ESTIMATION OF COMPLETED FERTILITY TRENDS IN KENYA

By

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DECLARATION

I declare that this project is my original work and has not been presented to any other university or institution of higher learning for academic purposes.

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DR. MURUNGARU KIMANI.

DEDICATION

To my wonderful parents, Boaz Ongong'a, and Joyce Adhiambo who have stood by me over all times to encourage me and to my wife Winnie Adhiambo and my best of friends Natalie – You mean the world to me.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABSTRACT

This study set out to adopt the use of Parity Progression Ratio (PPR) to estimate Completed Fertility using the fertility table model. The conventional age-based measure of fertility (ASFR) and their sum over all ages, the total fertility rate (TFR) which is a proxy measure of fertility indicate that Kenya's fertility has stalled (Bongarts, 2005). The study examines what the situation would be if the measure of actual fertility preferences are considered.

The specific objectives of the study are to estimate the completed fertility levels and trends in Kenya based on the life table approach and to examine the differentials in completed fertility by type of place of residence and education level. The study adopted the model of estimating completed fertility as developed by Feichtinger and Lutz (1983). The measure is only applied to women at the end of their child bearing years (40-49). The study uses data from the KDHS 1989-2003 series.

The result indicates that fertility in Kenya continues to decline despite earlier indication by the conventional method that it has stalled. However, the study presents a stalled fertility in urban area. By level of education, the stall is most evident among the least educated while those with secondary or higher education still shows a modest decline.

The policy implications to the government and relevant stakeholders to formulate policies design and implement appropriate strategies that are geared towards fertility reduction. The programs set should be implemented with recognition that there are regional variations especially in the rural areas. Secondly, there is need to improve and encourage education of the women as it changes the ideas and attitude towards early childbearing. Efforts should be made to encourage girls to have secondary and above education especially in rural areas.

The study further recommends that further studies focusing on fertility tables using other sources of data such as census data for comparability purpose. Detailed qualitative studies should be undertaken to establish factors that contribute to fertility variations and other approaches used in estimating fertility be applied to Kenya data and be compared to the conventional TFR.

CHAPTER ONE
INTRODUCTION AND STATEMENT OF THE PROBLEM

1.1 Background

Kenya's fertility history can be traced back to the early 1960s with the introduction of Family Planning (FP) programme. But the study of the fertility dynamics can be drawn at the first ever survey on fertility, that is, the Kenya Fertility Survey (1977/8). Other sources of information on fertility in Kenya are census data and the four Kenya Demographic and Health Surveys (KDHS) of 1989, 1993, 1998 and 2003. The conventional age-based measure of fertility, the age-specific fertility rates (ASFR) and their sum over all ages, the total fertility rate (TFR) have been in use over these years. The use of this measure shows that the fertility transition has passed through different phases. Kenya has seen its TFR decline from a high of 8.1 in 1978 to 4.8 in 2003 (CBS, 2004).

However, recent studies indicate that Kenya's fertility decline has stalled (Blacker et al, 2005). Bongaarts (2005) defines fertility stall as a failure of the national TFR to decline between the two most recent DHS surveys. This stall has been explained by the TFR which is a 'proxy' measure and does not consider completed fertility schedules. The study examines what the situation would be if the measure of actual fertility preference is considered.

Fertility estimates is important for population policy formulation, planning and population projection. Fertility is measured by different methods, and these measures have different strengths and weaknesses (Mboup and Saha, 1998). The total fertility rate (TFR) is a widely used measure that adjusts for differences due to age distributions. However, its relative sampling error is large when some age groups include only a small number of women. In contrast, the mean number of children ever born to women age 40-49—represents the childbearing experience of a real age cohort and reflects both current and past fertility behaviour.

Thus, the above reasons formed the basis of this study. The suggested measures are based on the life table model developed by Feichtinger and Lutz (1985). The study aims at estimating completed fertility levels and differentials in Kenya.

1.2 Problem statement

For the past 25 years, Kenya has been a prominent example of the fertility transition in Sub-Saharan Africa. The drop in Kenya's fertility levels from 7.9 live births per woman in 1978 (KFS, 1979) through to 5.4 in 1993 (KDHS, 1993) and the latest 4.7 in 1998 (KDHS, 1998) shows a clear decline. According to the Demographic transition, the developing countries like Kenya had just entered into the mid transitional phase. However, KDHS 2003 indicated that the fertility has stalled. Although the TFR can provide information on change in the average number of children per woman, it cannot give the insight into the nature of change provided by the parity progression ratios, which measure the proportion of women moving from one parity to the next (Mboup and Saha, 1998).

The completed fertility estimated using life table model can demonstrate the role of childlessness in overall fertility, role of high order birth and concentration of fertility among women (Lutz, 1988). This study would want to observe what the situation would be if actual fertility preference is considered.

1.3 General Objective

The main objective of the study was to estimate the completed fertility levels, trends and differentials in Kenya using the life table model.

1.3.1 Specific objectives

The specific objectives were;

1. To estimate the completed fertility levels and trends in Kenya based on the life table approach
2. To examine the differentials in completed fertility by place of residence and education levels.

1.4 Justification of the study

The total fertility rate (TFR) as a measure of fertility has revealed that Kenya's fertility has stalled. The stall has generated substantial interest by the government, development partners, researchers and scholars. The study used a life table approach which is able demonstrate the role of childlessness in overall fertility, role of high order birth and concentration of fertility among women. The findings of the study will be useful to the government policy makers,

Non-governmental organizations, planners and other concerned stakeholders for intervention policies.

The findings of the study will also be beneficial in understanding variations in fertility in Kenya by education level and type of place of residence and will stimulate other researchers to carry out further investigations by use of different methods of fertility measurement.

1.5 Scope and Limitation of the study

The study focuses on a group of women with emphasis on age group 40-49. The completed fertility measure is only applied to women at the end of their child bearing years, as ratios for younger cohorts are more strongly affected by changes in the timing of births, and will – in many ways – represent incomplete maternity histories.

The study use data from the KDHS which leaves out north eastern province and other districts such as Samburu, Turkana, Isiolo and Marsabit. The survey interviewed women aged 15-49 years. Census data was not considered since the study compared the results from the KDHS data only and that census does not bring out the fertility stall in Kenya.

The study focuses on education level and place of residence differentials since the pace of child bearing is known to be associated with these two factors. This will provide more light on the groups with higher fertility level.

Since the survey was conducted by retrospective interviewing, the data has some limitation which is likely to affect the outcome of the study. Some of these limitations are; birth interval misreporting, age misreporting, overstating or omission of children ever born (CEB). However, the five year age group was used to correct this.

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CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This review focuses on the topic of fertility measurement techniques using life table approach. The literature review focuses on parity progression ratios and development of life table approach. This section further summarizes application of life table techniques in estimating of fertility.

2.2 Parity Progression Ratio

Parity progression ratio (PPR), defined as the conditional probability of i-th birth given that a woman has (i - 1)-th birth, is an important measure of fertility dynamics and family building process. It is claimed to be a sensitive index of birth spacing pattern of population and reflects the tempo of fertility. Srinivasan (1967) introduced the idea of instantaneous parity progression ratio (IPPR) which is conceptually different from PPR. In fact, PPR denotes the probability that a woman after delivering her i-th birth will ever proceed to the next birth, while IPPR is the probability that a woman of parity i at the time of survey will ever proceed to the next child. The problem with the method is that it lacks data information of the age of the mother at the last birth to attaining age 45 years. The method is also affected by the age at which a woman is expected to have completed her fertility since this varies especially in the developing countries.

A further modification of the model was done by Yadava-Bhattacharia (1985). The modified version did not require age of the mother at her last birth but only uses open and last closed birth interval's data to produce a relatively high accurate result. The knowledge of age at last birth is replaced with a constant time span within which the open birth interval has a high chance of closing prior to the survey date. This method was applied in India's fertility survey data (1985). The results of the model indicated that some of the estimates exceeded unity, particularly at the lower parities while at higher parities the estimates were exceptionally high. This method gives higher estimate of PPR compared to other methods.

Feeney and Ross (1984) studied relationship between open and closed birth intervals distribution on the basis of analysing fertility transition. Women with a given number of children ever born are regarded as a population that women enter by having a birth of the given order and leave either by having a birth of the next order or by dying. A woman's

duration in parity is then analogous to age, and open birth interval distributions, which are distributions of women by duration in parity, are analogous to age distributions. This analogy is exploited to obtain explicit formulas for the relationship between open and closed birth interval distributions. This in turn allows identification of conditions under which open birth interval distributions may be used to estimate closed birth interval distributions. The study was undertaken using Indonesian data on open birth interval distribution with the aim of estimating PPR. The estimated fertility level from this estimate was higher by one birth compared to fertility calculated from children ever born. This difference favours the open birth- interval estimates.

Feeney (1988) computed the PPR from distribution of women by children ever born. This method is based on observed proportion not progressing to the next parity within a specified time. This method has been used extensively in Kenya using census data (Feeney, 1988). PPRs of each order were plotted on a time scale of year of birth of the woman so that the measures for the same cohorts at the three censuses were at coincident points on the horizontal axis. Lutz (1988), did a comparative analysis of completed parity distributions using the WFS to study the global perspective fertility.

2.3 Development of Life Table model

Life-table technique for the analysis of fertility distribution was first developed by Henry (1953). According to Henry, the cohorts of women who marry or have a birth of a given order are followed until the first or the next birth, if any, occurs. Their retention in the given parity, or their progression to the next child, is described by a set of probabilities specific for parity and time elapsed since last birth.

