

THE ROLE OF SOCIAL NETWORKS IN FERTILITY DECLINE IN KENYA



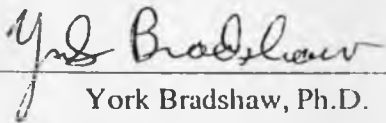
J. Muyoma Musalia

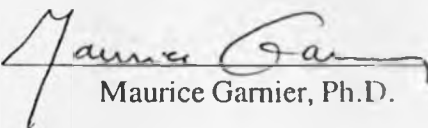


Submitted to the faculty of the University Graduate School
in partial fulfilment of the requirements
for the degree
Doctor of Philosophy
in the Department of Sociology
Indiana University

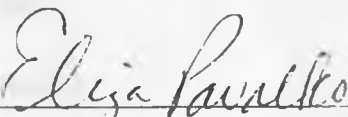
June, 2000

Accepted by the Graduate Faculty, Indiana University, in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

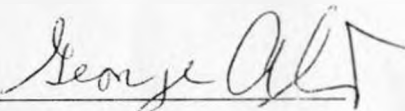

York Bradshaw, Ph.D.


Maurice Garnier, Ph.D.

Doctoral
Committee


Eliza Pavalko, Ph.D.

Date of
Oral Examination
June 8, 2000


George Alter, Ph.D.

c 2000

J. Muyoma Musalia

ALL RIGHTS RESERVED

DEDICATION

To my parents: thanks for your support, steadfast belief in my abilities and unfailing Love.

ACKNOWLEDGMENTS

This work has benefitted from many people both intellectually and financially. First, I want to thank my advisor York Bradshaw for his support and friendship. His professionalism, dedication and help saw me not only through the writing of this dissertation, but also through my student life at Indiana University. York, thanks a million for all you have been to me both academically and otherwise. You truly made my life exciting and bearable at Indiana University. I also want to sincerely thank my committee members, Professors Maurice Garnier, Eliza Pavalko and George Alter for their critical and incisive comments.

I would also like to thank the exchange program between Indiana University and University of Nairobi for facilitating my studies at Indiana University. I would particularly like to thank the two architects of the program, Prof. York Bradshaw of Department of Sociology, Indiana University and Prof. Mauri Yambo of the Department of Sociology, University of Nairobi for their foresight and dedication to the success of the program.

My gratitude to the Population Council for funding my field work in Kenya. Without their support this study would certainly not have taken place. To all my research assistants, I say thank you. Your help was invaluable. Thanks to the District Statistics officers in Murang'a and Kakamega, Mr. Mugane and Mr. Silingi for their help in sampling. Thanks to John Gikenye, Tabitha Wambui, Jane Kahuthia for the many hours you put into data entry.

In Bloomington. I want to thank Mompoloki Bagwasi for her help in proof reading, intellectual discussions and friendship. Thank you Brad Smith, Richard Wafula, Calvin Odhiambo, Eva Odhiambo, George Kakoti, Giovanni Burgos and Katy Fallon for your warm

friendship and help during my stay in Bloomington. Thanks Wangari, Bwuzu and Gikenye for enduring my absence. To all the others who helped me in one way or the other, and I am unable to mention their names, please accept my gratitude. I, alone, bear the burden of any errors in this work.

THE ROLE OF SOCIAL NETWORKS IN FERTILITY DECLINE IN KENYA

This dissertation examines the role of social interaction in the diffusion of new ideas about family size and spread of fertility control in Kenya. Kenya has undergone a dramatic and puzzling fertility decline since 1989, a process that was not anticipated. Since the transition happened at a time when factors that are usually associated with such a decline were absent, such as, socioeconomic development, this study set out to investigate the possible influence of social interactions on fertility change in Kenya. The study utilizes data derived from survey research in Kenya. Two districts, Murang'a and Kakamega were surveyed.

One of the findings of this study is that both men and women are talking to their relatives, friends and neighbors about family planning and other issues related to fertility behavior, something that was not custom before. More specifically, social networks are found to be important in modifying fertility behavior in Kenya. Another important finding is that contrary to family planning program focus on women, men's social networks turned out to be more important in some cases in influencing fertility behavior than women's social networks. The ongoing fertility decline in Kenya is therefore driven, to a large part, by the changing attitudes of men towards large families. In general, this study shows that people tend to enact behaviors that they believe are supported by other members of the community. The knowledge that others are engaging in a new behavior minimizes anxiety and costs associated with its adoption since there is already evidence in the community that the behavior is acceptable.

Yed Bradshaw
James Ganyu
Eliezer Kachiko
George Olt

TABLE OF CONTENTS

DEDICATION	iv
ACKNOWLEDGMENTS	v
ABSTRACT	vii
I. CHAPTER ONE	1
INTRODUCTION	1
Fertility Transition in Africa	4
Statement of the Problem	7
Description and Justification of the Areas of Study	11
Study Design and Methods	15
Layout of the Study	15
II. CHAPTER TWO	18
LITERATURE REVIEW AND THEORETICAL DISCUSSION	18
European Demographic Transition	22
Demographic Transition in Developing Countries	25
Conceptualizing Fertility Decline in Kenya	41
Operationalizing Social Networks and Fertility Transition in Kenya	45
III. CHAPTER THREE	53
METHODOLOGY	53
Introduction	53
Description of Murang'a and Kakamega	53
Kakamega	53
Murang'a	57
Training and Survey	60
Sampling Procedures	61
The Importance of Principal Researcher Presence During the Research Process	69

IV. CHAPTER FOUR	71
KENYA'S DEMOGRAPHIC DEVELOPMENT	71
Introduction	71
Kenya's Demographic History	71
High Fertility in Africa	75
Fertility in Kenya	77
Land Transformation and Changes in the Family Structure	82
Economic Decline	84
Family Planning Programs	87
Discussion and Conclusion	91
V. CHAPTER FIVE	94
CHARACTERISTICS OF RESPONDENTS AND DISCUSSION NETWORKS	94
Introduction	94
Characteristics of Respondents	94
Characteristics of Family Planning Discussion Networks	106
Summary and Conclusion	140
VI. CHAPTER SIX	143
ANALYSIS OF THE EFFECTS OF NETWORK ATTRIBUTES ON FERTILITY IN	
KENYA	143
Introduction	143
Variable Construction	148
Independent Variables	150
Statistical Model	152
Results of the Analysis	154
Ever use of Contraception and Social Interaction	154
Want Another Child and Social Interaction	158
Spousal Communication and Social Interaction	160
Total Sample Analysis with Dummy Variables for Gender and District	165
Conclusion	166

VII. CHAPTER SEVEN 173

SUMMARY, CONCLUSION AND RECOMMENDATION 173

 Introduction 173

 Findings 175

 Multivariate Findings 178

 Theoretical Implications of the Findings 184

 Implications and Recommendation 185

APPENDIX 191

REFERENCES 205

LIST OF TABLES

Table 4.1: Kenya's Population by Census year	73
Table 4.2: Fertility and Mortality indicators for Kenya, 1948-1989	74
Table 4.3: Trends in Age Specific Fertility Rates	79
Table 5.1: Percent distribution of respondents by age	96
Table 5.2: Percent distribution of respondents by ever use of contraception	97
Table 5.3: Percent distribution of respondents by current use of contraception	97
Table 5.4: Percent distribution of respondents by number of living Children	98
Table 5.5: Percent distribution of respondents by education	98
Table 5.6: Percent distribution of respondents by want another child	99
Table 5.7: Percent distribution of respondents by preferred number of children	99
Table 5.8: Respondents percent distribution by age and ever use of contraception ...	100
Table 5.9: Respondents percent distribution by age and current use of contraception .	101
Table 5.10: Respondents percent distribution by age and want another child	102
Table 5.11: Respondents percent distribution by education level and ever use of contraception	103
Table 5.12: Respondents percent distribution by education level and current use of contraception	103
Table 5.13: Respondents percent distribution by education level and want another child	104
Table 5.14: Respondents percent distribution by migration and ever use of contraception	105
Table 5.15: Respondents percent distribution by migration and current use of contraception	105
Table 5.16: Respondents percent distribution by migration and want another child ...	105
Table 5.17: Percentage by Network size	110
Table 5.18: Network Density	114
Table 5.19: Relationship of respondent to network partner	117
Table 5.20: Percent of family planning conversation partners with age category of network in relation to respondents	120
Table 5.21: Percent of gender of family planning conversation partners	121
Table 5.22: Percentage of networks that are Kin that the respondents talks with about Family Planning	123
Table 5.23: Percentage of network members who have Grade cows	126
Table 5.24: Percent Network members who are members of an informal or formal organization	129
Table 5.25: The length of time respondent has known network members	131
Table 5.26: Whether network member approves family planning	133
Table 5.27: Whether network member uses family planning	133
Table 5.28: Whether network member encouraged respondent to use family planning	134
Table 5.29: When the last conversation about family planning with the network member was held	136

Table 5.30: Frequency of family Planning discussions between respondent and network member 136

Table 5.31: Percent education differences between alters 138

Table 5.32: Number of people involved in the family planning conversation 140

Table 6.1: Effect of Selected Socioeconomic, Demographic and Social Network Variables on Ever use of Contraception 169

Table 6.2: Effect of selected socioeconomic, demographic and social network variables on want of another child 170

Table 6.3: Effect of selected socioeconomic, demographic and social network variables on whether the respondent talked to spouse about use of contraception 171

Table 6.4: Effect of selected socioeconomic, demographic and social network variables on would like another child, use of contraception and whether respondent talked to spouse about family planning 172

LIST OF FIGURES

Figure 6.1:	147
-------------------	-----

CHAPTER ONE

INTRODUCTION

The world's population has grown enormously in the past 50 years and is expected to continue growing for at least the next 50 to 100 years, although at a slower pace. Due to the high proportion of young people in most developing countries, population growth will continue at a rapid pace for some time, even as the fertility rate declines. If fertility rates move gradually to replacement levels by 2100, the world's population may eventually stabilize at about 11 billion people (Cassen 1994).

While the influence of population growth on economic development is controversial, the weight of scholarly opinion today supports the view that the poorest countries would be more likely to achieve reasonable growth rates in per capita income if their rates of population growth fell through declines in birth rates (United Nations 1999). It is possible, of course, that rapid population growth may contribute to economic growth at certain times and yet constrain it at others. In societies fortunate enough to begin the development process with small populations and abundant natural resources, rapid population growth may indeed help spur economic development. But in most developing countries today high population growth is already impeding efforts at improving quality of life.

Population growth was never seen as a problem in developing countries in the 1960s and early 1970s because of the abundance of land. In fact, there was sharp division between the views of developed and developing countries about the results of high population growth during the 1974 World Population Conference held in Bucharest. Developed countries felt that

population growth was a threat to mankind and as such should be checked. On the other side, developing countries felt that population growth was not a problem that could be solved without addressing it within the larger socio-economic context.

But by 1984, the time of the Mexico city World Population Conference, the developing countries' stance changed. Their earlier optimism changed into pessimism about the sustainability of the rising population. Most of these governments expressed the difficulties they were encountering in providing their populations with education, health care and employment as a result of the quickly expanding populations (Casen 1994). As a result, governments in these countries had already started instituting population control measures that included supporting active family planning programs meant to mitigate the effects of fast expanding populations. In fact two years after the Bucharest conference, the government of India issued a statement identifying population as a national priority that required immediate attention: the statement said "... To wait for education and economic development to bring about a drop in fertility is not a practical solution" while on the other hand the Chinese government decided that "the very future of socialism depended upon limiting fertility within marriage to only one or two births". This statement led to mounting of an aggressive population policy by the Chinese government (Gulhati and Bates 1994:53-54).

Concerns about the implications of fast growing population were also expressed during the 1994 International World Population Conference in Cairo. Many countries' statements showed that they were concerned about the effects of population growth at the individual level, that is, on employment creation, food, land availability, women's health, and the provision of

basic services as education and health (Cassen 1994). The Cairo conference recommended a change in focus of population issues from those that examined it from an aggregate perspective to ones that adopt a micro level view emphasizing the social and institutional aspects of reproductive decision making. Such individual factors as gender roles, women status, inter-familial relationship should become the main focus of the new approach to the population issue (United Nations 1995). The implementation of this approach therefore calls for the understanding of the socio-economic and demographic context that govern peoples' behavior.

Prior to the demographic transition, low population growth was a result of high death rates that offset the high fertility rate. But the high population growth rates being experienced by the developing countries have been a result of high fertility rates accompanied by low death rates resulting from better hygiene and the diffusion of simple health technologies from developed countries. All developed countries have gone through the demographic transition process and so have most countries in East Asia and Latin America. Countries in Africa are yet to begin although there are incipient fertility transitions in Kenya, Botswana, Zimbabwe and South Africa (Robinson 1992).

Although fertility decline has swept Europe, most of South East Asia and Latin America, the factors deemed to be responsible for the declines are still controversial. The standard demographic theory that once guided research in explaining the process of population change has slowly fallen into disuse as new data keep pointing to factors other than those prescribed by the Classical Demographic theory. Besides the demographic transition, a plethora of other theories have been advanced to explain why fertility declines but none of these

theories have proved suitable enough to guide demographic research. This scenario led Hirschman (1994) to point out that the field of demography has created a theoretical blind alley that leaves us incapable of understanding not only fertility transitions, but also other fertility variations and change. Mason (1997:443) on the other hand, notes that this confusion in theorizing fertility transitions is perhaps due to the fact that there are too many formal theories on fertility transition such that none is really adequate in capturing the dynamics of the transitions going on around the world. It is therefore little wonder that scholars from different theoretical orientations have posited different factors responsible for the past fertility declines and those that are underway now in developing countries.

FERTILITY TRANSITION IN AFRICA

This section talks about the findings of fertility research in Africa by noting the changes or lack of it that have characterized fertility regimes in the continent. These discussions will not attempt to give a comprehensive discussion of fertility trends in Africa because this will require an analysis of individual countries, which is beyond the scope of this study.

Doubt has been cast as to whether Africa will follow in the demographic transition path of other countries. This is because population growth in Africa is very high and thus defies the conventional wisdom about the path population growth should take. A remarkable widening gap between mortality and fertility was observed between 1950 and 1980 which resulted in a population growth rate in excess of 3.0 percent per annum. Indeed according to estimates and projections made by the United Nations (1991), population growth in Africa increased from

about 225 million in 1960 to 527 million in 1990 and is projected to reach 1.4 billion in 2025 and there will be not much change in the structure of the youth population. The implications are that population growth rate will continue as a result of the momentum already created.

Over this projection period, 1960-1990, mortality was falling rapidly while fertility was rising during the early stage. The wisdom of the classic demographic transition theory would have dictated that fertility levels would fall as a response to the rapid declines in mortality level. This scenario inspired scholarly interest and led to theorizing about the factors responsible for such a paradoxical situation. Foremost among the scholars falling within this category is Caldwell (1982) who argued that the reasons behind the persistence of high fertility were deeply cultural. This situation led to the belief that demographic transition theory was inapplicable to Africa. The uniqueness of Africa led Caldwell (1982) to formulate the wealth flows theory in which he examined the movement of wealth between parents and children. He concluded that fertility was likely to be dependent on the direction of the wealth flow. If the cost of raising children is very high and the expectation of getting returns from investments in children is absent, then parents would out of necessity shrink their fertility levels. On the other hand, if parents gain both material and emotional resources from their children while spending little on them, then there will be no motivation to change their fertility levels. This thinking was said to be more applicable to Africa because high fertility was believed to serve the interests of men and their lineages.

In order to evaluate the population situation in Africa, a great deal of effort has been expended in data collection and management. The first major data collection started with the

African census program coordinated by the Population Division of the UN Economic Commission for Africa. This was then followed by the World Fertility Surveys done in the late 1970s and early 1980s which covered nine African countries. From the mid 1980s, Demographic and Health Surveys have been conducted in 13 African countries. All these censuses and surveys provided much needed information for understanding the population dynamics of Africa for use by both researchers and policy formulators. With each subsequent survey, data quantity and quality, especially on fertility, has improved and this to a large extent reflects the commitment of government and international organizations in checking the high levels of fertility and subsequent high population growth rate by allocating resources to the collection and analysis of these data.

The availability of these data sets led to the commissioning by the Committee on Population of the National Research Council of a Panel on the Population Dynamics of Sub-Saharan Africa with a mission of describing and explaining demographic changes in the region. Published reports of these committees provide one of the most substantial syntheses of the population situation in Africa.

The National Research Foundation study found three main features of African fertility (Cohen 1993). First, fertility is generally high compared to other regions of the world. Even the lowest fertility levels found in South Africa and Gabon are still much higher compared to the average of the other major regions of the world. Secondly, there is a lot of regional and country variation in fertility levels. Rwanda had for example a total fertility rate (TFR) of 8.5 births per woman in 1983 compared to a TFR of 4.6 of black South African's derived from 1987-1989

data. Regionally, fertility rates in Central Africa are lower than from East and West Africa and lowest in Southern Africa. There are also great differences in fertility levels within countries. Surveys from individual countries have repeatedly shown fertility levels to be variable on the basis of ethnicity, religion, socioeconomic groups and place of residence. Third, there is evidence that fertility is declining in some countries. Cohen (1993) identified a fall in TFR in 26 of the 39 countries within the region since the peak rate of the 1970s and early 1980s. For most of these countries however, the fall has been relatively small, less than one child per woman. But for Botswana, Zimbabwe, Kenya, Sudan, and South Africa the decline has been substantial, more than ten percent, a proportion considered a key threshold for entry into non-reversible decline (Coale and Wkins 1986). While doubts remain about the fertility transition in some countries in Africa, the transition in Eastern and Southern African is however not in doubt and the focus has changed to researching the magnitude and sustainability of the decline than on the initiation.

STATEMENT OF THE PROBLEM

Kenya, the country upon which this study is based, has experienced a rapid decline in its fertility since 1989. In 1989 when the first evidence of the decline was noted, the fertility level was 6.9 but this has since declined to 5.4 according to the 1998 Kenya Demographic and Health Survey. The fertility decline in Kenya has been puzzling to many demographers and other population professionals. For example, Frank and McNicholl (1987), writing two years before the Kenya Demographic and Health Survey revealed the first evidence of fertility

decline remarked that Kenya's population policy was a "conspicuous failure". Apparently this was not the case since the evidence now suggests that fertility transition is a reality (see Robinson 1992; National Council for Population and Development, Central Bureau of Statistics and Macro International 1993).

Following the notable turn in the fertility profile of Kenya, this research project seeks to address three research questions; First, what is the process that is facilitating the fertility transition in Kenya? Fertility transition is underway in Kenya despite the fact that none of the conventional determinants of fertility decline are present. To answer this question, this study examines the role of social interaction captured through social networks. More specifically, the study investigates how people, through social interaction, change the definition of their orientation toward an aspect of social behavior that was before considered sacred. This study claims that people discuss the effects of structural changes in their lives and as a result of these conversations about what is going on within their society, people change their behavior.

Second, how do the dynamics of the transition differ between men and women? That is, do men's and women's network differ in attributes that are crucial for behavior change? In this case, I examine how social interaction for both men and women influence demographic behavior change in Kenya.

Third, how does fertility decline vary across regions of the country? To answer this question, the study examines two regions of Kenya; Kakamega district in Western Province which is dominated by the Luhya community and Murang'a District in Central Province which is dominated by the Kikuyu community. The two regions differ in important ways. Murang'a is

fairly wealthy and has a more advanced fertility transition than Kakamega district. Comparing the two regions will therefore provide a glimpse into the operation of social networks in different places.

To answer these questions, I conducted a case study of Kenya that relied mainly on survey research. Kenya is an ideal case to investigate these questions because for a long time it has been associated with the highest fertility in the world (see Mburugu 1986; Robinson 1992; Frank and McNicholl 1987). Much to the surprise of demographers and other social scientists, fertility is now declining. Kenya therefore offers an ideal case to study the factors behind this unprecedented occurrence. Moreover, Kenya is one of the African countries, besides Botswana and Zimbabwe to experience a fertility transition (Caldwell et al. 1992; Rutenberg and Diamond 1993). Thus, the understanding of the factors behind the decline will provide important insights that can be used in understanding the fertility transition in other African countries.

This study argues that the social environment in which fertility decisions are made is neither linear nor unidirectional, rather, it is constructed and shaped by the perceptions and actions of individuals in the community. This implies that, through social networks, people determine what is acceptable and what is not, what to do to achieve certain desired goals. I argue that decisions about demographic behavior are not undertaken individually. Rather, the decisions individuals make are embedded in the communities and changing situations (Watkins 1991b, 1995, 1995a; Montgomery and Casterline 1996). Thus, the demographic behavior of households according to this perspective are not independent of each other but are, as a matter

of fact, inextricably intertwined. The acceptance of fertility control by one household depends on past and contemporaneous fertility behavior of other couples in the community. Social interaction is therefore a critical determinant of demographic behavior. First, social interactions distribute information about acceptable techniques of family limitation to the population (Bongaarts and Watkins 1996). The source of this information could emanate from the media, clinics or other individuals who have discussed it with others. This information may not be restricted to only the techniques of family planning but may also include information about the determinants of the demand for children which include socio-economic changes.

When rapid socioeconomic change takes place, information about cost of family upbringing, living, and other related issues is likely to be considered imperfect. In this circumstance people can increase the evidence available to them by discussing the changes taking place in the cost and benefits of having large families with others in similar circumstances. In this way they not only get new information about the effects of the changing socioeconomic environment, but they also evaluate it before acting on it (Bongaarts and Watkins 1996:658). The information that gets passed to others in this case is that the use of family limitation within marriage is therefore legitimate in order to mitigate the hardships of raising a large family. Secondly, social interaction can establish a co-ordinated behavior among community members and it can buttress the role of the media in dissemination and legitimating media pronouncements. People debate and evaluate the efficacy of the new family ideal and the ways of achieving it in ways that are meaningful in the local context. Such debates therefore contribute to changes in the normative structure of the community and direct people's actions.

In line with this arguments, Montgomery and Casterline (1996) have developed the concept of “social effects” which basically means that actions by some individuals within their social interaction matrix has potential effect of affecting the action of others. They decompose social effect into two: social learning, in which individuals provide information to others regarding innovations or technologies and the consequences of certain decision and social influence, where certain players within the society impose certain constraints on the behaviors of others through the exercise of authority vested in social norms. Importantly, Montgomery and Casterline (1996) note that social effects can retard or accelerate change.

Interacting with others therefore establishes the extent to which others approve or disapprove the new behavior. Often people look to see what others are doing so that they can align their behavior to be commensurate with what everyone or their friends are doing. It is usually such assurance that others are engaging in the same behavior that allows people to feel comfortable breaking with the past normative behavior.

The importance of the social interaction approach is that it captures both the macro (structural changes) and micro (ideational changes) in explaining fertility transition. This approach promises to overcome some of the pitfalls of the earlier theories of fertility decline which either emphasized economic or cultural factors.

DESCRIPTION AND JUSTIFICATION OF THE AREAS OF STUDY

This study proposes to conduct its investigation in two districts, Kakamega and Murang'a district. Kakamega district, located in Western Province is one of the poorest

districts in Kenya. The economy of Kakamega is dependent on agriculture. The major crops grown include maize, beans, sorghum, millet, coffee, tea and sugar cane. Because of the poor economy of Kakamega district, many men have migrated to urban and other areas with better employment opportunities. This has meant that most of the households are headed by women for most of the year. Incomes in this district are low even by the standards of western Province. In 1982, total earnings from employment were 3,499,800 Kenya pounds (about US\$945891). The district has very poor roads and relatively few schools and hospitals. Moreover, Kakamega district has one of the highest levels of infant and child mortality in Kenya, indicating the poor level of development in the area. The total fertility rate for western Province in general has been considerably higher than the national level. In 1989 the total fertility rate for western province was 8.1 which fell to 6.4 in 1993, a 21 percent decline. Family planning use was 14 percent in 1989 (which was below the national average), and this increased to about 28% in 1993 (Central Bureau of Statistics 1984; National Council of Population and Development and IRD/Macro 1989).

Murang'a district in Central Province is one of the richest districts in the country. It is characterized by a well developed infrastructure. Its economy is based on farming, with the growing of coffee, tea, and horticultural crops predominating. Small numbers of livestock are also raised. Murang'a is well served by a network of tarmacked roads, a substantial number of homes have electricity and there are numerous public telephone booths. Murang'a has more health and educational facilities than Kakamega. For example, during the development year 1984-1988, Murang'a had 61 health facilities, 344 primary schools, 142 secondary schools

and a road network covering about 3500 km which served the whole district out of which roughly 20 percent were tarmacked. On the other hand, Kakamega had 39.6 km stretch of tarmacked road, 20 health facilities, 35 secondary schools, and 284 primary schools. Further, the fertility level in Central province is low. As of 1993 the fertility level was 3.9 a decline from 6.0 in 1989. The current use of contraception in the province is also high, averaging 56 percent. Specifically, Murang'a district had a contraceptive prevalence rate of 47.1 percent in 1993 having increased from 25 percent in 1989.

Kakamega and Murang'a districts provide a good case study of the role social interaction plays in understanding fertility decline. First, Kakamega is a high fertility area that has recently experienced a marked fertility decline while Murang'a is a low fertility area that has also experienced a large decline. Second, these two areas will provide a good mirror of the factors associated with fertility decline. Why is it that both Kakamega and Murang'a, though having such varied socio-economic characteristics, have experienced a fertility decline? How is the nature and content of their networks different? Since this will be a comparative study, it will facilitate the comparing and contrasting of important nuances between the two communities, thereby illuminating the important divergences which would be lost when only one case is examined.

Why did I choose to do research in Kenya? First, I have the benefit of knowing the language and culture of the people whom I will be researching. In addition, interesting demographic changes have taken place in Kenya in the recent past. This makes Kenya a unique location of this study. At one time, Kenya had the highest population growth rate in the world,

close to 4 percent per annum, and a fertility rate of eight, a level that is rarely attained in any human population. Then, suddenly, fertility started declining in the late-1980s contrary to earlier predictions that Kenya still had a long stretch before her fertility could budge (Robinson 1992). In addition, Kenya has a fairly well established research infrastructure making it an even more attractive research site for this project.

Secondly, this research project sought to test a new theoretical approach, the social interaction perspective (Watkins 1995a; 1991, 1987; Montgomery and Casterline 1996; Cleland and Wilson 1987; Bongaarts and Watkins 1996). This perspective situates the decision making process away from the individual to the community. It argues that individuals do not on their own engage in a mental calculation of costs and benefits of a given action. Rather, the decision to undertake a given behavior is socially engineered via interaction with others. Since social interaction is particularly suited in explaining the process of fertility change during the early stages of fertility transition (Rosero-Bixby and Casterline 1993), Kenya's incipient transition therefore provides an excellent opportunity to undertake this study.

Third, findings from Kenya would provide a glimpse into what could be in store for other African countries. The structure of Kenyan society is not very different from other countries and most of what is going on in other countries could most likely be mirrored by what is going on in Kenya. If indeed social interaction is crucial in fertility change in Kenya, then my research findings can be generalized to apply to other societies which are experiencing fertility decline. And for those societies that have not yet started the transition process, the recommendations I advance about how to create unmet need for contraception through the

operation of social networks is likely to be crucial in creating demand of family planning programs in these communities.

STUDY DESIGN AND METHODS

This research project used quantitative techniques to study the role of social interaction in fertility decline in Kenya. The study used a multistage sampling procedure to draw the desired sample of respondents. The sampling strategy of choice was cluster sampling. I used the existing clusters that Central Bureau of Statistics office in Kenya keeps. From these clusters, I randomly chose the respondents I interviewed. The use of CBS clusters saved me time and money and enabled me to get sample sizes that were representative of the districts I chose.

To complement the quantitative survey, the study also reviewed archival data to understand the past fertility trends in Kenya. I examined unpublished research reports that have been conducted by both the government and the University of Nairobi on fertility transition in Kenya.

LAYOUT OF THE STUDY

This study has seven chapters. The first chapter outlines the basic research questions and how I went about answering them. In chapter two, I review the relevant literature on fertility transition. In particular, I critically discuss demographic transition theory and its offshoots in search of an adequate explanation of the current fertility transition in Kenya. After the review, I extend the theory by providing the argument that social interaction is one of the

important perspectives capable of explaining the rapid process of fertility transition in Kenya.

Chapter three discusses the methodology employed in the study. It starts with a discussion of the survey instrument, focusing on its design and its execution in the field. It then goes on to discuss how I went about pretesting the instrument and other attempts I undertook to ensure the data collected was valid and reliable. I also discuss in detail the sampling procedures and other related methodological issues and problems encountered in the field and how I dealt with them.

Chapter four focuses on the demographic background of Kenya. In this chapter, I discuss the demographic development of Kenya beginning when data was available, especially with respect to fertility changes. In this chapter, I discuss the various reasons which have been presented to explain why fertility is declining in Kenya. This is done in order to demonstrate that the social interaction perspective holds great promise in explaining the process of fertility change in Kenya.

Chapter five presents descriptive statistics for the various network characteristics that are related to fertility change. In this chapter, I compare the differences in network characteristics between Murang'a and Kakamega while at the same time examining gender differences in the network attributes.

Chapter six is an extension of the descriptive analysis because it examines in a multivariate context how social network variables influence ideational (measured as whether the respondent wants another child or not) and behavioral changes (measured as ever use or non use of a modern method of contraceptive method). I use the logit model in evaluating these

relationships because it is well suited to the data with categorical dependent variables.

Chapter seven concludes the study by tying the discussion to the objectives of the study and determining if they have been met. I also discuss the theoretical and methodological implications of the study. It is in this chapter that I recommend how fertility transition in Kenya can be enhanced, given the findings of the study. The recommendations are directed to government, donors and NGO's working in the population field. Areas for future research are also recommended. Following chapter seven is an appendix that contains the questionnaire used to collect data.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL DISCUSSION

The significance of demographic change has been a subject of debate for a long time. This is because rapid population growth is seen as the main cause of many of the world's contemporary and future problems. Doomsday population prophets argue that the rising population will prove catastrophic to the human race if not checked (See Birdsall (1988) for a good discussion of the various contenting schools). These scholars argue that population growth will wreak havoc on cultures, economies, social systems and natural resource base. These, plus other fears, have brought population issues to the attention of many people. But it has been noted that most of the problems afflicting the world are not caused by the increase in population growth per se, but because of the actions and lifestyles of developed countries (UNFPA 1991). For example, the depletion of the ozone layer is attributed to the affluence in the developed economies, not population growth. Even the fast disappearing rain forests of Africa and Latin America are said to be due in part to the consumption patterns of developed countries. Because most of these countries lack mineral and other natural resources, they tend to exploit what they have, forests. Forests are therefore exploited to generate income in the productive economic sector by supplying raw material for manufacturing and processing industries that often satisfy demand from developed countries. But we can also trace the rapid depletion of rain forest to the high demand for agricultural land resulting from increasing human numbers.

The high population growth rate is a result of excess of births over deaths. This high

growth has been heralded as the consequence of improved medical technology and institution of simple hygiene which have cut mortality, especially of children, by more than half of what it was at its peak. This is contrary to what the population growth rate was before the industrial revolution in Europe and pre-colonial Africa. In the period preceding the Neolithic Revolution (about 10 000 BC), the population growth rate was extremely modest, revolving around one. The population addition between the Neolithic period and 1750 was about 760 million people and this only amounted to a growth rate of about 0.04 percent, a paltry increase (Livi-Bacci 1992). The population growth rate during this time was therefore remarkably stable because the difference between birth and death rates was relatively small. This stability does not by any means signify that population changes were homogenous. Different cultures, technological levels, social organizations and environmental factors to a large extent determined the levels of population growth. Despite the varied determinants of the population growth rate, world population remained quite stable and this suggests that there was a mechanism by which population growth established an equilibrium with available resources. This state is called population homeostasis.

Perhaps the most talked about homeostatic theory is the one promulgated by Malthus (1766/1798) whose basic thesis was that the power of population growth was infinitely greater than the power of the earth to produce subsistence for man. To illustrate this thesis, Malthus turned to statistics from the U.S. where population had doubled every 25 years for a century and half. He termed this kind of population growth “geometric” which today would be called “exponential” relationship. To show how in the long run, there will be no improvements in the

nature of agricultural production sufficient to keep up with the pace of population growth, he allowed that agricultural production could only be increased in an arithmetic fashion.

Because of the overpowering greater numbers which can potentially be generated by exponential population growth rate, in contrast with the slow linear progression of sustenance, Malthus was convinced that at almost all stages of human history, population has not expanded freely but has instead pressed painfully against the limits of its food supply. He maintained that human numbers are normally held in check by either disasters or by the suffering of the lowest social class. Occasionally, food supply would increase through some improvements in agriculture or through the opening of new lands, but then the population would grow rapidly and soon a new equilibrium would be established, with misery and vice once more holding the population in check. Malthus added two checks that were required to slow population growth. He conceived preventive checks as those that limit fertility, such as late marriages, and positive checks as those that would increase mortality. Among the positive checks he lists extreme poverty, diseases, epidemics, wars, famine and plague.

This homeostatic demographic analysis was consistent with what went on in England between 1250 to 1700AD (Lee 1980). But this changed with the advent of industrial revolution when dramatic population changes started to take shape. It is these changes in population growth that the demographic transition theory sought to explain.

Demographic Transition theory which Mason (1997) calls the “granddaddy” of fertility transition theories states that societies that experience modernization progress from a pre-modern regime of high fertility and high mortality to a post-modern one in which both fertility

and mortality are low (Davis 1945; Notestein 1945). The demographic transition theory views societies as evolving through three stages. The first stage is characterized by a low population growth rate because of simultaneously high mortality and high fertility rates. This is the pre-development stage. In this stage, society is characterized by institutions and cultures that promote fertility, such as early marriage, demand for child labor to work on farms and strong lineage systems that encourage high fertility. Moreover, many households cannot have the number of surviving children they desire due to the high mortality rate. Thus, to ensure that some survive, fertility has to be high.

The second stage or the stage of “population explosion” is characterized by an increasing birth rate and a declining death rate. In this stage, social and economic conditions may initially stimulate fertility but suppress mortality due to better nutrition and expanded public health programs (Szreter 1993). As Notestein (1945:39-40) noted:

In short, the whole process of modernization in Europe and Europe overseas brought rising levels of living, new controls over disease, and reduced mortality. Meanwhile, fertility was much less responsive to the process of modernization.

In the third stage, fertility gradually declines towards equilibrium with the already low mortality levels, creating low population growth rate. Fertility declines as a result of the concomitant full-scale industrialization and modernization. Thus, both children and adults survive, a culture of individualism replaces communal structures such as extended families, rising consumer aspirations, loss of various functions of the family to the factory and school, decline in fatalism in favor of scientific explanations, and the emergence of huge and socially

mobile urban populations. All these factors undermined the social structures that had kept fertility high.

Notice that, in its arguments, demographic transition theory argues that fertility decline always lags behind mortality decline. This is because fertility could not be sufficiently reduced unless the traditional social and economic conditions sustaining it were undermined by forces of modernization, industrialization and urbanization. In short, demographic transition theory argues that the major social transformation that occurred in western Europe effectively weakened the pressures for high fertility and led to the current level of low mortality and low fertility.

Transition theory formed a formidable theoretical enterprise in the 1950s and 1960s. In the words of Paul Demeny, demographic transition theory has become “the central preoccupation of modern demography” (Demeny, quoted in Cleland and Wilson 1987). Mason (1992) comments that “this question (demographic transition) has occupied at least half the field of demography for more than half a century”.

Since its formulation, demographic transition has come under severe criticism. Most of these criticisms have been generated by the European Fertility Project based at Princeton University which used historical data to test its tenets. The project’s findings have been at variance with the arguments of the theory.

EUROPEAN DEMOGRAPHIC TRANSITION.

Europe’s fertility and mortality are currently at very low levels. Most European countries completed their demographic transition by 1930 (Coale and Treadway 1986). For

the past two centuries, the life expectancy of Europeans has increased from roughly 25-35 to 75-80 years while the average number of children has dropped from five to less than two. Death rates have dropped too, from a high of between 30 and 40 to the current about 10 per thousand (Livi-Bacci 1992:101). Change in European population has been gradual, unlike what has been experienced in contemporary developing countries. This is why the transition period lasted from about 1870 to 1930. There were, however, differences in the fertility decline, especially the 10 percent decline in fertility that is considered irreversible (Coale 1973). After 1870 fertility decline spread quickly to other areas. Switzerland experienced a 10 percent decline in marital fertility in 78 years in all its cantons, Italy took 60 years, Germany 33 years, Denmark, 25 years and England, 16 years (Coale and Treadway 1986).

