. G, Oguntola, J.A., Izegbu, M.C., Ashiru, O.A. (2007). The negative impacts of adolescent sexuality problems among secondary school students in Oworonshoki Lagos. *Science. Research Essays*, 2(1): 023-028.

Schultz, T.W. (1971). *Investment in Human Capital*. New York. The Free Press.

Smith, D. H., Inkeles, A. (1964). A Comparative Socio-Psychological Measure of Individual Modernity. *Sociometry.* Vol. 29, No 4, pp. 353-377.

Soh, M. (2007). Access to healthcare vis-à-vis women's reproductive health in Cameroon. *Journal of International Women's Studies*, 9(1):117–134.

Speizer, I. S., Tambashe, B. O., & Tegang, S. (2001). An evaluation of the "entre nous jeunes" peer-educator program for adolescents in Cameroon. *Studies in Family Planning, 32*(4), 339–351. Retrieved from www.csa.com

Speizer, I. S., & White, J. S. (2008). The unintended consequences of intended pregnancies: Youth, condom use, and HIV transmission in Mozambique. *AIDS Education and Prevention, 20*(6), 531–546. Retrieved from www.csa.com

Stephenson, R., Beke, A. & Shibangu, D. (2008). Community and health facility influences on contraceptive method choice in the Eastern Cape, South Africa. *International Family Planning Perspectives, 34*(2), 62-70.

Sunil, T. S., & Pillai, V. K. (2004). Age at marriage, contraceptive use and abortion in Yemen 1991-1997. *Canadian Studies in Population, 2004, 31*(1), 83–107.

Takyi, B. K., & Dodoo, N., Baffour K. (2005). Gender, lineage, and fertility-related outcomes in Ghana. *Journal of Marriage and Family, 67*(1), 251–257.

Tenkorang, E. Y., Rajulton, F., & Maticka-Tyndale, E. (2009). Perceived risks of HIV/AIDS and first sexual intercourse among youth in Cape Town, South Africa. *AIDS and Behavior, 13*(2), 234–245.

The Theory of Political Economy. (2010). In *Encyclopædia Britannica*. Retrieved April 15, 2010, from Encyclopædia Britannica Online: http://www.britannica.com/EBchecked/topic/675888/The-Theory-of-Political-Economy

Tita, A. N., Selwyn, B. J., Waller, D. K., Kapadia, A. S., & Dongmo, S. (2005). Evidence-based reproductive health care in Cameroon: Population-based study of awareness, use and barriers. *Bulletin of the World Health Organization, 83,* 895–903.

Trovato, F., & Grindstaff, C. (Eds). (1994). *Perspectives on Canada's population: An introduction to concepts and issues.* Toronto, Canada: Oxford University Press.

Trussell, J., & Kost, R.I. (1989) Age at marriage and age at first birth. *Population Bulletin of the United Nations.* New York, NY: United Nations.

Turner, R. H. (1990). Role change. *Annual Review of Sociology, 16,* 87–110. Accessed March 20, 2011.

Umemoto, S. H. (2001). Early marriage: Child spouses *Unicef Innocenti Research Centre* No. 7.

UNFPA. (2003). *Population issues: Supporting the constellation of reproductive rights.* http://www.unfpa.org/rights/rights.htm.

UNFPA. (2004a). Country profile for population and reproductive health. *Policy Developments and Indicators 2003.*

UNFPA. (2004b). *Population issues: Improving reproductive health.* http://www.unfpa.org/rh/

United Nations. (2002). *Abortion policies: A global review*. Population Division, Economic and Social Council. Retrieved on April 20, 2010, from http://www.un.org/esa/population/publications/abortion/index.htm

United Nations. (2004). Population Division: The Adolescent Experience In-Depth: Using Data to Identify and Reach the Most Vulnerable Young People *Cameroon 2004*

United Nations. (2005). Population Division, United Nations Department of Economic and Social Affairs. World population prospects: the 2004 revision, New York: United Nations.