This method was used by Bhrolchain (1987) to analyze the period parity progression ratios and birth intervals both in England and Wales. The study covered the period between 1941 and 1971. The result of the study indicated that the proportion marrying increased from 0.84 in 1945 to 0.92 in 1969 and then dropped to 0.86 in 1970/71. Progression to first birth rose from 0.83 in 1951 to a maximum of 0.92 in 1966 and then fell to 0.88 in 1970/71. Progression from first birth to second moved up from 0.73 in 1945 by 10 percent in 1946 and stayed high in 1947 and then fell to low level of 0.68 in 1952, rising steadily thereafter to

fluctuate around 0.85 on 1964-68 before declining to 0.82 in 1970/71. The same behaviour was also noticed by progression to parity three and four respectively.

In summary, there were three types of movements observed; A fairly slow drift upwards in the progression to marriage to first birth from the early 1950's to the later 1960's; the change in the ratios from 1951 to the peak year being 5 percent and 10 percent respectively (0.005 and 0.08) absolute; A very steep increase in the propensity to proceed to a second birth, the relative increase in the peak year 1968 over 1951 being 26 percent 90.18 absolute change); lesser increase in the fairly low values of theirs and fourth progression to 1964 of 14 percent and 11 percent (0.08 and 0.05 absolute changes).

Conditional probabilities of first birth show more substantial rises at duration 0-8 months than at later durations up to the mid 1960's and then fell more rapidly at cohort distributions, between 9 and 17 months. Conditional probabilities of second birth also show differentials rates of rise and fall, shifting up especially rapidly at duration 12-48 months and falling off somewhat of duration 1-2 years. Third birth probabilities specific to duration show less pronounces movement with respect to rate of rise and fall.

In reference to birth intervals, the time from marriage to first birth fell by 3.1 months between 1951 and 1964 and then rose sharply by 5-6 months in the succeeding 6 years. The second birth interval shows that the most substantial change in speed over the period examined, the interval declined by 5 months and then rose slightly, however it levelled off in the later 1980's,. Third and fourth intervals showed a smaller decline then does the second interval and each also showed a contraction and later small expansion in dispersion.

The sources of data can be censuses, fertility surveys and vital registration. The data must contain information on dates of marriage with all their successive live births, the last vital event to the mother must occur below age 45 years. From these data information on the number of births of order (i) occurring during time (t) at point (x) in months since the previous birth, number of women having an (i)-th birth at duration (j) in period (k) must be easily obtained.

However, one of the limitations of the method is the unavailability of a complete vital registration system in developing countries and this makes the period analysis unreal indication of the true extent of temporal change.

In his modification of the original work Henry (1980) developed an approach that provides interval distributions as well as progression ratios. This method was applied to the data from China (1993). The main objective was to analyze parity progression and birth interval statistics in relation to the Chinese government birth planning policies. The study was undertaken by Feeney and Wang Feng (1993). The result of the study indicated that the period progression from marriage to first birth between 1972 and 1981 was very high approximately 0.986, implying a level of childlessness in marriage of only 1.4 percent. The period values showed an upward trend except between 1970 and 1972 mainly because of the population policy. The period progression from the first birth to second birth dropped drastically and this perhaps reflected the effectiveness of the one-child policy. The period mean interval was also seen to rise. From the second child to the third child the drop was sharp and this helped to explain the fertility transaction in China. The drop was more marked in cities and towns. To understand the levels hence trend over time, the period parities were translated in TFR and the result indicated that the fertility level of six children per women before 1970 dropped to near replacement level in 1990.

The data required can be obtained from fertility surveys and it includes date of birth, age at first marriage, pregnancy and contraceptive history. From these histories the birth intervals can be worked out. However the method faces the problem of truncation bias due to age selection. This age selection bias, biases the measured level of progression from first birth to second birth upward. The other limitation is due to reporting adopted children as natural children, this influences the parity progression ratios. In societies where there is strict limitation of family size like China first female births may be reported as adopted children to enable the parents hope to secure a natural son as their official only child.

Whelpton (1954) developed a fertility life-table. According to Whelpton a cohort of women is followed from the beginning of the reproductive ages. Their movement through single years of age and their progression to higher parities are described by a set of birth probabilities specific for age and parity. These probabilities take numbers of births by age of mothers and birth order as their numerators and numbers of women by age and parity as their

denominators. This method allows the computation of completed parity distribution and parity progression ratios on a periodic basis.

The method was used in the United States of America to analyze fertility trends as evidenced by the distribution of childbearing on a period basis. Whelpton produced fertility time series for the USA. Comparable statistics have been produced only for Japan. Retherford and Cho (1978) extended the own-children estimation procedure to provide the Whelpton probabilities for China (Feeney et al., 1989).

The main sources of data are vital registration and population registers. These sources provide the details of women birth histories. From these histories, the number of births by age of mothers and birth orders can be directly obtained. Similarly the numbers of women by age and parity can also be derived from the data. Like other methods it has the following short comings:-the procedure of calculating Whelpton age-parity specific birth probabilities is awkward in practice because of the volume of numbers involved in m magnitude larger than convectional fertility measures; if the data is not obtained from vital registration or a population register, one easily facers the problem of too small cell sizes per parity and single year age group.

Srinivasan (1980) combined the data on open birth interval from women of parity (i) with the data on the closed interval to prepare a life table. The closed birth interval can be obtained by using the following methods; in the first method it is observed that from women of parity (i+1) only as the last closed birth interval (CBI) and in the second method, from women of parity (i+1) and above all closed birth intervals (i) to (i+1), (ACBI). If the number of completed months of a birth interval is (x), then the ordinal month is taken as (x+1).

This method was applied to Fijian fertility data. The life table was worked for each parity separately and for two different closed births. It was also worked out at interval of 6 months up to 12 months. The results indicated that at the end of 120 months about 20 to 30 percent of the women continued to remain in the same parity. It was observed that for the sake of completeness, the period could have been extended up to 240 months (20 years).

The study conducted through the mean values of the birth intervals suggested a systematic increase in the mean values with birth order. The mean interval increased from 49.29 months

for parity one to 66.10 months for parity six plus. The reciprocal of the mean values for each parity corresponds closely to the parity specific fertility rates in the population. This was observed to decline as the parities increased and this could be due to age factor.

The sources of data required for the application of the method are fertility survey or complete vital registration. The source must provide data on the time of occurrence of each of the vital events together with the background characteristics of the woman and her contraceptive and marriage history. This life table technique suffers the problem of selection and truncation. Thus whether we analyze the all closed birth intervals or only the last birth interval the selection and truncation bias continue to operate in them in different manner. Further in the life table approach, the PPRs are relatively difficult to derive from commonly available data, that is, retrospective sample data. Even in developed countries with a long history of complete registration, the data on the time of last birth is not usually available (Feeney 1988).

Chiang Vanden Berg (1982) developed a fertility table which was designed for period analysis to estimate the completed parity distribution implied by observed period parity specific fertility rates and mean ages at birth. A relationship between the maximum likelihood estimators of the parity progression ratio and the parity specific fertility was derived under the assumption that fertility is independent of a woman's age. It was noted that human fertility is governed by a set of fertility intensity functions prevailing in a study population. Each of these functions is a function of parity and age within the reproductive period of women. The fertility rate specific for parity (i) for a woman of age (x_i) denoted by r_i was defined as the ratio of the expected number of births of order (i+1) to the expected length of exposure to the risk of having an (i+1)th child. Thus a woman will have a child with a probability P_i and will not have a child with a probability 1 - Pi. Therefore, the expected number of children of birth order (i+1) that she will have is P_i.. This method was applied to Bihar and Rajasthan fertility survey data. The main objective was to examine the applicability of the method. These values then fell progressively as the order of the parities increased except for higher orders. This inconsistency in the trend of parity progression ratios was attributed to the misreporting of the ages of the mothers at birth.

The main sources of data are vital registration, fertility surveys and censuses while the input data required are numbers of births distributed by birth orders and mean ages at birth of different orders. The mean age at zero parity is considered as the entry of the women in the

reproductive life. The method has the following limitations:- it faces the problem of and truncation bias. This rises with the age considered as the end of childbearing processes. It is also highly affected by the reporting of the age of the mothers at birth. In countries where vital registration is of quite poor quality, the parity specific rates would be under estimated. If they are derived from surveys, they would again suffer from the time reference error.

Feichtinger and Lutz (1985) modified the original work of Chiang Van Den Berg (1982). This fertility table is built up in analogy to an ordinary (mortality) life table where parity replaces age as the indexing variable. The parity progression ratios then correspond to the survival probabilities; their complements – the probabilities of death in the ordinary life table at certain parity. Starting with a radix, 1(0) of 1000 women entering the reproductive age, 1(i) column then gives the number of women who survived to parity (i) and p(i) is the parity progression ratio at parity (i). The column of life table deaths, d (i), gives the number of women who drop out of the process of child bearing at that parity and hence remain at parity (i).

Empirically this descriptive form of the fertility table pertaining to a cohort through the d(i) column, which corresponds directly to the observed completed parity distribution. Once the d(i) column is given, the 1(i) and P(i) column can be derived by simple algebraic transformation according to the definitions given above. Using the functions P(i),1(i) and d(i) it is also possible to calculate the mean number of children born beyond parity (i), F(i). The quantity f (i) gives the number of births of order (i) per women. This F (i) is also referred to as mean parity or mean size family of a cohort under study. Ryder (1982) refers to it as the total fertility rate for births of order (i).