The major force behind the European fertility decline was the successful attempt to reduce childbearing within marriage (Coale 1986). During this time, the most prevalent methods of contraception included a mix of abortion, abstinence, and withdrawal. Compared to modern methods of contraception, these practices required enormous sacrifice and determination by one or both of the spouses. These practices also took place in the face of strong opposition from the church and the political establishment who regarded population growth as a major source of political and economic strength (McLaren 1984:60; Watkins 1987:435). The demographic transition process began in France about the time of the French Revolution, then spread to other parts of Europe: England, Belgium, Germany and the Scandinavian countries. Later reaching the peripheral areas of southern and Eastern Europe. Though these transitions took place early in some countries and late in others, the process was nonetheless compressed

both temporally and spatially. The gap between their transition stages was short because the difference between the forerunners and the laggards in the fertility transition was short.

An in depth analysis of the demographic transition in Europe revealed facts which negated the predictions of demographic transition theory. It was found that the socioeconomic level of a country was weakly related to the fertility decline. This was contrary to the arguments of the transition theory that economic development was fundamental in determining the demographic transition process. In fact, the transition in Europe started at greatly varied levels of economic development. Knodel and van de Walle (1979:223-224) noted that, although Britain had a high level of urbanization and a well developed industrial infrastructure, its demographic transition began at the same time as Hungary, a country which scored low on the conventional socioeconomic indices. Though France was a forerunner in the transition process, having started during the period of the French Revolution period, she was less urban and industrial compared to England, Belgium and the Netherlands.

The second finding by the European fertility project was that culture was important in ordering the transition process. It was noted that differences in ethnicity and language were especially important in the demarcation of the transition process. Although fertility levels were differentiated by urban residence, education and religion, when the nature of the transition was considered a few years later, the fertility level was found to have declined among all groups in society. The most interesting finding involved the importance of linguistic patterns. The provinces that experienced early fertility decline outside France were actually French speaking or contiguous to France, such as the Walloon province in Belgium. Lesthaeghe (1977), in a

Belgian study, found sharp differences in the transition process between the Walloons and the Flemish areas. The Walloons, French speakers, were forerunners in fertility decline while the Flemish, who speak Dutch, were latecomers in the transition process. This was despite the fact that they shared a boundary. Watkins (1991) also noted a geographic disparity in fertility transition in Europe. She found that isolated provinces displayed higher marital fertility compared to those that were close to the nation's capital.

In summary, the European Fertility study found that, contrary to the formulation of demographic transition theory, fertility transition in Western Europe took place in climates that were economically diverse, some of which economically deprived. Also, cultural factors such as national and regional variations in religious belief, individualism, secularism (Lesthaeghe and Wilson 1986) and linguistic differences between the various regions and countries (Lesthaeghe 1977; Watkins 1990) were found to be important factors in determining the pace and pervasiveness of the fertility decline. Later on in this chapter, I will discuss in more details the diffusion process engendered by the importance of language which determines the level and accessibility to people with different perspectives on reproduction.

DEMOGRAPHIC TRANSITION IN DEVELOPING COUNTRIES.

In the period between 1960 to 1990, the total fertility rate for all developing countries declined by about 36 percent, from 6.0 to 3.8 births per woman (United Nations 1995 quoted in Bongaarts and Watkins 1996). These declines have been more pronounced in Asia and Latin America, less rapid in North Africa and Middle East, and negligible in sub-Saharan Africa.

These figures actually conceal even greater diversity in the transition process when they are examined on a country by country basis. At one extreme, are such countries as Hong Kong and Singapore while on the other extreme would be countries mostly from sub-Saharan Africa, where fertility decline is not only a recent phenomena but is confined to just a few countries mainly in Eastern and Southern Africa.

One of the major findings of the European fertility project was that fertility declined under various levels of economic development. Could this also apply to the developing countries which have experienced fertility transition since the 1960s? Bongaarts and Watkins (1996) tested whether economic development was an important marker of the fertility transition in the developing countries and found no evidence that development was crucial in determining the fertility transition. They found no fixed threshold of development for entry into the transition. They found, however, that as in Europe, regions which are geographically proximate experienced fertility decline almost at the same time, irrespective of their levels of economic development (Lesthaeghe 1977; Watkins 1987). Fertility decline was first noted in the relatively prosperous countries within each macro region and later other countries with much lower levels of development followed (Bongaarts and Watkins 1996:651). For example, Bangladesh experienced a dramatic fertility transition despite the fact that it is still at a very low level of development. Its fertility level compares with those found in the more prosperous countries of Hong Kong and Singapore. Bangladesh's fertility transition would have had to wait until the next century, when it would have achieved the level of development equivalent to that of Hong Kong or Singapore in 1960s (Bongaarts and Watkins 1996).

Why do people start suddenly to check their fertility? One explanation centers on the existence of a significant level of unwanted fertility at the onset of fertility transition (Bongaarts 1990). This phenomenon constitutes what has come to be known as “unmet need”. This is the situation where women wish not to have any more children, yet are not using any method of contraception. This gap was found to be high in the relatively prosperous Asian and Latin American countries which were leaders in the fertility transition (Bongaarts and Watkins 1996:655). Since the desire to limit fertility was presumably the result of economic prosperity, the transition was therefore rapid when women started using modern contraception. High levels of development are therefore associated with high levels of unmet need and unwanted fertility. Once the population becomes conscious that unwanted fertility can be controlled, the pace of fertility decline becomes relatively rapid.

Other theories that have been advanced to explain changing fertility include the demand theory which is derived from the original demographic transition theory. Economists who developed it translated demographic transition theory from the macro-level structural changes to a more micro-level. This economic formulation argued that couples make rational choices about the number of children they will have. Children are viewed as goods, just like any other, and childbearing processes can be analyzed within a cost-benefit framework. The number of children couples choose will maximize their utility function, that is, they will choose for example to raise one or two highly educated children instead of five or six less expensive children. This, therefore, is a preference for quality of children rather than quantity (Becker 1981). A decline in the number of children couples choose to have implies change in the relative price of a child,

change in the couple's income or change in the shape of the couple's utility function for children and other goods.

An alternative to this theory came from Easterlin (1975) and Easterlin and Crimmins (1985). Their elaboration entailed the addition of a sociological variable, the supply of children. This framework explains fertility in terms of three proximate determinants: the supply of children, that is number of children parents would bear in the absence of contraception; the demand for children, that is the number of surviving children they would like to have; and the costs of fertility regulation. The costs of fertility regulation are both psychic, social and financial. This model has spurred several studies, for example, Robinson and Cleland (1992) and Bulatao and Lee (1983). While this extension was a remarkable improvement over the original version of demand theory because it included psychological, economic and social factors in explaining the determination of fertility decline, it failed to take into consideration such factors as institutional, cultural and community determinants of fertility decline. Moreover, both the original demand theory and the Easterlin's modification assume that couples set fertility targets at or soon after marriage and that their subsequent behavior is bound by this original target. In real life, fertility decision are sequential, that is made and reevaluated frequently over the couple's life course in response to changes in personal circumstances. This inadequacy limits the explanatory power of the demand theories in evaluating the current fertility declines in contemporary developing world.

Caldwell (1976; 1982), after noting the inability of the standard demographic theory in explaining fertility decline across all countries, advanced a revised version of the theory that

took into consideration the influence of intergenerational wealth flows on fertility decline. Caldwell (1976) did a study in Nigeria in an attempt to understand the dynamics of the family in relation to fertility process. Based on his findings, Caldwell was able to reformulate demographic transition theory to take account of the African reality. Caldwell noted that factors that determine fertility decline in Africa are different from those experienced elsewhere, especially Western Europe where development seemingly played a crucial role. Rather, he advances that change in the pattern of intergenerational wealth flows will lead to fertility decline. He notes that when wealth flows from children to parents, there will be no motivation for fertility limitation. But when wealth starts flowing from parents to children, then fertility will decline. Wealth flow in this sense should not only be seen as economic goods but more fundamentally as social goods that include systems of deference, obedience, and social guarantees for all manner of support to the older generation, especially support given to parents in old age. While he does not discount the influence of economic factors, he notes that it is the social and cultural factors that are important in determining fertility transitions in Africa.

A major advantage of Caldwell's theory is that its formulation is based on a non-western society, an African society. The theory emphasizes the dynamics of the child-parent relationship which do not end with adulthood, but rather permeates people's entire lives. The potential importance of the long term child-parent relationship emphasizes the fact that fertility decline in Africa should be looked at from the point of view of the extended family rather than from the original premise of demographic transition theory that emphasized the importance of conjugal relationships. In many cultures, these relationships do not have a level of autonomy

similar to that of western societies.

The problem with Caldwell's theory, however, is that he emphasizes structural factors as being important in changing the direction of wealth flow. His main argument is that the changing "mode of production" is the underlying mechanism in familial change. We would then expect his argument to revolve around this concept. However, he goes on to postulate a more direct cause of these changes to education, urbanization and literacy. He conceives mass education as the main factor in the process of changing the direction of wealth flows from children to parents.

Another shortcoming of this theory is that it does not address structural factors which precede and are supportive of these value changes (Thandani 1978). Empirical evidence also suggest that Caldwell exaggerated the magnitude of the economic benefits provided by children and has understated the regional variability of their economic value. In addition, Cain (1982) criticized Caldwell's theory because it overlooks the value of children as an insurance against risk.

In general, none of the theories discussed above offers an adequate explanation for why fertility has declined so dramatically in both the developed and developing countries. Transition theory argued that other non-European populations will follow the same trend in their demographic profiles once modernization, industrialization, urbanization had taken place (Notestein 1953; Coale 1973). This has not been the case. The pathways envisaged by demographic transition have not been followed in developing countries. A number of countries, which include Sri Lanka, Kerala (a state in India), Thailand and Peoples Republic of China

have experienced fertility decline with only a limited level of development (Knodel and Debavalya 1978). This scenario is contrary to the postulates of transition theory. In Mexico, many conventional indicators showed rapid economic development between 1940 and 1970, but no fertility decline was evident at the national level until the mid-1970s (Alba and Potter 1986). This finding raises an important issue, that is, how much structural change would be sufficient to motivate fertility decline?

Furthermore, some countries in Africa, like Botswana, Kenya, some parts of Nigeria and Zimbabwe are now experiencing demographic transition (Robinson 1992; Caldwell et al. 1992; Rutenberg and Diamond 1993). This is despite the fact that most of these countries are undergoing an economic downturn as a result of the economic crisis that has engulfed the world since the 1980s (Lockwood 1995). This development goes against the arguments of the transition theory which saw development as the key to demographic change.

Demographic transition theory is also inadequate in explaining the pace and pervasiveness of fertility declines which, in developing countries, have been likened to a "social movement, a popular revolution" (Watkins 1987:661). Demographic transition theory envisaged a longer time frame for the demographic transition to be completed, the opposite of what is being experienced now in developing countries. For example, fertility transition in Western Europe began in 1870 and was not completed until 1930 (Coale and Treadway 1986). Compared to developing countries, this was slow. Countries such as Hong Kong, Singapore, Korea and Taiwan fell to modern fertility levels of two to three children per couple in about thirty years (Bongaarts 1986). Even more rapid declines took place in Costa Rica,

Thailand, and China. In Costa Rica, the fertility rate fell by 30 percent in seven years between 1965 and 1972, in Thailand it fell by 40 percent between late 1960s and early 1970s and in China fertility declined from 6.0 in the 1960s to 2.2 in 1980 (Watkins 1987).

Furthermore, transition theory emphasized structural factors such as urbanization and economic development as the key to explaining the transition process. Institutions and ideas were not considered. Yet, these factors were found to be important in understanding the demographic transition in developed countries (Coale and Watkins 1986). The strong patterning of fertility decline following linguistic lines in Europe pointed to the importance of cultural factors. In short, demographic transition theory, or its reformulation, do not accord well with the demographic trends experienced in developed and developing countries.

The speed with which most of the contemporary fertility transitions has taken place in developing countries does not agree with the tenets of demographic, demand, or the wealth flows theories. In fact, the wealth flow theory has been tested and found not applicable in Kenya (Dow, et al. 1994). This failure to account for the declining fertility in Developing countries has given rise to alternative formulations. Cleland and Wilson (1986) see fertility decline as a form of innovation. They argue that the practice of parity specific family limitation, something that was absent during the pre-transition period, points to the importance of innovation, that is, the adoption of new ideas and forms of behavior that are relevant to fertility decline. The authors therefore discount the importance of economic factors in stimulating fertility decline. They observe that "the simultaneity and speed of the European transition makes it highly doubtful that any economic force could be found which was powerful enough to offer

reasonable explanation" Cleland and Wilson (1986:18). The rapid adoption of contraception is seen as the beacon of the innovation arguments. A good example of this explanation is offered by a study of fertility decline in Thailand.

One of the most striking features of Thailand's recent fertility decline has been its pervasiveness. Almost all major divisions of Thai society have participated. During the last decade or so, fertility decline appears to be even more pronounced in rural than in urban areas. ... Moreover, fertility differentials by educational attainment and family income are minimal, a reflection of the full participation of the least educated women and the poorest couples in the move toward smaller families (Knodel et al. 1982).

Scholars who subscribe to the diffusion model argue that the rapidity with which both historical and contemporary fertility transitions took place cannot be accounted for by changes in structural factors because such factors are not capable of rapid change. Rather, it is the diffusion of innovative information (such as family planning) that explains the fertility transition experienced (See Watkins 1991a, 1991b). Diffusion theory argues that the adoption of innovative ideas (and corresponding behavior) by some individuals would influence the likelihood of such adoption by others (Montgomery and Casterline 1993:458). Accordingly, once an innovation infiltrates a social system, either via the mass media or through innovators, it's spread stops only at the borders of the system. Rogers (1983:24) clearly notes that "the social system constitutes a boundary within which an innovation diffuses." Importantly, once the innovation has been introduced, it is the network of friends, relatives and neighbors that determine whether or not that information will be acted upon (Watkins 1991).

Although the European Fertility study was a macro level study, some of the findings

have strongly suggested the operation of diffusion of information about contraceptive technology. Even stronger evidence of diffusion has come from contemporary fertility declines. From their European historical study, Knodel and van de Walle (1979:236) point to the importance of diffusion of information in explaining the transition to lower fertility in Europe. They note that:

There is greater similarity in fertility trends among provinces within the same region but with different socio-economic characteristics than is true among provinces with similar socio-economic characteristics but located in different regions. Provinces within regions typically share similar cultural characteristics, such as common dialect or common customs. Regional boundaries often coincide with cultural boundaries, which in turn impede the flow of information and the process of diffusion.

In the same vein, Watkins (1991) concludes that the strongest support for the diffusion of low fertility through social interaction is indicated by the simultaneous changes in demographic behavior and linguistic diversity. Watkins argues that a reduction in demographic differences between nations was a result of reduction in linguistic diversity. This statement implies the importance of language as a common denominator for diffusion of important information, even at national level especially if a common language is used. Moreover, Watkins (1991) found that the diversity of demographic regimes in historical Europe was diminished with the development of national media and more national forms of interaction which extended the individual exposure to ideas and information beyond the local situation.

Schneider and Schneider's (1984) study in Sicily showed how artisans came to adopt coitus interruptus as a contraceptive method from the French for whom they had great respect.

They saw French people as more evolved than Sicilians because they had smaller families. They noted that the French were capable of “picking up a glass of water, drink half of it, and put it down again, in contrast to the Sicilians who cannot but finish the whole thing” (Schneider and Schneider 1984:260). This metaphor implies the use of coitus interruptus as a method of fertility control. When artisans learned about the Coitus method from their interactions with the French, they adopted it with “thoroughness and ideological commitment”. They called it moving in “reverse gear”. This information later diffused to the lower social class of wage laborers who worked for the artisans. The wage laborers took a lot of pride in using coitus interruptus because they noted that they withdrew at the most beautiful time. They felt good because they associated the act with a sacrifice for the family that would lead to social respect because having many children was frowned upon by society with such words as rabbit, mice, being used to describe those with large families.

McLaren (1992:87-88) notes too that women in the 1890s relied on their friends rather than on the professionals to find out what kind of medications they needed. For example, through friends, women came to know that ingesting a little quantity of lead was capable of inducing an abortion. This knowledge became very popular with women particularly because the lead compound, diachylon, was readily available in homes of working class women because of its wide home based use. The use of diachylon as an abortifacient spread quickly through word of mouth to other regions of the country. As McLaren (1992:88) put it; “What impressed physicians was that this abortifacient was not a patent medicine or a quack cure popularized by handbills or newspaper advertisements but a home remedy passed on by word of mouth.”

In Taiwan, Palmore and Freedman (1969) found a direct relationship between the number of potential acceptors of family planning methods and the number of friends, relatives, and neighbors who were already using the methods. In Costa Rica, Rosero-Bixby and Casterline (1994) found support for the diffusion process in fertility decline, particularly in the initial stages of fertility transition. Elderton (1914 quoted in Watkins 1991), writing about fertility decline in Britain, observed the importance of the "word of mouth" in disseminating advertised information about family limitation. She noted that, "the part played by advertisement has been considerable... but the information usually travels by word of mouth" (Watkins 1991:8). Furthermore, diffusion facilitated through social networks was found to be associated with higher levels of contraceptive use in Thailand because of the positive evaluation by peers (Entwisle, et al. 1996). Rosenfield et al. (1973) studying the diffusion of information about modern contraception in Thailand in a period when government restricted public information about contraception found that information traveled rapidly through informal networks. In the three years following the opening of an IUD clinic in Chulalongkorn hospital, women came to the clinic from 66 out of Thailand's 71 provinces, despite the absence of any efforts at disseminating information beyond the hospital via mass media or field workers.

Watkins and Danzi (1995) explored the way that differences in interpersonal networks appeared to influence the pace of fertility change among two groups in the U.S. In the period between 1920 and 1940, both Jewish and Italian women changed their ideas about family size and adopted birth control. The Jewish women, however, did so more rapidly than the Italian women. Interviews from elderly Jewish and Italian women led the authors to conclude that the

earlier fertility decline among Jewish women, and the later fertility decline of the Italian women, appeared to be associated with the characteristics of their personal networks during their childbearing years. Friends of Italian women was similar to one another, that is, most were poorly educated catholic women who had little experience out of the neighborhood. The respondents were therefore slow to receive information about family planning, and had little need to adopt an innovative behavior since their networks world-view were similar. On the other hand, the Jewish women's networks were more heterogeneous whereby more respondents had friends who went out of the neighborhood for high school, college or work and thus got exposed to new ideas and techniques of family planning which they transmitted to their friends back in their home networks.

Rogers and Kincaid (1981) supported the social interaction hypothesis. In a study done in Korea, the authors found that socially isolated individuals had significantly lower rates of contraceptive use while those women found to be more likely to use contraception had networks who had previously used contraception. A re-analysis of the data used by Rogers and Kincaid yielded the same results (see Valente 1994, Montgomery and Chung 1994).

Freedman and Takeshita (1969) report on a controlled experiment in which blocks of neighborhoods in Taichung in Taiwan were exposed to different information about available family planning services ranging from no explicit information to mailings and home visits of field representatives. Close to half of all women who accepted family planning after the initial information campaign heard about the program from friends, neighbors and relatives instead of the home visits which provided the second most important source of information. Mailings had

virtually no effect on increasing women's propensity to adopt family planning. The importance of networks as sources of contraceptive information and consequent influence on use has also been documented by Knodel et al. (1987).

A social network approach has also been used in studying other social processes. Using a network approach, Kudushin (1966) documented the existence of social circles of psychotherapy he called "The friends and supporters of Psychotherapy". These friends and supporters encouraged individuals with mental health problems to seek professional assistance. Service use studies have also found positive effects of social network on service utilization (McKinlay 1973; Horwitz 1977) although some studies have also shown that social networks of those living in poor settings have a negative effect on service utilization (Pescosolido et al. 1996). This is because many people in the low class category mistrust information received from official sources as opposed to that garnered from their networks of family or friends around whom their lives revolve.

Social networks have also been found to be important in the dynamics of AIDS transmission. It has been noted that networks play a crucial role in directing the adoption of practices that are safe or unsafe with respect to HIV infection. In this case, social networks provide both normative and informational social influence that is likely to impact the spread of AIDS knowledge and prevention to those most at risk and to the population in general (Fischer 1988).

The foregoing review demonstrates the important link social networks have in understanding how a person's behavior is shaped through interacting with others. Having ties to

others in the community is critical in understanding whether an individual can enact a given behavior or not. The number of ties, the support they offer, and the functions they serve shape an individual's behavior and their outcomes. It is through the mutual exchange of information that individuals attach meaning to their situations and are able to determine an appropriate course of action.

The classical demographic transition and its variants (the demand theory and Caldwell's wealth flows theory) do not consider that social action proceeds through cultural routines. Rather, they conceive social action as governed by the individual cost-benefit calculations that arise due to structural changes within their environments. Because of these limitations, social networks theory becomes relevant. The social network theory takes cognisance of the wider social matrix which may influence an individual's behavior. In this case, decision making is framed more as an episode rather than a choice. A behavior enacted by an individual is conceptualized as being embedded in a social process where interactions of individuals are viewed not only as influencing preference and defining the situation, but also as driving the process of deciding whether something is wrong, whether anything can be done about it, what should be done, and how the results should be evaluated (Pescosolido 1992:1104). Decision making is therefore a dynamic and interactive process fundamentally intertwined with the structured rhythms of social life, and like other processes, it is mounted on the back of ongoing social processes (Pescosolido 1992:1105).

Decision making according to the network perspective is seen as a socially engineered process that is managed within social networks. How people come to accept or adopt a certain

behavior is seen as a process of social influence more than an individual action. People are seen as being pragmatic, as having a history from which they draw, pro-actively talking to others and reactively responding to the comments of others about their behavior or behavior of others in similar conditions. This does not mean that people are seen as irrational and incapable of independent decision. Rather, it is debatable whether people's decisions result from the complex matrix of cost-benefit analysis. There are times when people sit and think about the burden brought about by having a large family, but is it their mental calculations that help them make their decisions? I believe that people define their problems, know possible solutions and select the best options that fit their situation through their social networks. In the case of family planning, this perspective would argue that people are confronted with information that define children as burdensome in the course of their daily lives. They hear their neighbors or friends talk about the pros and cons of having many children and at the same time are able to see how well people in similar socioeconomic characteristics, but with fewer children, are living.

Thus, such decisions as limiting one's family size do not occur in a vacuum. They are made within a context. They are embedded in personal lives and changing communities. It is through the 'community' represented by social networks that people assess whether the change in behavior being undertaken is acceptable or not. The daily encounters of an individual with other people help in clarifying and providing meaning to puzzling situations. As a result, people are likely to behave like those they interact with.

The social interaction perspective provides a better focus on what is going on in Kenya because it allows for direct consideration of agency, while at the same time allowing for the

consideration of the influence of social structure and context on how the individual chooses to behave. Thus, social networks perspective looks at the process of how behavior changes by incorporating both structural factors and ideas/meanings in understanding the process of fertility transition. In this way we get a complete picture about what is going on in society.

CONCEPTUALIZING FERTILITY DECLINE IN KENYA

A major weakness of fertility transition studies concerns the application of theoretical explanations that lack an articulation of how fertility declines. Most of the theories are concerned with the “why” part of the broader fertility transition question. As a result, the theories have focused either on structural or individual level factors instead of incorporating the two parts of the system. This becomes critical especially when considering the fact that most of the current fertility transitions, especially in Africa, are progressing despite widespread economic stagnation and grinding poverty.

The literature review reveals two main contending theoretical enterprises. First, those that deal with structural factors, chief among them, the demographic transition theory, and secondly, those that focus on individual factors, among them demand theories of fertility. I believe that it is more profitable to have a theory that take account of both levels. To connect these two, I have adopted a social networks approach. Social networks approach bridges the macro and micro divide because it mediates the influences of individual and structural level factors. That is, structural changes in the community transmit pressure to families to reconsider their demand for children, while social networks evaluate these changes and finally determine

whether adjustment to fertility behavior is warranted or not.

This study examines the importance of process in understanding fertility transition in Kenya. To this end, I subscribe to the argument that the fundamental factor behind the rapidity of fertility decline in Kenya is largely associated with the operation of social networks. Since very few studies have tackled this issue, for exceptions see (Watkins 1995a; Valente et al. 1997), this study will make a significant contribution to the network literature in understanding one aspect of demographic behavior in Kenya.

This study will also find out whether any gender differences in network attributes that are important in fertility decline exist. In this regard, I hope to investigate whether women and men's networks are different in the type of information that they exchange and whether the type of information exchanged influences fertility behavior. Extensive research has shown that there are differences between men's and women's fertility desires. In some cases, women have been found to want fewer children compared to men (Eberstadt 1981). Other scholars have found that women's social status is enhanced when they have many children especially in situations where they are relatively powerless (Cain et al. 1979; Frank and McNicholl 1987; Caldwell and Caldwell 1987). In Africa, it has been assumed that men are less willing to limit their fertility because of the cultural and socioeconomic environment that makes high fertility beneficial to them (Caldwell and Caldwell 1987; Frank and McNicholl 1987; Boserup 1985). As a consequence, reproductive decision making seldom involves a negotiation between the genders. Adamchak and Adebayo (1987:65) found that Nigerian men with university degrees believed that women should not use contraception without the consent of their husbands. In the

same vein, Wa Karanja (1983) also found that men in Nigeria were against their wives using contraception as it was the prerogative of men to decide. As a result of the high pro-natalist tendencies held by men, their attitude towards women using contraception is at best negative.

However, other studies have shown that the fertility preferences between men and women are not all that different (Mason and Taj 1987; Ezech et al. 1996). These studies show that, while men's reproductive preferences affect women's fertility preferences, the relationship is at best inconclusive because much of it is specific to cultural contexts, parity and age of spouse (Ngom 1997). Some of the assumptions about the predominance of men in reproductive decision making stems from the overarching belief in the extensive patriarchal system in place in Africa. While it is apparent that men do indeed wield power with roots in patriarchy, it is nonetheless erroneous to apply this argument wholesale to all regions of Africa, and especially so now that rapid social and economic changes are taking place on the continent.

The question whether men and women have the same or divergent fertility desires is important in a number of ways. First, it may shed light on differential causes of fertility transition, that is, when it happens and why (Mason and Taj 1987). Second, it can also show women's resistance to patriarchal impositions. If women want fewer children and their husbands want more, women are likely to circumvent men's demands by using contraception to limit their fertility clandestinely without their husbands knowledge and approval (See Silberschmidt 1992; Gwako 1997; Rutenberg and Watkins 1997). Third, and at a more theoretical level, an understanding of the differences in fertility behavior, and the desires between men and women, illustrate the significance of either conflict or consensus in determining the level of fertility within

a household (Mason and Taj 1987:612).

It would be difficult to account for the fertility transition in Kenya without investigating what is going on between women and men. Though divergences between men and women fertility desires have been noted, little research has been done to establish whether the ongoing fertility transition is a result of convergence in the desires for a smaller family between the genders or not. Silberschmidt (1992:237), for example, notes that women in Kenya are becoming more and more reflective, assertive and active and are increasingly gaining influence and authority within their social situation. This is so because of the diminishing family and community resources that formerly gave men power over women. Moreover, more and more men are having difficulties fulfilling their roles as heads of their households. Since most men are unable to meet their obligations, they are facing an identity and self respect crisis and this is likely to have an effect on fertility behavior.

Men are therefore, included in this study to the extent that they will contribute to the understanding of the fertility decline underway in Kenya. Could it be that due to the economic and structural changes being experienced in Kenya, the demand for children is diminishing because of social interaction between the two genders? Are men abandoning the demand for more children because they are finding it difficult to honor their obligations as heads of their households, a fact that moves them to talk to their spouses about family planning? These are questions that this study hopes to investigate. It is the expectation of this study that women and men are being persuaded by what they are hearing from their friends and relatives about the disadvantages of having large families to the point where they start engaging in conversations

leading to improved communication and consequently support for use of family planning.

In summary, this study extends the scope of fertility transition in three ways. First, investigating the importance of social network structure on fertility behavior. Secondly, comparing what is going on between women and men. That is, are social networks equally important in initiating fertility change between men and women, or are their operation different because they emphasize different issues? Thirdly, finding out if any differences exist in the role played by social networks between two regions of Kenya; Kakamega and Muranga.

Kakamega is a relatively poor district while Muranga is fairly prosperous. If there is little difference in the role played by social networks in explaining fertility decline in these areas, then the two regions could be said to be demographically integrated. Studies in Western Europe have demonstrated the importance of national integration in enhancing the pace of fertility transition (See Watkins 1991). Communities that share a common language and have a national network of communication have been shown to experience fertility decline earlier than isolated communities.

OPERATIONALIZING SOCIAL NETWORKS AND FERTILITY TRANSITION IN KENYA.

This study investigates how social networks; their composition, size and spread are helping the process of fertility decline in Kenya. It is possible that social network attributes are playing a crucial role in the ongoing fertility decline. One way that social networks could be helping in ongoing fertility transition is by providing information about techniques to stop or

space births. In situations of ambivalence about what methods to use to stop or space a birth, people turn to their trusted friends for advice. An argument can be made, however, that this same information could be derived from media messages. Mass media is obviously important in dissemination and, to some, extent evaluation of new reproductive behavior. But social networks are effective in changing behavior. At best, mass media informs and creates awareness about the new idea. The rest is left to social networks. In fact, Katz and Lazarsfeld (1955) noted that communication research should take full account of interpersonal contexts in examining the more complex and portent aspects of media influences. Katz and Lazarsfeld confirmed that social relations are important and should be considered in interpreting media products (See also Liebes and katz 1990; Lull 1990). Social networks create meaning out of media messages. These meanings have a common property because they are arrived at through debates that involve negotiations between various people within the social networks (Liebes and Katz 1990).

Social Network approach has been used in studying topics such as social integration, socioeconomic attainment, psychological well being, social support, collective action, and work process (Lin 1999). While social network approach has been used to understand diverse social processes, little research has attempted to link social network characteristics and demographic behavior, particularly fertility decline. This study hopes to contribute to a growing interest in this field.

Several attributes of social networks have been hypothesized to influence behavioral outcomes. These include size, density, strength of ties, and composition. These network

characteristics, also known as range, capture the extent to which a network contains a diverse set of actors (Burt 1983; Marsden 1987). The aspect of range that I focus on, for the purposes of understanding fertility transition in Kenya, is network composition which is basically the average characteristics of the people in a person's social network. The importance of network composition is based on various studies that have documented how ties bridge disparate social worlds (Granovetter 1973; Marsden 1987). I pay particular attention to whether the networks are diverse or homogenous. Homogenous networks consist of people who share particular characteristics. They maybe composed of lower social class members, same or comparable levels of education, members of a certain community. Diverse networks on the other hand, consist of people who are different in their social outlooks. A diverse network is beneficial because it provides a different world view from the one held by homogenous networks. This is likely to influence the behavior of respondents on the basis of the new information derived from the diverse networks.

I use network size, density, educational heterogeneity and membership to voluntary organizations to examine the significance of diverse networks. A large network size is usually associated with more resources. Networks as resources serve to structure the flow of information and ideas to actors. Thus, talking to friends who have a favorable attitude to a new behavior is likely to influence behavior because of the need to conform. The converse would also be possible. Interacting with people with negative attitude towards a certain behavior will discourage the enactment of the behavior within the group (Campbell et al. 1986). For the purposes of this study, I believe interacting with others is likely to communicate the need to re-

evaluate the desire to have large families.

A particularly dense network composed primarily of relatives and friends in which everyone knows everyone else may provide few unaffiliated allies who might not have important information about family planning. The presence of alters who are different and who probably reside outside of the respondents' village would indicate a more diverse and extensive social network. Interacting with people who basically share the same world view about family planning would seldom lead to change in behavior (Marsden 1987; Fischer 1987; Granovetter 1973; 1985). In fact, it is within dense networks that the normative structure of society is enforced. But interacting with alters from outside the village increases the chances of obtaining new information about how to control or stop childbearing. The significance of having access to less dense networks has been noted with respect to getting jobs. Theories of isolation have adduced particularly strong evidence to this. Wilson (1996) notes that residents of poor neighborhood are thought to be socially and spatially distant from people with high socioeconomic status. For these people, having ties with people outside of the neighborhood may be crucial to finding jobs, whereas ties to people living in the same poor neighborhoods is unlikely to provide useful employment information. This is likely to be the same with regard to having information about family planning. Diverse networks are likely to provide non redundant information concerning how to control fertility compared to homogenous networks that have basically the same and unvaried information. The following hypotheses are accordingly derived.

Hypothesis 1: People with large social networks are likely to use modern methods of contraception, want no more children and talk more with their spouse about family planning.

Hypothesis 2: People with less dense networks, as opposed to dense social networks, are likely to use modern methods of contraception, want no more children and talk more with spouse about family planning.

Hypothesis 3: People with at least one alter with secondary and above level of education are likely to use modern methods of contraception, want no more children, and talk with spouse about family planning (This would be taken to mean interacting with a person of higher status).

Another way to capture the composition variable is by measuring whether both men and women belong to informal or formal groups. Membership to voluntary organizations is used to capture the potential of the respondent's network to contain actors whom they would not sometimes have access to. Moreover, membership to such organizations should increase network size and the possibility of getting non redundant information. Importantly, belonging to a group accords the participant a forum where they can get diverse views. Examples of some of these groups in Kenya would include *Maendeleo ya Wanawake*, meaning women progress clubs, community welfare associations, religious organizations, credit associations, political

parties, among others. Besides the empowering function of most groups in Kenya, there is another important function that they are likely to perform in rural Kenya, that of speeding up the fertility transition currently underway in Kenya. These groups draw their membership from different strata of the community, giving the association a more diverse outlook different from those mainly composed of kin and close friends (Watkins 1991; Hammerslough 1991). This is one of the fundamental requirements for diffusion of new information (Rogers 1983). The diversity of these groups brings new ideas which get picked up by the members who in turn are likely to take them back to their homes and share them with their friends and neighbors. In addition, leaders of these organizations are often well educated, and more enlightened people who are likely to advocate use of new ideas in handling members' day to day life challenges. Membership to these voluntary organizations is likely to be important to women compared to men. Men are usually involved in political and welfare based groups that are unlikely to be crucial in transforming their outlooks about family sizes. While women organizations might not have an official goal to promote family planning, they are likely to discuss the effects of having a large family size since they are the ones who experience the inconvenience of child care.

Hypothesis 4: People who interact with alters who are members of voluntary organizations are likely to have ever used contraception, want no more children and have talked to spouse about family planning.

Another important network composition variable is based on the perceived support of

the network members. Research in medical sociology has indicated that perception of support is more influential than actual support. For example, Pescosolido (1991) argues that if individuals do not perceive that their networks support the use of medical care, then the ability of the networks to influence the individual is reduced. Montgomery and Chung (1994) also found similar results in Korea. They found that perception was more strongly associated with the respondents' contraceptive use than the network member's actual behavior. Individual perception of what their network members are doing is apparently more influential than the actual behavior of their networks. My hypothesis regarding this variable is,

Hypothesis 5: People who interact with alters who they think are using contraception are likely to have ever used contraception, want no more children and have talked to spouse about family planning.

The variable whether one has lived out of their home districts for six or more months aims to capture the broad individual social interaction. This study argues that staying out of ones' community for an extended period of time, provides a different world view from the one an individual is used to because of meeting and interacting with people from diverse backgrounds. This variable could crudely be taken to denote national interaction.

Hypothesis 6: People who have lived in a big town, or have stayed outside their districts of births after marriage, are likely to use modern methods of contraception, want no more children and talk more with spouse about family planning (This captures the broad national interaction).

In conclusion, I hypothesize that having ties to others in the community is critical in determining whether fertility behavior can be managed successfully or not. The number of ties, the support they offer, and the functions they serve is likely to affect fertility behavior. It is through the mutual exchange of information that individuals attach meaning to their situations and determine appropriate course of action. The above hypotheses mark the social influence process and charts out how the process operates. In this case, individuals are not seen as isolated and weighing the costs and benefits of their beliefs about their condition, but are able to receive and evaluate information and opinions about family planning within their social networks. According to this model, decision making is managed within social networks that an individual has within the community.