USAID. (2009). Achieving the MDGs: The contribution of family planning in Cameroon. *Health Policy Initiative.* Retrieved on June 16, 2011, from http://www.usaid.gov/our_work/global_health/pop/techareas/repositioning/mdg_pdf/cameroon.pdf

U.S. Census Bureau. (2010). *International data base: Cameroon 2010 midyear population*. Retrieved on March 9, 2010, from http://www.census.gov/ipc/www/idb/country.php

Varga, C. A. (2001). The forgotten fifty per cent: A review of sexual and reproductive health research and programs focused on boys and young men in sub-Saharan Africa. *African Journal of Reproductive Health, 5*(3), 175–195.

Varga, C.A. (2002). Pregnancy termination among South African adolescents. *Studies in Family Planning, 33*(4), 283–298.

Varga, C. A. (2003). How gender roles influence sexual and reproductive health among South African adolescents. *Studies in Family Planning, 34*(3), 160–172.

Varkey, S. J., Fonn, S., & Ketlhapile, M. (2000). The role of advocacy in implementing the South African abortion law. *Reproductive Health Matters, 8*(16), 103–111.

Van Ngo, H. (2009). Patchwork, sidelining and marginalization: Services for immigrant youth. *Journal of Immigrant & Refugee Studies, 7*(1), 82-100.

Vogt, W. P. (2005). *Dictionary of Statistics and Methodology: A Nontechnical guide for*

the Social Science (3rd Ed.). Thousand Oaks, CA: Sage Publications Inc.

Wilcher, R., & Cates, W. (2009). Reproductive choices for women with HIV. *World Health Organization Bulletin, 87,* 833–839.

Williamson, L. M.; Parkes, A.; Wight, D.; Petticrew, M.; Hart, G. J. (2009). Limits to Modern contraceptive use among Young women in Developing Countries: a Systematic review of Qualitative Research. *Reproductive Health*, 6:3 doi: 10.1186/1742-4755-6-3

Yazbeck, A. S. (2004). Real and perceived threats to reproductive health: A way forward. *Reproductive Health Matters, 12*(24), 25-34.

Wang, G. Z., & Pillai, V. K. (2001). Measurement of women's reproductive health and reproductive rights: An analysis of developing countries. *Social Indicators Research, 54*(1), 17–35.

Wars in the World. (Oct. 2011). List of ongoing Conflicts. Retrieved from: http://www.warsintheworld.com/?page=static1258254223

(Accessed: November 1, 2011).

Whitley E., & Ball, J. (2002). Statistics review 5: Comparison of means. *Critical Care, 6*(5), 424–428. Retrieved on October 15, 2010, from: http://ccforum.com/content/6/5/424

World Health Organization (WHO). (2009). *Monitoring reproductive health: Selecting a short list of national and global indicators.* Geneva, Switzerland.

World Health Organization. (2007). Unsafe abortion: global and regional estimates of incidence of unsafe abortion and associated mortality in 2003, Geneva, Switzerland.

Xiao, J. (1998). Education expansion in Shenzhen, China: Its interface with economic development. *International Journal of Educational Development 18 (1), 3-19.*

Zapf, W. (2004). *Modernization theory and the non-western world.* Retrieved from http://bibliothek.wzb.eu/pdf/2004/p04-003.pdf

BIOGRAPHICAL INFORMATION

Consoler Tenug Teboh completed his undergraduate studies in Political Science with a minor in Sociology from Bayero University Kano, Nigeria. Both his master's and the doctoral studies were pursued at the University of Texas at Arlington in the field of social work. His professional background includes hospital social work, aging and community outreach. For the past two years he has been a community outreach practitioner with a healthcare facility in Arlington Texas. He has volunteered more than 1000 hours with the Mental Health and Mental Retardation services in Fort Worth, Texas; the Texas Reentry Services in Fort Worth, Texas; and assisted with the evacuation of critically ill Hurricane Katrina displaced patients from Houston to Kindred Hospital Arlington where he has served as a Patient Care Technician for the past 7 years. His research interests are reproductive health, human and community development, human rights and advocacy, immigration and displaced persons, diversity and human behavior in the social environment, aging and disability, and international social work. Dr. Teboh hopes to enter an academic career with a teaching, community outreach, and heavy focus on research.