The method was used in 1983 for comparative analysis of completed parity distributions for all the countries which participated in World Fertility Survey (WFS). It has also been applied to Austrian data and the main objective was to demonstrate its potential for assessing distributional consequences of currently observed fertility behaviour (Feeney and Lutz, 1991).

The result of the study undertaken in Austria indicated that the calculated value of F (i) were compared and it was noted that the parity distribution did not reflect the fertility pattern by then because the group of women (40-49) to which the analysis was limited, had passed their

child bearing ages. The mode of the completed parity distribution for high fertility countries ranges mostly between six and nine children, whereas in all European countries it was at parity two. Analysis of the parity progression ratios for developing countries indicated monotonically declining PPRs from a maximum at parity zero to a minimum at the highest parity. However, for industrialized countries the pattern of parity progression ratios are characterized by steep decline from parity two after which the curve levels off or even increases. This increase at higher parities could be attributed to selectivity of a few high fertility women.

Result for the study undertaken in Austria indicated that the total fertility rate was 1.62 children per women while the level of childlessness was extremely high at 28 percent. However differentials existed both by regional and for educational levels. The overall trend indicated that high proportion progressed to second birth than in than in the first and third births respectively. Very few women progressed to fourth and fifth births. The major sources of data are fertility surveys and birth registration. The specific data required included birth histories which provide the distribution of the number of children ever born with their birth orders. If parity specific rates are derived from surveys, then the method would suffer from time reference error. Thus it works well with data obtained from vital registration. This requirement limits most developing countries since they have incomplete birth registration. The method also yields biased estimates, especially for progression to first births.

2.4 Summary

From the literature review, it was observed that there are two major approaches of calculating parity progression ratios. These are fertility table method and instantaneous parity progression ratios (IPPRS).

The literature review showed the objectives, sources of data, methodologies and results of different methods used which is relevant to this study. The objectives of the studies were different; however, they were all linked to fertility measurements and trend over time. The sources of data range from fertility surveys, censuses, birth registration and demographic and health surveys. The methods used in the studies were all based on parity progression ratios. However, they were of different forms depending on the nature of the data available as indicated by the authors who developed and used the model.

Historically, lack of information on parity distributions was probably the other major reason for the disregard of distributional aspects in fertility analysis. The success of the PPR method is largely based on the strong positive correlation between age and parity. The fertility table is selected for this study as it is direct to establish level of childlessness, modal parity and final the completed fertility. The KDHS provides a very rich and reasonably reliable source material for parity-specific fertility analysis. The analysis in this study focuses only on completed cohort distributions of women aged 40-49 which is used in the model. The only two socio-economic background variables considered here are place of residence (urban/rural) and education (low or high).

CHAPTER THREE
DATA AND METHODS

3.1 Introduction

This chapter discusses the methods used in the study. It outlines the data sources, data equipments and method of analysis.

3.2 Data sources

The source of the data will be KDHS series (1989, 1993, 1998 and 2003). The woman questionnaire was used to collect information from women aged 15-49. The data provide information on fertility. For this particular study the kind of data needed is the reproductive histories of women aged 40-49. This information provides the total number of children living with their mother or elsewhere. Data on different background characteristics were also collected.

3.3 Data requirement

The study requires data on children ever born by women aged 40-49.

3.4 Method of Analysis

The study adopts the life table method developed by Feichtinger and Lutz (1985). Lutz (1988) used the model to perform a comparative analysis of completed parity distributions in developed and developing countries. The approach requires data on parity.

PPR is then computed as shown below;

$$PPR(i, i+1) = \frac{P(i+1)}{Pi}$$

Where, pi is the number of women at parity i or higher.

The parity progression ratios will then correspond to the survival probabilities; their complements – the probabilities of death in the ordinary life table at certain parity. Starting with a radix, 1(0) of 1000 women entering the reproductive age, 1(i) column then gives the number of women who ever reached parity (i). Hence, as in regular life table, 1(i) is defined by;

$$l_{(i)} = l_{(i-1)} P_{(i-1)}$$

Where P(i) is the parity progression ratio at parity (i).

The column of life table deaths, d (i), gives the number of women who drop out of the process of child bearing at that parity and hence remain at parity (i). Thus d(i) is defined as;

$$d_{(i)} = l_{(i)}(1 - P_{(i)}) \text{ or}$$

$$d_{(i)} = l_{(i)} - l_{(i+1)}$$

This descriptive form of the fertility table relate to a cohort through the d(i) column, which corresponds directly to the observed completed parity distribution (multiplied by the radix). Once the d(i) column is given, the l(i) and p(i) columns is derived by simple algebraic transformation according to the definitions given above. Using the functions p(i),l(i), d(i) and L(i) it is possible to calculate the mean number of children born beyond parity (i), F(i), directly from the given data by

$$Ti = \sum_{i=1}^{m} Li$$

where by m being the highest parity considered. The quantity F(i) gives the number of births of order (i) per women.

$$F(i) = \frac{Ti}{li}$$

This F (i) is also referred to as mean parity or mean size family of a cohort under study. Ryder (1982) calls it the total fertility rate for births of order (i).

Steps in computation

Step 1: Computation of reported parities

The reported parity of women in age 40-49 is denoted by p(i). Its value is obtained by dividing the number of children ever born to women by the number of women with that parity

$$PPR(i, i+1) = \frac{P(i+1)}{P_i}$$

Step 2: The number of women ever reaching parity i out of 1,000 women (radix = lo = 1,000).

$$li = l(i-1) * p(i-1)$$

Step 3: Number of women never reaching parity i, d(i) is defined by women reaching parity i less women reaching the next parity.

$$di = li - l(i+1)$$

Step 4: The number of children born by the women that reached parity i, between parity i and parity i+1.

$$L_i = \left(li + l(i+1)\right)/2$$

Step 5: The total number of children left for survivors after reaching parity i; Ti is the sum of Li for all parities exceeding i.

$$Ti = \sum_{i=1}^{m} Li$$

Step 6: This is the average number of children born to a woman beyond parity i

$$F(i) = \frac{Ti}{li}$$

Table 3.1: Computing Completed Fertility using Life table Approach

i	Pi (1)	li (2)	di (3)	Li (4)	Ti (5)	Fi (6)

Outputs are categorized by education level and place of residence. Appendix captures the entire model while chapter four only discusses significant elements of the fertility table.

CHAPTER FOUR
COMPLETED FERTILITY LEVELS AND TRENDS

4.1 Introduction

This chapter focuses on the application of the model discussed in the previous chapter to achieve the study objectives which were to establish the trends, levels and differentials of completed fertility in Kenya. The background to this chapter is explained in chapter three and its derivation is also explained therein.

4.2 Completed Parity Distribution

4.2.1 Place of Residence

Table 4.1 gives the observed distributions of children ever born (CEB) to women aged 40-49 in Kenya from KDHS series data by place of residence. The table presents the completed parity distributions that were used as input data to the model. The table describes three key issues; the level of childlessness, mode parity and mean family size among women. Overall mean family size, F(0), is highest (7.8) in 1989 which reduces to 7.4 and 7.2 in 1993 and 1998 respectively. It further dropped to 6.5 in 2003. Generally, differential by place of residence indicate that the rural areas have relatively larger family size over the period compared to the urban areas. For instance the average family size in urban areas dropped from 5.6 in 1989 to 5.2 in 1993 thereafter it stood at 5.1 in the 1998 and 2003 surveys. Magnitude of family size is large among the rural folks. The mean family size reduced from 8.2 in 1989 to 8.0 in 1993 thereafter dropping further to 7.5 in 1998. F(0) further drops to 6.9 in 2003

Proportion of childless women is significant in determining mean family size. The table shows that in urban areas, the proportion of childless women was exceptionally higher compared to the rural areas (6.5%) in 1989 but decrease to 3.3% in 1993 and 2.1% in 1998. However, this proportion increased to 3.5% in 2003. The rural areas provide a different perspective. The proportion of childless women was low, (2.0% and 1.8% in 1989 and 1993 respectively), it stagnated in 1998 and 2003 at 1.9%. This means that higher proportion of childless women would reduce the completed fertility size in urban areas.

The mode of the completed parity distribution ranges from eight in 1989 which slightly increase to nine in 1993 in the rural category. This trend however changed as the modal

parity reduces to seven and five in 1998 and 2003 respectively. Alternatively, urban category registered a reduced mode parity of four in 1989 which increased by a unit in 1993. There was an exceptionally low reduction in mode parity in the last two studies in urban category. Rural category had the highest proportion of women with 13 or more births (4.7%) in 1989, which reduces significantly over the study periods to 1.1% in 2003.