CHAPTER THREE

METHODOLOGY

INTRODUCTION

This chapter describes the procedures I followed in collecting data for this study. My data was collected in two districts. Murang'a and Kakamega. Although administrative redistricting took place in Murang'a and Kakamega, this study relied on the old district boundaries. Practical considerations dictated this choice. Often, the new districts were not operational because of controversies over the locations of headquarters. To circumvent these problems, I relied on the original districts because no controversies were involved. Also, it was not essential to use the new district demarcation because the Central Bureau of Statistics office, whose clusters I sampled my respondents from, still managed the clusters in the newly created districts.

DESCRIPTION OF MURANG'A AND KAKAMEGA

KAKAMEGA

Kakamega is one the six districts making up Western Province. It lies between longitudes 34°20' and 35° E and latitudes 0°15' and 1° N of the equator. The district is 3,020 square kilometers in size. Kakamega district's altitude ranges from 1,250 meters to 2000 meters above sea level. The district has a beautiful undulating terrain which dips south westwards from about 1600 meters at the eastern boundary to 1500 meters in the central parts of the district and further to about 1250 meters on the eastern boundaries. The district is cris-

crossed by perennial rivers, the largest being Nzoia and Yala rivers which drain in Lake Victoria. The southern part of the district has a flat topography and experiences heavy rain which makes it suitable for sugar cane growing. These areas cover Mumias, Butere and Matungu.

Kakamega is one of the wettest districts in the country. In the 1990-1994, the mean annual rainfall was 157.6mm. The district has two rainy seasons, the long rains and the short rains. The long rain season begins in March, peaks in May and ends in June. Short rains start in July and end in August. This climate supports two planting seasons for subsistence crops such as maize, beans, sugar cane and horticulture. While Kakamega's climate is conducive to the various agricultural practices, it creates conditions ideal for mosquitoes breeding, leading to high prevalence of Malaria. Also, the Kakamega climate is associated with upper respiratory tract infections and fungal diseases affecting both animals and plants.

In 1989, Kakamega district population was about one million. At a growth rate of 2.98 percent per year the population was expected to reach 1.3 million in 1997. The high population density in the district is expected to reach 469 people per square kilometer. This has meant subdivision of landholding to uneconomically viable sizes between siblings because it is the custom that fathers subdivide their land to all their sons when they become adults. The resulting small pieces of land have led to low crop production and increasing marginality and poverty. Although the land size per household is small, nonetheless intensive agricultural activities take place. Close to seventy percent of the Northern part of the district grows maize, both for commercial and home consumption. Thirty percent of the district's area under cultivation are

taken up by cash crops mainly sugar cane, tea, and coffee. The land also supports livestock, though subsistence crops take a larger acreage than livestock farming. Often times farmers combine both livestock and subsistence crop farming though each is done on very small scale, making food shortages in Kakamega a daily problem despite the favorable agricultural climate.

Kakamega population mirrors the rest of Kenya, persons aged below 15 years constitute 51 percent of the population. A high level of dependency ratio characterizes Kakamega district, those in economically active age group constituting only 32 percent. The sex-ratio in Kakamega is 92 males to 100 females. The skewed sex ratio shows the high level of out migration by men from Kakamega. Most men in the larger Western Province have migrated to large urban centers such as Nairobi, Nakuru, Kisumu and Mombasa in search of employment opportunities from which they occasionally return to their homes, especially over Christmas and other holidays. Often women are left behind to take care of children and tend to the small pieces of land.

Kakamega's total fertility rate is about 6.4 children per woman, a figure that is above the national average of 5.4 children per women. On the other hand, the district has a contraceptive prevalence rate of 28.3 percent compared to 33 percent national figure.

Kakamega lags behind national averages on other important indices. The infant mortality rate is 82 per 1000 live births which is above the national average of 60 per 1000 live births. It even has a higher rate than the provincial level of 63 deaths per one thousand live births. The high rate is attributable to the high incidence of diseases, especially malaria, anaemia, diarrheal diseases and a high levels of malnutrition among young children.

Incomes in this district are low, even by the standards of the western Province. In 1982, earnings from employment was 3,499,800 Kenya pounds. The district has very poor road networks that includes about 140 kilometers of tarmacked road, 406 kilometers of gravel and 582 kilometers of earth roads. Often times, when it rains, most of these roads, especially the earth roads, are impassable. The poor network of roads and other communication facilities hamper the development of the district. There are also relatively fewer schools and hospitals. The district has 120 secondary schools, 660 primary schools and 812 pre-primary schools. On the health front, there are 4 hospitals, 28 health centers, 33 dispensaries and over 28 private maternity and nursing homes and clinics in the district. These facilities are inadequate given the high population of Kakamega.

In general, Kakamega district exhibits the classic symptoms of underdevelopment. The high levels of infant and child mortality, the poor road networks, scarce schools and health facilities attest to the poverty that afflicts the Kakamega district and the entire Western Province. Development in Kenya is aligned to politics. There has not been strong enough political leadership in Western Province to marshal national resources to develop the region. Areas with strong politicians do much better because national resources get directed to these areas. Strong political leaders are politicians who know how to lobby the state for development resources. Often politicians who are able to marshal resources to the benefit of their constituents are those who are closely allied to the head of state. For example right now, the Rift Valley province is enjoying unparalleled development because the president comes from that region. The first president of the republic came from Central province, of which Murang'a

is one of the districts, and the evidence of his leadership is everywhere. Central Province districts have more and better schools, health facilities, tarred roads and other amenities. This skewed development leads to the unequal distribution of the indicators of quality of life. More prosperous areas have better indices compared to poorer ones.

MURANG'A

Murang'a district is one of the six district's in Central province. It lies between latitude 0° 34' South and 1° 07' South and longitudes 36° East and 37° 27' East. Murang'a has an area of 2150 square Kilometers. It constitutes about 0.42 percent of the national area. The district rises gradually from an altitude of 914metres in the east to 3,353metres along the slopes of the Aberdares mountains in the west. Several rivers criss-cross the district draining into Tana river, the largest river in Kenya which eventually drains into the Indian Ocean. The district is divided into three climatic regions. The equatorial climate (high potential area) is found in the western part of the district; subtropical climate (medium potential area) in the central region and the eastern part has a dry climate (low potential area). The district has two rainy seasons, with the long rain season starting from the months of March to May and the short rains commencing in the month of October and ending in November. Rainfall is high, reliable and well distributed in the medium and high potential regions while it is erratic and unreliable in the eastern part of the district. The high potential areas receive average annual rainfall between 1400-1600mm, while the average annual rainfall in the medium potential in the medium potential areas ranges from 900mm to 1400mm. The low potential area or the dry area receives less than 412mm per year

making agriculture possible through irrigation. This is the area where Del Monte, a large multinational company, has its pineapple plantations. A variety of ranching activities also exist in this region. The high potential area grows tea while the medium potential predominantly grows coffee.

Murang'a had a population of 858,063 in 1989. It was projected to grow by about 2.46 percent per annum to be 1,044,637 in 1997 and 1,097,372 in 1999. The population growth rate in the district declined from 2.67 percent to 2.46 percent between 1989 and 1996. In general, the fertility level in Central province is low. As of 1993, the fertility level was 3.9, a decline of 2.1 over the 1989 level. The current use of contraception in the province is also high, averaging 56 percent. Specifically, Murang'a district had a contraceptive prevalence rate of 47.1 percent in 1993, having increased from 25 percent in 1989.

Murang'a district is one of the richest districts in the country, characterized by a well developed infrastructure. Its economy, as noted earlier, is based on farming, with the growing of coffee, tea, and horticultural crops predominating. Small numbers of livestock are also raised. Murang'a is well served by a network of 36,789 kilometers of tarmacked roads. A substantial number of homes in the district have electricity and there are numerous public telephone booths placed in major markets. Murang'a has more health and educational facilities than Busia. For example, during the development year 1997-2001, Murang'a had 155 health facilities. These included both government run hospitals and dispensaries, mission hospitals and private clinics. On the education front, there were 544 pre-primary schools, 374 primary schools, 143 secondary schools and 35 youth polytechnics.

One other important feature about Murang'a is that it is extremely hilly. Some of the land inclinations in this region reaches a scary 60 degrees. Due to the hilly nature of Murang'a's terrain, landslides are not uncommon. In November 1998, three children were killed in a landslide in one of the clusters. There have been at least three killer landslides in Murang'a since 1991. In some instances, the landslides have altered river courses (Daily Nation Nov. 12 1998).

In general, Murang'a district is richer and more developed than Kakamega district. This is not because Murang'a has superior natural resources than Kakamega, but because of the nature of resource allocation in Kenya. Development resources are allocated on the basis of how close a politician representing a certain region in the country is to the head of state. Murang'a was particularly favored because the first President of the Republic of Kenya, Jomo Kenyatta was from the central province where Murang'a is a district. The favorable political climate and the fact that people in Central Province were introduced to the monetary economy earlier than most other Kenyans because of the establishment of Nairobi by colonial power, close to Murang'a has meant rapid progress in the region compared to Western province which is far from the centers of influence. As a result of this and other factors, there is a skewed development trajectory of the two regions. The question thus become: would these differences be significant when examining the pace of fertility transition? This is a question I will tackle in chapter six.

TRAINING AND SURVEY

I used the services of four research assistants in Murang'a and eleven in Kakamega. All of them were either University graduates or had a prior experience in conducting research. I recruited almost an equal number of men and women to facilitate the interviewing of men and women. It would be inconceivable to have a man interviewing a female about such sensitive issues as family planning and vice versa. To get more accurate information, I had to recruit women and men to interview their respective gender. All the research assistants originated from the districts I surveyed. This was because most people in rural Kenya only speak their local languages. The interview was therefore done in the local language.

Before employing the research assistants, I put up a job advertisement announcing the availability of the research assistants for the two districts. The response was overwhelming. In total, I received more than one hundred applications. I then assembled an interview team which included experienced Kikuyu and Luhya researchers to interview the applicants. The interview process was spread over a two day period to accommodate the large number of short listed applicants. The interviews involved asking the applicant questions in both English and the local languages in which the interview would be conducted. The local language component ensured that the assistants were fluent in their native language. This was important because many young people do not speak the local language in the same way as an ordinary person in the village. Instead, they speak a mixture of the vernacular, English and Kiswahili. This kind of language mixing could cause problems in the rural areas because the respondents would immediately identify the interviewers as urban based. This perception would spell disaster for the research

project because most people would decline to respond.¹ Before beginning the survey, I thoroughly trained the assistants in every respect of research: How to approach households, probing for response, cross checking response, and I delved into the details of the questionnaires. I pretested the survey instrument and made the appropriate adjustments in both regions.

The entire survey exercise in both Kakamega and Murang'a districts took place from January 1998 to July 1998. When the interview commenced, I was in the field continuously, scrutinizing and editing the questionnaires. I held meetings with the research assistants every evening to flush out any problems encountered in the field.

SAMPLING PROCEDURES

The work on this project started in January 1998. Originally, the work was scheduled to start in September of 1997, but that being an election year in Kenya, very little could be done. The situation was highly electrified and politically polarized, making it extremely harzadous to conduct a survey. The situation cooled down after elections were held in December 1997. I started with Murang'a district, near the capital city of Nairobi.

In drawing my sample to interview, I used the Central Bureau of Statistics NASSEP clusters. CBS is a government department within the Ministry of Planning and National

¹

People in the rural area are very sensitive about who they talk to with regard to their personal affairs. Failure to speak the language fluently is a mark of a stranger and will impede the smooth flow of the conversation and lead to withholding of important information.

Development that conducts national surveys and censuses on behalf of the Kenyan government. The department is also charged with the task of mapping, creation of clusters and drawing of representative samples at either the district, province or national level. Most studies in Kenya rely on these preselected CBS samples whose level of representativeness is considered satisfactory. There was no reason not to rely on the CBS clusters given their history of representativeness.

Since 1975, the CBS created a sample frame (NASSEP) from which samples needed for government and other users have been drawn. Since its inception, this master sample has provided reliable and integrated socioeconomic data. NASSEP is a two stage sample design stratified by urban-rural residence and within the rural stratum by individual districts. In the first stage, the 1989 census enumeration areas (EA's) were selected with probability proportional to size. The selected EA's were then segmented into the expected numbers of standardized clusters, one of which was selected at random to form the NASSEP cluster. The selected clusters were then mapped and listed by CBS field staff.

I randomly selected four clusters in Murang'a. These were Kinyona, Kairetu, Kambiti, and Kamahuha. I did an extensive tour of the clusters accompanied by my field assistants and the CBS field staff. The CBS staff assisted in showing us the boundaries of the clusters. We consulted with the local administration who were very helpful showing us around the clusters, in the process telling us about the history of the area. The administrator of the smallest unit in Kenya is an assistant Chief. He knows everyone within his jurisdiction. We took a day to tour the cluster with the Assistant chief and his elder in-charge of the cluster. This was to familiarize

ourselves with “his people”. This proved important because it would have otherwise been difficult for people to cooperate with us since we were strangers in the area.

The Kinyona and Kairetu clusters are tea growing zones, and very little food crop farming is undertaken. In fact, most of the households were short of food. These areas are characterized by steep hills and deep valleys that enjoy an equatorial type of climate. They are cold and wet throughout the year and are bordered by a thick forest with a variety of wild animals. This was a constant source of fear to us because some households were near the forest. The weather was so rough that after a time, our skins started peeling off because of the cold.

Although the clusters have immense agricultural potential, their infrastructure is poor. There are no tarred roads within the clusters, the dirt roads were badly damaged by trucks collecting tea leaves from collection centers that dot the clusters and the region. The roads become even worse during a heavy down pour, not an unusual occurrence. The only public telephone booth available was at a small shopping center called Mairi and quite a long distance from where we stayed. Mairi was the only place we could get some form of accommodation in the back of a shop. The clusters are not on the national electricity grid and do not have constant running water.

I used the CBS list of households to sample households to interview. Every household had CBS numbers assigned for identification. This made it much easier to get the targeted households. We endeavored to cover all the households within the area. We were not able to interview all the households because of the unavailability of household members for reasons

ranging from deaths, refusal, and migration. In each household, we interviewed both spouses, if they were available. However, in the event only one spouse was available, we were content to interview him/her.

The two other clusters I drew my sample from were Kamahuha and Kambiti.

Kamahuha is relatively dry, though such crops as maize, bananas and pawpaw are grown.

Kambiti is the driest and perhaps the least productive in the entire District. The cluster is

therefore sparsely populated. Kamahuha cluster is generally flat, it is approximately 20

Kilometers off the busy Nairobi-Murang'a road. The road leading to the cluster is all weather.

Some sections of it were so bad that, if there was a downpour, the sections would become

impassable to vehicular traffic. Many gum gum trees grow in this area, but no cash crop is

grown in this cluster though there is active trade in pawpaws and bananas. The topography of

this cluster is relatively flat. Coupled with the thick cotton soil, the cluster has numerous water

ponds which form Mosquito breeding places.

Kambiti cluster is located along the Nairobi-Nyeri road. It is a dry, hilly and rocky

place. The local vegetation consists of shrubs and thorny bushes. Most people in this cluster

grow subsistence crops such as maize and beans. The harvests are not large because of the

poor rainfall and harsh climatic conditions. Paw paw, a drought resistant fruit, is grown here. In

fact, the road from Nairobi to Kambiti cluster which passes through this dry area is dotted with

sheds stocking mainly Pawpaws. To supplement their incomes, people in this area work as

casual laborers in some of the large scale coffee farms nearby. One indicator of poverty in this

cluster (absent in the other clusters) is the existence of grass thatch houses. There is no other

place within Murang'a district where as many grass thatch houses can be found. In fact, most Murang'a people when asked to name a poor region are quick to point to Makuyu division and, more specifically, to the existence of grass thatch houses. Households in these clusters were already listed by CBS staff. We therefore interviewed both spouses when we found both. We interviewed a total of 323 women and 268 men out of a possible total of 638. This translated to a response rate of 93 percent.

My survey in Kakamega covered the original larger Kakamega district. Using Central Bureau of Statistics sampling, I randomly sampled five clusters. These were, Shinoi, Lunza, Navakholo, Virembe and Butali. Of these clusters, Navakholo and Virembe are in the sugar growing belt while the others engage in subsistence farming growing mostly maize and beans. In all the clusters, dairy farming of the zebu breed of cattle is undertaken, although these cows produce little milk.

Shinoi cluster is off the Mumias-Kakamega road about 20 minutes drive from Kakamega town. It is located within the sugar belt. Despite being a cash crop growing area, poverty is apparent. The majority of houses are grass thatched with very sparse furnishing and this was also the case in the other clusters. Lunza cluster is in Butere division that is reached by dirt roads which are impassable when it rains. This was a constant source of worry to us because we commuted to the clusters everyday from Kakamega town because of the lack of proper accommodation in the clusters. Lunza is a predominantly subsistence community, growing mainly maize and beans and rearing the local zebu cows.

Navakholo is another rural cluster I investigated. The road leading to this cluster is not

paved and is difficult to use during the rainy season. We only went to the cluster when we were sure that it would not rain. We were lucky that while we were conducting the survey, it did not rain. This is a sugar belt zone but the general poverty that characterizes Kakamega district is still evident. Only a few households have iron sheet roof tops, a sign of higher socioeconomic status. Butali cluster is on the tarred Kakamega-Webuye road. This cluster is well served by road and there was no threat of our getting stuck in the cluster in the event it rained. However, the cluster is poor despite the fact that the average land size is much larger than the average Kakamega district. This is the only cluster where there is enough land but is not fully exploited. Virembe cluster is much closer to Kakamega town in Shinyalu division. This is a subsistence area with small pieces of land. Quite a number of houses are iron roofed, indicating a high socioeconomic status. Several families grow cash crops, especially tea.

Generally, the sampled clusters in Kakamega district are not highly differentiated economically. Their economy is predominantly based on small-scale subsistence farming relying on low levels of technology. A limited amount of cash crops are grown in these clusters. These include sugar cane, coffee, and tea. The distribution of the cash crop growing is determined by the ecological suitability and availability of spare land, that is, land not strictly required for home food production. With the exception of the sugar mills in the Mumias and Nzoia areas, no other significant industrial projects are available. The Kenyan government is the significant employer in these areas while a large number of other people are self employed in the informal sector where they sell used clothes, fresh farm products and handcraft.

The general standard of living in these clusters is low. Despite the fact that the climate is

favorable to the growing of various cash and food crops, the size of land holdings limits profitable employment of land as a major resource. Even in the sugar growing areas of Shinoi and Navakholo, I observed that large tracks of sugar cane plants (grown on an out grower basis)² had overgrown and were rotting in the field because the Mumias Sugar company, which rigidly controls the growing of the sugar by offering inputs and other farm accessories and also controls the sugar harvesting, was working under capacity and had failed to harvest the cane already planted. This meant that many of the cane growers in the area were starving because they had not yet been paid. The situation was even more serious because most of the farmers had committed their entire land to sugar cane growing and abandoned food crop production. There was a feeling of loss among the people because they had invested land and labor resources that had not yielded any valuable returns.

In all the clusters, we tried to interview everyone, but this was not possible because some people declined to be interviewed due to suspicion that we were on some secret mission to bring harm to them despite our assurances to them that we were harmless. Other household members were not at home and we found it difficult to trace them even when we made call backs the following day. In total, I interviewed 234 women and 200 men out of a total of 460 giving a total response rate of 94 percent.

With the high response rate, the result are unlikely to be biased. The high response rate reflects the mutuality and friendship we established with the people in the communities we

2

Ougrowers is a term used by the Mumias Sugar Company to classify those who grow sugarcane on their land as opposed to sugarcane grown on the company's farms.

surveyed. Prior to starting the project, we clearly explained the objectives and purpose of the research to both the local and all the contacts we made with the community members. We assured the respondents of the projects' importance and reiterated that the survey will not be used for any other purposes other than the one it was intended for. We repeatedly assured them of our commitment to confidentiality of the information they provided to us.

The cluster sampling design I adopted in this study is cost effective. Singleton (1993:154) observes that clustering concentrates interviews within fewer and smaller geographic areas, hence spreads travel over several cases, thus reducing the costs of any one interview. Moreover, clustering can reduce costs by allowing lists to be compiled only for selected clusters rather than for the entire population. The main problem with cluster sampling is that it minimizes variability within the cluster. This however is overcome by the fact that we chose to interview respondents from a number of clusters.

This study sought to interview an equal number of women and men. This was not possible because we ended up interviewing more women than men. This is expected because most men have migrated to urban centers, leaving their wives behind. It was therefore difficult getting men within the reproductive age groups. Most of the males in the rural area are either young or very old. We were fortunate nonetheless to have interviewed a reasonable sample of men.

I decided to interview both men and women because, in demographic studies, men are often left out. This study attempts to cover that neglect by 'bringing' the men back in. It should be noted that because African societies are patriarchal, it is important to see how men fit in the

puzzle of the fertility decline in Kenya. Men have always been seen as having a vested interest in the high fertility in African societies, yet little research has verified this assertion. This study attempts to find out if men are critical in the ongoing fertility transition in Kenya.

THE IMPORTANCE OF PRINCIPAL RESEARCHER PRESENCE DURING THE RESEARCH PROCESS.

The quality of the survey is of utmost significance to any research project. If the quality of research is to be high, the head researcher must be present. Sampling procedures and interviews can be verified, research assistants say that, sometimes, they would just sit under a tree and fill in the information. Being present therefore ensures close monitoring of the project and avoids such fraudulent behavior by the research assistants. I avoided having to give my research assistants a target number of questionnaires to complete in a day. Such numerical targets put undue pressure on the research assistants, especially when they cannot achieve the desired number of interviews in a day. This opens the door to cheating. I asked them to do what they could depending on the field conditions. Sometimes it would rain and this would disrupt the process. Moreover, my research assistants were highly motivated young people whom I remunerated well. They therefore had no motive to cheat.

Being in the field with my research assistants and checking the returns every evening minimized cases of missing data. If inconsistencies and/or missing data were noted, the assistant would go back to the respondent the following day to clarify the inconsistency and fill in the missing values. During the training session for the research assistants, I emphasized that they

should never close the meeting with the respondent. The respondent was always alerted that there was a chance of coming back in case some things did not make sense. It was therefore easy to go back to the households to re-interview. Principal researcher presence in the field also motivates the research assistants to work hard. This in turn yields good research results. Moreover, presence of principal researcher creates an automatic familiarity with the data. Also, being present leads to the development of hypothesis or explanations of some findings. Being present also makes investigators realize how difficult it is to collect data.

CHAPTER FOUR

KENYA'S DEMOGRAPHIC DEVELOPMENT

INTRODUCTION

For the past three decades, Kenya has enjoyed the dubious label of having the highest fertility, and consequently, the highest population growth in the world. At its height, the population growth rate hit the 4 percent mark, rarely attained in any population, and a total fertility rate of 8. Since the late 1980s and early 1990s, research has revealed that the once high fertility level is declining, placing Kenya among nations experiencing fertility transition. This new development has sent the Kenyan demographic community and foreign observers into a search for the reasons behind the decline. The pertinent question has been, why were the earlier predictions that Kenya will continue having a high and stable fertility so wrong? Why has fertility started declining despite the fact that conditions that have always been associated with declining fertility were absent in Kenya. These include, high levels of development, urbanization, and general weakening of the social and cultural forces that sustain high levels of fertility.

In this chapter, I will examine Kenya's demographic history from the earliest known period when data is available to present. I will also discuss some of the reasons why fertility was high and then attempt an explanation of why fertility is declining now.

KENYA'S DEMOGRAPHIC HISTORY

Kenya draws its origin as a nation from the British colonization in the latter part of the last century. Kenya was the center of British East Africa, a thriving and a lovely settler colony

with almost 300,000 non-Africans by independence in 1964. Kenya has a much more developed infrastructure, and other productive sectors of the economy compared to its two neighbors, Uganda and Tanzania.

Early population estimates for Kenya ranged from 450,000 to 2.5 Million in 1897 to 4 Million in 1902 (van Zwanenberg 1975). These figures were derived from hut and poll tax returns which were levied on every household. Children were assumed to constitute about 37 percent of the population (van Zwanenberg 1975). Kenya has had population censuses taken from as early as 1911. However, the population censuses taken between 1911 to 1931 covered only the non-African population (Wortham 1993:198). The non-African (European, Asians, and Arabs) had a very high growth rate of about 5.7 between 1911 and 1931. This cannot be explained by fertility; rather it reflects the increased immigration of these groups into Kenya as a result of the increased infrastructural development in the colony (Wortham 1993:198).

During this time it is not easy to tell whether the African population grew at the same rate as the immigrant population. Nonetheless, the large scale immigration of non-Africans brought with it aspects of modernization and westernization which played a decisive role in reducing mortality levels. Declining mortality with high fertility meant population growth was high. Indeed, Zwanenberg (1975) reports that Kenya's total population may have increased from 3.7 to 4.8 million people between 1921 and 1939 which gives an annual population growth rate of between 1 and 1.5 percent.

Systematic population data collection started in 1948 when the first comprehensive

population census was undertaken. Since then, censuses were undertaken in 1962, 1969, 1979, and 1989. In 1948, Kenya's population totaled 5.4 million out of which about 150,000 were non-Africans. The total population rose to about 9 million by Independence in 1963. Ever since independence, Kenya's population growth rate has been high. During the 1960s and 1970s, the population growth rate was around 3.4 percent. By the 1980s, the growth rate was estimated at 4 percent see table 4.1.

Table 4.1: Kenya's Population by Census year.

Year	African Population	Non-African Population	Total Population	Annual Growth Rate
1948	5,251,120	154,846	5,405,966	
1962	8,365,942	270,321	8,636,263	3.40
1969	10,733,202	209,503	10,942,705	3.44
1979	15,101,540	225,521	15,327,061	3.43
1989	21,252,861	190,775	21,443,636	3.36

Source: Republic of Kenya. 1996.

The high population growth rate was as a result of a combination of high fertility and declining mortality. Mortality decreased drastically during the 1960s and 1970s as a result of modern science and technology and the resulting improvement in the quality of life (Muganzi, 1988). Examining mortality indices shown in table 4.2, there is evidence that the general mortality conditions have improved since the 1948 population census. By the time of the 1989 population census, the mortality rate was a little less than half that of 1948. More importantly, there was a sharp decline in under five mortality rate. This is an important index that can be

used as a proxy for the level of quality of life in a given society. This index declined from 270 per 1000 in 1948 to 110 in 1989 per 1000 births. Life expectancy improved from 37 years in 1948 to about 59 years in 1991.

Table 4.2: Fertility and Mortality indicators for Kenya, 1948-1989.

Years	1948	1962	1969	1979	1989	1991	1997
Total Fertility Rate	5.5	7.0	7.6	7.9	6.7	6.5	4.8
Crude Birth Rate	40	48	50	52	45	45	40
Crude Death Rate	25	20	17	14	11	11	9
Under five Mortality	270	220	190	150	110	100	83
Life Expectancy	37	43	49	54	58	59	65

Source: 1948-1991. Brass and Jolly (1993).

1993, The African Population Policy and Research Center, 1998.

The decline in mortality in Kenya was chiefly attained during the decades of up to around 1980s when economic growth was positive and stable. This was the time that was marked by agricultural expansion which exceeded population growth rate by about 1.3 percent. Industrial production grew steadily at a rate of 6.2 percent. With the economy in good shape, the state invested huge resources in the social sector, education and health, which led to major decrease in the mortality levels of the country (Kelley and Nobbe 1990). However, during the 1980s, influenced by the debt crisis, Kenya experienced an economic decline while population growth continued.

Like other Sub-saharan countries, substantial fertility change has been recorded in Kenya from the time when population data became available in 1948. From this time, when

total fertility rate was 5.5, records show that the country experienced significant fertility increases, peaking up in 1979 at the rate of 7.9. Before attempting to understand why fertility is declining, it is important first to examine some of the explanations of the high fertility level and population growth. Because the arguments that have been advanced to explain high fertility in Africa are the same ones advanced for Kenya, I will examine the literature from a continent wide perspective and later narrow it down to Kenya.

HIGH FERTILITY IN AFRICA

The persistence of high fertility in Africa that dominated the 1960s and 1970s was viewed as a problem that emanated chiefly from the supply side factors: that is, the lack of knowledge and the means to control fertility by use of modern contraception. The poor efficacy of the traditional methods of contraception was seen too as an additional problem in this perspective (Cochrane and Farid 1985; Page 1987). A large unmet demand for contraception was assumed. In fact, the unmet need for family planning as a concept evolved in the 1960s when family planning survey results showed that there was a discrepancy between women's fertility desire and their contraceptive behavior. Women would state that they would not like to have another child, yet were not using any modern contraception (Bongaarts, 1991).

Bongaarts and Bruce (1994) have shown the diverse conditions under which unmet need occurs. These include but are not limited to, lack of information, health concerns and husband's disapproval of family planning. This is found to be the case in most sub-Saharan countries, Kenya included. About 28 percent of married women in Kenya had unmet need that

resulting from lack of knowledge, 17 percent had unmet need on health concerns, 20 percent expressed husbands disapproval, 6 and 5 percent expressed religious and lack of access respectively. Support for the unmet need thesis was strong among donor agencies and international population organizations. The 1965 Population Council mission to Kenya, whose recommendation helped establish the Kenya National Family program, show the donor community's view. They noted that;

"Studies in other countries have almost invariably shown that family planning is little practiced by most of the people. However, contrary to common official opinion, the majority of the population in those countries has stated that more information would be welcome, and that they would like to limit the size of their families and to space intervals between the births of their children" quoted in Warwick (1982:121).

The supply side arguments came under fire during the 1980s for neglecting the demand side factors seen as cardinal in influencing fertility levels (Frank and McNicoll 1987). The demand school argued that, without greater focus on the sociological context of childbearing and family formation patterns, family planning programs would continue being unsuccessful (See Warwick 1982; Frank and McNicoll 1987 for Kenya).

Caldwell and Caldwell (1987) emphasized the importance of heritage and descent in maintaining high levels of fertility. They argued that the honor bestowed on dead members of the community required their appeasement through high fertility as links to their dead relative. Indeed, in Africa, a person never dies but is reborn. In this system, it is taboo to be childless. The tragedy that befalls a childless couple is so great that any childless marriage will not be accepted unless the society has prescribed other measures of countering such a tragedy, for

example allowing a man to take a second wife. High fertility therefore enjoyed both community and divine approval (Caldwell and Caldwell 1987). It is not uncommon to hear someone dreaming about a dead relative who comes back in a dream demanding that he be born. When a new baby is born into the deceased family, he/she is often named after the departed soul. Such beliefs according to Caldwell and Caldwell (1987) militate against the use of modern contraception. Fertility is also high because it is believed that the locus of fertility decision making is not found within the conjugal family unit. Rather, it is encapsulated within the larger social system. It is mired in the extended family, clan, and the larger community making the nuclear family powerless in fertility decision making process (Caldwell and Caldwell 1987).

FERTILITY IN KENYA

Focusing on Kenya, several schools have persuasively explained high fertility. Foremost amongst them is Frank and McNicoll (1987) who see the locus of fertility decision making as falling outside the conjugal family unit and enmeshed within the kinship group. Frank and McNicoll (1987) observed that high fertility in Kenya cannot be explained using the narrow economic typification of cost and benefit calculation, but must also involve an understanding of the social cultural context. They noted that high fertility in Kenya, and Africa in general, arises from the contradictory gender relations. In Kenya, it is argued that women do not own important productive resources like land; rather they have use rights provided to them through marriage. Even after their husband's death, women can only hold the land in trust for their immature boys or pass it directly to their mature sons. Children therefore constitute an

important source of old age security to their mothers since their livelihoods are not assured after the death of their husbands, or after divorce. By bearing more children, women were able to confirm their status in marriage, secure continued access to land resources and ensure their security in old age. Women in Kenya, therefore, accumulate large families because of social, economic, and cultural factors (Frank and McNicoll 1987:217). Men, on the other hand, are driven by the returns accruing from their children's participation in the labor market, bride-price paid for their daughters, old age security and the prestige and status that goes with paternity.

Since 1989, the demographic profile of Kenya has changed. During this period, the first significant decline in Kenya was registered. The result of the 1989 Kenya Demographic and Health Survey (KDHS) heralded the most significant evidence that fertility transition was underway. According to Robinson (1992), while this was the single most significant evidence of the decline in fertility, other small scale surveys had indicated both quantitative and qualitative evidence of fertility decline in Kenya. Goldberg et al (1985) found a strong and positive attitude towards family limitation in Meru. Ferguson (1991) also noted a trend towards smaller families in Kisii District. Later, Ferguson's findings were corroborated by the 1989 KDHS data. These and other small scale studies have revealed the undeniable evidence that Kenya was indeed on its path to a fertility transition.

Brass and Jolly's (1993) analysis of the demographic situation in Kenya showed that fertility increase in Kenya peaked at 8 children in the late 1970s. After this, fertility started declining slowly at first and by the latter half of the 1980s started to decline more rapidly. By the time of the 1989 KDHS, fertility had declined to the unprecedented 6.7 level. This decline

in fertility occurred in all the age groups, although it was more pronounced among the older women (Egero and Hammarskjold 1994). Since the 1989 KDHS was conducted, two other KDHS's have been undertaken; one in 1993 and the latest in 1997. The 1993 KDHS results showed fertility to have declined to 5.35 children, a remarkable 20 percent over the 1989 figure. The decline occurred across all age groups, socioeconomic subgroups and among all regions of the country although with a marked reduction recorded for the youngest age group. The 1997 KDHS revealed a further reduction in fertility to 4.7 constituting a 12 percent over the 1993 level (see table 4.3 for details).

Table 4.3: Trends in Age Specific Fertility Rates.

AGE	1969/79 CENSUS	1979/89 CENSUS	1978 KFS	1989 KDHS	1993 KDHS	1997 KDHS	% CHANGE 1978-1997
15-19	0.118	0.158	0.175	0.161	0.116	0.112	36
20-24	0.375	0.334	0.336	0.299	0.269	0.245	27
25-29	0.369	0.323	0.345	0.289	0.248	0.221	36
30-34	0.301	0.252	0.287	0.239	0.194	0.186	35
35-39	0.213	0.169	0.244	0.172	0.145	0.109	55
40-44	0.096	0.070	0.162	0.096	0.074	0.053	67
45-49	0.012	0.008	0.072	0.058	0.047	0.016	78
TFR	7.8	6.6	8.1	6.6	5.5	4.7	42

Source: African Population and Research Center (1998:13).

For 1997 data, Republic of Kenya and Macro International Inc (1998:18).

The table above confirms the fertility decline in Kenya. The smallest decline took place during the 1978-1997 period in the age group 20-24 amounting to 27 percent, while the highest

decline was recorded in the age group 45-49 with a 78 percent change. These results indicate the unequivocal entry of Kenya into the demographic transition. Blacker (1994) raised doubts about the plausibility of the transition, arguing that it was more likely to be a statistical artifact. He asserted that the 1989 KDHS could not yield reliable data because it was based on sample surveys that were subject to sampling errors. He argued that the sampling frame used was outdated and therefore could not be relied upon because it ignored the many households that had come up in the intervening period. He wished that the 1993 KDHS results would confirm the fertility decline. This came to pass because both the 1993 and 1997 KDHS results have confirmed that Kenya is indeed on the firm path of demographic transition. The decline is real and continuing (Robinson and Harbeson 1996; Republic of Kenya and Macro International Inc. 1998).

Before the fertility transition started taking shape, Kenya's demographic geography was hardly the subject of much discussion, save from the often mentioned fact that it enjoyed the rather awkward fame of having the highest fertility in the World. But since the fertility transition came to the international attention following the publication of the 1989 KDHS, Kenya has become a subject of intense discussion in the demographic and social science community (Robinson 1992; Kelley and Knobbe 1990). This stems from the fact that fertility decline has occurred when known socio-economic conditions traditionally associated with such decline are absent. In this case, scholars are testing new theories using Kenya as a case in point. In this category belong such scholars as Watkins (1987, 1995a, 1995b) who are vouching for the role of social interaction in facilitating this decline. They point to the fact that the fertility transition has

been found to cross cut social and regional differences. The fact that every social group has been touched by the transition would suggest that it is a "a social movement, a popular revolution" thanks to diffusion of information through social networks (Watkins 1987:661). Diffusion operates clearly in populations with incipient fertility transitions, making Kenya an attractive location. This study builds on the work of Watkins and others who are investigating the role communication networks are playing in the current fertility transition in the world. This study uses the social networks approach in understanding the process of fertility decline in two Provinces of Kenya. A plethora of articles and books have been published on Kenya since 1989, all advancing what they think is the most likely reason why fertility is falling. In the following section, I will present these reasons.