Table 4.1 Distribution of Completed Parity (di) by Place of Residence

		Completed Parity Distribution (per 1000)													
	F(0)	0	1	2	3	4	5	6	7	8	9	10	11	12	13+
1989															
Rural	8.2	20	14	17	39	48	72	107	125	148	142	101	82	39	47
Urban	5.6	65	52	65	118	163	111	137	59	85	72	33	39	0	0
Overall	7.8	26	20	24	50	64	77	111	116	139	132	91	75	74	0
1993															
Rural	8.0	18	23	29	38	62	71	98	127	140	144	101	67	42	41
Urban	5.2	33	98	120	76	120	196	109	54	98	87	11	0	0	0
Overall	7.4	19	29	37	41	67	81	99	121	136	139	93	61	38	38
1998															
Rural	7.5	19	19	24	55	64	86	134	140	136	136	104	40	29	14
Urban	5.1	21	71	121	157	207	93	114	71	57	50	14	7	14	0
Average	7.2	19	25	36	67	81	87	132	132	127	126	93	36	27	12
2003															
Rural	6.9	19	21	26	73	106	144	125	119	132	96	75	31	23	11
Urban	5.1	35	50	134	195	122	108	122	87	64	32	32	3	12	3
Overall	6.5	23	29	55	105	110	134	124	111	114	79	64	23	20	9

4.2.2 Education Level

Table 4.2 gives the observed distributions of children ever born to women aged 40-49 by education level. In 1989 F(0) was higher (8.2) for women with primary education than those with no education (7.9). There was no difference in mean family size in 1993 among women with no education and those with primary education (7.9). Thereafter there was a monotonic decline in mean number of children born from 7.6 in 1998 to 7.5 in 2003 in among women with no education and 7.4 in 1998 to 6.9 in 2003 among women with primary education. Women with secondary and above level of education had a constant of 5.7 in 1993 and 1998 which further declined to 4.7 in 2003. The mean family size was highest among women with lower level of education and lower for women with secondary and higher levels of education, which corroborates most of the published reports.

The table shows that the proportion of childless women with secondary and above level of education is remarkably higher (7.8% in 1989, 2.7% in 1993, 1.8% in 1998 and 2.8% in 2003) compared to those in lower level. Women with no education had relatively higher proportion of childlessness than women with primary level of education. The study further established that proportion of childless women increased in 2003. Proportion of women reaching parity 14 and above is evident among those with lower levels of education.

The mode of the completed parity distribution ranges from eight to nine for women with no education and those with primary education in 1989 and 1993 which reduced to seven and five for women with primary education in 1998 and 2003 respectively. For women with secondary plus education the modal parity was at three in 1989 which shot to six in 1993 but reduced again to three in 1998 and 2003. This trend depicts a low mode parity of three for women with secondary and above level of education.

Table 4.2 Distribution of Completed Parity (di) by Education Level

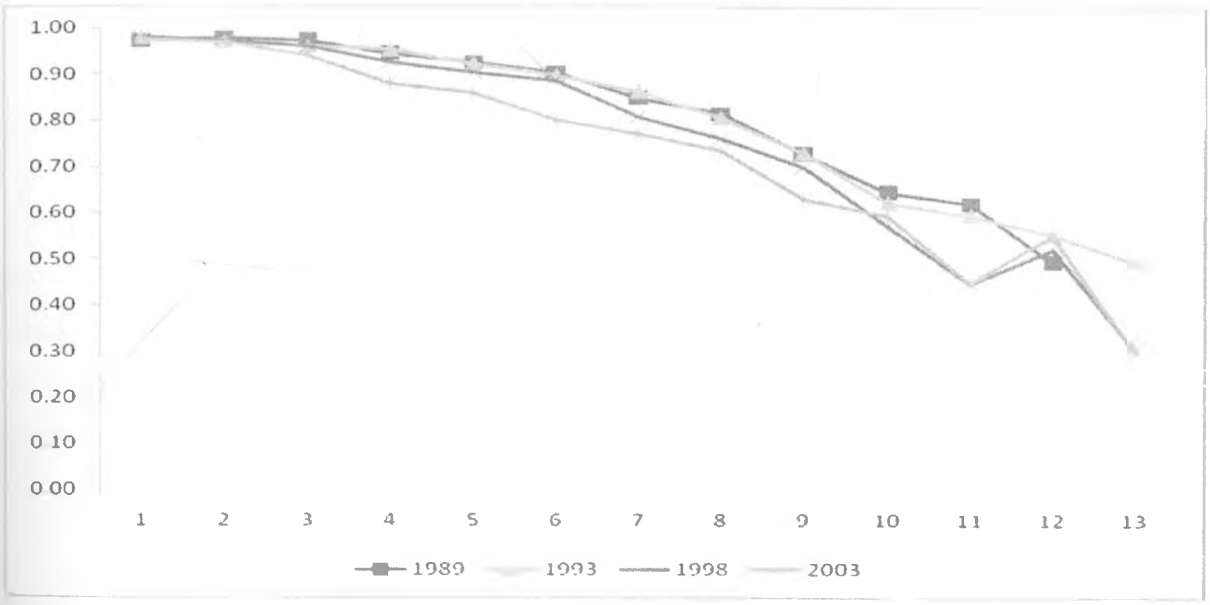
		Completed Parity Distribution (per 1000)														
1989	F(O)	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14+
No Educ	7.9	26	17	27	44	66	75	99	136	138	119	106	73	32	24	17
Primary	8.2	21	23	7	37	51	79	129	88	148	166	83	88	37	18	25
Secondary+	4.6	78	20	137	235	157	78	98	118	59	0	0	0	20	0	0
1993																
No Educ	7.9	21	29	43	43	58	58	81	114	141	147	109	66	43	31	16
Primary	7.9	16	24	18	32	72	98	108	129	141	139	88	64	40	14	18
Secondary+	5.7	27	67	120	93	93	133	160	107	67	80	27	13	0	13	0
1998																
No Educ	7.6	27	25	34	41	63	75	111	124	124	163	129	43	27	11	2
Primary	7.4	12	23	32	57	73	86	139	144	139	119	86	39	32	7	11
Secondary+	5.7	18	30	54	169	157	120	163	108	90	48	24	6	12	0	0
2003																
No Educ	7.5	25	22	40	40	57	121	82	136	163	121	106	32	47	2	5
Primary	6.9	19	21	27	57	109	153	151	122	122	94	69	31	11	8	8
Secondary+	4.7	28	47	113	249	171	122	133	66	47	11	8	3	3	0	0

4.3 Trends in Parity Progression Ratios

From Tables 4.1 and 4.2 it can be pointed out that the mean family size is not identical to the modal parity but indicate some correlation between the two. To shed more light on the relationship between the shape of the distribution and the average level of family size, further aspects are considered. Of the functions introduced in the fertility table, the parity progression ratios, p(i), shows irregularity and sensitivity between and within populations. The parity progression ratios represent the behavioural component of fertility table.

The parity distribution decreases over time as indicated in Figure 4.1. At a first glance, the study suggests after parity 2 the decline of the parity progression ratio is increased. This is also considered a threshold as it is an indicator for high and low fertility levels over the four periods. In general, between 1989 and 1993, the fertility declined at most parity is similar, while there was an increased reduction in 1998. Similarly, the PPR for 2003 shows a significant reduction compared to the other three periods, showing a reduced progression to a higher in parity in the recent years. The birth order 11, 12 the PPRs for 1993, 1998 and 2003 was highest indicating an increase in fertility

Figure 4.1 Trends in PPR 1989 - 2003



4.3.1 Parity progression Ratios by Place of Residence

Table 4.3 shows parity progression ratios corresponding to parity distribution in Table 4.1. The table shows a general higher proportion of women progress to higher parity in rural than in urban. In urban category which is regarded a low fertility area, most women are controlling their fertility and this is why progression to a higher parity reduces significantly after parity three. The PPR in this way reflects explicit decision on the part of women and their families to have or not to have another child.

Table 4.3: Parity progression Ratios by Place of Residence

	1989		1993		1998		2003	
I	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
0	0.9346	0.9804	0.9674	0.9820	0.9786	0.9815	0.9650	0.9810
1	0.9441	0.9856	0.8989	0.9766	0.9270	0.9812	0.9486	0.9785
2	0.9259	0.9820	0.8625	0.9698	0.8661	0.9747	0.8535	0.9725
3	0.8560	0.9588	0.8986	0.9592	0.8000	0.9419	0.7500	0.9219
4	0.7664	0.9474	0.8226	0.9306	0.6705	0.9273	0.7910	0.8773
5	0.7927	0.9168	0.6471	0.9146	0.7797	0.8955	0.7673	0.8098
6	0.6769	0.8652	0.6970	0.8711	0.6522	0.8170	0.6557	0.7962
7	0.7955	0.8172	0.7826	0.8082	0.6667	0.7662	0.6250	0.7549
8	0.6286	0.7354	0.5000	0.7383	0.6000	0.7034	0.5600	0.6408
9	0.5000	0.6534	0.1111	0.6354	0.4167	0.5783	0.6071	0.5919
10	0.5455	0.6235		0.5976	0.6000	0.4427	0.3529	0.4621
11		0.5130		0.5533	0.6667	0.5176	0.8333	0.5246
12		0.5443		0.4940		0.3182	0.2000	0.3125
13+		0.4884		0.4146		0.3571		0.5000

Figure 4.2 is a graphical presentation of PPR distribution by place of residence. Rural category has a higher PPR between parity zero to three, before uniformly reducing as parity increases. On the other hand, PPR in the urban category shows irregularity with a monotonic decline in PPR from a maximum at parity zero to a minimum at the highest parity. At a glance, an observed uniform steep decline in PPR between parity zero to three after which the curve levels off. An increase in parity progression ratio at higher parity is observed in low ferility region due to selectivity of a few fertile women.

In all categories the PPR at parity zero are higher than those at parity one, except urban 1989. The progression probabilities are higher in rural area compared to the urban area. Between parity three and ten the PPR in rural category decrease at an accelerating speed after which the pattern irregularly declines .

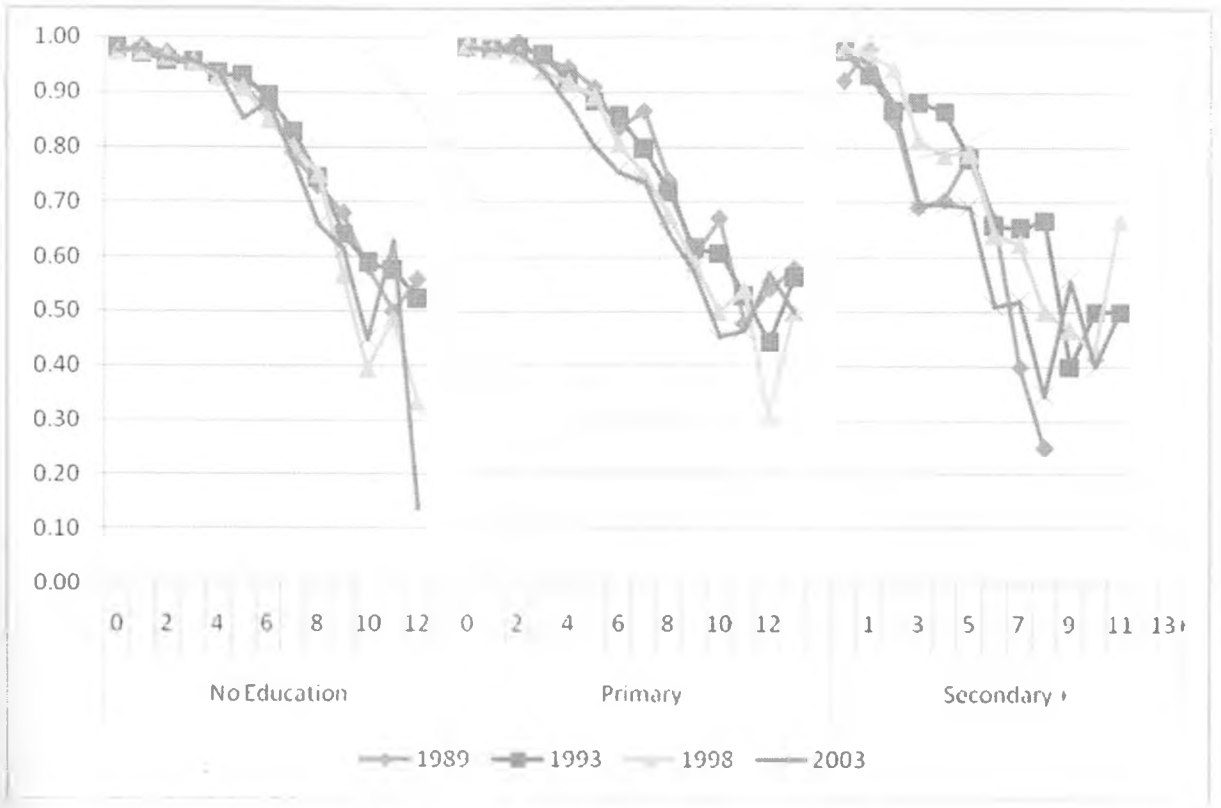
Figure 4.2 Differentials in Parity Progression Ratios by Place of Residence

4.3.2 Parity Progression ratio by Educational Level

Parity Progression ratios by education level are illustrated in figure 4.3. The PPRs decrease as parity increases. Irregularities in PPRs are observed among women with secondary and above level of education. This pattern is characterised by low fertility areas where a few elements of women with high parity is observed.

PPRs for women with no education shows a uniform decline across the four periods. An increased decline in PPRs from parity eight to ten in 1998 and 2003 is observed. The progression probabilities for 1989 are higher compared to those in the recent periods. This pattern is clearer among women with lower education levels. Between parity three and ten the PPRs among women with primary education, decrease at an accelerating in PPRs after which pattern becomes irregular.

Figure 4.3: PPR by Education level.



4.4 Number of Women Ever Reaching Parity i or Higher l(i)

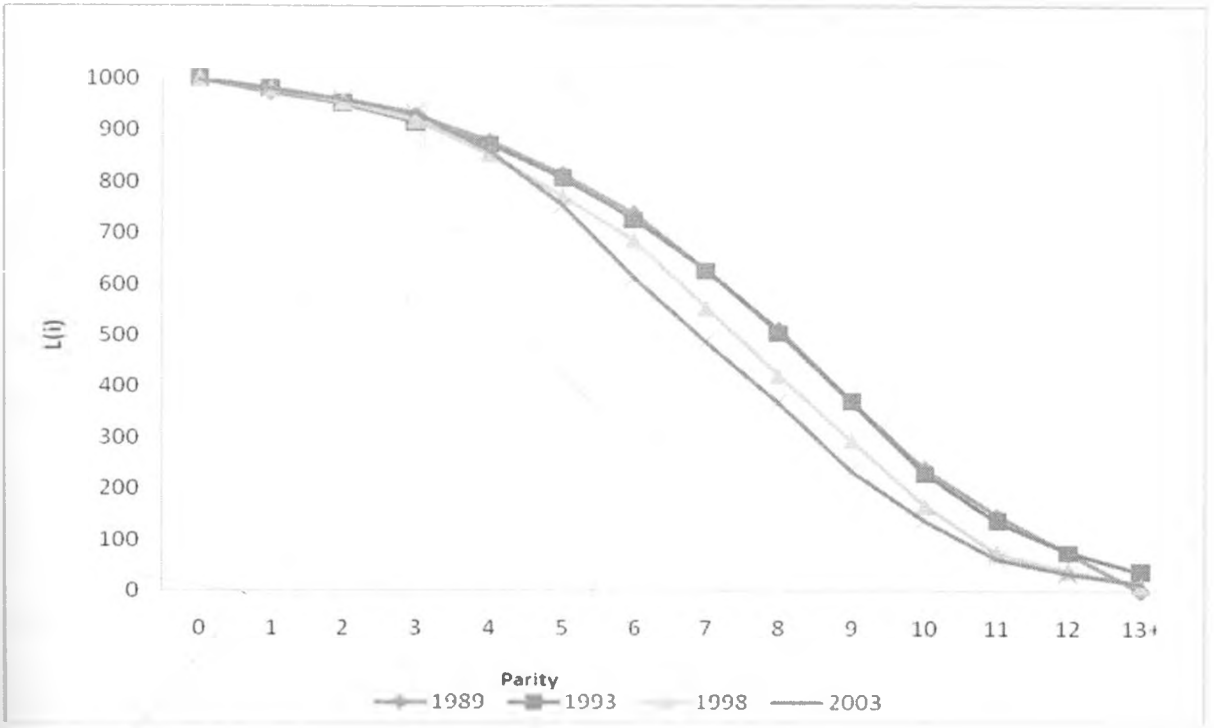
The l(i) column in the fertility table gives the number of women out of a cohort of 1000 that are still in the process of parity progression at parity i. This indicator is important in showing change in proportion of women as parity increases. The curve of l(i) declines by definition from 1000 to 0 for each of the four periods. Differentials in the proportion of women reaching the next parity can be seen from the extent to which the curve is to each other.

Figure 4.4 plots the **l(i)** function for four periods with different levels of fertility. The curve for 1989 and 1993 lie to the far right of the curves and are superimposed. To the left lie the curves for 1998 and 2003 showing typical patterns of modern low fertility period.

A rapid decline is evident for proportion of women reaching parities between five and eleven. From the figure, the proportion of women reaching parity five in 1989 and 1993 was higher compared to the proportion reaching the same parity in 1998 and 2003. For instance proportion of women reaching parity seven in 2003 was about 20% lower compared to women of the same parity in the 1989 and 1993 period. It can also be explained from the

figure that the proportion of women of birth order eight in 1989 and 1993 are reduced by a unit in 2003.

Figure 4.4 l(i) Trends in Number of Women Reaching Parity (i)



4.4.1 Number of Women Ever Reaching Parity (3), l(3)

Tables 4.4 gives an overview on differentials in the *l(i)* function. The range is even wider for place of residence and educational level. The table shows what proportion of the initial 1000 women had a third birth during their life. On the overall, the values range from 93% in 1989 to about 89% in 2003 with a slight increment in 1998.

Among urban women it was only in 2003 that about 75% of the cohort had a third child. In rural areas, however, proportions of over 93% of the women had a third birth. Similar differentials are observed with respect to education as a higher proportion of women with primary education had a third birth in comparison to women with secondary and above level of education.

Table 4.4: Number of women (Out of 1000) who had reached at least parity three l(3) by Level of Education and Place of Residence

	Level of Education			Place of Residence		
	No Educ	Primary	Secondary +	Total	Urban	Rural
1989	930	949	765	930	817	949
1993	907	942	787	915	750	930
1998	914	932	898	920	786	939
2003	913	933	812	893	781	933

4.4.2 Number of Women Ever Reaching Parity (5), l(5)

Table 4.5 gives comparable figures for proportion of women that had a fifth birth. About 14% of women with secondary and above level of education had five births in 2003 as compared to 31% and 29% in 1993and 1998 respectively. Similarly, there is a clear decline in proportion of women reaching parity five and above across the three levels of education.