Some arguments emphasize the changes in the structure of the family and land transformation in Kenya as crucial in bringing down fertility in the recent past. The high level of land subdivision, a consequence of high fertility is starting to make people realize the need for reducing their fertility (Mulder 1987; Safilios-Rothschild and Mburugu 1986). Others argue that family planning programs have become entrenched and are spread all over the country, thereby providing people with access to effective contraception (Njogu 1992; Robinson 1992). This ties in neatly with the overt government policy to limit family sizes by encouraging the use of contraception. On the other hand, there are those who argue that the economic decline Kenya has experienced since the early 1980s due to the debt crisis and the subsequent tough measures mandated by the World Bank and IMF², have moved the burden of health care and education financing from the state to the family, making it more expensive to care for large families

(Lockwood 1995; Kelley and Nobbe 1990). The health and education costs were unknown to many families before the 1980s because the state paid for them. As a result, the high cost of having large family sizes are forcing families to think of the best way to minimize the costs of additional children by reducing their fertility. In the following section I will discuss these views in detail.

LAND TRANSFORMATION AND CHANGES IN THE FAMILY STRUCTURE.

The importance of land holding in Kenya cannot be overemphasized. Land is both an economic and cultural resource, and its ownership is crucial to the survival of the people, especially in the rural areas where about 80 percent of the population live. In fact, most of the internal instability in Kenya has been based on land ownership. Land hunger started in Kenya when huge chunks of land were alienated from the indigenous populations for settlement by the white colonialist in the early twentieth century. The destitute population, confined to unproductive locations within the central province, demanded upon receipt of independence in 1963, to reclaim their lands. The new government however, opted to settle them in different parts of the country, especially in the Rift Valley Province, where there was still space. Much of the large scale farms in Central Province which were alienated by whites changed hands and were bought by political elites of the time. Increase in population coupled with the age old tradition of land inheritance which entailed subdividing the piece of land to male members of the family has resulted into smaller and smaller, economically unviable, pieces of land. This has meant that no meaningful agricultural practice can take place because of the size of land

holding.

Two dimensions of land utilization and ownership are important in shaping fertility outcomes; size of holdings and the type of land tenure, that is, ownership patterns including legal and institutional arrangements for use (Shutjer and Stokes 1984). Some studies have shown that Kenyans are concerned about shortage of land. Moreover, incomes from agricultural activities, especially in the current situation of economic decline, is inadequate (World Bank 1984).

Shortage of good agricultural land is a major issue in Kenya given the fact that good agricultural land is scarce relative to the size of the population that earns its livelihood in agriculture. Available hectares of good agricultural land per person have diminished from about one hectare in 1979 to less than half a hectare in 1989 (World Bank 1989). This decline has been more acute in the districts of the country with good agricultural land such as those in central and Western Provinces as compared to the others. Within the context of Kenya's rapid population growth and the need for increased productivity of land to support the population with food and employment, changes in land tenure patterns are also relevant to increased productivity in agriculture (Migot-Adhola et al 1991).

Some studies carried out in Kenya have demonstrated a positive effect of land size holding on fertility. Among the Kipsigis, women who were married in families with large farm holdings were found to have a higher fertility than those with small land holdings (Mulder 1987). In several other communities in Kenya, size of land under cultivation was an important variable in understanding fertility behavior. Large land holdings meant a demand for more labor which

was easily provided by increasing fertility. On the other hand, the diminishing land acreage due to the high population growth that Kenya has experienced tended to depress fertility (Safilios-Rothschild and Mburugu 1986). In a study done in four districts, land scarcity was cited as the major factor that led people to undergo voluntary surgical contraception (Bertrand et al. 1989).

Kenya is currently experiencing a serious shortage of land, especially good land in prime areas. For example in western Kenya, land holdings have shrunk to the point where in some areas male children are no longer able to inherit anything from their parents (See Bradley 1994). Given the squeeze on land holdings and no possibility of colonizing more viable land, families are now unable to transfer land to children. This absence of land also means that the labor of wives and children cannot be exploited for economic gains by patriachs in the households. The increased land shortage has therefore led to the re-examination of having large family size, hence the fertility transition.

The shortage of land has also brought in a new phenomenon. Parents are now investing heavily in their children's education bringing to the fore a new form of "inheritance" parents are bequeathing their children. This has increased the demand for education which has also played a role in reducing fertility (Mhloyi 1992:8).

ECONOMIC DECLINE

The timing of the beginning of the demographic transition in Kenya, and the other African countries in general, have spawned new explanations, namely that fertility decline is a response to the relative decline in quality of life after a long period of raised expectations

(Lockwood, 1995:15). After attaining independence, the major goal of the new Kenyan Government was to oversee the development of the economy. To this end, the Government encouraged both local and foreign companies to sink their capital within the country promising a whole array of incentives. This move met with success because, besides the already existing foreign capital, a carryover from colonial era, new capital started flowing in, especially from the U.S. (Swainson 1980).

Furthermore, the strong world economy also played a pivotal role in the development of Kenya during the 1960s and 1970s. The world had massive reserves of capital from oil windfalls at the time and this easily moved into Kenya. Much of this capital went into import substitution type of industrialization. Although an unwise strategy, due to the fact that it failed to establish back and forward linkages within the economy, it nonetheless stimulated the domestic market. Rising incomes from agricultural products being processed by the import substituting industries and the increased incomes that derived from the linkages between manufacturing industries expanded markets, stimulated growth in investments and domestic production. As a result of the massive resources at the disposal of the state following the favorable economic situation, the Kenyan state invested heavily in the social sector, health, education and infrastructure. The state bore almost all the costs of establishing and running these sectors.

The period of steady growth changed in 1979. This coincided with the second world oil shock. Developed countries, notably the United States and Europe from whom most developing countries had borrowed, increased their interest rate to stave off inflation. This action led to higher interest payment on most of the loans advanced to Third World Countries.

As a result, third world debts significantly increased. Moreover, the high interest rates meant that the dollar appreciated significantly, leading to a world recession that in turn led to depressed prices of exports (especially primary) products from developing countries. Most developing countries, Kenya included, found themselves hard put to honor their debt obligation.

The external environment proved unfavorable to the growth of the Kenyan economy and led to worsening terms of trade. The world economy became more restrictive, import quotas were imposed on poor countries' export, which narrowed the scope of trade with developed countries which led to decreased exports and to a further decrease in prices. This impacted negatively on the overall investment flows into the country and in general on the quality of life of Kenyan families. In order to recover from this situation, the World Bank and the International Monetary Fund mandated Kenya to undertake the painful structural adjustment programs which entailed cuts in social sector expenditures. This meant that parents were required to shoulder the burden of educating their children and to pay for their health, costs that had previously been shouldered by the state.

The poverty situation in Kenya is also grave. Over one half of Kenya's population lives in absolute poverty (UNDP 1993) and a majority of these poor people are women. The share of women in agricultural labor force was 81 percent in 1990-2 although women's share of adult labor force was 39 percent (UNDP 1995:177). The predominance of women in agriculture results in their worsening poverty situation because income returns in agriculture have declined since the early 1980s as a result of the unfavorable world prices and the general decline in the

demand for primary products. Moreover, the decline in family land holdings have meant that parents can no longer bequeath their children a viable resource. The declining incomes from land have meant that the quality of family life has declined. Education costs and health care costs have become unbearable, especially following the state's divestiture as a result of the structural adjustments programs mandated by the IMF and the World Bank. Families are therefore under considerable strain to limit their fertility. The declining fertility can therefore be seen as an eventual internalization of the costs of large families that have been transferred from the state to the family due to the poor economic circumstances that have left states without sufficient resources to sustain their early investments in the social sector (Lockwood 1995:15; Kelley and Nobbe 1990). As a consequence, families have no alternative but to shrink their fertility.

FAMILY PLANNING PROGRAMS

Family Planning has been credited for facilitating the declining fertility in Kenya. Family planning, however did not exist during the 1970s and the early 1980s when most people, and by extension the government, were resistant to its acceptance. The Kenyan situation was seen as hopeless and termed by some notable scholars as a "conspicuous failure" Frank and McNicholl (1987). Looking back at the history of family planning in Kenya, one cannot fail to see why the conspicuous failure came about. Kenya has the oldest family planning program in East Africa and one of the oldest in Africa (Khasiani 1988). The official family planning program was established in 1967, with private sector involvement having started even earlier in

the 1950s. Very little reduction in fertility came after the establishment of the national family program. Fertility continued to increase during the 1970s, reaching its peak of about 8.0 in 1979. The government's acknowledgement of failure of the family planning program in reducing population growth in Kenya was expressed in Mexico City during the 1984 World Population Conference. The Kenyan government argued that it erred in concentrating too much effort on supplying family planning services and concentrating on the medical and health aspects of family planning while neglecting demand side factors. Sufficient demand for the services was therefore necessary if the program was to succeed (Khasiani 1988). Sindiga (1985:7) judged that "... one of the world's most expensive family planning appears to have hardly made a dent on fertility". He therefore concluded that family planning programs failed because of lack of demand for family limitation. This conclusion reinforced the government's position.

The story, however, changed during the 1980s, the decade that has come to be known as the "Turning Point" in Kenya's fertility profile (Sec Kelley and Nobbe 1990). The first sign of fertility decline was noted after the 1984 Kenya Contraceptive and Prevalence Survey. Five years later in 1989, it was unquestionable that fertility decline in Kenya was underway. Fertility in 1984 KCPS was 7.7, and had declined to 6.7 by the time of the 1989 KDHS. Ever since, fertility has continued declining and the latest results from the 1998 KDHS survey show fertility having declined to 4.7 (National Council for Population and Development et al., 1998).

Behind these impressive fertility figures are impressive contraceptive prevalence rates. Contraceptive use has increased since the 1984 KCPS. Current use of contraception has increased from 10 percent in 1984 to 18 percent in 1989 to 27 percent in 1993 and 31 percent

in 1998. The most widely used methods are injections (12 percent), pill (9 percent), female sterilization and periodic abstinence, each being used by 6 percent of the women (National Council for Population and Development et al. 1998). Although the use of contraceptives differs according to the different socio-economic status of individuals, region and residence, strong evidence indicates a general increase in contraceptive use in the country as whole (National Council for Population and Development et al. 1998). This increase in contraceptive use, a number of scholars have argued, had led to the decline of fertility in Kenya.

A number of research projects have supported the view that the increase in use of modern contraceptive methods have contributed significantly to the fertility transition under way in Kenya. Hammarslough (1992:57) study in rural Kenya observed that a "growing availability of family planning services has accelerated the Kenyan fertility transition". He, however, cautions that although family planning availability is a necessary condition, it is insufficient to fully explain fertility transition in Kenya. Njogu and Martin (1991) study on contraception using the 1989 KDHS data found that on average women who had between one and six children had their birth intervals extended by 30 months, meaning that women were engaging in birth spacing.

Several factors can be attributed to the success of the Kenyan family planning program. First, Kenyan society has been changing very rapidly, especially starting during the 1980s. Massive expansions in education programs saw an increase in female enrolment. Although enrolment rates are declining today, the 1980 and early 1990s enrolment rate were well over 80 percent. The high education enrollments have meant an increased level of contraceptive use.

Second, the government has been committed to the success of family planning programs. In the 1960s and 1970s, there was very little government commitment to family planning programs. Family planning was seen as an imposition from the west by the establishment. Moreover the first President of Kenya, Jomo Kenyatta, did not see Kenya as having a population problem and, as a result of his attitude, all arms of the government did not see family planning as a priority item. But since 1978, when Daniel Moi took over the reigns of power, he provided strong leadership in the area of population policy. He spoke openly about the need to curb the rapid increase in population and this has in turn influenced government priorities. Budgetary allocations for family planning programs, especially within the Ministry of Health are now a routine matter. The rank and file of government workers are all involved in informing the public about the importance of family limitation. Equally important was the establishment of the National Council for Population and Development in 1982 which was charged with the responsibility of overseeing and coordinating government wide efforts of population programs. Thus, the political establishment provided a major boost to the family planning program in Kenya, hence its effect on fertility. As Warren Robinson (1992:455) put it "...instead of (family planning program) being as critics would have it 'over twenty years old' the present structure of service delivery is about six to eight years old". This statement by Robinson (1992) implies that, before the 1980s, family planning programs were not sufficiently organized to have met the kind of success being experienced now.

DISCUSSION AND CONCLUSION

As has been noted in the above discussion, fertility related processes take place and are shaped within a cultural context and are influenced by the socioeconomic conditions which determine the family's social goals and means of attaining these goals. It is also true that the interplay between socio-cultural environment and the changing socio-economic conditions in Kenya have influenced reproductive outcomes of families. Indeed, Kenya is having a land problem and perhaps families are making social adjustments to mitigate this problem by starting to use modern contraceptive methods in order to match the available land resources to their fertility. Of course, Kenya is suffering from the effects of economic decline emanating from outright mismanagement, corruption, high levels of inflation, world economic swings and the collapse of tourism industry due to insecurity. A vast majority of the Kenyan people are therefore poor and unemployed and this state would call for a redefinition of affordable fertility levels. No one can argue against the increased use of family planning facilities. The figures speak for themselves.

However, all these explanations about the reasons why fertility is declining in Kenya leave out something. They do not address the process of how the fertility decline is shaping up. We need to know if social interaction is contributing to the decline of fertility in Kenya. What is it that is moving Kenyans towards desiring fewer children? We can only think that the factors outlined above provide the incentive for the fertility decline. In and of themselves, these factors cannot lead to a fertility decline, or behavior change for that matter. To understand how fertility is declining, we have to understand the process and the dynamics of how people come to

problematize an issue that was not a problem before and how they start acting on it. This can only be done through the examination of social interaction. We all learn from others. We look over our shoulders to see what our neighbors, friends and relatives are doing and by so doing we are able to align ourselves to conform to what is going on around us. We learn what is going on in society by interacting with others within our immediate environment. On the basis of these interactions, we gauge what is going on in society. If it is a new behavior, probably one that was unacceptable before, a conclusion is reached based on discussions with friends, relatives, and neighbors that the current disposition of the society is changing.

In explaining fertility change in Kenya, I think that both structural factors and ideas matter. I think that what counts in the end is how people interpret the influence of these structural factors on their lives, and these interpretations ultimately have power to guide their behavior. For example, I suspect that people in the rural areas of Kenya are not much poorer today than they were in the 1940s and 1950s and in some ways they are probably better off (more people probably have radios, more probably have some sort of job to earn money). But it is not just the objective situation, what we as outside analysts can see, that matters, but what people make of it. It might well be that people consider themselves poorer today, perhaps, in part because there are more things that they want (baby powder, money to buy a radio, etc). I think part of their assessment that they are poorer today comes from talking with other people, from social interaction. They also need to be able to have alternative courses of action and to know that the course of action will bring about the desired end.

Another example is that in Kenya in the 1940s and 1950s, just like today, people

probably complained about being poor and tried to figure out how they could get better off. They probably concluded (as had their ancestors before them) that it would be useful to have many children or perhaps one would be "clever" and go to Nairobi and make some money and send it back home. In the 1970s and 1980s, it seems, the answer started to be different. People started to believe that, maybe, it would be better for their future to have only a few children, and to educate them so that they can get a good job and send money back. People apparently make these assessments on the basis of whom they talk to. What my field work interviews showed is that people are trying to figure out whether they would be better off with fewer or more children by talking with their friends, by observing someone who had many children and comparing them to someone who had few. The family planning program is also part of these discussions since the program is trying to persuade people that, if they have few children, they will be better off.

I therefore think that one needs to take both structural factors and ideas/meanings into account. I do not think that people figure out these things on their own, as if they were completely isolated. On the other hand, I doubt that they come to conclusions that are not related to their objective circumstances. This study therefore combines both structural factors and how people perceive themselves vis-a-vis what others are doing in understanding fertility decline in Kenya. Thus, concentrating on structural factors alone as the main factors leading to fertility decline in Kenya provides a partial story of what is really going. The social interaction (social networks approach) perspective promises to bridge this gap by helping investigate how social structure and individual agency come together to influence demographic behavior.

CHAPTER FIVE

CHARACTERISTICS OF RESPONDENTS AND DISCUSSION NETWORKS

INTRODUCTION

This chapter is divided into two sections. The first section discusses the general characteristics of the surveyed respondents such as age, sex, education, and contraceptive use. The section examines background information of the people surveyed by providing insights into the differences in the two populations with respect to these important characteristics.

The second section examines the characteristics of network members that are likely to be important in accelerating fertility decline in Kenya. Very few, if any studies, have investigated the characteristics of social networks in Africa, and Kenya in particular. This chapter therefore, seeks to address this gap by documenting the nature of family planning networks for men and women in two districts of Kenya: Kakamega and Murang'a. The contribution of this chapter to the family planning network literature is profound given that very little if any, information on such networks exist for these communities. Most importantly, this chapter compares family planning network characteristics of men and women within and between each district with a view to gleaning important characteristics that are likely to have implication for the fertility transition in Kenya.

CHARACTERISTICS OF RESPONDENTS

In this section, I look at the distribution of the data. I look at the implication of the selected demographic and socioeconomic status to see if the respondent's ideas about children

are changing. This is captured through assessing whether the respondents want more children or not, and the use of contraception. These two variables (want more children and contraceptive use) show the embrace of a small family idea. If respondents do not want more children, it means that they see large families as burdensome. This indicates the desire, therefore, to use contraception in order to have the desired number of children. Use of family planning, whether current or ever use, implies innovation in fertility management. People use family planning to space or limit fertility. If this situation is obtained in a community that did not think of controlling its fertility before using such efficient methods, then the adoption of the new behavior would be an innovation that has diffused from outside the system (Roger 1995).

Considering the general distribution of respondents within the sample, Table 5.1 reveals that most of the interviewed women in Kakamega are within the age range 20-34 age group. In Murang'a, women are almost equally distributed in all age groups except for those in the 15-19 age category who constituted a minuscule 2 percent. On the other hand, men in the Kakamega sample were also more or less equally distributed in the 20 plus age groups. The bulk of Murang'a men in the sample consisted of those aged 35-39 years followed by those over 50 years. The latter category constituted about 20 percent of the sample.

Table 5.1: Percent distribution of respondents by age.

	KAKAMEGA		MURANG'A	
AGE	WOMEN	MEN	WOMEN	MEN
15-19	6.4	1.5	1.9	
20-24	24.4	10.0	12.4	5.6
25-29	20.5	15.5	17.0	13.8
30-34	19.2	16.0	18.3	14.9
35-39	10.7	14.0	12.1	22.0
40-44	10.7	13.0	17.7	9.7
45-49	8.1	14.5	20.7	14.3
50+		15.5		19.8
Total	234	200	323	268

Table 5.2 and 5.3 shows ever and current use of contraception. In half of the Kakamega sample, both men and women reported having ever used contraception. In Murang'a, women reported the highest level of ever use of contraception in the entire survey at 72 percent while 57 percent of men reported having ever used contraception. In general, more than half of the respondent in the entire sample reported having ever used modern methods of family planning. Current use of contraception is slightly lower than ever use. This is expected because ever use of contraception includes people who once used contraception and may not currently be using at this point. For men and women in both districts, current use is within the 47 to 53 percentage range.

Table 5.2: Percent distribution of respondents by ever use of contraception.

	KAKAMEGA		MURANG'A	
AGE	WOMEN	MEN	WOMEN	MEN
Never Used	44.4	49.0	27.2	42.5
Ever Used	55.6	51.0	72.8	57.5
Total	234	200	323	268

Table 5.3: Percent distribution of respondents by current use of contraception

	KAKAMEGA		MURANG'A	
AGE	WOMEN	MEN	WOMEN	MEN
Not Using	52.6	54.0	47.1	47.4
Using	47.4	46.0	52.3	52.6
Total	234	200	323	268

Most people in both districts had between one and four living children although a substantial number of them had seven and more children. This could be explained by the sizable number of people in the sample who were more than 40 years of age. These results are found in table 5.4. Most people in the sample had primary level education in both districts (see table 5.5). This is typical of Kenyan society where most people in the rural areas, the focus of this study, go only up to primary level schooling. A substantial number of people in both districts also reported having had secondary and higher level education. This could also be mirroring the effects of the substantial education expansion in the country since independence in the early 1960s.

Table 5.4: Percent distribution of respondents by number of living Children

Living Children	KAKAMEGA		MURANG'A	
	WOMEN	MEN	WOMEN	MEN
0	8.6	10.0	4.7	10.1
1	17.5	13.5	10.3	8.2
2	20.1	15.5	13.7	18.7
3	12.0	15.5	17.4	16.4
4	12.8	10.5	15.5	16.8
5	8.6	11.0	7.1	9.3
6	8.6	6.0	7.4	7.8
7	12.0	18.0	23.9	12.7
Total	234	200	322	268

Table 5.5: Percent distribution of respondents by education

Education Level	KAKAMEGA		MURANG'A	
	WOMEN	MEN	WOMEN	MEN
No Education	15.4	7.0	13.9	4.5
Primary	45.3	53.5	40.9	51.5
Secondary	29.1	25.5	37.8	32.5
Post Secondary	10.3	14.0	7.4	11.6
Total	234	200	323	268

Table 5.6 shows that a higher percentage of both men and women in Kakamega desired to have another child. In Murang'a, on the other hand, more than half of the respondents, both men and women, did not want to have an additional child. With regard to the number of children preferred by the respondent, a majority of the respondents said that they would prefer to have 3-4 children. The percentage was highest in Murang'a with 58 percent and lowest in Kakamega with 42 percent, see table 5.7.

Table 5.6: Percent distribution of respondents by want another child

	KAKAMEGA		MURANG'A	
Want Another child	WOMEN	MEN	WOMEN	MEN
No	44.7	44.9	57.8	59.4
Yes	55.3	55.2	42.2	40.6
Total	228	194	282	256

Table 5.7: Percent distribution of respondents by preferred number of children

Preferred	KAKAMEGA		MURANG'A	
	WOMEN	MEN	WOMEN	MEN
0	0.4			
1-2	15.8	20.5	29.4	30.2
3-4	53.8	42.0	46.1	57.8
5-6	20.1	21.0	9.0	5.6
7+	9.8	16.5	15.5	6.3
Total	234	200	323	268

Relating age and ever use of contraception, I realize that Kakamega women progressively reported higher percentages of ever use of contraception from ages 25-49. Men in Kakamega on the other hand reported higher percentage of users of contraception compared to those who have never used in the age groups 25-29 and 40-44. Those in the age group 30-34 reported an equal number of those who had ever used and those who had never used contraception. In Murang'a, women reported much higher proportion of having ever used family planning in all age groups except 15-19. This is slightly different from Murang'a men aged 30-49 who reported higher percentage of using family planning, see table 5.8 for results.

Table 5.8: Respondents percent distribution by age and ever use of contraception

Age	KAKAMEGA				MURANG'A			
	Women		Men		Women		Men	
	Never used	Used	Never Used	Used	Never Used	Used	Never Used	Used
15-19	73.3	26.7	66.7	33.3	66.7	33.3		
20-24	59.7	40.4	55.0	45.0	37.5	62.5	73.3	26.7
25-29	41.8	58.3	35.5	64.5	10.9	89.1	62.2	37.8
30-34	33.3	66.7	50.0	50.0	10.2	89.8	27.5	72.5
35-39	36.0	64.0	53.6	46.4	10.3	89.7	27.1	72.9
40-44	24.0	76.0	42.3	57.7	42.1	57.9	30.8	69.2
45-49	47.4	52.6	48.3	51.7	43.3	56.7	44.7	55.3
50+			58.1	41.9			52.8	47.2
Total	104	130	98	102	88	235	114	154

With regard to current use of contraception as shown in table 5.9, Kakamega women in the age group 25-39 reported a higher percentage of current use of contraception compared to the other age groups. This compares with Murang'a women aged between 20-39 who reported a much higher percentage of current use of family planning. Kakamega men aged 15-29 and 40-44 on the other hand reported a higher percentage of current use of contraception. Men in Murang'a start using contraception later in life compared to both men and women in Kakamega and women in Murang'a. Most of the men in Murang'a who reported currently contracepting are in the age range 30-44.

Table 5.9: Respondents percent distribution by age and current use of contraception

	KAKAMEGA				MURANG'A			
	Women		Men		Women		Men	
Age	Not Using	Using	Not Using	Using	Not Using	Using	Not Using	Using
15-19	66.7	33.3	100.0	0.0	83.3	16.7	0.0	0.0
20-24	63.2	36.8	50.0	50.0	40.0	60.0	80.0	20.0
25-29	43.8	56.3	45.2	54.8	25.5	74.6	62.2	37.8
30-34	42.2	57.8	53.1	46.9	22.0	78.0	35.0	65.0
35-39	40.0	60.0	57.1	42.9	12.8	87.2	33.9	66.1
40-44	52.0	48.0	42.3	57.7	77.2	22.8	30.8	69.2
45-49	73.7	26.3	58.6	41.4	82.1	17.9	50.0	50.0
50+	0.0	0.0	64.5	35.5	0.0	0.0	58.5	41.5
Total	123	111	108	92	152	171	127	141

Table 5.10 shows that among younger respondents, both men and women expressed a wish to have another child. This is expected because they are basically starting the family building process. People attain their desired family size as they age. Those who expressed the highest desire to have another child were aged between 15-24. After this age, the desire to have another child drops.

Table 5.10: Respondents percent distribution by age and want another child

	KAKAMEGA				MURANG'A			
Age	WOMEN		MEN		WOMEN		MEN	
	No	Yes	No	Yes	No	Yes	No	Yes
15-19	6.7	93.3	0.0	100.0	33.3	66.7	0.0	0.0
20-24	15.8	84.2	10.0	90.0	23.1	76.9	7.1	92.9
25-29	36.2	63.8	16.1	83.9	32.7	67.3	19.4	80.6
30-34	50.0	50.0	34.4	65.6	70.2	29.8	50.0	50.0
35-39	76.0	24.0	42.9	57.1	62.2	37.8	57.9	42.1
40-44	82.6	17.4	44.0	56.0	77.3	22.7	68.0	32.0
45-49	88.2	11.8	75.9	24.1	84.1	15.9	78.9	21.1
50+	0.0	0.0	92.3	7.7	0.0	0.0	95.7	4.4
Total	102	126	87	107	163	119	152	104

Table 5.11 shows the relationship between education and having ever used contraception. In general, those who reported to have had secondary and higher level of education had the highest level of ever use of contraception. Those who had no education reported the highest percentage of those who had never used family planning. Higher levels of education are associated with higher levels of ever use of contraception in both districts. Table 5.12 shows that at all levels of education, there is little difference between those currently using and those not using family planning. Murang'a women with secondary and higher schooling were the exception. More than seventy percent reported currently using contraception. This is possible due to the fact that Murang'a is generally a well developed area, further more, it is near Nairobi, the capital city, and therefore likely to reflect higher levels of current use of contraception because of the urban influence.

Table 5.11: Respondents percent distribution by education level and ever use of contraception

Education	KAKAMEGA				MURANG'A			
	Women		Men		Women		Men	
	Never	Used	Never	Used	Never	Used	Never	Used
None	41.7	58.3	71.4	28.6	62.2	37.8	58.3	41.7
Primary	50.0	50.0	51.4	48.6	28.8	71.2	40.6	59.4
Secondary	38.2	61.7	45.1	54.9	14.7	85.3	43.7	56.3
Post Secondary	41.7	58.3	35.7	64.3	16.7	83.3	41.9	58.1
Total	104	130	98	102	88	235	114	154

Table 5.12: Respondents percent distribution by education level and current use of contraception

Education Level	KAKAMEGA				MURANG'A			
	Women		Men		Women		Men	
	No	Using	No	Using	No	Using	No	Using
None	58.3	41.7	71.4	28.6	88.9	11.1	75.0	25.0
Primary	56.6	43.4	56.1	43.9	56.1	43.9	44.9	55.1
Secondary	42.7	57.4	51.0	49.0	27.1	72.9	47.1	52.9
Post Secondary	54.2	45.8	42.9	57.1	20.8	79.2	48.4	51.6
Total	123	111	108	92	152	171	127	141

Table 5.13, shows that education does not have a consistent effect on whether the respondent wants another child or not. I would have expected that the higher the education, the lower the percentage of people that would want to have another child. Apparently, education does not influence whether the respondent will want another child. Whether the couple or respondent will desire to have another child seems to be a function of how many children they already have and not the level of education. Attaining higher levels of education usually extends

the time of marriage and this could explain why people with secondary and higher education desired to have another child because they started family building late compared to those falling in the other education categories.

Table 5.13: Respondents percent distribution by education level and want another child

Education Level	KAKAMEGA				MURANG'A			
	Women		Men		Women		Men	
	No	Yes	No	Yes	No	Yes	No	Yes
None	73.5	26.5	91.7	8.3	82.1	18.0	70.0	30.0
Primary	41.2	58.8	46.6	53.4	58.0	42.0	67.4	32.6
Secondary	39.7	60.3	31.4	68.6	55.1	44.9	53.6	46.4
Post Secondary	33.3	66.7	42.9	57.1	41.7	58.3	36.7	63.3
Total	102	126	87	107	163	119	152	104

In general, those respondents who reported that they had once left their home districts for more than six months since marriage, had a higher level of ever and current use of contraception compared to those who had never migrated. People who have migrated are likely to be much more knowledgeable about contraception. They are likely to have interacted with people from different places from whom they learn about the utility of using contraception (See table 5.14 and 5.15 for results). Table 5.16 shows the association between migration and whether the respondent desired to have another child or not. The table shows the expected results. Both men and women in both districts who had experienced a migration, with exception of Kakamega men, reported a higher percentage of not desiring to have another child. This

confirms that the family size for those who have migrated is achieved earlier than those who have not migrated.

Table 5.14: Respondents percent distribution by migration and ever use of contraception

Lived Outside District	KAKAMEGA				MURANG'A			
	Women		Men		Women		Men	
	Never	Used	Never	Used	Never	Used	Never	Used
No	48.0	52.1	53.1	46.9	29.1	70.9	52.8	47.2
Yes	35.0	65.1	46.2	53.8	20.0	80.0	35.6	64.4
Total	104	130	98	102	88	235	114	154

Table 5.15: Respondents percent distribution by migration and current use of contraception

Lived Out of District	KAKAMEGA				MURANG'A			
	Women		Men		Women		Men	
	No	Using	No	Using	No	Using	No	Using
No	56.1	43.9	55.6	44.4	47.7	52.3	57.4	42.6
Yes	42.9	57.1	52.9	47.1	44.6	55.4	40.6	59.4
Total	123	111	108	92	152	171	127	141

Table 5.16: Respondents percent distribution by migration and want another child

Lived Out of District	KAKAMEGA				MURANG'A			
	Women		Men		Women		Men	
	No	Yes	No	Yes	No	Yes	No	Yes
No	39.2	60.8	40.5	59.5	52.5	47.5	54.8	45.2
Yes	59.7	40.3	47.8	52.2	77.1	23.0	62.5	37.5
Total	102	126	87	107	163	119	152	104

CHARACTERISTICS OF FAMILY PLANNING DISCUSSION NETWORKS

This section provides a descriptive map of features of social networks in Murang'a and Kakamega Districts. It presents results of network size, kin composition and heterogeneity of discussion networks of family planning in Kenya. Before we discuss how the networks influence behavior, it is important to first provide a descriptive benchmark that will then flow into the next chapter which deals with statistical inference. Network data is important because it describes the social context within which interpersonal relations are nurtured.

Personal relationships be they, with children, spouses, friends, neighbors, relatives are important for the well being of all humans. By virtue of being the most social animals, human beings crave recognition, love, warmth, encouragement, all of which can only be offered through interpersonal relationships. Personal relationships also show how well a person is integrated within society. How strongly a society is integrated and the ramifications of loose integration have been explored since the dawn of Sociology. Durkheim (1897), one of the founding fathers of sociology, grappled with these issues of personal relationships. In his famous book on Suicide, Durkheim notes that poor integration in society affects a person's well being and has the effects of leading to higher Suicide rates. Contrasting Jews and Protestants, he found Jews to have lower suicide rates because of the strong integration in their community while Protestant's had higher suicide tendencies because their community is highly individualistic and characterized by poor community ties.

Since the 1960s, studies have revealed the importance of social networks in the well being of people. A positive association has been found between the social support derived from

networks with their well-being and health (Willis 1985). These interpersonal interactions provide important resources. They not only provide support but also provide instrumental, emotional and informational resources and appraisal. It has been found that the more people someone has in their networks, the better their well-being. This means that someone who interacts with many friends and relatives has a higher pool of people from whom they can get support and advice (Burt 1987).

Although individuals are influenced by others, groups they belong to, and the society in general, much mainstream demographic research pays very little attention to the importance personal relationships play in shaping peoples' behavioral outcomes. Much of the demographic research focuses on how personal characteristics influence an individual's behavior. As such, the social context which shapes behavior remains largely unknown. Social network analysis has therefore been developed to bridge this gap. The social network approach takes into consideration an individual's characteristics and the relationships with others who may be friends, relatives, neighbors or just acquaintances in assessing changes in behavior. Social network analysis therefore engages both structure and agency in understanding what is going on within society.

In this chapter, I discuss the various family planning network characteristics of both Murang'a and Kakamega districts, identifying their similarities and differences if any. I also discuss how these characteristics are likely to be important in the transition process currently underway in Kenya.

Before I proceed, I would like to make a point about how to interpret the tables. For

most of the tables, the value column contains numbers with percentages. The percentages show how many of the network members have the characteristic in question. The score over the named alters (network members) is then averaged giving a proportion that is subsequently converted into a percentage. A zero percent would for example mean that none of the named network members have the characteristic in point. A fifty percent value would mean that half of the network members reported had the characteristic in question and one hundred percent means that all the network members reported had the desired characteristics. For example, if the variable in question is gender of the network member, and assuming that the variable is coded one for men and zero for women, then a value of one hundred percent would mean that all the network members were men while a value of zero means none of the network members are men implying that all the network members are women. The t-test column tests whether the differences in the means between the various columns is significant or not at the 0.05 percent level. An expression such as $1 > 3$ means that the mean of the value in column one is significantly greater than the mean value in column 3. A "NO" following such an expression in the t-test column denote that the means are not significantly different.

Table 5.17 below shows network size, defined by the number of people who were named in response to the question "How many people have you discussed FP with? The table reveals that, compared to men, women in each district talked on average to a significantly higher number of people about family planning than men. Comparing across districts, women and Men in Kakamega district talked on average to more networks about family planning than Murang'a Men and women. However, an examination of the percentages of how many

network members the respondents spoke to reveal that a sizable percentage of both women and men in both districts did not chat about family planning with anyone. Evidently, a higher percentage of men in both districts reported not having discussed family planning matters with anyone compared to women. This is expected because a number of men still consider talking about family planning inappropriate for cultural reasons. Remember that fertility outcomes in Africa have always been controlled by men who, to a large extent, were opposed to its control. On the other hand, this large proportion could be a reflection of the individual way family planning activities are still held in Kenya. A number of people do not want to admit that they talk about family planning, lest it makes them look bad in the eyes of society. Family planning to some people is still seen as a foreign imposition and as such a number of people believe that using it will be a betrayal of their cultural obligation to have many children. However, a majority of people reported having talked to someone about family planning. Talking about family planning shows that the normative structure that hitherto governed reproduction is waning.

Table 5.17: Percentage by Network size

Value	Kakamega		Murang'a		Gender		District		t-test
	1 Women	2 Men	3 Women	4 Men	5 Women	6 Men	7 Mur*	8 Kak*	p ≤ 0.05
0	23	34	18	28	20	31	22	28	1>3
1	14	10	16	16	16	13	16	12	2>4
2	24	18	28	28	27	24	28	21	1>2
3	12	12	24	16	19	14	20	12	3>4
4	6	8	7	9	7	9	8	7	5>6
5+	20	18	6	2	12	9	5	19	7<8
Mean	2.76	2.32	2.26	1.75	2.47	1.99	2.03	2.55	
Std D.	1.78	1.88	1.40	1.40	2.91	2.12	2.19	3.03	
N	234	200	322	268	556	468	590	434	

Key: *Mur- Murang'a; Kak- Kakamega

Network density is a measure of the degree to which the network partners named by a respondent know each other. The importance of the network density is that it shows the likelihood that a new piece of information will percolate into a circle of friends, thereby having the potential effect of accelerating behavior change within the networks. I did not have a question in my questionnaire that asked whether the network members, also known as alters, know each other. I therefore, devised a proxy that can be used to measure density. I use the variable that asked where the network stays. Because in rural Kenya people know each other over a large geographic spread, I assumed that people who stay in the same compound, same village and same sub-location know each other well, while networks staying in the same location, elsewhere in the district, or elsewhere in the country might not know each other. I realize that there could be some people who reside outside the sub-location who know each

other well but I believe there are not many. Using this proxy measure, I can then calculate the density measure as follows.

There are up to four alters for each respondent. I labeled these people, p1, p2, p3, and p4. In order to create density, I need a variable that describes whether, for every possible combination of these people, would know each other. The density of the alters is given by

$$d = \frac{\text{\# of alter pairs who know each other}}{\text{total number of alter pairs}}$$

Since there are four alters for each person, there are $N(N-1)/2=6$ possible pairings. To compute density we have to know whether, p1 knows p2, p1 knows p3, p1 knows p4, p2 knows p3, p2 knows p4, p3 knows p4. That is, consider every possible combination. To actually compute a density score, we need to create six variables such as, p1p2, p1p3, p1p4, p2p3, p2p4, p3p4. I coded each of these 1, if they live in the same sub-location or village and 0, otherwise. These are the set of variables that are used to compute network density. Specifically, the density score for each individual is the average of these six variables.

For example, assuming persons 1, 2, and 3 are all acquainted, but none of these people know person 4, the variables would then be, p1p2=1, p1p3=1, p1p4=0, p2p3=1, p2p4=0, p3p4=0. The density is then given by $(1+1+0+1+0+0)/6=0.5$, that is, half of the people in the network who might know each other actually know each other. The density measure ranges from zero where none of the networks members (alters) know each other, to one where all the alters know each other implying a dense network. The density measure ranges from zero where none of the networks members (alters) know each other to one where all the alters know each other implying a dense network.

We would expect dense networks, where network members know each other, to

consist of people who share more or less the same backgrounds characteristics, that is, age, education, and other individual indicators. We would expect also that these people spend more time together, talk to people with the same world views, and generally do things with people who are like themselves. On the other hand, we would expect less dense networks, where network members do not know each other, to consist of people with different social and economic outlooks. To this extent, people involved with less dense networks are likely to be exposed to greatly varied ideas and information that would communicate behavior change.

Table 5.18 below shows network density. Both women's and men's networks are substantially dense. This means that most of the alters know each other. Elizabeth Bott (1972) suggests that dense networks are to be found among people who have stayed together in the same locale for a protracted period of time. In this situation people know each other. This is the case in rural Kenya where the traditional social system is based on clans with a territorial based exogamous group tracing their descent patrilineally from a common ancestor. People within a locale are therefore related in some way, and consequently know each other. High network density could also be a reflection of respondent bias of naming people who are close and in their immediate environments rather than people they encounter once in a while and who might be living far away. Also, people might not remember someone they probably met only once at the market or flour mill and with whom they shared a conversation about family planning. The high density might therefore mask the true extent of geographic spread of an individuals networks. It is therefore expected that these dense networks will militate against behavior that is likely to be innovative. Granovetter (1973) introduced a concept of "strength of weak ties" to

denote the importance of loose ties in diffusion of innovative information. Granovetter notes that dense networks are formed by people who are close-knit (Valente 1995) and thus share the same world view about almost anything. This, as a result, makes it difficult for any new information to be introduced in the networks. On the other hand, less dense networks allow new information into the networks because people interact with others not in their immediate circle of intimates who are likely to carry new information and ideas. Granovetter's strength of weak ties seems not to operate in the surveyed districts because apparently most people talk to their intimates, those who know one another.

An equally plausible argument points out that innovations are likely to spread more rapidly within groups of people that have social networks that are tightly-knit (Valente 1995). Chances are that the two arguments work together in reinforcing each other. Close-knit networks mean that the intensity of interaction is high and therefore a high degree of trust amongst the networks exists. Such networks are therefore the ones that ultimately provide legitimacy to accept or discard the use of a new technology or embrace new ideas. On the other hand, "weak ties" can be looked at as conduits through which new information and ideas flow. I believe that the component of "outsiders" that networks need to interact with in order to infuse new information and ideas does not necessarily need to be large. To this end, network densities in the two districts indicate close-knit networks that are linked to a limited set of "weak ties" that are likely to be critical for introduction of innovations in knowledge, attitudes and behaviors.

An examination of within district variation in density shows that men's networks are

substantially more dense than women's networks. This is also true when gender differences are considered, men in general talk to people like themselves compared to women. Interestingly, women in Kakamega district have the least dense networks. This could be one of the reasons why Kakamega district has experienced a higher magnitude fall in fertility compared to Murang'a. This could lend credence to the argument that the role of social interaction is likely to be more pronounced in communities that are just beginning to experience fertility decline compared to those that have a longer history (Rosero-Bixby and Casterline 1993).

Table 5.18: Network Density

Value	Kakamega		Murang'a		Gender		District		t-test p≤0.05
	1 Women	2 Men	3 Women	4 Men	5 Women	6 Men	7 Mur*	8 Kak *	
<0.25	49	34	37	34	42	34	36	43	1<3
0.25-0.49	5	3	8	3	6	3	6	4	2<4
0.50-0.74	6	8	4	1	5	4	3	7	3<4
>0.74	41	55	58	62	47	59	56	47	1<2
Mean	0.46	0.61	0.57	0.47	0.52	0.62	0.59	0.52	5<6
N	175	127	263	191	438	318	454	302	7>8

Key: *Mur- Murang'a: Kak- Kakamega

Table 5.19 below shows who the network members talked with. The question asked, "Is ____ a confidant, just a friend, or an acquaintance?" This variable measures the extent of closeness between the respondents and network members. I assigned a value of 1 to each confidant, 0.5 for each friend, and 0 for each acquaintance. I then averaged the composite

measure over the number of network members reported by each respondent. The higher the average score on this measure, the closer the respondent is to the networks members, that is, the more likely the networks are confidants as opposed to being acquaintances.

The responses reveal the sensitivity of family planning discussions in Africa. Both women and men, reported talking more with confidants and friends about family planning matters. Murang'a women tended to prefer talking to confidants than friends and acquaintances. On the whole, most women and men did not talk with acquaintances. The results reveal the importance respondents attach to trust in talking about family planning. People talk to people they can trust. To this extent, family planning apparently is not a topic about which one will talk to anyone. As one woman I talked to noted;

“There are those women who like it (family planning) and those who do not. If you go to a woman and start talking about “family” she might feel offended. So the person must be someone you have something in common with and someone you know well.” Mmbetsa, Kakamega District, Western Province.

The quote demonstrates that women are very careful about whom they talk with. This is a selective process where only very close friends get to discuss family planning. Research has shown that there are some instances where women use family planning methods without their husband's knowledge (See Watkins et al. 1997; Gwako 1997; Silberschmidt 1991). For fear of being discovered by their husbands and other relatives who are opposed to such action, they choose to talk only to those they can trust. But women also cited cases where family planning

discussions popped up spontaneously as they discussed other issues. For example, if a child died in the community during birth because the mother was too weak to go through the delivery process because of physical exhaustion, they would gossip about how she could have avoided the situation by using family planning. Or while pitying a woman who “diarrheas” (this was a common phrase used by women in western Kenya to denote women having children very closely to each other) children, other women would lament why she is not using contraception, given the difficulty of taking care of children. An interesting point that the table raises is the high percentage (13%) of men in Kakamega that reported talking with acquaintances. Although this might seem small, it is significant especially when considering that interacting more with people who obviously are not part of your intimate group is likely to generate new information and ideas. This is likely to be a source of new information and ideas to be debated within the close-knit social network.

On average, women spoke to people they feel closer to compared to men and Murang’a residents spoke to people they are close to compared to Kakamega. The difference between Murang’a and Kakamega is significant because this could be one of the explanation why fertility has started declining in Kakamega, a district that is fairly traditional compared to the more progressive and developed Murang’a.

Table 5.19: Relationship of respondent to network partner

Value	Kakamega		Murang'a		Gender		District		t-test $p \leq 0.05$
	1 Women	2 Men	3 Women	4 Men	5 Women	6 Men	7 Mur*	8 Kak *	
<0.34	8	13	2	3	4	7	2	10	1<3
0.35-0.67	45	48	23	38	42	42	30	46	2<4
0.68-1.00	47	39	75	59	51	51	68	44	3>4
Mean	2.39	2.26	2.73	2.56	2.59	2.44	2.66	2.34	1>2
Std.D.	0.63	0.67	0.49	0.55	0.57	0.62	0.52	0.65	5>6
N	174	126	264	190	438	316	454	300	7>8

Key: *Mur- Murang'a: Kak- Kakamega

Table 5.20 represents response to the question “Is _____ much older than you, an age mate or an acquaintance?” The question establishes the type of people who constitute the respondent’s network in terms of age. If talking about family planning is cutting across ages, then this is likely to have implication for the ongoing fertility transition. This would mean that the age long tradition of exclusive age sets capable of transmitting significant but one sided information is disintegrating. Talking to different age groups has the potential effect of introducing different world views to the respondents. Talking to older people provides a certain view about using family planning and so is talking to younger people. For those who reported talking to older people were given a score of 1, those who spoke to agemates were given a score of 0.5 and lastly those who reported talking to much younger people were given a score of 0. The results were then averaged over the number of network members reported by the respondent.

Clearly, women in Kakamega tended to talk more with older networks compared to their age mates or younger networks. In Murang'a, women talked equally to both older networks and age mates. This contrasts with men's networks who talked more with age mates about family planning compared to networks that were older or younger. On the whole, fewer women and men had networks that were younger than themselves. This could be because of the way African society is structured. African society consists of age sets that comprise people who underwent a common life course event together such as circumcision, schooling and year of birth. These groups therefore constitute friendship or talking groups.

Family planning is still a sensitive issue and is therefore, a matter that can only be discussed with friends who are age mates or for men, those who are older. Talking to a younger person about family planning will be construed as culturally inappropriate although, as the data shows, a small number of people seem to be breaking this trend. The fact that there are some older people talking about family planning with younger people is crucial in understanding the ongoing fertility transition. The young people are likely to be motivated to embrace family planning as a result of these conversations and are likely to tell their friends about the discussion and the views about family size and use of contraception of the older generation. It is possible that the conversations between older and younger people could spread negative information about family planning, but then the young people are unlikely to heed what the old people are telling them because they are more educated and informed than the old. The important fact here, however, is that there is some cross-age communication about family planning which shows that Kenyan society is changing in ways unthinkable in the past.

Women, on average, interacted more with networks that are older compared to men.

Interactions among women are less marked by divisions compared to men's. A sense of belonging often develops among groups of people that dominant members of society consider underdogs. The sense of togetherness arises from the treatment they receive from other members of society and the various problems they experience as a group. The reason why women do not talk about family planning issues with younger women, is aptly summarized by one woman I talked to. She said:

They have said (meaning health workers) that if you take family (this is the characteristic short form of family planning) while young with lots of eggs on your back is not good, because it spoils. If young people who still have many eggs use family planning that is not good" Mmbetsa, Kakamega District, Western Province.

The fear of not having children in Africa is strong and certainly, as the above quote implies, cannot be wished on anyone. Therefore, this fear could be one of the reasons why women limit the incorporation of younger women in their family planning networks.

Table 5.20: Percent of family planning conversation partners with age category of network in relation to respondents

Value	Kakamega		Murang'a		Gender		District		t-test p≤0.05
	1 Women	2 Men	3 Women	4 Men	5 Women	6 Men	7 Mur*	8 Kak *	
<0.34	12	19	17	17	15	17	17	15	1>3
0.35-0.67	36	50	42	48	40	49	45	42	2<4 NO
0.68-1.00	52	31	41	35	45	34	39	43	3>4 NO
Mean	2.39	2.13	2.25	2.18	2.30	2.16	2.22	2.28	1>2
Std.D.	0.70	0.70	0.72	0.70	0.72	0.70	0.71	0.71	5>6
N	177	124	264	192	441	316	456	301	7<8 NO

Key: *Mur- Murang'a; Kak- Kakamega

This study also asked what gender the network was to establish if cross-gender discussions took place. This variable was coded zero if the respondent talked to a woman and one if talked to a man. Table 5.21 shows clearly that gender division in talking exists in Kenya. Ninety one percent and 88 percent of women in Murang'a and Kakamega respectively reported talking only to women) about family planning. On the other hand, 61 percent and 82 percent of men in Kakamega and Murang'a reported talking to men only (that is all their network partners (the value 100%) were men). These findings confirm my understanding of the Kenyan society where there is rarely cross gender talk especially of such a secretive issue as family planning. Apart from the household sphere, where women and men interact, superficially though, their spheres of interaction and operation are very different. Women's interactions are in areas where other women are to be found and these include water collecting points, forests where they get firewood, at grinding mills, or at the hospital. On the other hand, men meet and

talk while engaging in such activities as selling livestock and other hardware materials and in beer drinking places. The circles of interactions between men and women do not therefore converge. Even if they do, distinct interaction patterns emerge where women gravitate towards women and men do the same. Even though an overwhelming majority of men talked to fellow men about family planning, a sizable proportion, 12 percent, reported talking to only women. This trend means that family planning is slowly commanding a place in the inter-gender communication, a positive development that is likely to enhance the fertility transition already underway.

Table 5.21: Percent of gender of family planning conversation partners

Value	Kakamega		Murang'a		Gender		District		t-test p≤0.05
	1 Women	2 Men	3 Women	4 Men	5 Women	6 Men	7 Mur*	8 Kak*	
0	91	17	88	8	89	12	54	60	1<3 NO
25%	4	2	2	1	3	1	2	3	2<4
33%	2	1	2	1	2	1	2	1	3<4
50%	2	9	2	5	2	6	3	5	1<2
67%	0	2	0	3	0	2	1	1	5<6
75%	0	9	0	2	0	4	1	4	7>8
100%	2	61	5	82	4	73	37	27	
Mean	0.05	0.74	0.08	0.87	0.07	0.82	0.41	0.33	
Std D.	0.17	0.38	0.24	0.30	0.21	0.34	0.47	0.44	
N	179	128	264	190	443	233	454	307	

Key: *Mur- Murang'a; Kak- Kakamega

To find out whether the respondents talked to relatives (kin) or non relatives about

family planning, the survey asked about the respondent's relationship with the network member. Anyone who was reported to be a relative such as brother, sister, mother, father, uncle, aunt or any other relative was coded 1 while others were coded 0. I, then, averaged the scores over the number of networks members reported. Result are reported in table 5.22 below.

Compared to Kakamega district, more men and women in Murang'a reported that they do not talk about family planning to their relatives. Fifty percent of women and seventy eight percent of men from Murang'a reported none of their network partners was a relative. This contrasts to Kakamega district where only 32 percent of women and 40 percent of men reported having no kin networks. On average women (50%) and men (40%) in Kakamega tended to speak more to kin about family planning matters than respondents from Murang'a.

Composition of kin in the networks is important because usually the greater the number of kin, the more traditional the network outlooks are. Normally, strong attitudes towards large families are embedded within kin network's. Caldwell (1987:412) notes from his research in Nigeria that women who tried to use modern contraception were often chastised for their behavior, often labeled as sinful by their kin. This negative labeling tended to discourage use of modern contraceptive methods. On the other hand, people with networks composed of non kin members are likely to be exposed to climates of opinion that are different and innovative. Non kin are therefore likely to be supportive in encouraging behavior change. I would, therefore, expect that people with predominantly kin networks to be less likely to show change in their traditional beliefs and consequently be less likely to use family planning than those with non kin networks.

Table 5.22: Percentage of networks that are Kin that the respondents talk with about Family Planning

Value	Kakamega		Murang'a		Gender		District		t-test
	1 Women	2 Men	3 Women	4 Men	5 Women	6 Men	7 Mur*	8 Kak*	
0	32	40	50	78	43	62	62	35	1>3
25%	4	8	3	4	4	5	4	6	2>4
33%	2	3	10	3	7	3	7	3	3>4
50%	20	17	19	7	19	11	14	19	1>2
67%	5	9	5	2	5	5	4	7	5>6
75%	4	3	2	1	3	2	1	4	7<8
100%	32	20	11	6	19	12	9	27	
Mean	0.50	0.40	0.29	0.13	0.38	0.24	0.22	0.46	
Std D.	0.40	0.39	0.34	0.28	0.38	0.35	0.33	0.40	
N	180	130	264	192	444	322	456	310	

Key: *Mur- Murang'a; Kak- Kakamega

This study was also interested in knowing if people talk with others not like themselves. These include people in authority, professionals, and other important people in the community. The purpose of this section is to confirm the scope of family planning discussions. The manner in which the survey questions were posed in eliciting network partners could have biased the respondents to give only names of those people they are constantly in contact with in their daily routines. But it is also possible that once in a while, the respondents talk to others not in their immediate circles and these could include people different from them in terms of education, income, status, age, generation etc. A stratification system exists in these societies and thus it would be instructive to note if people cross some of these boundaries in matters of family planning. The respondents were asked if they had talked to the following people about family

planning; Community Based Distributors of contraceptives (CBD), nurse (denoting a health worker), teachers/clergy, chief/elder and workmate . Almost half of the men in this study reported that they had talked to a CBD, a nurse, teacher/clergy or their spouse and chief/elder or their spouse while 53 percent reported that they had talked to their workmate about family planning. This indicates that, besides talking to people within their immediate interpersonal environments, their talk is extended to others not immediately connected to them. It is, however, possible that these others constitute part of their immediate interpersonal environment. The current data is therefore limited in sieving out this possibility. On the other hand, women reported a lower level of interaction, CBD (39%), Teacher/Clergy and their spouses (32%), and Chief/Elder and their spouses (20%) and workmate (33%) compared to men. But more women reported having talked to a nurse (69 percent) than men. This is interesting because it is CBDs that we would have expected to feature prominently amongst women because they are supposed to be members of the community and to reach out to every woman in their areas of operation. A plausible explanation of this discrepancy is that probably women thought that CBDs are indeed nurses because this is how most of them are referred to in the rural areas.

Table 5.23 below shows the socioeconomic status of conversational partners. I considered people with a grade cow³ as being of a higher socioeconomic status than those without. Clearly, networks in western Kenya are poorer compared to those in Murang'a district. About 80 percent of those interviewed in Kakamega for both men and women had no

3

Owning a grade cow instead of the traditional Zebu means that you get more milk which you can sell to neighbors to earn a substantial income.

network partners who owned a grade cow. This proportion was a little lower in Murang'a where about 50 percent and 65 percent of women and men conversation partners did not own a grade cow. Though the proportion of friends owning grade cows looks low in both districts, Murang'a has a larger proportion of both women and men who talked with members of households considered to be of a high socioeconomic status.

The initial investments in procuring a graded cow is high, showing that to afford it families have to first and foremost be able to raise the initial capital. The cost of taking care of these cows is also high. They need extra attention, special fodder, and are vulnerable to all kinds of diseases. Families that can manage to keep these cows reap some returns. They sell milk and milk products to their neighbors and other consumers such as hotels, thereby earning income and raising their economic status. Most households in Kakamega are still quite traditional, keeping the traditional breed of cows which produce very little milk per day, hardly enough to meet the family's daily requirements, let alone have some for sale. In Kakamega, most people therefore interact with people of low socioeconomic background compared to Murang'a. No wonder Murang'a district was one of the forerunners of the fertility transition in Kenya. Conversing with people of a higher socioeconomic status is likely to infuse "modern" values to those in the lower sections of society. Higher status people are likely to be well educated, widely traveled with generally modern outlooks that are likely to limit the number of children they might want. It could as well be that those in low socioeconomic status look up to the better off in society for some kind of leadership in adopting innovations. Those in higher socioeconomic status are likely to popularize the use of such innovations as use of modern

family planning methods. I am not arguing that people from lower status are pawns, that they only respond to the trends set by the better off in society. On the contrary, I argue that the more people there are of a higher socioeconomic status in the community, the more they are likely to be leaders in adoption of an innovation than in a society wholly composed of poor people who would most likely be governed by strict traditional norms unresponsive to changing circumstances.

Table 5.23: Percentage of network members who have Grade cows

Value	Kakamega		Murang'a		Gender		District		t-test
	1 Women	2 Men	3 Women	4 Men	5 Women	6 Men	7 Mur*	8 Kak*	p≤0.05
0	77	81	53	65	44	48	31	69	1<3
25%	3	3	3	2	3	3	1	6	2<4 NO
33%	2	3	7	5	5	4	5	4	3>4 NO
50%	10	4	7	8	9	9	8	10	1<2 NO
67%	1	1	7	2	5	3	4	3	5>6 NO
75%	1	1	2	1	3	2	2	2	7>8
100%	5	7	20	18	32	31	48	6	
Mean	0.13	0.12	0.33	0.25	0.44	0.41	0.59	0.18	
Std D.	0.27	0.28	0.40	0.39	0.44	0.44	0.44	0.30	
N	177	120	260	191	430	303	444	289	

Key: *Mur- Murang'a: Kak- Kakamega

Informal and formal organizations have been found to be important in shaping peoples' social, political and economic consciousness. But one of the most important things about belonging to a group is that it accords the participant a forum where they are likely to meet

diverse others. Examples of some of these groups in Kenya would include *Maendeleo ya Wanawake* meaning Women progress clubs, community welfare associations, religious organizations, credit associations, political party, among others. Besides the empowering function of most groups in Kenya, there is another important function that they are likely to perform in rural Kenya, that of speeding up the fertility transition currently underway in Kenya. These groups draw their membership from different strata of the community, giving the association a more diverse outlook different from those mainly composed of kin and close friends (Watkins 1991; Hammerslough 1991). This is one of the fundamental requirements for diffusion of new information (Rogers 1983). The diversity of these groups bring different new ideas which get picked up by the members who in turn are likely to take it back to their homes and share it with their friends and neighbors. In addition, leaders of these organizations are often well educated, and more enlightened people who are likely to advocate use of new ideas in handling members' day to day life challenges. Table 5.24 below shows that most of the respondents conversation partners belonged to either an informal or formal organization. Murang'a women reported the highest proportion of partners who were members of a group with an average mean of 78 percent. The lowest membership was among Kakamega men where on average 47 percent reported having talked about family planning to networks belonging to some organization. On average, women are significantly involved in formal and informal organizations in both districts compared to men. Murang'a district had on average a higher mean number of membership to organizations compared to Kakamega district.

Hammerslough (1990) considered the role women's organizations play in fertility

change. He found that women who belonged to women's organizations were more likely to use contraception than those who did not belong to these organizations. He also found that the behavior of women who were not members of these organizations reflected the influence of those in the organizations. That is, non-members were more likely to use contraception if they lived in areas with more women's organizations than if they lived in areas with fewer women's organizations. Membership to some form of organization is important because it provides women and men with an opportunity to talk to others who are socially different. These heterogenous networks are likely to serve as avenues for the dissemination and evaluation of information that is relevant to the understanding of the pace of fertility change in Kenya. A study by Mwaniki (1986:220) makes this point even more clear:

“... the groups have become, for many women, a source of identity, pride, and, most importantly, moral support and motivation in their endeavor to improve the quality of their lives and that of their families. The groups also provide a forum through which valuable information is transmitted, new ideas are exchanged, and various issues discussed informally.”

Table 5.24: Percent Network members who are members of an informal or formal organization

Value	Kakamega		Murang'a		Gender		District		t-test
	1 Women	2 Men	3 Women	4 Men	5 Women	6 Men	7 Mur*	8 Kak*	p≤0.05
0	32	41	10	37	19	39	21	36	1<3
25%	3	3	2	2	2	2	2	3	2<4
33%	4	1	2	1	3	1	2	3	3>4
50%	8	14	10	6	9	9	8	10	1>2
67%	2	6	9	3	6	4	6	4	5>6
75%	6	1	5	2	5	1	4	4	7>8
100%	45	34	62	49	56	43	57	41	
Mean	0.57	0.47	0.78	0.56	0.70	0.53	0.69	0.53	
Std D.	0.44	0.44	0.33	0.47	0.39	0.46	0.41	0.44	
N	167	116	258	179	425	295	437	283	

Key: * Mur- Murang'a; Kak- Kakamega

I also investigated the question of how long the respondent had known the network member. This question had four options; 1) spoken once or twice; 2) Less than a year; 3) 1-5 years; 4) 5 years and over. The first two options were recoded into zero while the rest were set to a value of one. Table 5.25 below shows that a majority of respondents have known their network partners for more than one year. More than 60 percent of the respondents in both districts, regardless of their gender, reported that they had known all their network partners for more than one year. Only men in Murang'a reported a substantial number (34%) of networks whom they had not known for more than a year compared to less than fifteen percent from the other groups. Because Murang'a is very close to Nairobi, about 45 minutes drive, it is possible that this would be the reason why there is such a large proportion of respondents reporting to

have known their network partners for a short time. Most of their friends are likely to have been met in the urban area where relationships are transitory and less stable than in the rural areas. This is important because then people meet others who hold different ideas. This could explain why Murang'a was a forerunner in fertility transition than Kakamega. As has been documented (see Caldwell and Caldwell 1987) men make decision about family size. High fertility regime is said to serve the interest of men, for power, lineage maintenance and old age security. A change in men's attitudes towards the number of children is therefore likely to have a big impact on the fertility level of the community. Change in attitude is likely to be more pronounced if these men get involved in talking with others from different places with different attitudes towards family size.

The stronger the link between long term friends would mean the stronger the normative pressure to conform to the groups beliefs because there is little ambiguity in what type of behavior is expected from group members. Little new information is likely to enter these groups. But having known someone for a short time would imply a weak link between the conversation partners. There is likely to be a diversity of information and as a result the network is more likely to respond to this diversity by being influenced by it. This is the likely scenario amongst Murang'a men.

Table 5.25: The length of time respondent has known network members

Value	Kakamega		Murang'a		Gender		District		t-test
	1 Women	2 Men	3 Women	4 Men	5 Women	6 Men	7 Mur*	8 Kak*	p≤0.05
0	15	11	2	34	7	25	16	13	1<3
25%	0	4	0	1	0	2	0	2	2>4
33%	0	2	1	0	0	1	0	1	3>4
50%	8	2	2	1	5	2	2	6	1<2 NO
67%	4	2	3	1	3	2	2	3	5>6
75%	7	2	2	1	4	1	2	5	7>8 NO
100%	67	76	89	63	80	68	78	71	
Mean	0.79	0.82	0.95	0.65	0.88	0.72	0.82	0.80	
Std D.	0.48	0.35	0.18	0.47	0.28	0.43	0.37	0.35	
N	178	127	262	192	440	319	454	305	

Key: *Mur- Murang'a; Kak- Kakamega

Table 5.26, 5.27, and 5.28 shows results derived from the questions, “Does ____ approve family planning”, “Does ____ use family planning?”, and “Did ____ encourage you to use family planning?”. The responses were coded 1 if the answer was yes and 0 if the answer was no. The scores were then averaged over the number of network members provided. Results from these tables show interesting results about contraceptive use. They mimic the increase in the national level of contraceptive use. There is an overwhelming approval of modern contraceptives by the networks in both districts, regardless of gender . More than seventy percent of the respondents reported that all of their network partners approve use of family planning. On the other hand, the average proportion of women and men who reported that their networks were using modern contraceptives methods and those who were advised to use

family planning methods by their networks was also remarkably high, all above 70 percent. A noteworthy trend is that in all cases, whether network approves, uses, or encourages family planning use. Murang'a district reported higher proportions than Kakamega. This could again point to the fact that Murang'a district is well-to-do and thus likely to have embraced family planning earlier than Kakamega, to the point where it is no longer considered taboo to interact with people who use modern contraceptive methods. These proportions look quite high given that national samples surveys have shown the average level of current contraceptive use is about 30 percent for Western Province and 61 percent for Central provinces, regions where I drew my samples from (KDHS 1998).

The high rate of approval of family planning could be due to two reasons. One, self selection where people report that their friends practice family planning in order to look good. One man quoted in Watkins (1997:295) points out that use of family planning has come to be equated to being "modern", just as in the case of education. Secondly, the readiness and willingness with which the networks talked about family planning could have led the respondent to assume that their networks did indeed use family planning without necessarily having been told. Probably, the details the networks provided in the course of their conversations left no doubt that the network was using family planning and, by extension, approved of the use of modern methods of contraception. On the whole however, there is a strong indication of pervasive talk about family planning amongst both men and women within the two communities studied (Rutenberg and Watkins 1997).

Table 5.26: Whether network member approves family planning

Value	Kakamega		Murang'a		Gender		District		p≤0.05
	1 Women	2 Men	3 Women	4 Men	5 Women	6 Men	7 Mur*	8 Kak*	
0	7	8	1	5	3	6	3	7	1<3
25%	1	2	0	0	0	1	0	1	2<4 NO
33%	4	0	0	1	2	0	0	2	3>4 NO
50%	7	5	3	3	5	4	3	6	1>2 NO
67%	2	0	3	0	3	0	2	1	5<6 NO
75%	6	3	3	1	5	1	2	5	7>8
100%	72	83	88	91	82	88	89	77	
Mean	0.84	0.88	0.95	0.93	0.90	0.91	0.94	0.85	
Std D.	0.30	0.31	0.16	0.24	0.23	0.26	0.20	0.30	
N	174	119	260	190	434	309	450	293	

Key: *Mur- Murang'a: Kak- Kakamega

Table 5.27: Whether network member uses family planning

Value	Kakamega		Murang'a		Gender		District		t-test
	1 Women	2 Men	3 Women	4 Men	5 Women	6 Men	7 Mur*	8 Kak*	
0	13	21	4	13	8	17	8	16	1<3
25%	3	3	0	0	1	1	0	3	2<4
33%	5	1	2	1	3	1	1	3	3>4 NO
50%	9	3	9	3	9	3	7	7	1<2 NO
67%	5	1	8	2	7	2	6	4	5>6 NO
75%	6	3	3	1	4	2	2	5	7>8
100%	58	68	74	80	68	75	76	62	
Mean	0.73	0.74	0.87	0.84	0.81	0.79	0.86	0.73	
Std D.	0.37	0.42	0.26	0.35	0.31	0.38	0.29	0.39	
N	175	104	251	143	426	247	394	279	

Key: *Mur- Murang'a: Kak- Kakamega

Table 5.28: Whether network member encouraged respondent to use family planning

Value	Kakamega		Murang'a		Gender		District		t-test
	1 Women	2 Men	3 Women	4 Men	5 Women	6 Men	7 Mur*	8 Kak*	p≤0.05
0	7	8	1	5	12	6	10	9	1<3 NO
25%	1	2	0	0	1	1	0	2	2<4
33%	4	0	0	1	2	0	1	2	3>4
50%	7	5	3	3	4	3	3	5	1<2 NO
67%	2	0	3	0	4	0	4	1	5<6
75%	6	3	3	1	6	2	3	5	7>8 NO
100%	72	83	88	91	70	88	79	76	
Mean	0.84	0.88	0.95	0.93	0.81	0.91	0.85	0.84	
Std D.	0.30	0.31	0.16	0.24	0.34	0.26	0.32	0.32	
N	174	119	260	190	433	304	448	289	

Key: Mur- Murang'a: Kak- Kakamega

I also investigated when the last conversation with the network member was held. This variable was recorded in such a way that those who had conversations within the last month were coded one while the rest, those who had conversed for more than six months, were coded zero. Table 5.29 below shows that substantial informal social interaction goes on among the people of Murang'a and Kakamega. This is characteristic of African society where people live in close proximity to each other and speak the same language. People therefore interact quite often with their friends, relatives, and neighbors. These interactions are enhanced when there are community functions such as funerals, and weddings which bring many people together from different parts of the region. The high intensity of interaction is particularly evident since the percentage of those who had reported having spoken to at least one person about family planning within the last month ranged from about 60 percent for Murang'a women to 88

Table 5.29: When the last conversation about family planning with the network member was held

Value	Kakamega		Murang'a		Gender		District		t-test p≤0.05
	1 Women	2 Men	3 Women	4 Men	5 Women	6 Men	7 Mur*	8 Kak*	
0	26	12	41	30	32	22	36	20	1>3
25%	6	3	3	2	4	2	3	5	2>4
33%	4	4	13	4	9	4	9	4	3<4
50%	13	12	14	5	13	7	10	12	1<2
67%	3	5	5	1	4	3	4	4	5<6
75%	6	8	6	1	6	3	4	7	7<8
100%	42	57	18	58	28	57	35	48	
Mean	0.58	0.74	0.38	0.63	0.46	0.68	0.49	0.65	
Std D.	0.42	0.35	0.38	0.45	0.41	0.42	0.43	0.40	
N	179	129	264	193	443	322	457	308	

Key: *Mur- Murang'a: Kak- Kakamega

Table 5.30: Frequency of family Planning discussions between respondent and network member (Contact Volume)

No. of Days	Kakamega		Murang'a		Gender		District		t-test p≤0.05
	1 Women	2 Men	3 Women	4 Men	5 women	6 men	7 Mur*	8 Kak*	
0-50	32	43	21	28	28	35	27	38	1<3
51-150	24	29	28	33	26	31	29	26	2<4 No
151-365	44	28	51	39	46	34	44	36	3>4
Mean	132	115	152	133	144	126	144	125	1>2 No
Std. D.	127	129	121	129	124	129	125	128	5>6
N	179	129	264	192	443	321	456	308	7>8

Key: *Mur- Murang'a: Kak- Kakamega

To determine how much education the alters had, the respondent was asked the question "How much education does ____ have?" This question had three responses which were subsequently given the values; Technical college/secondary=12; primary=8; never went to school=0. Out of the responses, I calculated the standard deviation over the number of alters named. Results of the analysis are shown in table 5.31. When I considered how diverse the networks members are on the basis of education, I found that most of the network members are not highly differentiated from each other by education. Thirty five percent of women, and fifty nine percent of men in Kakamega, had network members with the same education level, while thirty nine and sixty eight percent of women and men had talked to network members who stated the same level of education in Muranga. Surprisingly women are more differentiated by education in each district than men. Forty four percent of women in Kakamega had between one and three years of educational difference compared to 35 percent for men. The highest education difference was among alters Kakamega women interacted with. Twenty two percent of the women had interacted with network members with more than three years of education compared to six percent of men who had interacted with alters with the same educational differences. On average the difference in education between network members is 1.02 years for men and 2.04 years for women (not shown on table).

Table 5.31: Percent education differences between alters (standard deviation)

Value	Kakamega		Murang'a	
	Women	Men	Women	Men
0	35	59	39	68
1-3 years	44	35	48	29
>3 years	22	6	13	4
Mean	2.3	1.2	1.9	0.9
N	147	110	211	151

An investigation about how many people were involved in the conversation (a variable coded as 0 for those who had spoken in a group of less than five and 1 for those who had discussed family planning in groups involving five or more people) revealed that more than three quarters of the respondents, with the exception of women in Kakamega, reported talking about family planning matters in the presence of groups of more than five people, see table 5.32 for results. This implies that talking about family planning is no longer an individual affair. Strong debates seem to be going on within the communities about family planning. These discussions can go either way, encourage or discourage use. The most likely scenario, however, is to encourage use as is evidenced by the rising levels of family planning use in Kenya. Discussions in groups provide a window of understanding to a community grappling with fundamental changes going on around them. Most likely, community members are debating how difficult it is to get jobs for their educated children, or how tough it is to raise children nowadays or just the deteriorating security of the community as result of increased house burglaries in the community, all of which have a bearing to the increase in population and the diminishing community

resources. Discussions within these groups are likely to make people realize that fertility control is within their control and that it is advantageous for them to limit the number of children they would like to have given the economic and social conditions around them and the type of life they would like to lead.