Nearly 63% of the women reached parity five and above in both 1989 and 1993. This however reduced to 55% in 1998 and 42% in 2003. Differentials by place of residence indicate that the proportion reduced from 29% in 1989 to 21% in 1998 and then shot up to 23% in the urban areas while across the rural areas about 68% of the women had five births and above in 1989 which reduced to 49% in 2003.

Table 4.5: Number of women (Out of 1000) who had reached at least parity five l(5) by Level of Education and Place of Residence

	Level of Education			Place of Residence		
	No Educ	Primary	Secondary +	Total	Urban	Rural
1989	646	654	196	627	288	684
1993	667	663	307	627	250	661
1998	624	576	289	554	214	600
2003	614	464	138	419	233	487

4.5 Trends in Average Fertility Sizes

The completed fertility rate for the period 1989 to 2003 is described in table 4.6 using three different fertility estimation methods. The table displays differentials by place of residence and level of education. The MCEB, CF and TFR differ in levels. TFR levels are lower than for the CF. In particular, TFR in rural areas reduced from 5.8 in 1993 to 5.2 in 1998, it then rose to 5.4 in 2003. The same level is evident among those in urban areas with a decrease from 3.4 in 1993 to 3.1 in 1998, thereafter an increase to 3.3.

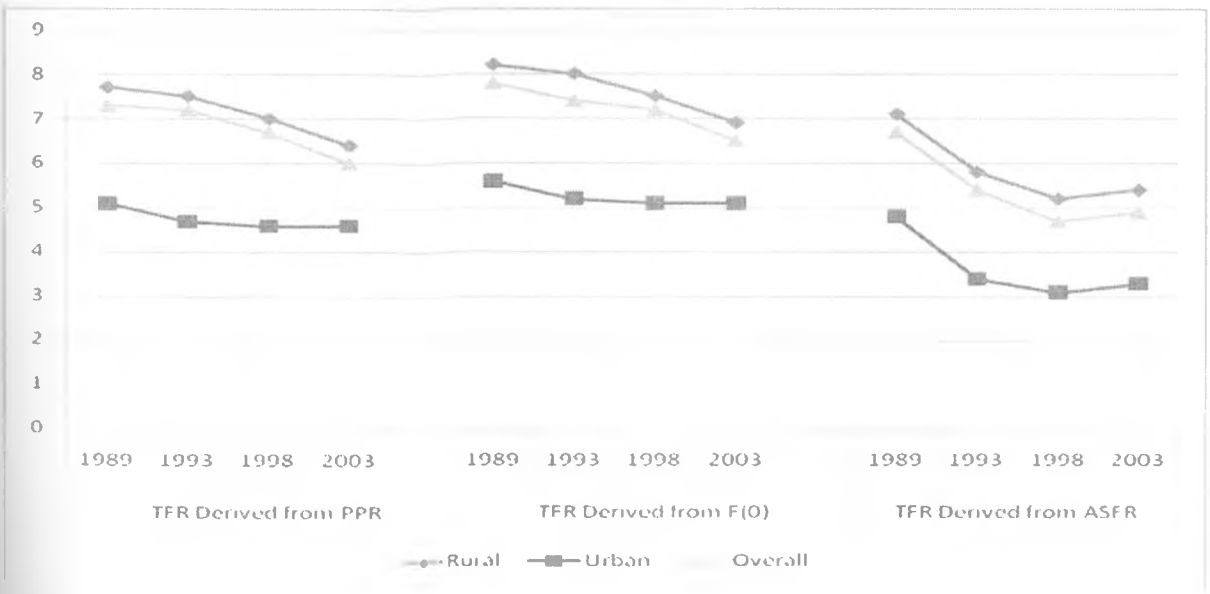
The completed fertility levels are however reducing among the rural areas with a high of 8.2 in 1989 to 8.0 in 1993 which further reduced to 7.5 in 1998 and finally 6.9 in 2003. On the other hand, fertility levels in the urban areas was 5.6 in 1989, then reduced to 5.2 in 1993. The level then remained constant in 1998 and 2003 at 5.1.

Table 4.6 Trends in Average Fertility Sizes

	1989			1993			1998			2003		
Category	**MCEB**	**CF**	**TFR**	**MCEB**	**CF**	**TFR**	**MCEB**	**CF**	**TFR**	**MCEB**	**CF**	**TFR**
Rural	7.7	8.2	7.1	7.5	8	5.8	7.0	7.5	5.2	6.4	6.9	5.4
Urban	5.1	5.6	4.8	4.7	5.2	3.4	4.6	5.1	3.1	4.6	5.1	3.3
Overall	7.3	7.8	6.7	7.2	7.4	5.4	6.7	7.2	4.7	6.0	6.5	4.9
No Education	7.4	7.9	7.2	7.4	7.9	6.0	7.1	7.6	5.8	7.0	7.5	6.7
Primary	7.6	8.2	6.5	7.4	7.9	5.0	6.9	7.4	4.8	6.4	6.9	4.8
Secondary +	4.1	4.6	4.9	5.2	5.7	4.0	5.2	5.7	5.5	4.2	4.7	3.2

MCEB = Mean Children ever born from the Parity Progression Ratio
CF = Completed fertility from the fertility table
TFR = Average Fertility Size from the Age Specific Fertility Rate

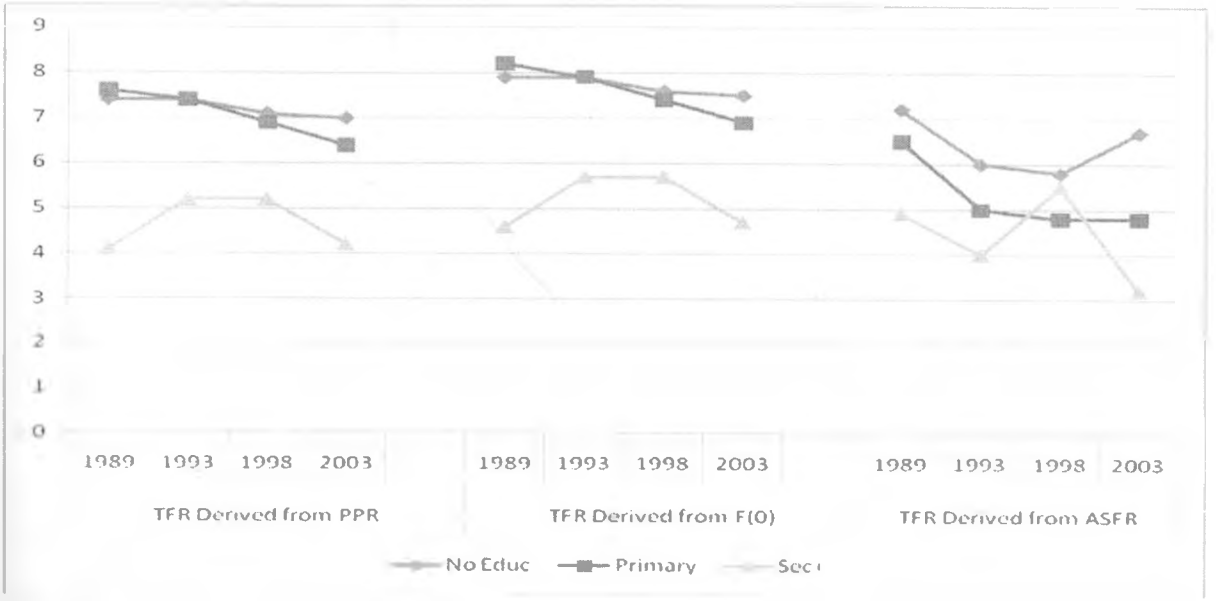
Figure 4.5: Trends in TFR from the Three Derived Methods for Place of Residence in Kenya, 1989-2003.



The trends in fertility by education levels are revealing. Women with higher education have lower fertility level. However, for women with higher education, there is a sharp increase in

CF of 7.9 in 1993 which then dropped after to 7.4 in 1998. The TFR however showed a sharp increase in 1998 which further declines in 2003. It is interesting to note that TFR for no education had a substantial increase in 2003.

Figure 4.6: Trends in TFR from the Three Derived Methods for Levels of Education in Kenya, 1989-2003.



CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

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

5.2 Summary

The aim of this study was to analyze the completed fertility trends, levels and differentials in Kenya using the KDHS series data. The study applied fertility table model developed by Feichtinger and Lutz (1985). The fertility table built is analogous to a life table with parity replacing age as the indexing variable. The results of application of the fertility table reveal that the proportion of childless women was higher in urban category than the rural category. Generally, the proportion is consistently reducing amid an upsurge in 2003. The modal parity ranges from eight in 1989 which reduces to seven and five in 1998 and 2003 respectively.

Overall differential by place of residence and education indicate that the rural category and those with low education level had higher average family size. Moreover, the proportion of childless women in urban category is higher than those in the rural category.

Over the period, the mode of the completed parity distribution ranges from eight to nine for women with no education. In rural category, higher proportions of women progress to higher parity than in urban. In urban category which is regarded a low fertility area, most women are controlling their fertility and this is why progression to higher parity reduces significantly after parity three. The PPR in this way reflects explicit decision on the part of women and their families to have or not to have another child. This result might be clouded by infertility and contraceptive failure but still clearer that the conventional ASFR.

Generally, between 1993 and 1998, fertility declined at most parities while between 1998 and 2003 there was little or no change at the low parities and then an increase in higher parities, beginning at parity four. An increase in parity progression ratio at higher parity is observed in low fertility region due to selectivity of a few fertile women. In both Rural and Urban areas, over the period, the PPR at parity zero are higher than those at parity one except urban 1989. Rural category has the highest fertility compared to the urban category.

The parity progression ratios by educational levels show that parity distribution decreases over time. Irregularities in PPR are observed among women with secondary and above level of education.

The proportion of women reaching parity i or higher reduced in the last two recent surveys. For instance, among the urban women, about three quarters had a third birth compared to 93% in the rural areas in 2003. By education level, 61% of women with no education had a third birth order compared to 14% with secondary plus. Similarly, 49% of women in rural areas had fifth birth order in 2003 compared to 23% in urban area in the same year. These levels were however higher in the preceding periods.

5.3 Conclusion

In general, fertility levels are lower among urban and highly educated women which conform to theory of demographic transition. It can also be concluded from the fertility table model that the completed fertility is still in the decline, which contradicts the estimates from the TFR.

5.4 Recommendations

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

5.4.1 Implication for policy

The finding of this study has shown that there are urban rural variations in fertility levels. These findings can assist government and relevant stakeholders to formulate policies, design and implement appropriate strategies that are geared towards fertility reduction. The programs set should be implemented with recognition that there are regional variations and more emphasis should be put in the rural areas.

From the results, it is evident that education is important in determining fertility level. There is need to improve and encourage education of the women as it changes the ideas and attitude towards early childbearing. Efforts should be made to encourage girls to have secondary and above education.

5.4.2 Recommendations for further research

From the study, the following suggestions for further research have been made;

1. Future studies focusing on fertility tables using other sources of data such as census data for comparability purpose.
2. Detailed qualitative studies to establish factors that contribute to fertility variations over the years
3. Other approaches used in estimating fertility be applied to Kenya data and be compared to the conventional TFR.

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APPENDIX I: Completed fertility by Place of Residence
KDHS 1989

Type of place of residence

Urban

Parity	Urban Wi	Urban Pi	Urban Bi	PPR(i,i+1)	PPR(0,i)
0	10	153		0.9346	
1	8	143	331	0.9441	0.9346
2	10	135	314	0.9259	0.8824
3	18	125	268	0.8560	0.8170
4	25	107	201	0.7664	0.6993
5	17	82	159	0.7927	0.5359
6	21	65	122	0.6769	0.4248
7	9	44	80	0.7955	0.2876
8	13	35	50	0.6286	0.2288
9	11	22	28	0.5000	0.1438
10	5	11	17	0.5455	0.0719
11	6	6	6	0.0000	0.0392
12	0	0	5	#DIV/0!	0.0000
13+	0	0	1		0.0000
Total	153				

MCEB 5.1

Descriptive Parity Table

i	pi	Ii	di	Li	Ti	Fi
0	0.9346	1000	65	967.32	5565.36	5 57
1	0.9441	935	52	908.50	4598.04	4 92
2	0.9259	882	65	849.67	3689.54	4 18
3	0.8560	817	118	758.17	2839.87	3.48
4	0.7664	699	163	617.65	2081.70	2.98
5	0.7927	536	111	480.39	1464.05	2 73
6	0.6769	425	137	356.21	983.66	2.32
7	0.7955	288	59	258.17	627.45	2.18
8	0.6286	229	85	186.27	369.28	1.61
9	0.5000	144	72	107.84	183.01	1 27
10	0.5455	72	33	55.56	75.16	1.05
11	0.0000	39	39	19.61	19.61	0.50
12	0.0000	0	0	0.00	0 00	#DIV/0!
13+		0	0	0.00	0.00	#DIV/0!

CF 5.6

Rural

Parity	Rural Wi	Rural Pi	Urban Bi	PPR(i,i+1)	PPR(0,i)
0	18	920		0.9804	
1	13	902	929	0.9856	0.9804
2	16	889	909	0.9820	0.9663
3	36	873	884	0.9588	0.9489
4	44	837	815	0.9474	0.9098
5	66	793	715	0.9168	0.8620
6	98	727	579	0.8652	0.7902
7	115	629	461	0.8172	0.6837
8	136	514	348	0.7354	0.5587
9	131	378	223	0.6534	0.4109
10	93	247	132	0.6235	0.2685
11	75	154	61	0.5130	0.1674
12	36	79	32	0.5443	0.0859
13	43	43	10	0.0000	0.0467
14+	0	0	5		0.0000
Total	920				

MCEB 7.7

Descriptive Parity Table

i	pi	Ii	di	Li	Ti	Fi
0	0.9804	1000	20	990.22	8179.35	8.18
1	0.9856	980	14	973.37	7189.13	7 33
2	0.9820	966	17	957.61	6215.76	6 43
3	0.9588	949	39	929.35	5258.15	5 54
4	0.9474	910	48	885.87	4328.80	4 76
5	0.9168	862	72	826.09	3442.93	3 99
6	0.8652	790	107	736.96	2616.85	3.31
7	0.8172	684	125	621.20	1879.89	2.75
8	0.7354	559	148	484.78	1258.70	2.25
9	0 6534	411	142	339.67	773.91	1 88
10	0.6235	268	101	217.93	434.24	1 62
11	0.5130	167	82	126.63	216.30	1.29
12	0.5443	86	39	66.30	89.67	1.04
13	0 0000	47	47	23.37	23.37	0.50
14		0	0	0.00	0.00	#DIV/0!

CF 8.2

Parity	Wi	Pi	Bi	PPR(i,i+1)	PPR(0,i)
0	28	1073		0.9739	
1	21	1,045	1260	0.9799	0.9739
2	26	1,024	1223	0.9746	0.9543
3	54	998	1152	0.9459	0.9301
4	69	944	1016	0.9269	0.8798
5	83	875	874	0.9051	0.8155
6	119	792	701	0.8497	0.7381
7	124	673	541	0.8158	0.6272
8	149	549	398	0.7286	0.5116
9	142	400	251	0.6450	0.3728
10	98	258	149	0.6202	0.2404
11	81	160	67	0.4938	0.1491
12	79	79	37	0.0000	0.0736
13+	0	0	11		0.0000
	1,073				

MCEB 7.3

Descriptive Parity Table

i	pi	Ii	di	Li	Ti	Fi
0	0.9739	1000	26	986.95	7766.54	7.77
1	0 9799	974	20	964.12	6779.59	6 96
2	0.9746	954	24	942.22	5815.47	6.09
3	0.9459	930	50	904.94	4873.25	5.24
4	0.9269	880	64	847.62	3968.31	4 51
5	0.9051	815	77	776.79	3120.69	3.83
6	0.8497	738	111	682.67	2343.90	3.18
7	0.8158	627	116	569.43	1661.23	2.65
8	0.7286	512	139	442.22	1091.80	2.13
9	0.6450	373	132	306.62	649.58	1.74
10	0.6202	240	91	194.78	342.96	1.43
11	0.4938	149	75	111.37	148.18	0 99
12	0.0000	74	74	36.81	36.81	0.50
13+		0	0	0.00	0.00	#DIV/0!

CF 7.8

KDHS 1993

Type of place of residence

Urban

Parity	Urban Wi	Urban Pi	Urban Bi	PPR(i,i+1)	PPR(0,i)
0	3	92		0 9674	
1	9	89	331	0 8989	0 9674
2	11	80	314	0 8625	0 8696
3	7	69	268	0 8986	0 7500
4	11	62	201	0 8226	0 6739
5	18	51	159	0 6471	0 5543
6	10	33	122	0 6970	0 3587
7	5	23	80	0 7826	0 2500
8	9	18	50	0 5000	0 1957
9	8	9	28	0 1111	0 0978
10	1	1	17	0 0000	0 0109
11	0	0	6	#DIV/0!	0 0000
12	0	0	5	#DIV/0!	0 0000
13+	0	0	1		0 0000
Total	92				

MCEB 4.7

Descriptive Parity Table

i	pi	li	di	Li	Ti	Fi
0	0 9674	1000	33	983 70	5228 26	5 23
1	0 8989	967	98	918 48	4244 57	4 39
2	0 8625	870	120	809 78	3326.09	3 83
3	0 8986	750	76	711 96	2516 30	3 36
4	0 8226	674	120	614 13	1804 35	2.68
5	0 6471	554	196	456 52	1190 22	2.15
6	0 6970	359	109	304.35	733.70	2 05
7	0 7826	250	54	222 83	429 35	1.72
8	0 5000	196	98	146.74	206 52	1 06
9	0 1111	98	87	54 35	59 78	0 61
10	0 0000	11	11	5 43	5 43	0 50
11	0 0000	0	0	0 00	0 00	#DIV/0!
12	0 0000	0	0	0 00	0 00	#DIV/0!
13+		0	0	0 00	0 00	#DIV/0!