In this respect, they are likely to talk about what they have heard over the radio about contraception and from their experience especially for those who have successfully used the various methods. Although members of the discussion group might not adopt a family planning method immediately, discussions that take place raise and provide answers to their misgivings. Moreover, these discussions provide community legitimacy to the use of modern contraception methods and show that society is changing from the embrace of many children to adopting a small family norm. Obviously, in their daily lives these discussions continue and eventually use of family planning is perceived as a good thing, and users are regarded as modern (Watkins et al. 1997).

Table 5.32: Number of people involved in the family planning conversation

Value	Kakamega		Murang'a		Gender		District		t-test
	1 Women	2 Men	3 Women	4 Men	5 Women	6 Men	7 Mur*	8 Kak*	
0	41	15	3	6	19	9	4	15	1<3
25%	1	1	1	1	1	1	1	1	2<4
33%	2	0	0	0	1	0	0	0	3>4
50%	3	6	6	4	2	5	3	3	1<2
67%	1	2	2	4	1	3	2	2	5<6
75%	5	10	10	3	2	6	1	7	7>8
100%	47	67	67	83	74	77	89	55	
Mean	0.54	0.79	0.94	0.90	0.78	0.85	0.93	0.63	
Std D.	0.48	0.36	0.21	0.26	0.40	0.31	0.23	0.44	
N	179	123	260	177	439	300	437	302	

Key: *Mur- Murang'a: Kak- Kakamega

P.S.H. UNIVERSITY

SUMMARY AND CONCLUSION

Regarding background characteristics of the sample, the analysis shows that the rate of ever having used contraception in both Kakamega and Murang'a is fairly high. More than 50 percent of the respondents reported ever use of contraception. This was also true for current use of contraception. Current use of contraception in the sample was around 50 percent in both districts and between men and women. With regard to wanting another child, Kakamega men and women showed a higher desire for more children compared to their counterparts in Murang'a. This could be one of the reasons why Kakamega district fertility transition is not as advanced as in Murang'a district (KDHS 1993). The interesting and important result coming from this analysis is that little difference exists in the use of contraception and wanting additional

children between men and women for all the characteristics considered in both districts. Both men and women should therefore be targeted equally for family planning programs to enhance the fertility transition underway in Kenya.

Regarding family planning network characteristics, the chapter has demonstrated that both men and women are talking about family planning and other issues related to fertility behavior. Most of the respondents reported having had a conversation about family planning in the last month and at the same time reported spending more than 50 days in a year talking about family planning. Most of these conversations took place in the course of daily activities. More importantly, these interactions are with people who approve, encourage and use family planning methods. The intensity of family planning discussions is important in itself. It tells us that it is no longer taboo (or the taboos are quickly eroding) to talk about family limitation. People are talking to age mates, those older and sometimes those younger meaning that society is slowly demystifying the age gaps that are often so entrenched in African society. Important information about family size is therefore flowing to those who are starting, those in the process, and those about to finish their family building process.

I have also demonstrated the nature of these networks. People are talking to others who are unlike themselves in terms of education and socioeconomic status. Most people are not talking to their kin about family planning. This is crucial because it is usually relatives who prop up and demand high fertility. Talking to non-kin about family planning issues means that the normative structure that held fertility high is slowly being dismantled. New information and ideas are more likely to be passed on from strangers than relatives. Generally, talking to people

with different outlooks is conducive to behavior change because new suggestions and ideas are made. The discussions and debates going on within Murang'a and Kakamega's social networks with regard to family planning signal that changes taking place in peoples attitude and behavior towards high fertility is community wide and not confined to certain regions or classes of people.

CHAPTER SIX

ANALYSIS OF THE EFFECTS OF NETWORK ATTRIBUTES ON FERTILITY IN KENYA

INTRODUCTION

In chapter five, I explored descriptively how different characteristics of networks express themselves in Kakamega and Murang'a districts. I have noted that Murang'a's networks support my suspicion that it was a forerunner in fertility transition compared to Kakamega district. Although Murang'a's networks reflect an environment more conducive to fertility decline than Kakamega, the differences between the two regions are not pronounced, at least from the descriptive data. One important thing that the last chapter demonstrated, however, is that there is a lot of talk among people about family planning, and this talk often involves more than one person (See Rutenberg and Watkins 1997 for similar results). In this chapter, I will demonstrate the importance of network variables in predicting fertility behavior. These analyses include only women and men who are married and analyzes networks of the respondents who reported having talked to someone about family planning.

There are few but increasingly important studies that are being undertaken to determine the significance of social networks in shaping reproductive behavior change. Although diffusion studies have been around for a while, it is only recently that the explanatory importance of the network paradigm has been gaining currency in understanding demographic behavior. Network analysis holds great promise in explaining the process of fertility change in Kenya because it does not just examine the implications of personal characteristics which most social science

examine in explaining behavior change; rather, social networks examine the influence of social structure on an individual's behavior. Network analysis captures social structure because it is the relationships between individuals that are seen to be important in changing an individual's attitudes and behavior towards something. Influence occurs through patterns of direct interaction because people develop common ideas and attitudes about an issue which they relate to as they see it from the eyes of their network members. Social networks therefore provide a mechanism through which social influence operates while at the same time they provide a forum where information that is sometimes difficult to convey is broached and debated to determine its suitability and efficacy and then disseminated. Generally, social networks provide individuals with a place where they can "vicariously experience others' trial adoption" before they actually try using the new innovation (Rice et al 1990:32).

The importance of networks in influencing behavior was noted by Bott (1971) in her work in England about how the structure of individuals' social networks would influence the way they see norms regarding conjugal relationships. Bott (1971) was interested in knowing what factors would determine the type of a family a couple will have. She found that, in close-knit families, tasks were segregated; women and men's roles were different. In less knit families, however, tasks between the sexes were more integrated and couples shared more tasks and more open discussions went on among them. What Bott demonstrated was that the immediate interpersonal environment is important in shaping behavior. Maintaining role boundaries between the sexes was seen as normal by the close-knit families while the blurring of the boundaries was seen to be normal in the more liberal families because they had been

exposed to different climates of opinions from other groups that are not immediately within their circles. It therefore becomes clear that if social networks can influence the attitudes regarding task allocation among spouses, they should also be able to influence other attitudes that are allied to conjugality, in this case the number of children a couple would have and use of modern contraception.

Talking is an important part of human interaction. It conveys our emotions, feelings, but above all, it constitutes a fundamental mechanism through which people come up with goals, influence others' belief systems, and generally represent their visions of events and the future. Moreover, through talk, people are able to construct in their own words what is going on around them and through it they are able to assess the direction of change around them. When people meet in their daily routines, they talk and in the process of talking, they evaluate exchanges with each other. They form impressions and general ideas about the meaning of such exchanges-- meanings that could have an effect on the individual behavior and that of others. Also processed within these contexts are the concerns of other people and problems and issues that confront them. For example, people might complain about how difficult it is to raise children. It may also provide an opportunity to extol the virtues of modern technology of controlling births, or about how misconstrued modern contraceptives are. Talking therefore provides an avenue for people to discuss issues that confront them and their community. Thus, relationships between people facilitated through talk offer situations where minor or major advice and consultation can occur without being made a major feature of the relationship.

Social interaction therefore not only provides information, but also serves to shape

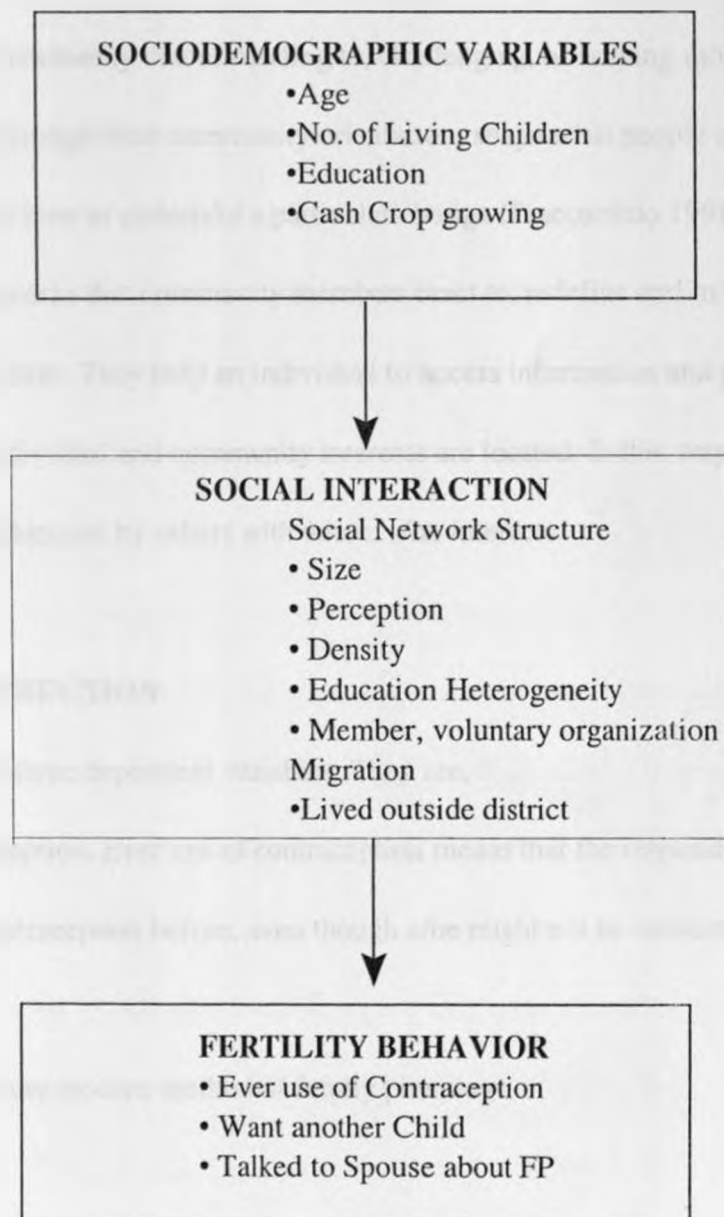
peoples' perception about how they view the world. Through conversations, meanings are constructed and shaped, giving individuals the chance to make assessment about realities unfolding in their environments. During discussions around a dinner table, or while walking to and from working, people share information extensively in ways that carry implications beyond their literal context. It is in our daily routines of talking to others that we acquire much important personal and relational information that can be molded and developed into affecting and changing our conceptions of what is going on within our contexts. Such communication provides the basis for others to draw important inference that will affect their own future behavior. Indeed, attitudes are made, maintained or modified through interpersonal interactions.

This dissertation investigates the importance of social interaction in explaining fertility change in Kenya. Since 1989, Kenya has experienced a dramatic change in its fertility level, a change that cannot simply be attributed to changes in the individual characteristics which most studies focus on. I contend that social interaction captured through social networks is important in explaining the process of fertility change in Kenya. The central variables that comprise my explanation for the role of social networks in shaping fertility behavior are presented in figure 1.

The figure shows that the background variables that constitute my control variables in this case do not in and of themselves influence fertility behavior. It is social network variables that guide and ultimately lead to adoption of the appropriate fertility behavior. I expect that the behavior of those people who engage in discussions about family planning with others is likely to have a negative or positive influence on fertility behavior depending on what kind of information is transacted. Like Watkins (1991a; 1987), I argue that the crucial determinants of

fertility behavior change lie in the interactional matrix of the Kenya society.

Figure 6.1: Dynamic Network- fertility model.



The figure above presents a model that illustrates how social networks mediate the macro/micro level factors in bringing down fertility, especially in a situation where people live in communities. It must be understood that communities or primary groups are sites where meanings are created/revised and social constructions negotiated. Networks are therefore vectors both for delivering important messages about what is going on in society, and also for forming conduits for community voices reacting to, challenging, or seeking modification of these messages. Networks, through their community orientation, shape what people consider appropriate, and define how to undertake a particular change (Pescosolido 1991). On the other hand, it is through networks that community members react to, redefine and in turn influence what happens in their lives. They help an individual to access information and provide contexts where advocacy for individual and community interests are located. In this way, an individual's fertility behavior is influenced by others with whom s/he interacts.

VARIABLE CONSTRUCTION

This study has three dependent variables: They are,

1) Ever use of contraception. Ever use of contraception means that the respondent has used a modern method of contraception before, even though s/he might not be currently using it. It is coded as,

1 = ever used any modern method of family planning

0 = otherwise.

2) Respondents would like to have more children in addition to what they have. Coded as

1 = want more children

0 = otherwise

3) If respondent talked to spouse about family planning. Coded as

1 = talked to spouse

0 = otherwise.

The first dependent variable, if the respondent has ever used family planning, indicates fertility innovation. The people who use modern family planning methods are seen as engaging in a behavior that is aimed at restricting fertility. This kind of behavior is new because it is a practice that did not exist in the community before. The second dependent variable, if the respondent does not want more children, also shows innovation but not in terms of adoption of a new technology. Rather, it suggests a change in the meaning of children; that is, ideas about children are changing. If respondents do not want any more children, especially if their parity is low, then it means that ideation change is taking root. The third variable is meant to capture the changing gender relations with regard to fertility behavior. Talking about family planning amongst couples would be crucial to understanding the ongoing fertility transition in Kenya. A combined use of contraception between couples would only arise after talking to each other about the need to either space or stop childbearing. It is the belief of this study that women and men are influenced by what they hear from their friends and relatives about the disadvantages of having large families, to the point where they start engaging in conversation with each other,

leading to improved communication and consequently support for use of family planning among themselves.

INDEPENDENT VARIABLES

This study has two levels of independent variables. The first level (control variables) include the standard demographic and socioeconomic variables that describe personal characteristics such as age, number of living children, education and wealth (measured by whether respondent grows cash crop). The second level includes the social networks variables.

Control Variables

The operationalization of these variables is as follows: 1) Age: age is measured in completed years. 2) Number of living children. This was calculated by subtracting the number of children ever born from those reported dead. 3) Education: education is measured as completed years of education. 4) Cash crop: this is whether the respondent grows any cash crop, sugar, coffee, tea and is coded as, 1 if grows cash crop and 0 otherwise.

Social Network Variables

The measure of education heterogeneity differs from the more usual coding of heterogeneity, which uses the standard deviation (Marden 1987). I use a different calculation of education heterogeneity because using standard deviation educational attainment does not

capture the theoretical interest that this study wants to investigate, that of connecting different social worlds. I am interested in the presence of high status alters (determined by high education) rather than diversity in educational attainment. Alters with secondary or higher education were coded 1, the rest were coded 0. I expect that the existence of at least one highly educated alter is likely to be instrumental in directing the respondents fertility behavior. I averaged the score over the four alters to get a proportion representing educational heterogeneity.

Membership in a voluntary organization is coded 1, if the alter is a member of a voluntary organization and 0, otherwise. The average over the four alters gives us a measure of voluntary organization participation. Perception was derived from the question, "Does ____ use family planning?" Those who answered yes were coded 1, and 0, otherwise. The average of the responses over the four alters gave a measure of perception.

Network size, is simply the number of people the respondent reported having spoken with about family planning. This variable is meant to capture local interaction; that is, personal experience with those who use or do not use family planning in the community. Although this is meant to capture local interaction, it is possible that respondents have talked to people from other localities. My expectation is that people who talk with others who are unlike themselves, and loosely linked, are more likely to behave in ways that are innovative than those who interact with people who are like themselves.

Another independent variable is whether the respondent has lived outside their district of birth for more than six months since marriage. This variable is meant to capture the influence

of interaction with people from outside of their immediate environments. Kenya is still a predominantly rural country where there are fewer formal employment opportunities. Most people have therefore migrated to urban centers or other districts in search of employment opportunities. The expectation of this study is that those who have interacted with people from outside their districts are more likely to have been exposed to different climates of opinions that are conducive to fertility change.

Network density is a measure of the degree to which the network partners named by a respondent know each other. The importance of the network density is that it shows the likelihood that new information will percolate into a circle of friends, thereby having the potential effect of accelerating behavior change within the networks (See how density is calculated in chapter five).

My control variables include age, education, number of living children, cash crop (denoting socioeconomic status) which have all been shown by previous studies to significantly influence fertility (Cochrane 1979; Bulatao and Lee 1983).

STATISTICAL MODEL

This study uses Logit analysis because this type of regression is suitable for categorical dependent variables. When the dependent variable is dichotomous, the normal regression assumptions of normal distribution are violated.

The Logit model predicting the dependent variable (Y) for the *i*th individual is given as:

$$Y = a + \beta X + e$$

where Y is defined as $\log(p/1-p)$, a is some minimal probability of the dependent variable across all individuals, β is the matrix of all the coefficient measuring the effects of individual level variables and X is the matrix of all the independent variables, e is the error term representing the individual variation in the dependent variable not captured by the independent variables specified.

The logit coefficients are difficult to interpret unless they are transformed into log odds. Once this is done, it becomes easy to interpret the coefficients. The odds of an event happening are defined as the ratio of the probability that it will occur to the probability that it will not. My analysis will use factor change to interpret the logit coefficients. Factor change in the odds is derived as e^{β} or $\text{Exp}(\beta)$ where β is the coefficient of the independent variable in question.

The results are interpreted as; for a change of δ in X_k , the odds are expected to change by a factor of $\exp(\beta_k \times \delta)$, holding all other variables constant. For $\delta=1$, the interpretation becomes, for a unit change in X_k , the odds are expected to change by a factor of $\exp(\beta_k)$, holding all other variables constant. If $\exp(\beta_k)$ is greater than 1, then the odds are “ $\exp(\beta_k)$ times larger.” If $\exp(\beta_k)$ is less than 1, then the odds are “ $\exp(\beta_k)$ times smaller.” With a logit coefficient of 0.600 the factor change would be $\text{Exp}(0.600)=1.822$. This would be interpreted as, a unit change in variable X increases the odds by a factor of 1.8, holding all other variables constant. One can similarly interpret this as: a unit change in X increases the odds by 82% holding all other factors constant $((1.82-1.00) \times 100)=82\%$. If on the other hand the logit coefficient is -0.600 then the factor change would be $\text{Exp}(-0.600)=0.549$. This would be interpreted as: a unit change in variable X decreases the odds by a factor of 0.549, holding all

other variables constant. Similarly such finding can be interpreted as; a unit change in X decreases the odds by 45%, all other factors held constant $((1.00-0.549) \times 100)=45\%$).

RESULTS OF THE ANALYSIS

EVER USE OF CONTRACEPTION AND SOCIAL INTERACTION

Table 6.1 shows the effects of selected socioeconomic, demographic and network variables on ever use of contraception. The table presents results by district and gender. The table shows that no single variable significantly influenced contraceptive use among Kakamega women although education heterogeneity of alters shows a strong but statistically insignificant relationship. It is only among Murang'a women that three of the control variables (number of living children, education and cash crop growing) are significant in determining ever use of contraception. The number of living children a couple has was found to significantly influence the likelihood of having ever used family planning. More specifically, having an additional child among Murang'a women increased the odds of having ever used contraception by 21 percent, holding all other variables constant. The relationship is in the expected direction; the more children a couple has, the higher the probability of using family planning. Education level of the respondent was also found to increase the odds of ever having used contraception by 18 percent. A large body of literature has documented the importance of education in shaping demographic behavior, especially use of family planning. High level of education is associated with higher contraceptive use because education has a modernizing effect. More educated people are open to new ideas and have more rational thinking such that they do not see the

control of reproduction as being in the realm of the gods but within their power (For a detailed discussion see Cochrane 1979).

TABLE 6.1 ABOUT HERE

Cash crop growing was found to reduce the odds of having ever used a modern contraceptive method by 64 percent, holding all other variables constant. Cash crop growing is meant to capture the wealth status of the family. I expected this variable to have a positive effect, but in this case ownership of cash crop does significantly reduce the odds of using modern contraception among Murang'a women. Since income from cash crop farming is not directly controlled by women, but by men, much of the money is spent on projects that are not family oriented. This might be the reason why cash crop growing has a negative relationship with ever use of contraception. Also, since the 1980s, cash crop prices have fallen due to changes in the global economy. This has meant that cash crops fetch little returns which are unlikely to have a positive influence on ever use of contraception. Moreover, cash crop ownership is determined by the climatic zone of the area and not by the economic status of the household. Areas that enjoy an ideal climate that favor cash crop growing will have a majority of people growing the crop irrespective of their socioeconomic background. This could explain why the cash crop variable is negatively related to ever use of contraception since most cash crop growers are small-scale farmers who are unlikely to be well educated and thus still hold traditional views about having many children.

Social network variables were found to be important in all but among Kakamega women. The majority of the social network variables were particularly important in influencing

ever use of contraception among Murang'a men. Two of them, whether respondent has lived outside their district for more than six months since marriage and network size, were significant only among Murang'a men. Both significantly increased the odds of having ever used family planning by 192 and 135 percent respectively, holding all other variables constant. Murang'a is near Nairobi and so most of its men have at least migrated to Nairobi once in their life time to seek off-farm incomes. Most of them were also noted to commute to Nairobi on a daily basis. This means that they come into contact with other people who are likely to have more innovative ideas about fertility behavior, thus making them more receptive to using contraception.

It is not clear why having lived out of the district for more than six months does not significantly influence ever use of contraception for Kakamega people. I would have expected at least migration to be significant because Kakamega is a net outmigration district in Kenya. The high migration in Kakamega district is captured by Moock (1975:84) who found a substantial number of people had migrated from Kakamega. She also found that local off farm employment was quite restricted in Western Kenya. Only 15 of 137 farm heads she interviewed had permanent local off farm employment. The results are nonetheless as predicted save for Kakamega men whose results are counter intuitive.

Network density was important in reducing the odds of having ever used family planning among men in both districts. In both districts, dense networks reduced the odds of having ever used contraception by about 73 percent, all factors being equal. Results for females are as predicted, but weaker than for males. In rural Kenya, most men's relationships tend to

be localized and associations only incorporate people from their own locations. Literature points out that dense networks consist of people who share more or less the same backgrounds characteristics like age, education, and other individual indicators (Granovetter 1973). People who spend more time together, talk to people with the same world views, and generally do things with people like themselves are unlikely to be innovative in their fertility behavior.

The other crucial social network variable that was consistent in influencing contraceptive use in the two districts was perception by the respondent whether the network member was using contraception. As I hypothesized, perception strongly influence the odds of having ever used contraception among men in both districts and Murang'a women. Literature has pointed out that perceptions, both in medical sociology and demography, are important in directing behavior change. This study too, shows that, perception is important in promoting ever use of contraception. Respondents who thought their network members were using contraception, had significantly higher chances of having ever used contraception. The magnitude of the influence of perception on ever use of contraception is large. They range from increasing the ever use of contraception by about 245 percent among Murang'a women, to 1300 percent among Murang'a men. This result shows that it is not just talking that is important, rather, it is the perception of use of family planning among their network members that gives people the confidence to adjust their fertility behavior. Family planning networks do not therefore in and of themselves influence behavior change, they are important in providing a forum to "vicariously" experiencing other people's behavior. People are therefore more likely to adopt new behaviors if they think their friends have already adopted them. This assures them

that they have a community of support in enacting the behavior.

WANT ANOTHER CHILD AND SOCIAL INTERACTION

Table 6.2 shows regression results obtained by using “want another child” as the dependent variable. Age is found to reduce the odds of wanting another child for Kakamega men and Murang’a men. A one year increase in the age of Kakamega men reduces wanting another child by about 13 percent. This is also true for Murang’a men for whom a one year increase in age invokes a 10 percent reduction in wanting another child, holding all other variables constant. The number of living children was also found to reduce the odds of wanting another child in all categories except Kakamega men. This result was expected since the older the person is, the less likely he will want to have another children because of both social and biological reasons. The percent reduction in the odds of wanting another child is highest among Murang’a women, where the odds of wanting another child is reduced by 47 percent, followed by Murang’a men with 45 percent, and lastly Kakamega women with 40 percent. Cash crop growing was found to increase the odds of wanting another child among Kakamega men. The most dominant cash crop in Kakamega district is sugar cane, with limited amount of coffee and tea. The problem with the dominant cash crop, sugar cane, is that it takes at least 18 months before the crop is harvested. There is therefore a long wait before the crop matures and increases the family’s economic resources. However, the point that should be emphasized here is that with the cash crop money, especially from sugar cane, men have been known to use the money to finance taking another wife which would mean wanting to have more children.

TABLE 6.2 ABOUT HERE

Only among Murang'a women was the variable living outside the district for more than six months significant in reducing the want of another child. Having migrated reduced the odds of wanting another child by 53 percent. Like their male counterparts, Murang'a women are astute business people. They shuttle between Nairobi and other neighboring towns trading in various items that include agricultural products, crafts and used clothing. The fact that Murang'a women who have lived outside the district for more than six months do not desire to have more children reflects the importance of ideas and innovations that are acquired as a result of meeting and living with people with different persuasions. Women networks in Kenya have a greater geographic spread and diversity because a number of the networks involve sisters, cousins and relatives who have married in other parts of the country or districts. They keep in touch often as they seek help from each other. Marriage in Kenya is exogamous and this practice explains the geographic spread of some of the women's social networks. People who live in different areas have ideas that probably question the conventional wisdom held by a certain community. As a result, interacting with other people from outside facilitates acquiring new ideas that are important in determining behavior patterns that are incompatible with the original world view. This could explain why Murang'a women did not want to have more children.

Network size was found to be insignificant in all categories except among Kakamega men. The influence is in the expected direction. For an additional person a Kakamega man spoke with about family planning, the odds of wanting another child were significantly reduced by 26 percent.

Education heterogeneity was found to reduce the probability of wanting another child among men in Kakamega and women in Murang'a. The more alters with secondary or higher levels of education that respondents had, the less likely they were to want another child. This means that having high status people as part of an individual's networks has significant implications for ideation change. Wanting no more children is an important indicator of changing ideas and meaning about children. The only other social network variable that was important in reducing want of another child was the perception of network members using contraception among Murang'a men. The probability of wanting another child was reduced by 83 percent for those who perceived their friends to be contracepting.

Surprisingly, Kakamega women are still ambivalent about wanting another child. None of the social interaction variables played a significant role in shaping the desire not to have more children although most of the results are as predicted. Since wanting to have another child represents changes in the meaning of children, it means that ideation change is taking place in Kenya among both men and women with the exception of Kakamega women. At least talking and interacting with others is important in determining whether men and women want to have another child or not. The fertility transition that has been noted in Kakamega seems to be related to the social interaction of men. This makes sense as Kakamega is still traditional, a change in men's attitude is likely to be critical in initiating fertility behavior.

SPOUSAL COMMUNICATION AND SOCIAL INTERACTION

Fertility decision-making is governed by the gender division of labour between the

husband and wife (Muvandi, 1996:142). In this section, I look at whether talking to friends, relatives or neighbour affects inter-spousal communication in fertility decision-making. I contend that enhanced inter-spousal communication is a prime indicator of the extent of family planning knowledge and use. Inter-spousal communication is a key factor in the adoption and sustained use of family planning because it allows couples to discuss, exchange information which may change strongly held beliefs, and to question what might appear unclear to each other (Rogers, 1973; Roudi and Ashford, 1996; Effah, 1997). Open communication between couples about family planning also provides couples with an opportunity to discuss family size preferences and the means to achieve them (Bertrand, Pineda and Soto, 1978). There is, however, a general belief that in Africa couples do not discuss family planning and reproductive health issues together (JHU/Centre for Communication Programs, 1996:9). Data from many African countries do, however, show that communication between husband and wife about family planning is strongly associated with the couples' contraceptive use (Roudi and Ashford, 1996:1). However, this communication must occur quite often to bear meaningful results (Effah, 1997:12). DHS data from seven African countries (Botswana, Burundi, Ghana, Kenya, Senegal, Sudan and Togo) has shown that the percentage of women using modern contraceptives is higher in the group that has discussed FP with their husbands than in the group that has not (Roudi and Ashford, 1996:1).

Gendered power relations in most of Africa are often skewed in favour of men and this may inhibit inter-spousal communication. The KDHS data showed that over two-thirds of married men had discussed FP with their wives in the year preceding the study (NCPD *et al*,

1993:151). In this study, however, I explored the role social networks are playing in influencing whether spouses talk to each other about family planning. Watkins (1990:242) points out that “even when the couple is literally alone in the bedroom; the echoes of conversations with kin and neighbors influence their action.” Do these echoes therefore motivate spouses to talk about family planning on the basis of the discussions they have had with their friends? This study expects that those who engage in conversations with others about family planning are more apt to talk about it with their spouses. The echoes probably come by way of just talking about the days’ events which may include a discussion of what other women or men say about family planning when the couple is alone in their bedroom away from other household members. In situations where, for example, the man is inclined to oppose family planning, the woman might report the family planning episode as something she overheard from other women as a way of protecting herself. The initiation of the discussion within the bedroom is certainly crucial because then the couple can also analyze and come to a conclusion whether to use a method of contraception or not. In this case, the echoes are likely to influence reproductive behavior. In case the man is hostile to the use of family planning going by the responses he provides during the discussion, the woman is likely to do it alone and start to use family planning methods secretly, despite the attendant risks. The most important thing, however, is that she will have broached the topic to him.

Table 6.3 examines the influence of the selected socio-economic, demographic factors and network variables on whether or not the spouses spoke about family planning. Among Kakamega women, a one year increase in age reduces the probability of talking to spouse by 6

percent. This is expected because demand for children reduces as people age. As a result, there might be less need to talk about family planning. However, having an additional living child increases the odds of talking to a spouse by about 26 percent among Kakamega women. Number of living children also influenced talking to spouse about family planning among Murang'a men. For an additional child Murang'a men had, reduced the odds of talking to spouse by 25 percent. This is unexpected result since having more children should ideally encourage inter-spousal communication. I cannot explicitly explain this result unless the number of children a couple has is dis-aggregated to find out whether more men in Murang'a had fewer children and thus need to reach a target number which they had not yet attained. It is possible that those who have not yet attained their target family size would not find it necessary to start talking to their spouses about contraception. Although the education variable is not significant, it nonetheless demonstrates a strong influence on talking to spouses about family planning among Kakamega women, and both men and women from Murang'a.

TABLE 6.3 ABOUT HERE

The various social networks variables have different effects on the dependent variables. Having lived outside district for more than six months since marriage was found to significantly increase the odds of talking to spouse about family planning among Kakamega women. Network size was found to significantly increase the probability of talking to spouse about family planning among Kakamega men. Being a member of an informal/formal voluntary organization significantly increased the odds of speaking to spouse about family planning among women in both Kakamega and Murang'a districts. In Kakamega, women who were members

of an organization were 2.4 times more likely to talk to spouse about family planning than those who were not. Murang'a women had even a higher magnitude. Members of a voluntary organization were 4.6 times more likely to talk to their spouses about family planning than non members.

Membership to voluntary organizations provide occasions where people participate in more heterogenous networks. These organizations contain large and more diverse networks who are likely to be instrumental in influencing fertility behavior. In Korea, government efforts to influence contraceptive use through mass media campaigns and use of field workers failed to increase use of family planning. However, a reorientation of policy by the government to focus on women clubs increased family planning acceptance. Mother's Clubs provided legitimation and discussion forums to community members about family planning (Montgomery and Chung 1999). Similar results were noted for Kenya by Hammerslough (1990, 1991) who found that women who belonged to voluntary organizations were more likely to use contraception than those who did not belong to these organizations. Also, the behavior of women who were not members of these organizations appeared to reflect the influence of those in these organizations.

Lastly, Murang'a men who interacted with network members whom they perceived to be using family planning were 19 times more likely to talk to their spouses about family planning than those who did not, other variables being constant. In general, though social network variables have different effects on gender in the two districts, they are nonetheless significant in enhancing interspousal communication.

TOTAL SAMPLE ANALYSIS WITH DUMMY VARIABLES FOR GENDER AND DISTRICT.

Table 6.4 shows the results derived from the combined sample with gender and district included as variables. The table shows the results testing whether there are any significant departures from the results I have already presented when the district and gender variables are included in the model. Also, the table shows whether there are any gender or district differences in outcomes of the three dependent variables. The district variable is coded 1, if the district is Murang'a and 0, if Kakamega. On the other hand, gender is coded 1, if women and 0, if men.

The results do not show major departures from what has already been discussed in the previous sections. But just to reiterate, age and number of living children reduced the likelihood of wanting another child for the entire sample. Network size and having network members with more than secondary school education also reduced significantly wanting to have another child. Compared to men, women's desire to have another child is low. The results is not significant but is strong. However, Murang'a residence as opposed to Kakamega, reduced the for another child. This indicates that compared to Murang'a, ideation change is yet to be established in Kakamega district. This could explain why Murang'a district was a forerunner in fertility decline in the country. Kakamega district is still traditional in its outlook especially with regard to the number of children desired compared to Murang'a and as such still has some time to go before ideational change takes place.

TABLE 6.4 ABOUT HERE

With regard to ever use of contraception, age is not important in determining ever use,

but the number of living of living children, education, and cash crop growing does significantly influence ever use of contraception. Living outside district, network density, and the respondent perception of alter's use of contraception significantly influence ever use of contraception. Gender in this model becomes significant. Compared to men, the odds of women having ever used contraception increases significantly by 57 percent. Murang'a district residents were more likely to have ever used contraception than Kakamega. This again goes back to the fact that Murang'a has had a long history of enterprise and innovation, something that is just beginning in Kakamega.

Regarding whether the spouse talked to their partners about family planning, results show that the probability of women talking to their spouses is significantly lower compared to men. While at the same time Murang'a residents are significantly more likely to talk to their spouses about family planning compared to Kakamega. This is in addition to significant effects found between age, education, having lived outside district and whether network member is a member of a voluntary organization or not.

CONCLUSION

The results I have discussed underscore the importance of social interaction in understanding the process of fertility change. Often, change in behavior has been associated with changes in the individual circumstances rather than social structure (relationship between people). My results show that networks, basically a social structure phenomenon, does in fact help explain the process of fertility behavior change. Social interaction at a general level

provides a more congenial learning atmosphere where friends, neighbors and relatives influence each others' thinking. People learn new projects from friends. In situations of fuzzy understandings and high uncertainty about what to do or expect, networks are sought to clarify and possibly provide a solution to the puzzling situation. It is with friends that people evaluate a situation and come up with decisions that are either adopted or discarded depending on the consensus of the networks. Friends, relatives and neighbors therefore become important sources of encouragement and advice to adopt a new behavior. Network members act as a "lay referral system" providing important advice and encouragement to undertake a behavior hitherto considered inappropriate.

People listen and look at what society is doing, and by so doing, tend to minimize the conflicts that they will encounter if they went against what society demands. They therefore adopt behaviors that are congruent and acceptable to the society. To know what is going on in society, people listen to others and take hints about the desires and changes that are going on in society through what they hear people talk about. Thus, the focus that most studies adopt where only individual characteristics are considered leave out an important component, social interaction, that this study has demonstrated to be important.

Although first impressions would be that most rural peoples' social networks are homogenous, but as this study's results have shown, there are instances where their networks are heterogenous as shown by the significance of education heterogeneity, membership to voluntary organizations, and living outside the district. Thus, learning of new techniques and attitudes towards family planning is likely to derive from these encounters with others unlike

themselves.

Generally, with the exception of ever use of contraception and want another child among Kakamega women, all other findings had at least one significant social network variable. Social network variables are therefore crucial in understanding the dynamic process of fertility decline in Kenya. While individual characteristics of age, education, number of living children, and cash crop growing were found to be important, social network variables exerted an independent effect on all the dependent variables. As a such, network variables should not be ignored when considering explanations behind the fertility transition.

Table 6.1: Effect of Selected Socioeconomic, Demographic and Social Network Variables on Ever use of Contraception

Variables	Kakamega				Murang'a			
	Women		Men		Women		Men	
	Odds		Odds		Odds		Odds	
	Ratio		Ratio		Ratio		Ratio	
Age	0.024 (0.82)	1.025	-0.049 (1.46)	0.952	0.011 (0.36)	1.011	0.013 (0.47)	1.013
No. of Children	0.071 (0.75)	1.074	0.096 (0.75)	1.100	0.193 (1.75)*	1.213	-0.009 (0.07)	0.992
Education	0.011 (0.24)	1.011	0.068 (0.93)	1.071	0.169 (2.85)**	1.184	-0.058 (0.69)	0.944
Cash Crop	-0.445 (1.29)	0.641	0.345 (0.70)	1.412	-1.017 (2.52)**	0.362	-0.334 (0.78)	0.716
Lived Outside District	0.330 (0.86)	1.391	-0.651 (1.18)	0.521	0.461 (0.96)	1.585	1.071 (2.46)**	2.918
Network Size	0.007 (0.14)	1.007	0.054 (0.59)	1.055	-0.002 (0.02)	0.998	0.852 (2.91)**	2.345
Education Heterogeneity	0.735 (1.47)	2.086	0.145 (0.26)	1.156	-0.533 (1.02)	0.587	0.785 (1.42)	2.192
Member of Informal/formal Social Group	-0.004 (0.01)	0.996	-0.102 (0.19)	0.903	0.710 (1.32)	2.034	-0.138 (0.30)	0.872
Network Density	-0.201 (0.55)	0.818	-1.322 (2.49)**	0.266	-0.343 (0.84)	0.709	-1.295 (2.30)*	0.274
Network Member uses Contraception	-0.025 (0.05)	0.975	1.273 (2.18)*	3.570	1.239 (2.01)*	3.453	2.595 (4.28)**	13.396
Constant	-0.874 (0.92)		1.261 (0.91)		-1.419 (1.21)		-3.054 (1.99)*	
Log Likelihood	-112.80		-62.19		-101.92		-76.15	
Pseudo R ²	0.047		0.144		0.107		0.231	
Observations	174		108		255		159	

Absolute value of z-statistics in parentheses

* $p \leq 0.05$; ** $p \leq 0.01$

Table 6.2: Effect of selected socioeconomic, demographic and social network variables on want of another child

Variables	Kakamega				Murang'a			
	Women		Men		Women		Men	
	Odds Ratio		Odds Ratio		Odds Ratio		Odds Ratio	
Age	-0.051 (1.40)	0.950	-0.143 (3.16)**	0.867	-0.026 (0.86)	0.975	-0.107 (2.79)**	0.899
No. of Children	-0.518 (3.72)**	0.596	-0.128 (0.83)	0.880	-0.632 (4.65)**	0.531	-0.602 (2.96)**	0.548
Education	0.047 (0.87)	1.048	0.082 (0.97)	1.085	0.043 (0.77)	1.044	-0.045 (0.42)	0.956
Cash Crop	0.214 (0.50)	1.238	0.992 (1.66)*	2.697	-0.358 (1.06)	0.699	-0.063 (0.13)	0.939
Lived Outside District	-0.276 (0.60)	0.759	-0.022 (0.04)	0.978	-0.851 (1.99)*	0.427	0.054 (0.11)	1.056
Network Size	-0.081 (1.19)	0.923	-0.298 (2.30)*	0.743	-0.064 (0.79)	0.938	-0.012 (0.08)	0.988
Education Heterogeneity	-0.639 (1.03)	0.528	-1.472 (2.04)*	0.230	-1.025 (2.06)*	0.359	-0.117 (0.18)	0.889
Member of Informal/formal Social Group	-0.187 (0.36)	0.830	0.663 (1.07)	1.940	-0.100 (0.18)	0.905	0.371 (0.73)	1.449
Network Density	-0.307 (0.67)	0.736	0.822 (1.34)	2.275	-0.295 (0.79)	0.745	-0.081 (0.16)	0.922
Network Member uses Contraception	0.256 (0.43)	1.291	0.666 (0.99)	1.946	-1.062 (1.44)	0.346	-1.803 (2.34)**	0.165
Constant	3.613 (2.94)**		5.428 (3.01)**		4.364 (3.56)**		6.942 (3.28)**	
Log Likelihood	-81.56		-49.78		-117.16		-63.85	
Pseudo R ²	0.302		0.324		0.269		0.354	
Observations	169		108		234		155	

Absolute value of z-statistics in parentheses

* $p \leq 0.05$; ** $p \leq 0.01$

P.S.W.I. LIBRARY
UNIVERSITY OF KENYA

Table 6.3: Effect of selected socioeconomic, demographic and social network variables on whether the respondent talked to spouse about use of contraception

Variables	Kakamega				Murang'a			
	Women		Men		Women		Men	
		Odds Ratio		Odds Ratio		Odds Ratio		Odds Ratio
Age	-0.066 (1.88)*	0.936	-0.067 (1.36)	0.936	0.046 (1.25)	1.047	-0.018 (0.47)	0.982
No. of Children	0.231 (1.97)*	1.260	-0.109 (0.64)	0.897	0.014 (0.11)	1.014	-0.293 (1.68)*	0.746
Education	0.072 (1.32)	1.075	0.010 (0.08)	1.010	0.104 (1.52)	1.109	0.177 (1.45)	1.193
Cash Crop	-0.099 (0.24)	0.906	0.101 (0.12)	1.106	0.298 (0.64)	1.347	0.985 (1.41)	2.677
Lived Outside District	1.288 (2.42)**	3.624	0.921 (1.18)	2.512	-0.119 (0.22)	0.888	-0.736 (1.00)	0.479
Network Size	0.012 (0.17)	1.012	0.724 (2.21)*	2.062	-0.024 (0.31)	0.977	0.238 (0.54)	1.268
Education Heterogeneity	0.068 (0.12)	1.071	-0.903 (0.99)	0.405	-0.138 (0.24)	0.871	1.100 (1.14)	3.004
Member of Informal/formal Group	0.878 (1.88)*	2.406	-0.700 (0.81)	0.496	1.516 (2.58)**	4.552	-0.497 (0.70)	0.608
Network Density	0.477 (1.08)	1.611	-0.577 (0.72)	0.561	0.779 (1.64)	2.179	-0.192 (0.21)	0.825
Network Member uses Contraception	-0.873 (1.50)	0.418	0.752 (0.77)	2.122	0.319 (0.44)	1.376	2.978 (3.79)**	19.653
Constant	1.495 (1.32)		3.014 (1.36)		-2.359 (1.76)*		0.425 (0.19)	
Log Likelihood	-85.28		-29.11		-78.08		-35.99	
Pseudo R ²	0.116		0.260		0.101		0.331	
Observations	171		105		215		157	

Absolute value of z-statistics in parentheses

* $p \leq 0.05$; ** $p \leq 0.01$

Table 6.4: Effect of selected socioeconomic, demographic and social network variables on would like another child, use of contraception and whether respondent talked to spouse about family planning

Variables	Would like another child		Ever used method		Talked to spouse about contraception	
	Odds Ratio		Odds Ratio		Odds Ratio	
Age	-0.066 (4.18)**	0.936	-0.006 (0.44)	0.994	-0.034 (2.01)*	0.966
No. of Children	-0.477 (6.67)**	0.621	0.110 (2.11)*	1.117	0.068 (1.09)	1.070
Education	0.037 (1.20)	1.038	0.048 (1.75)*	1.050	0.062 (1.81)*	1.064
Cash Crop	0.007 (0.03)	1.007	-0.348 (1.87)*	0.706	0.155 (0.64)	1.167
Lived Outside District	-0.313 (1.42)	0.731	0.369 (1.80)*	1.446	0.485 (1.80)*	1.625
Network Size	-0.103 (2.23)*	0.902	0.034 (0.87)	1.035	0.063 (1.07)	1.065
Education Heterogeneity	-0.705 (2.56)**	0.494	0.256 (1.04)	1.291	-0.025 (0.08)	0.975
Member of Informal/formal Group	0.262 (1.06)	1.299	0.098 (0.45)	1.103	0.600 (2.16)*	1.821
Network Density	-0.064 (0.29)	0.938	-0.422 (2.10)*	0.655	0.274 (1.09)	1.316
Network Member uses Contraception	-0.434 (1.41)	0.648	1.127 (4.47)**	3.085	0.477 (1.53)	1.611
Gender (1=Women)	-0.363 (1.50)	0.696	0.448 (2.03)*	1.566	-0.701 (2.32)*	0.496
District (1=Murang'a)	-0.726 (3.34)**	0.484	0.924 (4.75)**	2.519	0.498 (2.00)*	1.646
Constant	4.897 (7.05)**		-1.388 (2.38)**		1.053 (1.40)	
Log Likelihood	-330.46		-382.57		-261.46	
Pseudo R ²	0.281		0.099		0.077	
Observations	666		696		648	

Absolute value of z-statistics in parentheses

* $p \leq 0.05$; ** $p \leq 0.01$

CHAPTER SEVEN

SUMMARY, CONCLUSION AND RECOMMENDATION

INTRODUCTION

This chapter has three parts. First, it summarize the methodological, theoretical and substantive issues. Second, it presents the summary of the key findings of the study and third, it presents the policy implications of the findings and suggest recommendations about how to advance and continue the demographic transition in Kenya. Lastly, I suggest fruitful areas for future research.

This dissertation set out to find out the role social interaction plays in the fertility change in Kenya which came as a complete surprise to many social scientists. It was envisaged that the transition would start at some point in the 21st Century. Obviously, demographic transition theory cannot explain why fertility declined because its main argument is that development is the best contraception. This cannot be said of Kenya because, since the mid-1980s Kenya's economic performance has been disappointing. The little economic development that took place during the 1970s has more or less been reversed as a consequence of both global and internal factors. In this respect, we cannot say that economic development was crucial in ordering the transition process currently underway in Kenya.

Evidence from European fertility transition, which occurred in the last century, and contemporary fertility transitions in developing countries, point to the importance of diffusion of information through social networks. Social networks approach holds great promise, particularly for African countries where information about family planning is often lacking and

where norms and traditions are particularly strong in stifling programs efforts aimed at popularizing family planning methods. In some cases, program efforts to inform people about how to take advantage of the modern contraception could appeal to some sector of society but for others they would want to collect evidence from other people about how the new technology (modern contraception) “rhymes” with their bodies, that is, if the new technology is safe. They may also want to know what others think about it, do they approve of the new behavior or not. In such situation social networks would be creating “unmet need”.

This study, using social networks approach has revealed that interaction with others, kin, friends, neighbors does affect demographic behavior. I have found that both men and women in the two districts surveyed are not only talking but they are actively debating issues of family size and family planning factors often associated with fertility transition. The debates seem to be bringing Coale’s (1973) three preconditions for fertility decline into focus. Coale argues that for fertility transition to take shape, people must realize that reproduction is within their realm of control, that reduced fertility is advantageous and techniques of fertility control are available. Through social networks, I believe people are learning that fertility control is within their control, and are being encouraged by their friends to use modern family planning methods after realizing that having many children is no longer glamorous. This marks a break with the past thinking that fertility control was in the realm of deity (Caldwell and Caldwell 1987).

Social interaction is important because whatever gets transmitted during these exchanges or the stories that are told provides interpretive schemes that people use to evaluate a new behavior. Since people cannot verbalize social rules guiding their behavior, talking with

other people provides a forum in which social rules can be given a highly contextual and situational formulation. The interaction provides information about what is desirable and acceptable and what is undesirable and unacceptable. Through talking, people in some way try to test the possibility of change, and in the process assess the reaction of their friends about the topic under discussion (Watkins 1991b).

In some ways there are those who might look at the demographic change in Kenya as being caused by a weakened normative structure or social control as Lesthacghe and Wilson (1986) found for Europe just before the fertility transition. They found that inhabitants of secularized regions were pioneers of fertility control, and that in Catholic areas secularization played a particularly important role. Others may argue that, fertility reduction occurred because of the increased levels of education (individual characteristics) among the population that has rationalized people's thinking about the burden of having large families. This may be true, but it may also be true that increased education allows people to establish more networks outside their local contexts that are heterogenous and more supportive of behavior change (Watkins 1991b). Thus, it is important to examine the influence of others on changing peoples behavior.

FINDINGS

One of the major findings of this study is that both men and women talk about family planning and other issues related to fertility behavior. Most of the respondents reported having had a conversation about family planning in the last month and at the same time most reported spending more than 50 days in a year talking about family planning. Most of the talking took

place in the course of their daily activities. Even more important is the finding that most of the respondents reported interacting with networks who approved and encouraged family planning use.

What are the implications of these characteristics for fertility transition in Kenya? The sheer intensity of the discussions is important in itself. This tells us that it is no longer taboo (or the taboos are quickly eroding) to talk about family limitation. People are talking to age mates, those older and sometimes those younger than them, meaning that society is slowly demystifying the age gaps and the interaction between age groups. Information is therefore flowing to those who are starting their family building, those in the process and those about to finish. The intensity of the conversations could mean that whatever is being talked about is also reaching groups that probably were not intended, the young.

In Bangladesh, Rezina and Simons(1995) found that information about family planning was able to reach young audiences for whom the program was not intended through the diffusion process. Young girls would discreetly listen to adult women talk about family planning and then go and tell their friends at school what they heard. While this might seem culturally unacceptable to most communities, it is the future impact that is likely to be significant. When one is equipped with the appropriate knowledge before an event happens, the person is usually more prepared to confront the issue when it finally comes than the converse. Thus, when new ideas reach the young, unmarried women in the years preceding the onset of sexuality and childbearing, their influence on future family size norms and contraceptive behavior is potentially significant (Rezina and Simons1995:2). This, I believe, is happening in Kenya. Even more

explicitly, mothers in Kenya are now counselling their daughters to be cautious when they start their family building process. Daughters are encouraged to use family planning methods to avoid pregnancy (Robertson 1997:237).

The diversity of the networks shown by the proportion talking to non kin, education heterogeneity and differences in the socioeconomic status shown by whether networks own grade cows indicate that a substantial number of respondents are exposed to people who are different from themselves. These are people who probably hold different views about demographic behavior. The diverse others are likely to suggest new ideas that would have implications for their behavior. While it is true that the information that get exchanged in these interactions could constitute a positive change to some groups of people, it is also true that negative information could be traded in these discussions, thereby discouraging people to adopt the intended new behavior. Many people I talked to during the survey complained about the side effects of using modern contraception. Concerns over side effects have also been documented by Watkins (1995; 1997). This may lead to disaffection amongst willing adopters of contraception. However, since contraception prevalence levels are increasing in Kenya, it means that people are evaluating these shortcomings and deciding that it is probably safer to use them and endure the side effects than risk the misery of having another child.

Discussions, debates, that go on within social networks probably mark the early signs of the process of social change. With regard to fertility, social change would consist of changes in the normative structure that demand high levels of fertility. Once people start talking, analyzing and possibly engaging in debates that are critical of a certain behavior in society, that

would be an indication of the beginning of social change. For example, once it becomes negative to have many children and people start seeing children as a burden, changes in attitudes and behavior towards children are likely. A good example of this change comes from a research done in Sicily where a large family was once prized (Schneider and Schneider 1992:172-173). But once small family norm started taking root, the tide changed. People with many children were called "rabbits", "mice" and the negative feelings about having large families were so strong that such families became targets of local gossips and were chastised for the disgrace of not having thought before making such a bad impression. It was so shameful to the parents that they never looked people in the eye and often allowed their children to skip school to avoid the stares and the spite. This kind of label was a form of social control mechanism that informed those who still lived in the past to change and embrace the small family norm. This is the case in Kenya where people with large families and who are unable to take care of them are pitied and often become a subject of gossip.

MULTIVARIATE FINDINGS

Although men and women have different ways in which they interact with their friends the outcome is the same, interaction facilitates fertility behavior change. Most men's general networks are usually used for locating employment, paying of school fees, providing loans, resolving legal disputes and of course for lamenting about the difficulties wrought by changing economic conditions (Orvis 1997:76). Men maintain their discussion and support networks through social contacts at funerals, feasts, and in local brew joints. Just to show how social

events force people to congregate thereby creating conditions for idea exchange, I examine the case of funeral ceremonies. When a death is announced, relatives and non-relatives of the deceased are expected to attend and, in honor of the departed soul work, especially on the farm, is suspended in the locality for at least until after the burial time. People therefore gather at the deceased home, often eating and talking about changes taking place around them. Talking is not only limited to funerals but to many gatherings where people meet.

Men usually spend time drinking and chatting in bars. Though conversations in bars and home breweries frequently revolve around farming, potential employment, local politics and other social happenings, they are likely to involve talking about the difficulties inherent in eking out a life and the problems associated with many children. Through talk people are likely to link increased hardships being experienced to having large families. This would in turn affect the reproductive outcome of those starting to have children and those in the process of having children.

On the other hand, women's networks usually involve sisters, cousins who have married in other parts of the country or districts. This means that women's networks have a greater geographic spread and diversity than do men's especially those who have never migrated. This is because marriage in Kenya, especially in Western and Central Kenya where this study took place is exogamous. Women use most of these social networks in harnessing help for child care, food and health assistance. These networks are also likely to make the woman conscious of the problems of having large families by reminding her that, if she had few children, she would not be suffering. Women's networks are also important in situations where

a woman is experiencing a difficult pregnancy. Seeing a women having a difficult pregnancy because of poverty, or lack of medical care is likely to instigate conversations in the community about how to avoid such births. This may include advice on using family planning methods to avoid future problems. Also, during times of food shortage women turn to their social networks for assistance. It is possible that after offering help, women start gossiping about how some people have given birth to children whom they are unable to feed. This type of gossip is hinted by Watkins (1990). Gossip is believed to exercise some social control on members of the community. Some form of gossip condemns certain behaviors such as relying too much on others to raise children. Such gossips may wonder why a woman gave birth to so many children when she cannot afford to take care of them. Gossip therefore provides what Watkins (1990:256) refers to as "narrative, explanation and judgement" of the situation at hand. Both the listener and the talker in gossip situations try to decipher and understand what is going on by talking about someone else. They are actually using such a situation to generate more information in order to reach a judgement. The judgement they reach is likely to have implications for their own behavior and the behavior of others within the social network.

The importance of social networks was demonstrated in the multivariate analysis in which social interaction variables proved important in influencing fertility behavior. Men's social networks turned out to be even more important than women's social networks in influencing fertility behavior in the two districts. Murang'a men's social networks were particularly important in promoting ever use of contraception. Of the six social network variables, four of them (having experienced a migration, size of network, network density, and perception of

network's use of family planning) significantly influenced ever use of contraception. Among Kakamega men, network density and perception of contraception use by network member strongly influenced the respondents ever use of contraception. Overall, respondents perception of network use of contraception turned out to be important in both districts, with the exception of Kakamega women with whom none of the tested variables turned out significant though education heterogeneity showed a strong but insignificant relationship. This means that people tend to enact behaviors that they believe are supported by other members of the community. Perception, therefore, works to reinforce the feeling that there is a community of support for the new behavior. The knowledge that others are engaging in a new behavior minimizes the anxiety and costs associated with its adoption since there is already evidence in the community that the behavior is acceptable.

The increasing contraceptive prevalence rate in Kenya could be due to the changing attitude of men about contraception, that is as a result of the outcome of the discussions going on among men's networks. That men are an important factor in the increasing contraceptive prevalence rate in Kenya, goes counter to what most family planning programs have emphasized. Most program efforts have targeted women because it is believed that women are the ones who give birth and as such believed to be the ones making contraceptive decisions. This is despite the fact that literature has shown that men and their lineages have over the ages determined both the reproductive and productive capacity of women. The neglect of the male component in many program efforts is therefore misguided and an expensive oversight. It is no wonder the fertility transition in Kenya was totally unexpected because the changing attitudes of

men were not noted. The importance of Kenyan men in directing contraceptive behavior was noted by Ashraf and Becker's (1997) research. They find that women's likelihood of using contraceptive increased significantly if they believed that their husbands approved use of family planning than if they thought they disapproved of it. Women whose husbands have a positive evaluation of family planning are more likely to use contraception than those whose evaluation is negative. Changes in the attitudes of men towards use of contraception could emerge as a result of the intense consultations and discussions that go on within their social networks.

Network size was found to be significant in determining whether men wanted another child or not and whether they talked to their spouse about contraception or not in Kakamega. This is in addition to educational heterogeneity of alters which was found to significantly reduce wanting another child among Kakamega men. Interacting with network members whom the respondent thought were using contraception (perception) was the only significant variable among Murang'a men. Having lived outside the district for more than six months since marriage and education heterogeneity of network member influenced women's want of another child in Murang'a. Again, none of the interaction variables proved important in influencing want of another child among Kakamega women. On the other hand, having lived outside the district, and membership to a voluntary association influenced talking to spouse about family planning among Kakamega women. Voluntary membership in an organization also influenced talking to spouse about family planning among Murang'a women while perception continued being important among Murang'a men with regard to initiating talk with spouse about family planning.

The fact that networks variables are important does not mean that individual

characteristics are not. In the multivariate analysis, the number of living children, education, age and whether the respondent grew cash crop were found to be important in determining fertility behavior. Although they were not uniform in influencing fertility behavior across the district and gender, they nonetheless exerted significant influence on the dependent variables.

The importance of social networks cannot be overstated. People look to trusted friends or others close to them for role models, as such these groups of people are likely to have greater impact in shaping a person's behavior than other persons positioned differently in society. Usually people conform to attitudinal and behavioral norms of people close to them or their social network because they constitute a potent source of social influence. Fishbein and Ajzen (1975) found that the attitudes of significant others toward a particular preventive act, for example use of contraception, were an important determinant of the individuals' own behavior. Networks have the capacity to effectively convey informational social influence because they represent a valid source of information in general and about the behaviors and outcomes of similar others in particular. In addition, networks may communicate information because they contain salient, socially meaningful models and also serve as sources of social comparison for the individual. Social networks serve as especially effective models. People may simply pay greater attention to similar others' actions and may feel that, if similar others can enact a behavior, they can too. Networks may therefore interpret similar others' behavior as information about how they should behave.

THEORETICAL IMPLICATIONS OF THE FINDINGS

I have presented the case of why the demographic transition theory and its variants cannot adequately explain the unexpected nature of the demographic transition process in Kenya. I have noted that all these theories addressed either structural or individual characteristics and neglected the context in which reproductive decisions are made. Historically, reproduction has always been under social rather than individual control in virtually all communities and cultures, but this dimension has been neglected in demographic research. In traditional societies, many practices restrained reproduction by way of prescribing who will marry and when, and how long should a baby be breast-fed. This has continued to today in many societies. The focus on couples and on their individual characteristics as the main factors in determining fertility transition that many of these theories emphasize, makes us lose sight of how changes in behavior are embedded in the social structure.

The most fascinating thing about contemporary fertility transitions in developing countries has been its pace and pervasiveness. More intriguing is the fact that a relatively short time lag marked the onset of the transition in some groups and its adoption by others in the same country. The pervasiveness and speed of the fertility decline in both developing and developed countries casts doubt on the operation of the classical formulation and the recent restatements of the Demographic Transition Theory. Cleland and Wilson (1987) note that it is implausible to maintain that the social or economic structure of these societies changed so profoundly within a decade as to account for this demographic response.

The "demographic revolution" that has taken place in contemporary developing

countries could be due to the importance of social networks. Social networks provide people with situations where they compare themselves with each other especially when they are confronted with an ambivalent or puzzling situation that they need answers to. Although the implementation of demographic behavior such as use of family planning, is a private matter, it should be recognized that it is an act that is profoundly rooted in society. People often look over their shoulders at other members of society to see what they are doing so that they can align their private behavior with everyone else's. They come to know about what others are doing or what is going on in their community through the operation of social networks.

The demographic transition theories that attempt to explain why fertility is changing would therefore have to incorporate the process of fertility decline in accounting for changes in an individual's demographic behavior. Concentrating on structural or individual characteristics as the most important variables in explaining fertility decline in Kenya as enunciated by demographic theories would provide a partial story of what is really going on. As this dissertation documents, social interaction (captured via social networks) is crucial in explaining the timing of the fertility transition currently underway in Kenya.

IMPLICATIONS AND RECOMMENDATION

The implications of my research results on fertility transition is that research should not be confined to assessing only the effects of individual characteristics, but should also incorporate network (social structure) variables. I have found out that attitudes and behaviors of both men and women towards demographic variables are associated with those of their

networks.

Another implication that is likely to be key in the success of family planning programs is that programs should “listen” to what people are talking about. Most times when people talk about family planning, they are assessing the consequences (side effects) of using family planning programs. Since people trust and take the advice of their friends seriously, the program efforts should work towards making sure that the right information is passed on to the population. Some efforts have been made towards this end by appointing local women to be Community Based Distributors (CBD) of contraception. This is likely to help as long as the CBDs do not de-link themselves from the community by adopting more sophisticated mannerisms that would attract resentment in the community. Community workers can therefore help demystify some of the misconceptions that may arise from the social interactions.

If policy makers and program officers can implement programs that enhance discussion among people, both men and women in this respect, then it will be an important step towards helping more men and women have the courage to broach the topic of family planning to their spouses. One way of keeping the community talking is to intensify media programs that deal with family planning. Media messages increase awareness and also help generate discussion about the topic of family planning. But to have an effective impact on changing behavior of the target group, the media must create a situation where people will start talking and analyzing the messages. It is through these kinds of social interactions that people acquire confidence and a willingness to try out a new behavior.

Considering the respondents perception of network member using contraception is very

important for ever use of contraception as demonstrated in this dissertation. I would recommend that program planners should take advantage of the satisfied users of contraception to talk to their neighbors and friends who remain ambivalent about the use of family planning. An identification could be made through networks of the satisfied users and how big their networks are, this could shed some light about the future impact of program efforts in the country.

Because most governments and family planning programs use women in family planning projects, such as community based distributors of contraception, it will be fruitful, given the findings of this study (that men's networks are important in promoting contraceptive use), to include male workers in the process of contraceptive distribution. Since social networks proved to be important in men's ever use of contraception, men should be targeted as critical factors in the success of the fertility decline going on in Kenya. The fertility transition underway in Kenya is in part, as shown by the network analysis, due to changing men's attitude to family planning. Given men's control of both reproductive and productive capacities of women, their actions are fundamental in increasing the contraceptive uptake by their spouses. Mens' use of contraception would invariably imply that their spouses are also consistent users of contraception. Family planning program designers should therefore incorporate men in their programs to enhance the fertility transition currently underway now that their attitudes towards demographic behavior are changing. Engaging men in the family planning distribution process would reach other men and is likely to shape a favorable view of contraception and thereby prop up demand. The exclusive use of women as community based contraceptive workers

sends a message to men that family planning activities do not concern them. More than just increasing the number of men using condoms and having vasectomy, increased male involvement would increase the number of men who support their partners and their peers to use family planning.

Some programs have developed Information, Education and Communication campaigns that have aimed at increasing men's contraceptive awareness and knowledge. The main question that remains, however, is how these programs can move beyond just increasing knowledge to changing attitudes and practices. Family planning programs should therefore establish means and ways to promote and expand the discussion space of contraceptive issues. I believe that using a mix of both men and women as family planning promoters will encourage and increase discussion of family planning among community members and is likely to have significant implications on their respective reproductive health and fertility concerns.

The importance of inter-spousal communication that is fostered among both women and men through social networks is also critical in understanding the ongoing fertility transition. Most couples do not talk to each other about family planning because of the cultural set up of the Kenyan society where men and women spheres of influence are distinct. Given this set up, it becomes a problem to broach the topic of family planning, especially to husbands. However, the finding that inter-spousal communication is initiated as a result of the operation of the various social network variables is worth following. Apparently, interacting with others encourages respondents to talk to their spouses. It appears that the discussions they have among their friends melt their fears or sharpen their resolve by giving them adequate background and

information to introduce the topic to their spouses.

As this study has shown, membership to voluntary organizations significantly influence inter-spousal communication about contraception among women. Besides the economic empowering role of these organizations, they are also important in helping women with strategies to broach a topic that is rarely open for conversation between spouses. I think through the informal talks and sometimes even formal ones, women are encouraged to talk to their spouses about the importance of family planning in clever ways. They might in the course of talking to their spouses, reminisce on the talks they heard during the day, and one of them might involve having overheard people talk about family planning (she might even have taken part in the talk). If the husband becomes defensive and hostile to the talk, she might abandon it and maybe decide to use contraception secretly (See Watkins 1987; Watkins et al. 1995). However, if the husband is responsive and keen to listen, then, the adopted strategy of broaching the topic would have succeeded. This might work either way although in this case men's involvement in voluntary organizations is not significant. Not many men are members of organizations that are capable of transforming reproductive behavior in rural Kenya.

The fact that women are now starting to talk to their spouses about family planning shows how much is changing within the traditional African family. There is a move towards understanding and exchanging of important information between both men and women and I think there is a realization by both genders that the common good of the family rests with the concerted and joint action between both of them.

This study recommends that further research should be done to find out why ideational

change captured by wanting another child and behavioral change captured by ever use of contraception is not firmly established among Kakamega women. Generally, more research should be undertaken in the various districts to further test the role of social interaction in the continuing fertility decline in Kenya.

APPENDIX: QUESTIONNAIRE

BACKGROUND INFORMATION

Division _____

Location _____

Sublocation _____

Village _____

Respondents Name _____

Date of Interview _____

Interviewers Name _____

Outcome:

First Visit 1. Complete 2. Refused 3. Not Home Other _____

Second Visit 1. Complete 2. Refused 3. Not Home Other _____

Third Visit 1. Complete 2. Refused 3. Not Home Other _____

1. When were you born? _____ Age in years _____

2. Are you now... 1. Married 2. Divorced/Separated 3. Single (skip to 4)

4. Wido
wed

3. When did you get married? (This marriage) Year _____

4. Have you ever attended school?

1. Yes 2. No (Skip to 8)

5. What is the highest level of school you have attended?

1. Primary 2. Secondary 3. University 4. Other (specify _____)

6. What is the highest (standard/form/year) you completed? _____

7. Exactly how many years did you go to school in all _____

8. What is your ethnic group?

1. Kalenjin 2. Kamba 3. Kikuyu 4. Kisii

5. Luhya 6. Luo 7. Meru/embu 8. Miji Kenda/swahili

9. Somali 10. Taita/taveta

11. Other (specify _____)

9. What religion are you?

1. Catholic 2. Protestant 3. Other (specify _____)

10. What is your occupation _____

11. Considering all your sources of income (salary, money from farm produce, money sent by relatives- husband, children etc) about how much income do you get in a month

1. Less than Ksh. 2000 2. Ksh. 2000-4999 3. Ksh. 5000-10000 4. Over 10000

12. Have you ever been to Nairobi or any other big town?

1. Yes 2. No (skip to 14)

13. About how many times? _____
14. Have you lived outside _____ for 6 months or more since marriage?
1. Yes 2. No (skip to 16)

15. Did you live in Nairobi, Mombasa, or somewhere else for 6 or more months?

	Yes	No
Nairobi	1	2
Mombasa	1	2
Other (specify _____)	1	2

16. Do you belong to a women's organization?
1. Yes 2. No (Skip to 19)
17. How often do you attend meetings of the organization? _____
18. Do you hold any leadership position in the organization?
1. Yes 2. No
19. Does your husband usually stay in this compound or does he usually stay somewhere else?
1. Stays in compound (skip to 23) 2. Stays somewhere else 3. Deceased
20. When was the last time he visited here?
1. Within last month 2. Since June 1997
3. Since January 1997 4. More than a year ago
21. When was the last time he sent or brought you money?
1. Within last month 2. Since June 1997
3. Since January 1997 4. More than a year ago
22. How much money did he sent? _____
23. How many children have you had in all your life, including children from before marriages and including those who have died? Number _____
24. How many died? Number of deaths _____
25. How many of your children are aged under 18? Number _____

CONTRACEPTION

Now I would like to talk to you about family planning - The various ways or methods that a couple can use to delay or avoid pregnancy.

26. Which ways or methods have you heard of?	1. Pill 2. Coil 3. Injection 4. Foam tablets/jelly 5. Condom 6. Female sterilization 7. Male sterilization 8. Norplant 9. Rythym 10. Natural FP 11. Withdrawal 12. Other (specify _____)
27. Have you ever used any of the methods	1. Yes 2. No (Skip to 33)
28. How many children did you have when you started using family planning method?	
29. Are you currently using any FP method	1. Yes 2. No (skip to 33)
30. Which one?(Enter code from question 26)	
31. When did you start using an FP method	1. After January 1997 2. 2-4 years ago 3. 5 or more years ago 9. Don't know
32. How old were you when you started using FP method?	Age in years _____

33. Why are you not using any method? _____

34. How did you first hear about family planning?
- | | | |
|---------------------------|-----------------|----------------------|
| 1. Radio | 2. TV | 3. Newspaper/Books |
| 4. Posters | 5. Husband/wife | 6. Friends/relatives |
| 7. Health worker | 8. CBD/CHW | 9. Church |
| 10. Other (specify _____) | | |

35. From which person did you get the most information? Enter code from 34 above

FERTILITY PREFERENCE

I would like to talk to you about the future.

36. Would you like to have another child or would you prefer not to have anymore children?	1. Have another 2. No more/none 3. Wife can't get pregnant 4. Undecided/don't know
37. If you were to become pregnant in the next few months, would you be	1. Happy 2. Unhappy 3. Would not matter

38. Explain your answer? _____

39. If you could back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?
_____ other (specify _____)

VALUE OF CHILDREN

40. I would like you to give me your opinion on the following statements about the value of children.

Children.....	Strongly agree/Very important	Somewhat agree/important	Disagree/Not important
Are wealth			
Bring bride wealth			
Protect property			

Provide future insurance (old age)			
Give power in society			
Give prestige			
Continue clan/family lineage			
Inherit parents property/heir			
Pay fees for siblings			
Bring home money regularly			
Feed family/buy clothing			

SOCIOECONOMIC CHANGES

41. If you compare the past and present, which time do you think is/was difficult to raise children?
1. Present 2. Past 3. Same 9. Don't Know
42. Why do you think so?

43. Do you own or have access to land?
1. Yes 2. No (Skip to 48)
44. How big is it? (In acres) _____
45. What kinds of crops do you grow on your farm? _____

46. Do you harvest enough food on your farm to feed your family for the rest of the year?
1. Yes (Skip to 48) 2. No
47. How do you then supplement the food deficit?

48. If you compare the past and present, which time was/is difficult for households to grow enough food on their farms to feed their families?
 1. Difficult today 2. Difficult in the past
 3. No difference 9. Don't know
49. Explain your answer? _____

50. Do relatives help you with food when you do not have enough?
 1. Yes (skip to 52) 2. No
51. Why don't they help you? _____

52. Do you help your relatives if they do not have enough food?
 1. Yes (Skip to 54) 2. No
53. Why don't you help them? _____

54. What is your opinion about people who cannot feed their families. Do you consider it
 1. Shameful 2. Alright 3. A misfortune
 4. Other opinion _____
55. What is your opinion about having large families?

56. In your opinion, are most people within this area able to feed their families?
 1. Yes (skip to 58) 2. No
57. Why are most people unable to feed their families in this area?
 1. Their families are too large
 2. Their farms are too small
 3. Their farms are unproductive
 4. Other reasons (specify) _____

CHILDREN'S EDUCATION

58. Do you have children who go to school?
 1. Yes 2. No (Skip to 60)
58. How many children do you have in school both primary and secondary? Number

59. What is your opinion about the cost of educating children today? Is it
1. High 2. Low 3. Same as before 9. Don't know
[if has no children going to school skip to 66]
60. Could you give me the amount you spent on each child on education in the past year and the source of your funds.

child	Level of schooling 1. Primary 2. Sec 3. Other	cost in Ksh.	source of funding
1			
2			
3			
4			
5			
6			
7			
		Total	

61. Why have you taken your children to school?

62. Do your relatives help you with the education of your children?
1. Yes 2. No (skip to 65)
64. How do they help?

65. Why do you think your relatives do not help?_____

66. Do you help pay for your relatives education?
1. Yes 2. No (skip to 68)
67. Why do you help?_____

Why don't you help?

68. Why don't you help? _____

69. In the past, parents and other relatives used to put pressure on couples to have large families. Is this the case today especially when you consider your case?
1. Yes (skip to 71) 2. No
70. Why are they not putting pressure on couples to have more children nowadays?

FAMILY PLANNING AND SOCIAL NETWORKS

71. Have you ever discussed about FP with anybody beside your husband?
1. Yes 2. No (skip to 97)
72. If yes, How many people have you discussed FP with?
Number named _____
(Do not include husband)
73. Could you please give me the names of these people you discussed FP with? As I said earlier, this information will be completely confidential.
- | | |
|----------|----------|
| 1. _____ | 5. _____ |
| 2. _____ | 6. _____ |
| 3. _____ | 7. _____ |
| 4. _____ | 8. _____ |

		10. 000 11. 000 12. 000				
74	Please think back to your last conversation with _____ (Person named). When was this conversation?	1. Within the last week 2. Within the last month 3. Since January 1997 4. Since January 1996 5. Before January 1995				

75	How many people were involved in this conversation, either talking or just listening	____ (# if less than 5) 5..... 5-10 6..... more than 10				
76	How long have you known ____?	1. Spoken once or twice 2. Less than a year 3. 1-5 years 4. More than 5 years				
77	Where does ____ stay?	1. Same compound 2 same village 3 same sub-location 4 same location 5 elsewhere in Murang'a 6 Nairobi or Mombasa 7 somewhere else 9 DK				
78	How frequently do you talk with ____?	1 almost every day 2 at least once a week 3 once a month 4 about once a year 5 less than once year				
79	What is your relationship to ____?	1 friend 2 father 3 mother 4 brother 5 sister 6 sister-in-law 7 brother-in law 8 other male relative 9 other female relative 10 CBD 11 nurse 12 chief/elder or their spouse 13 teacher/clergy/spouse 14 workmate 15 other (specify)_____				

80	What gender is _____?	1 male 2 female				
81	Is _____ a confidant, just a friend or an acquaintance?	1 confidant 2 just a friend 3 an acquaintance				
82	Is _____ much older than you, an age mate, or much younger	1 much older 2 age mate 3 much younger				
83	Have you ever lent money to _____?	1 yes 2 no				
84	How often do you help with _____'s family activities?	1 often 2 sometimes 3 rarely				
85	Does _____ have a: READ LIST	Yes No Sofa set 1 2 Car 1 2 a husband or son with a regular salary Yes No 1 2				
86	Does _____'s household have a: READ LIST	Yes No A cement Floor 1 2 Water tank 1 2 Grade cow 1 2				
87	How much education does _____ have?	1 secondary school or technical college 2 primary school 3 never went to school 4 other (specify _____) 9 D.K.				

88	How many children has ____ had?	Number born_____				
89	How many of these children have died?	Number dead_____				
90	Does ____ belong to a women's organization?	1 yes 2 no				
91	Does ____ approve of family planning?	1 yes 2 no				
92	Does ____ use family planning? By family planning I mean spacing or stopping having children by use of such things as pills, injections coil etc	1 yes 2 no (Skip to 95) 9. D.K. (Skip to 96)				
93	what methods is _____ using?	1 pill 2 injection 3 coil 4 condom 5 TL 6 withdrawal 7 calendar/natural 8 separate beds 9 others (specify)_____				
94	IF NETWORK IS FEMALE, ASK: Does her husband know that she is using FP?	1 yes 2 no 3 not married 9 DK (skip to 96)				
95	Why don't they use FP?	1 wife currently pregnant, breastfeeding, trouble getting pregnant 2 wants another child soon 3 person himself doesn't approve of FP 4 fear side effects 5 persons wife/husband objects 6 religious reasons 7 other (specify)_____				
		9 D.K.				

96	Did _____ encourage you to use FP	1 yes 2 no				
Now return to beginning of network and ask the questions about the next conversation partner. When you have finished with all the conversation partners go to question 97						
97. I'd just like to check one more time. I am going to read a list and ask if you've chatted with any of these people about family planning. READ LIST.						
		Yes	No		Yes	No
CBD		1	2	friend	1	2
Nurse		1	2	father	1	2
teacher/clergy or their spouse		1	2	mother	1	2
chief/elder or their spouse		1	2	brother	1	2
workmate		1	2	sister	1	2
mother-in-law		1	2	sister-in-law	1	2
father-in-law		1	2	brother-in-law	1	2
unmarried woman		1	2	other male relative	1	2
non Kikuyu		1	2	other female relative	1	2

98. Now I would like to ask you about your husband. Have you ever talked to your husband about family planning?

1. Yes 2. No (Skip to 101) 3. Deceased (Skip to 104)

99. How often have you talked to him about using family planning	1 often 2 sometimes 3 rarely
100. When was the last time you talked about family planning with your husband.	1 within the last week 2 within the last month 3 since January 1997 4 since January 1996 5 before January 1996
101. Have you ever asked your husband if you could use family planning?	1 yes 2 no (Skip to 103)
102. Did he agree	1 yes (skip to 104) 2 no (skip to 104)

103. If you wanted to use family planning, do you think your husband would agree?

1. Yes 2. No 3. Uncertain

SECRET USE

Some women use family planning without their husbands knowing about it. Sometimes you might know because the woman told you in confidence, sometimes you might hear about it because somebody else told you, and sometimes you might suspect because she didn't have a child recently.

104. Have you heard of women using family planning secretly?

1. Yes 2. No (stop and end interview).

105. About how many women? Write number _____

106. I'm now going to ask you several questions about how you heard that these women were using family planning secretly. Can you tell me:

about how many told you in confidence _____

about how many you heard about from someone else _____

about how many you suspected _____

107. I'm now going to ask you about the methods that these women use secretly. I'll read the list of methods, and I'd like you to tell me how many women you think use these methods without their husbands knowledge. I'm also going to ask again whether these women told you what method they were using, whether you heard it from someone else, or whether you guessed.

	Number of women she knows who use this method secretly	How did you learn about this?		
Method		Woman told her (1)	Heard from someone else (2)	Guessed (3)
1 Pill				
2 Injection				
3 Coil				
4 TL				
5 Calendar/Nat.				
6 Norplant				
7 other (specify_____)				
88 Don't Know				

End of Interview. Please thank the respondent most sincerely for the patience and help.

REFERENCES

- Adamchak, Donald and Akinwumu Adebayo. 1987. "Male Fertility Attitudes: A Neglected Dimension in Nigerian Fertility Research." **Social Biology** 34:57-67.
- African Population Policy and Research Center. 1998. Fertility Decline in Kenya: Levels, Trends and Differentials. Nairobi: African Population Policy and Research Center and Population 7Council..
- Ajzen, I. And Fishbein, M. 1980. Understanding Attitudes and Predicting Social Behavior. Englewood Cliffs, NJ: Prentice Hall.
- Alba, F. and Potter, J.E. "1986. Population and Development in Mexico since 1940: An Interpretation." **Population and Development Review** 12:47-75.
- Becker G. 1981. A treatise on the Family. Cambridge: Harvard University Press.
- Becker, G.S. 1991. A Treatise on the Family. Enlarged Edition. Cambridge: Harvard University Press.
- Bertrand, J T; Pineda, M A and Soto, F E (1978) Communicating family planning to Rural Guatemala. Chicago : The Community and Family Study Centre, The University of Chicago.
- Biennestock, E.J. Boncich, P., and Oliver Melvin. 1990. "The effect of Network Density and Homogeneity on Attitude Polarization. **Social Networks** 12:153-172.
- Birdsall, Nancy. 1988. "Economic Approaches to Population Growth" in Chenery Hollis, and Srinivasan T.N. (eds.) Handbook of Development Economics Vol. 1. Amsterdam: North Holland.
- Blacker, J. 1994. "Some thoughts on the Evidence of Fertility Decline in Eastern and Southern Africa." **Population and Development Review** 20:200-205.
- Bongaarts, J. 1991. "The KAP-gap and the Unmet Need for Contraception," **Population and Development Review** 17(2):
- Bongaarts, J. 1990. "The Measurement of Wanted Fertility," **Population and Development Review** 16:487-506.
- Bongaarts, J. 1986. "The Transition in Reproductive behavior in the Third World." Center for Policy Studies Working Paper No. 125, The Population Council, New York.

Bongaarts, J. and Susan Watkins. 1996. "Social Interactions and Contemporary Fertility Transitions. **Population and Development Review** 22:639-682.

Bongaarts, J. and Bruce, J. 1995. "The Causes of Unmet Need for Contraception and the Social Content of Services." **Studies in Family Planning** 26:57-75.

Boserup, E. 1985. Economic and Demographic Interrelationships in Sub-Saharan Africa." **Population and Development Review** 11:383-397.

Bott Elizabeth. 1971. Family and Social Networks: Roles, Norms and External Relationships in Ordinary Urban Families. New York: The Free Press.

Bradley, Candice. 1997. "Fertility in Maragoli: The Global and the Local." p.109-123 in Economic Analysis Beyond the Local System (eds) Richard E. Blanton, Peter N. Peregrine, Deborah Winslow and Thomas D. Hall. New York: University Press of America. (Monographs in Economic Anthropology, No. 13).

Bradley, C. 1994. "Declining Fertility and Wealth Flows in Maragoli," in Weisner, T., Bradley, C., and Kilbride P. (eds.) African Families and the Crisis of Social Change CT: Greenwood.

Brass, William, and Jolly, C.L. (Eds.). 1993. Population Dynamics of Kenya. Washington, D.C.: National Academy Press.

Bulatao, R.A., and Lee R.D. 1983. Determinants of Fertility in Developing Countries Vol. 2. New York: Academic Press.

Burt, R.S. 1983. "Range" Pp. 176-194. In Burt S..S., Minor, M.J. (eds.), Applied Network Analysis: A Methodological Introduction. Beverly Hills, CA: Sage Publications.

Burt, Ronald. 1987. "A note on Strangers, Friends, and Happiness". **Social Networks** 9:311-331.

Cain, Mead. 1982. "Perspective on Family and Fertility in Developing Countries." **Population Studies** 36:159-175.

Cain, Mead. T., Syeda Rokeya Khanam and Shamsun Nahar. 1979. "Class, Patriarchy, and Women's Work in Bangladesh," **Population and Development Review** 5:405-438.

Caldwell, J.C. 1982. Theory of Fertility Decline. London: Academic Press.

Caldwell, J.C. 1976. "Toward a Restatement of Demographic Transition Theory." **Population and Development Review** 2:321-366.

Caldwell, John C., Orubuloye, I.O., and Caldwell, Pat. 1992. "Fertility Decline in Africa: A New Type of Transition?". **Population and Development Review** 18:211-242.

Caldwell, J.C. and Caldwell, P. 1987. "The Cultural Context of High Fertility in Sub-Saharan Africa" **Population and Development Review** 13:409-437.

Campbell, K.E., Marden, P.V., Hurlbert, J.S. 1986. "Social Resources and Socioeconomic Status. **Social Networks** 8:97-117.

Cassen, Robert. 1994. Population and Development: Old Debates. New Conclusions. Washington, DC: Overseas Development Council.

Central Bureau of Statistics (CBS). 1984. Kenya Contraceptive and Prevalence Survey 1984. First Report. Nairobi: Central Bureau of Statistics.

Cleland, J. and Wilson, C. 1987. "Demand Theories of Fertility Decline: An Iconoclastic View." **Population Studies** 41:5-30.

Cleland, John and Hobcraft, John. 1985. Reproductive Change in Developing Countries: Insights from the World Fertility Survey. New York: Oxford University Press.

Coale, A.J. 1986. "The Decline of Fertility in Europe Since the Eighteenth Century as a Chapter in Human Demographic History", in Ansley J. Coale and Susan C. Watkins (eds.), The Decline of Fertility in Europe. pp. 1-30. Princeton, NJ: Princeton University Press.

Coale, Ansley. 1973. "The Demographic Transition Reconsidered", in International Population Conference, Liege, Liege: International Union for the scientific Study of Population, Vol. 1, pp 53-72.

Coale, Ansley and Susan Cotts Watkins (eds). 1986. The Decline of Fertility in Europe. Princeton, NJ: Princeton University Press.

Coale, A.J. and Treadway, R. 1986. "A Summary of the Changing Distribution of Overall Fertility, Marital Fertility, and the Proportion Married in the Provinces of Europe," in A.J. Coale and S.C. Watkins (eds.), The Decline of Fertility in Europe pp. 131-181. Princeton: Princeton University Press.

Cochrane, S. H. 1979. Fertility and Education: What do we Really Know? Baltimore: Johns Hopkins University Press.

Cochrane, S.H., and Farid, S.M. 1985. "Fertility in sub-Saharan Africa: Levels and their Explanation" World Bank PHN Technical Note 85-13. Washington, DC: World Bank.

Cohen, Barney. 1993. Fertility Levels, Differentials, and Trends. Pp. 8-67. In Demographic Change in Sub-Saharan Africa. Eds. Karen A. Foote, Kenneth H. Hill, and Linda G. Martin. Washington, DC: National Academy Press.

Davis, Kingsley. 1945. "The World Demographic Transition." *Annals of the American Academy of Political and Social Science* 273:1-11.

Dow, T.E., Archer, L., Khasiani, S., and Kekovole, J. 1994. "Wealth Flow and Fertility Decline in Rural Kenya, 1981-92", *Population and Development Review* 20:343-364.

Durkheim, E. 1951(1897). Suicide: A study in Sociology (J. Spalding & G. Simpson, Trans.) Glencoe, Ill: Free Press.

Easterlin, R. 1975. "An Economic Framework for Fertility Analysis," *Studies in Family Planning* 6:54-63.

Easterlin Richard, and Crimmins, E. 1985. The Fertility Revolution: A Demand-Supply Analysis. Chicago: The University of Chicago Press.

Eberstadt, Nick. 1981. "Recent Declines in Fertility in Less Developed Countries, and what Population Planners may Learn from them," in Nick Eberstadt (ed.), Fertility Decline in Less Developed Countries. New York: Praeger Publishers).

Effah, B K (1997) "Determinants of contraceptive adoption in Ghana and Kenya" Paper presented at the annual meeting of Rural Sociological Society, Toronto, Canada, August 13 - 17.

Egero, B. and Hammarskjold, M (eds.). 1994. Understanding Reproductive Change: Kenya, Tamil Nadu, Punjab, Costa Rica. Lund, Sweden: Lund University Press.

Entwisle, B., Rindfuss, R.R., Guilkey, D.K., Chamrathirong, A., Curran.. and Sawangdee, Y. 1996. "Community and Contraceptive Choice in Rural Thailand: A Case Study of Nang Rong District." *Demography* 33:1-11.

Ezeh, Alex C., Michka Seroussi and Hendrik Raggers. 1996. "Men's Fertility, Contraceptive Use, and Reproductive Preferences," Demographic and Health Surveys Comparative Studies. No. 18, Calverton, Maryland U.S.A.: Macro International Inc.

Ferguson, A. 1991. *Family Planning Adoption, Change and Discontinuation: A Retrospective Study from Two Rural Areas of Kenya*. GTZ and Ministry of Health, Nairobi, Kenya.

Fischer, C.S. 1982. To Dwell among Friends: Personal Networks in Town and City. Chicago: University of Chicago Press.

Fishbein, M. and Ajzen, I. 1975. Belief, Attitude, Intention and Behavior. Reading, MA: Addison-Wesley.

Fisher, Jeffrey. 1988. "Possible Effects of Reference Group-Based Social Influence on AIDS-Risk Behavior and AIDS prevention." *American Psychologist* 43:914-920

Frank, Odile and McNicoll, Geoffrey . 1987. "An Interpretation of Fertility and Population Policy in Kenya." *Population and Development Review* 13:209-243.

Freedman, R. and Takeshita, J.Y. 1969. Family Planning in Taiwan: An Experiment in Social Change. Princeton: Princeton University Press.

Goldberg, H., McNeil, M., and Spitz, A. 1989. "Contraceptive Use and Fertility Decline in Chogoria, Kenya." *Studies in Family Planning* 20:17-25.

Granovetter, M.S. 1973. "The Strength of Weak Ties". *American Journal of Sociology* 78:1360-1380.

Granovetter, M.S. 1985. "Economic Action and Social Structure: The Problem of Embeddedness" *American Journal of Sociology* 9:481-510.

Gulhati, Kaval and Lisa M. Bates. 1994. "Developing Countries and the International Population Debate: Politics and Pragmatism". pp. 47-77. In Robert Cassen (ed.) Population and Development: Old Debates, New Conclusions. Washington, DC: Overseas Development Council.

Gwako, Laban E. 1997. "Conjugal Power in Rural Kenya Families: Its Influence on Women's Decision About Family Size and Family Planning Practises," *Sex Roles*. 36:127-146.

Hammerslough, C.R.1992. "Proximity to Contraceptive Services and Fertility Transition in Rural Kenya". *International Family Planning Perspectives* 18:54-58.

Hammerslough, C.R. 1991. "Proximity to contraceptive Services and Fertility Decline in Kenya". in Demographic and Health Surveys World Conference Proceedings Vol. II Columbia, MD: Institute for Resource Development, Macro International, Inc.

- Hammerslough, C.R. 1990. Community Determinants of Demographic Behavior in Kenya: First Report. Nairobi, Kenya: Population Studies and Research Institute, University of Nairobi.
- Hirschman, C. 1994. "Why Fertility Changes," **Annual Review of Sociology** 20:203-233.
- Horwitz A. 1977. Social Network and Pathway to Psychiatric Treatment. **Social Forces** 56:86
- Jensen, Ann-Magritt. 1995. Is there a Link Between Fertility Decline and Family Planning in Kenya? In C. Lundh (ed), Demography, Economy and Welfare, Scandinavian Population Studies, pp.351-365. Lund University Press.
- Jensen, Ann-Magritt. 1995. "The Status of Women and the Social Context of Reproduction". **Journal of International Development** 7:61-79.
- Jensen, Ann-Magritt. 1995. "Prospect of a Decline in Fertility in Sub-Saharan Africa: A Review of the Recent Debate". **Acta Sociologica** 38:263-273.
- Johansson, Ryan S. 1993. "Review of Fertility Transition: The Social Dynamics of Population Change". **Population and Development Review** 19:375-387.
- John Hopkins University/Centre for Communication (1996) "Perspectives and Challenges: An Overview on Men's Participation in Reproductive Health in Africa" Paper prepared for the Africa Regional Conference on Men's Participation in Family planning and Reproductive Health, Harare, Zimbabwe. Baltimore. Maryland: Population Communications Services, John Hopkins University
- Kadushin, C. 1966. "The Friends and Supporters of Psychotherapy: On Social Circles in Urban Life." **American Sociological Review** 31:786-802.
- Katz, E. and Lazarsfeld, P.F. 1955. Personal Influence: The Part Played by People in the Flow of Mass Communications. New York: The Free Press of Glencoe.
- Kelley, A.C. and Nobbe, C.E. 1990. Kenya at the Demographic Turning Point? Hypotheses and a Proposed Research Agenda. World Bank Discussion Paper No. 107. Washington, DC: World Bank.
- Khasiani, S.A. 1988. "The Family Planning Program in Kenya: Current Impact and Future Prospects" in Ominde Simcon (ed.) Kenya's Population Growth and Development to the Year 2000AD. Pp. 40-47. Nairobi: Heinemann.
- Kirk, Dudley. 1996. "Demographic Transition Theory", **Population Studies** 50:361-387.

- Knodel, John and Van De Walle, Etienne. 1986. "Lessons from the Past: Policy Implications of Historical Fertility Studies". In Ansley Coale and Susan Watkins (eds), The Decline of Fertility in Europe, pp. 390-419. Princeton, NJ: Princeton University Press.
- Knodel, J., Chamrathirong, A. and N. Debavalya. 1987. Thailand's Reproductive Revolution: Rapid Fertility Decline in a Third World Setting. Madison: University of Wisconsin Press.
- Knodel, J. and van de Walle, E. 1979. "Lessons from the Past: Policy Implications of Historical Fertility Studies," **Population and Development Review** 5:217-245.
- Lasec, A. and Becker, S. 1997. "Husband-Wife Communication About Family Planning and Contraceptive Use in Kenya" **International Family Planning Perspectives** 23:15-20.
- Lee, R.D. (1980). "A Historical Perspective on Economic aspects of the Population Explosion: The case of Pre-Industrial England". In R.A. Easterlin (ed.), Population and Economic Change in Developing Countries, pp. 517-566. Chicago: University of Chicago Press.
- Lesthaeghe, R. 1989. "Social Organization, Economic Crises, and the Future of Fertility Control in Africa," Pp. 475-505. In R. Lesthaeghe R. (ed.), Reproduction and Social Organization in Sub-Saharan Africa. Berkeley: University of California Press.
- Lesthaeghe, Ron. 1977. The Decline of Belgian Fertility, 1800-1970. Princeton, NJ: Princeton University Press.
- Lesthaeghe R. and Chris Wilson. 1986. "Modes of Production, Secularization and the Pace of the Fertility Decline in Western Europe, 1870-1930". In Ansley Coale and Susan Watkins (eds), The Decline of Fertility in Europe, pp. 261-292. Princeton, NJ: Princeton University Press.
- Liebes, T. and Katz, E. 1990. The Export of Meaning: Cross-cultural Readings of Dallas. New York: Oxford University Press.
- Lighthourne, R.E. 1985. "Individual Preferences and Fertility Behavior" in J. Cleland and J. Hobcraft (eds.), Reproductive Change in Developing Countries: Insights From the World Fertility Survey. New York: Oxford University Press.
- Lin Nan. 1999. "Social Networks and Status Attainment." **Annual Review of Sociology** 25:467-487.

Livi-Bacci Massimo. 1992. A Concise History of World Population. Cambridge, MA: Backwell.

Livi-Bacci Massimo. 1986. "Social-Group Forerunners of Fertility Control in Europe". In Ansley Coale and Susan Watkins (eds), The Decline of Fertility in Europe, pp. 182-200. Princeton, NJ: Princeton University Press.

Lockwood, M. 1995. "Development Policy and The African Demographic Transition: Issues and Questions". **Journal of International Development** 7:1-23.

Lull, J. 1990. Inside Family Viewing: Ethnographic Research on Television's Audience. London: Routledge.

Malthus, T.R. 1976. An Essay on the Principle of Population. New York: Norton & Co.

Marsden, P.V. 1987. "Core Discussion Networks of Americans," **American Sociological Review** 52:122-131.

Mason, Karen O. 1997. "Explaining Fertility Transitions." **Demography** 34:443-454.

Mason, Karen O. 1992. Culture and Fertility Transition: Thoughts on Theories of Fertility Decline." **Genus** 48:1-14.

Mason, Karen O. and Anju Malhotra Taj. 1987. "Differences Between Women and Men Reproductive goals in Developing Countries," **Population and Development Review** 13:611-638.

Mburugu, Edward. 1986. "Some Notable Patterns of Fertility Behavior in Africa: The Case of Kenya". **International Journal of Sociology** 1:203-211.

McKinlay J.B. 1973. "Social Networks, Lay Consultation, and Help-seeking Behavior." **Social Forces** 51:275

McLaren, A. 1992. "The Sexual Politics of Reproduction in Britain". In John R. Gillis, L. Tilly and D. Levine (eds), The European Experience of Declining Fertility, 1850-1970: The Quite Revolution. pp. 83-100. Cambridge, Mass.: Balckwell Publishers.

McLaren, A. 1984. Reproductive Rituals. New York: Methuen.

Mhloyi, Marvellous M. 1992. "Changing Factors Affecting Fertility Decisions in Africa." Third African Population Conference, Meeting of Experts, Dakar 7-10, December 1992. UN and ECA POP/APC.3/92/Inf.6.

Migot-Adhola, S. 1994. "Security of Tenure and Land Productivity in Kenya", in Bruce J. and Migot-Adhola, S. (eds.), Searching for Land Tenure Security in Sub-Saharan Africa London: Kendall Hunt.

Migot-Adhola, S., Peter Hazell, Benoit Blarel and Frank Place. 1991. "Indegenous Land Rights Systems in sub-Saharan Africa: A constraint on Productivity?" **The world Bank Economic Review** 5:155-175.

Montgomery, M.R. and W.S. Chung. 1994. "Social Networks and the Diffusion of Fertility Control: the Korean case." In Values and Fertility Change. Sion: Internatioanal Union for the Scientific Study of Population Conference.

Montgomery, Mark R. and John B. Casterline. 1993. "The diffusion of Fertility Control in Taiwan: Evidence from Pooled Cross-Section Time-Series Models". **Population Studies** 47:457-479.

Montgomery, Mark R. and John B. Casterline. 1996. "Social Learning, Social Influence, and new Models of Fertility," in J.B. Casterline, R.D. Lee, and K.A. Foote (eds.), Fertility in the United States: New Patterns, New Theories, pp. 151-175. Supplement to **Population and Development Review** 22. New York: Population Council.

Montgomery, Mark R., and Woojin Chung. 1999. "Social Networks and the Diffusion of Fertility Control in the Republic of Korea," In Richard Leete (ed.), Dynamics of Values in Fertility Change. Pp.179-209. Oxford: Oxford University Press.

Moock, Joyce Lewinger. 1975. "The Migration Process and Differential Economic Behavior in South Maragoli, Western Kenya." Ph.D. Dissertation, Columbia University.

Muganzi, Z. 1988. "Fertility and Mortality Trends in Kenya". In S.H. Ominde (ed) Kenya's Population Growth and Development to the Year 2000 AD. pp. 34-39. Nairobi: Heinemann.

Mulder, M.B. 1987. "Resources and Reproductive Success in Women with an example from the Kipsigis of Kenya." **Journal of Zoology** 213:489-505.

Munch, A., McPherson, J.M., and Smith-Lovin, L. 1997. "Gender Children, and Social Contact: The Effects of Childbearing for Men and Women," **American Sociological Review** 62:509-520.

Muvandi, I (1996) "Fertility Behaviour and Contraceptive use in Kenya : Findings from a Male Survey" **African Journal of Fertility, Sexuality and Reproductive Health** 1 :136-145

Mwaniki, Nyaga. 1986. "Against Many Odds: The Dilemmas of Women's Self Help Groups in Mbere, Kenya" **Africa**, 50:210-227.

National Council for Population and Development, Central Bureau of Statistics and Macro International Inc. 1998. Kenya Demographic and Health Survey 1998: Preliminary Report. Nairobi: Ministry of Planning and National Development and Macro International.

National Council for Population and Development (NCPD)m Central Bureau of Statistics (CBS) and Macro International Inc. (MI). 1994. Kenya Demographic and Health Survey 1993. Calverton, Maryland: NCPD, CBS and MI.

National Council for Population and Development (NCPD) and Insitute for Resource Development/Macro Systems Inc. (IRD/Macro). 1989. Kenya Demographic and Health Survey 1989. Columbia, Maryland: NCPD and IRD/Macro

Ngom, Pierre. 1997. "Implications of Men's unmet need in Africa", **Studies in Family Planning** 28:192-202.

Njogu, W. 1992. "Trends and Determinants of Contraceptive Use in Kenya". **Demography** 28:83-99.

Njogu, W. and Castro Martin. 1991. "Fertility Decline in Kenya: The Role of Timing and Spacing of Births," Paper presented at IUSSP Seminar on the Course of Fertility Transition in Sub-Saharan Africa, Harare.

Notestein, F.W. 1945. "Population– The Long view." in T.W. Schultz (ed.), Food for the World, pp. 36-57. Chicago: University of Chicago Press.

Notestein, F.W. 1953. Economic Problems of Population Change. In Proceedings of the Eighth International Conference of Agricultural Economists. London: Oxford University Press.

Orvis Stephen. 1997. The Agrarian Question in Kenya. Gainesville, FL: University press of Florida.

Robertson, C. 1997. The Trouble Showed the Way: Women, Men and Trade in the Nairobi Area, 1890-1990. Bloomington, IN: Indiana University Press.

Palmore, J.A and Freedman, R. 1969. "Perceptions of Contraceptive Practice by Others: Effects on Family Planning Acceptance in Taichung, Taiwan" in Freedman, R. and Takeshita, J.Y (eds.) Family Planning in Taiwan: An Experiment in Social Change. Princeton, NJ: Princeton University Press.

Rutenberg, N. and Watkins, S.C. 1997. "The Buzz Outside the Clinics: Conversations and Contraception in Nyanza Province, Kenya." **Studies in Family Planning** 28:290-307.

Pescosolido, B.A. 1992. "Beyond Rational Choice: The Social Dynamics of How People Seek Help." **American Journal of Sociology** 97:1096-1138.

Pescosolido, B.A. 1991. "Illness Careers and Network Ties: A Conceptual Model of Utilization and Compliance." pp. 164-81 in Gary Albrecht and J. Levy (eds.), Advances in Medical Sociology. Vol. 2. Greenwich, CT: JAI Press.

Pescosolido, B.A., Wright, E., Alegria, M., and Vera M. 1996. "Social Networks and Patterns of Use Among the Poor with Mental Health Problems in Puerto Rico." Paper presented at the 1994 Annual Meeting of the American Public Health Association.

Phillips, James F., Simmons, R., Koenig, M. and Chakraborty, J. 1988. "Determinants of Reproductive Change in a Traditional Society." **Studies in Family Planning** 19:313-334.

Retherford, R.D. and Palmore, J.A. 1983. Diffusion Processes Affecting Fertility Regulation. In Determinants of Fertility in Developing Countries, eds. R.A. Bulatao and R.D. Lee, Vol. 2. Pp. 296-337. New York: Academic Press.

Rezina, M. and Simons, R. 1995. "Diffusion of the culture of contraception: Program Effect on Young Women in Rural Bangladesh". **Studies in Family Planning** 26(1):1-13.

Rice, R. E., Grant A. E. Schmitz J. and Torobin J. 1990. "Individual and Network Influences on the Adoption and Perceived Outcomes of Electronic Messaging" **Social Networks** 12:27-55.

Ringheim, K. 1993. "Factors that Determine Prevalence of Use of Contraceptive Methods for Men" **Studies in Family Planning** 24(2): 87-99.

Robert Cassen. 1994. Population and Development: Old Debates, New Conclusions. Washington, DC: Overseas Development Council.

Robinson, Warren C. 1992. "Kenya Enters the Fertility Transition". **Population Studies** 46:445-457.

- Robinson, W.C. and Harbison, S.F. 1995. "The Fertility Decline in Kenya", *Journal of International Development*, 7:81-92
- Robinson, W.C. and Cleland, J. 1992. "The Influence of Contraceptive costs on Demand for Children." pp. 106-122 in *Family Planning Programs and Fertility*, J.F. Phillips and J.A. Ross (eds.) Oxford, England: Clarendon Press.
- Rogers, E. 1995. Diffusion of Innovations. New York: Free Press.
- Rogers, E. 1983. Diffusion of Innovations. New York: Free Press.
- Rogers, E.M. and D.L. Kincaid. 1981. Communication Network: Toward a New Paradigm for Research. New York: Free Press.
- Rosenfield, A. G., W. Asavesena and J. Mikhanorn. 1973. "Person-to-Person Communication in Thailand." *Studies in Family Planning* 4(6): 145-149.
- Rosero-Bixby, L. and John Casterline. 1994. "Interaction Diffusion and Fertility Transition in Costa Rica." *Social Forces* 73:435-462.
- Rosero-Bixby, L. and John Casterline. 1993. "Modelling Diffusion effects in Fertility Transition," *Population Studies* 47:147-167.
- Roudi, F and Ashford, L. 1996. Men and family planning in Africa Washington: Population Reference Bureau
- Rutenberg, N. and Diamond, I. 1993. "Fertility in Botswana: The Recent Decline and Future Prospects", *Demography* 30:143-158.
- Safilios-Rothschild, C. and Edward Mburugu. 1986. Women's Income and Fertility in Rural Kenya Working Paper No.441, Institute of Development Studies, University of Nairobi, Nairobi.
- Schneider, J.C. and Schneider, P. T. 1996. Festival of the poor : fertility decline & the ideology of class in Sicily, 1860-1980. Tucson : University of Arizona Press
- Schneider, J.C. and Schneider, P.T. 1984. "Demographic Transition in a Sicilian Rural Town". *Journal of Family History*, 9:245-273.

- Schutjer, Wayne A. and Stokes Shannon C. 1984. "Access to Land and Fertility in Developing Countries," pp. 195-215. Schutjer, Wayne A. and Stokes Shannon (eds.), Rural Development and Human Fertility New York: Macmillan.
- Silberschmidt, Margrethe. 1992. Have Men become the Weaker Sex? Changing Life Situations in Kisii District, Kenya. **Journal of Modern African Studies**. 30:237-253.
- Sindiga, I. 1985. "The Persistence of High Fertility in Kenya." **Social Science and Medicine** 20:71-84.
- Singleton, A.R., Straits, C.B., and Straits, M.M. 1993. Approaches to Social Research Oxford: Oxford University Press.
- Swainson, N. 1980. The Development of Corporate Capitalism in Kenya, 1918-1977. London: Heinemann
- Szreter, S. 1993. "The Idea of Demographic Transition and the Study of Fertility Change: A Critical Intellectual History," **Population and Development Review** 19:659-701.
- Thandani, Veena. 1978. "The logic of Sentiment: The Family and Social Change." **Population and Development Review** 4:457-499.
- The Daily Nation Newspaper. 1998. Nov. 12. Nairobi.
- United Nations Development Program (UNDP). 1995. Human Development Report 1995. New York: Oxford University Press.
- United Nations Development Program (UNDP). 1993. Human Development Report 1993. New York: Oxford University Press.
- United Nations. 1999. "Population Growth and Demographic Structure: Proceedings of the United Nations Expert Group Meeting on Population Growth and Demographic Structure". Paris 16-20, November 1992. New York, NY: United Nations.
- United Nations. 1995. "Population and Development: Programme of Action adopted at the International Conference of Population and Development", Cairo, 5-13 September 1994. New York: United Nations Publications.
- United Nations. 1991. Investing in Women: The focus of the 90's. New York: United Nations Population Fund.

United Nations Population Fund. 1991. Population, Resources and the Environment: The Critical Challenges London: UNFPA.

Valente, T.W. 1995. Network Models of the Diffusion of Innovation. Cresskill, New Jersey: Hampton Press.

Valente, T.W., Watkins, S., Jato M.N., Straten A. and Tsitsol, L. M. 1997. "Social Network Association with Contraceptive Use Among Camerronian Women in Voluntary Association". **Social Science and Medicine** 45:677-687.

Van Zwabenberg, R.M. 1975. An Economic History of Kenya and Uganda 1800-1970. Atlantic Highlands, NJ: Humanities Press.

Wa Karanja, Wambui. 1983. Conjugal Decision-Making: Some data from Lagos." Pp. 236-241, In C. Oppong (ed.) Female and Male in West Africa. London: Allen and Unwin.

Warwick, D.P. 1982. Bitter Pills: Population Policies and Their Implementation in Eight Developing Countries. Cambridge: Cambridge University Press.

Watkins, Susan Cotts. 1995a. "Social Networks and Social Science History." **Social Science History** 19: 7-17.

Watkins, Susan Cotts. 1990. "From Local to National Communities: The Transformation of Demographic regimes in Western Europe, 1870-1960. **Population and Development Review** 16:241-272.

Watkins, Susan Cotts. 1991a. From Provinces into Nations: The Demographic Integration of Europe, 1870-1960. Princeton, NJ: Princeton University Press.

Watkins, Susan Cotts. 1991b. "More Lessons From the Past: Women' s Informal Networks and Fertility Decline", Paper presented at IUSSP Seminar on the Course of Fertility Transition in Sub-Saharan Africa, Harare.

Watkins, Susan Cotts. 1987. "The Fertility Transition: Europe and the Third World Compared", **Sociological Forum** 2:645-673.

Watkins, Susan C., Naomi Rutenberg and David Wilkinson. 1997. "Orderly Theories, Disorderly Women"p.213-245. In The Continuing Demographic Transition (eds). G.W. Jones, R.M. Douglas, J.C. Caldwell and R.M. D'Souza. New York: Clarendon Press.

Watkins, S. C., Rutenberg, N. and Green, S. 1995. Diffusion and Debate: Reproductive Change in Nyanza Province, Kenya. Paper Presented at the annual meeting of the Population Association of America, San Francisco, CA.

Watkins, Susan C. and Danzi, Angela D. 1995b. "Women's Gossip and Social Change: Childbirth and Fertility Control Among Italian and Jewish Women in the United States, 1920-1940." **Gender and Society** 9:469-490.

Wills T. 1985. "Supportive functions of Interpersonal Relationships." In S. Cohen and S. Syme (eds.) Social Support and health. pp. 61-81. Orlando: Academic Press.

Wilson, W.J. 1996. When Work Disappear: The World of the New Urban Poor. New York, NY: Alfred A. Knopf.

World Bank. 1984. Population Growth and Economic Development. World Development Report, 1984. New York: Oxford University Press.

World Bank. 1983. Kenya: Growth and Structural Change. Vol. 1. Washington DC.

Wortham, R.A. 1993. "Population Growth and the Demographic Transition in Kenya", **International Sociology** 8:197-214.