CF 5.2

Rural

Parity	Rural Wi	Rural Pi	Urban Bi	PPR(i,i+1)	PPR(0,i)
0	18	1001		0 9820	
1	23	983	929	0 9766	0 9820
2	29	960	909	0 9698	0 9590
3	38	931	884	0 9592	0 9301
4	62	893	815	0 9306	0 8921
5	71	831	715	0 9146	0 8302
6	98	760	579	0 8711	0 7592
7	127	662	461	0 8082	0 6613
8	140	535	348	0 7383	0 5345
9	144	395	223	0 6354	0 3946
10	101	251	132	0 5976	0 2507
11	67	150	61	0 5533	0 1499
12	42	83	32	0 4940	0 0829
13	24	41	10	0 4146	0 0410
14+	17	17	5		0.0170
Total	1,001				

MCEB 7.5

Descriptive Parity Table

i	pi	li	di	Li	Ti	Fi
0	0 9820	1000	18	991 01	7984 52	7 98
1	0 9766	982	23	970.53	6993 51	7 12
2	0 9698	959	29	944 56	6022 98	6 28
3	0 9592	930	38	911 09	5078 42	5 46
4	0 9306	892	62	861 14	4167 33	4 67
5	0 9146	830	71	794 71	3306 19	3 98
6	0 8711	759	98	710 29	2511 49	3 31
7	0 8082	661	127	597 90	1801 20	2 72
8	0 7383	534	140	464 54	1203 30	2 25
9	0 6354	395	144	322 68	738 76	1 87
10	0 5976	251	101	200 30	416 08	1 66
11	0 5533	150	67	116.38	215.78	1 44
12	0 4940	83	42	61 94	99 40	1 20
13	0 4146	41	24	28 97	37 46	0.91
14		17	17	8 49	8 49	0 50

CF 8.0

66

Parity	Wi	Pi	Bi	PPR(i,i+1)	PPR(0,i)
0	21	1093		0 9808	
1	32	1,072	1260	0 9701	0 9808
2	40	1,040	1223	0 9615	0 9515
3	45	1,000	1152	0 9550	0 9149
4	73	955	1016	0 9236	0 8737
5	89	882	874	0 8991	0 8070
6	108	793	701	0 8638	0 7255
7	132	685	541	0 8073	0 6267
8	149	553	398	0 7306	0 5059
9	152	404	251	0 6238	0 3696
10	102	252	149	0 5952	0 2306
11	67	150	67	0 5533	0 1372
12	42	83	37	0 4940	0 0759
13+	41	41	11		0 0375
	1,093				

MCEB 7.2

Descriptive Parity Table

i	pi	li	di	Li	Ti	Fi
0	0 9808	1000	19	990 39	7736 96	7 74
1	0 9701	981	29	966 15	6746 57	6 88
2	0 9615	952	37	933 21	5780 42	6 08
3	0 9550	915	41	894 33	4847 21	5 30
4	0 9236	874	67	840 35	3952 88	4 52
5	0 8991	807	81	766 24	3112 53	3 86
6	0 8638	726	99	676 12	2346 29	3 23
7	0 8073	627	121	566 33	1670 17	2 66
8	0 7306	506	136	437 79	1103 84	2.18
9	0 6238	370	139	300 09	666 06	1 80
10	0 5952	231	93	183 90	365 97	1 59
11	0 5533	137	61	106 59	182.07	1.33
12	0 4940	76	38	56 72	75 48	0 99
13+		38	38	18 76	18 76	0 50

CF 7.7

KDHS 1998

Type of place of residence

Urban

Parity	Urban Wi	Urban Pi	Urban Bi	PPR(i,i+1)	PPR(0,i)
0	3	140		0.9786	
1	10	137	331	0.9270	0.9786
2	17	127	314	0.8661	0.9071
3	22	110	268	0.8000	0.7857
4	29	88	201	0.6705	0.6286
5	13	59	159	0.7797	0.4214
6	16	46	122	0.6522	0.3286
7	10	30	80	0.6667	0.2143
8	8	20	50	0.6000	0.1429
9	7	12	28	0.4167	0.0857
10	2	5	17	0.6000	0.0357
11	1	3	6	0.6667	0.0214
12	2	2	5	0.0000	0.0143
13+	0	0	1		0.0000
Total	140				

MCEB 4.6

Descriptive Parity Table

i	pi	Ii	di	Li	Ti	Fi
0	0.9786	1000	21	989.29	5064.29	5.06
1	0.9270	979	71	942.86	4075.00	4.16
2	0.8661	907	121	846.43	3132.14	3.45
3	0.8000	786	157	707.14	2285.71	2.91
4	0.6705	629	207	525.00	1578.57	2.51
5	0.7797	421	93	375.00	1053.57	2.50
6	0.6522	329	114	271.43	678.57	2.07
7	0.6667	214	71	178.57	407.14	1.90
8	0.6000	143	57	114.29	228.57	1.60
9	0.4167	86	50	60.71	114.29	1.33
10	0.6000	36	14	28.57	53.57	1.50
11	0.6667	21	7	17.86	25.00	1.17
12	0.0000	14	14	7.14	7.14	0.50
13+		0	0	0.00	0.00	#DIV/0!

CF 5.1

Rural

Parity	Rural Wi	Rural Pi	Urban Bi	PPR(i,i+1)	PPR(0,i)
0	19	1027		0.9815	
1	19	1,008	929	0.9812	0.9815
2	25	989	909	0.9747	0.9630
3	56	964	884	0.9419	0.9387
4	66	908	815	0.9273	0.8841
5	68	842	715	0.8955	0.8199
6	138	754	579	0.8170	0.7342
7	144	616	461	0.7662	0.5998
8	140	472	348	0.7034	0.4596
9	140	332	223	0.5783	0.3233
10	107	192	132	0.4427	0.1870
11	41	85	61	0.5176	0.0828
12	30	44	32	0.3182	0.0428
13	9	14	10	0.3571	0.0136
14+	5	5	5		0.0049
Total	1,027				

MCEB 7.0

Descriptive Parity Table

i	pi	Ii	di	Li	Ti	Fi
0	0.9815	1000	19	990.75	7535.05	7.54
1	0.9812	981	19	972.25	6544.30	6.67
2	0.9747	963	24	950.83	5572.05	5.79
3	0.9419	939	55	911.39	4621.23	4.92
4	0.9273	884	64	852.00	3709.83	4.20
5	0.8955	820	86	777.02	2857.84	3.49
6	0.8170	734	134	666.99	2080.82	2.83
7	0.7662	600	140	529.70	1413.83	2.36
8	0.7034	460	136	391.43	884.13	1.92
9	0.5783	323	136	255.11	492.70	1.52
10	0.4427	187	104	134.86	237.59	1.27
11	0.5176	83	40	62.80	102.73	1.24
12	0.3182	43	29	28.24	39.92	0.93
13	0.3571	14	9	9.25	11.68	0.86
14		5	5	2.43	2.43	0.50

CF 7.5

Parity	WI	PI	Bi	PPR(i,i+1)	PPR(0,i)
0	22	1167		0.9811	
1	29	1,145	1260	0.9747	0.9811
2	42	1,116	1223	0.9624	0.9563
3	78	1,074	1152	0.9274	0.9203
4	95	996	1016	0.9046	0.8535
5	101	901	874	0.8879	0.7721
6	154	800	701	0.8075	0.6855
7	154	646	541	0.7616	0.5536
8	148	492	398	0.6992	0.4216
9	147	344	251	0.5727	0.2948
10	109	197	149	0.4467	0.1688
11	42	88	67	0.5227	0.0754
12	32	46	37	0.3043	0.0394
13+	14	14	11		0.0120
	1,167				

MCEB 6.7

Descriptive Parity Table

i	pi	Ii	di	Li	Ti	Fi
0	0.9811	1000	19	990.57	7234.36	7.23
1	0.9747	981	25	968.72	6243.79	6.36
2	0.9624	956	36	938.30	5275.06	5.52
3	0.9274	920	67	886.89	4336.76	4.71
4	0.9046	853	81	812.77	3449.87	4.04
5	0.8879	772	87	728.79	2637.10	3.42
6	0.8075	686	132	619.54	1908.31	2.78
7	0.7616	554	132	487.57	1288.77	2.33
8	0.6992	422	127	358.18	801.20	1.90
9	0.5727	295	126	231.79	443.02	1.50
10	0.4467	169	93	122.11	211.23	1.25
11	0.5227	75	36	57.41	89.12	1.18
12	0.3043	39	27	25.71	31.71	0.80
13+		12	12	6.00	6.00	0.50

CF 7.2

KDHS 2003

Type of place of residence

Urban

Parity	Urban Wi	Urban Pi	Urban Bi	$PPR(i,i+1)$	$PPR(0,i)$
0	12	343		0.9650	
1	17	331	331	0.9486	0.9650
2	46	314	314	0.8535	0.9155
3	67	268	268	0.7500	0.7813
4	42	201	201	0.7910	0.5860
5	37	159	159	0.7673	0.4636
6	42	122	122	0.6557	0.3557
7	30	80	80	0.6250	0.2332
8	22	50	50	0.5600	0.1458
9	11	28	28	0.6071	0.0816
10	11	17	17	0.3529	0.0496
11	1	6	6	0.8333	0.0175
12	4	5	5	0.2000	0.0146
13+	1	1	1		0.0029
Total	343				

MCEB 4.6

Descriptive Parity Table

i	pi	Ii	di	Li	Ti	Fi
0	0.9650	1000	35	982.51	5112.24	5.11
1	0.9486	965	50	940.23	4129.74	4.28
2	0.8535	915	134	848.40	3189.50	3.48
3	0.7500	781	195	683.67	2341.11	3.00
4	0.7910	586	122	524.78	1657.43	2.83
5	0.7673	464	108	409.62	1132.65	2.44
6	0.6557	356	122	294.46	723.03	2.03
7	0.6250	233	87	189.50	428.57	1.84
8	0.5600	146	64	113.70	239.07	1.64
9	0.6071	82	32	65.60	125.36	1.54
10	0.3529	50	32	33.53	59.77	1.21
11	0.8333	17	3	16.03	26.24	1.50
12	0.2000	15	12	8.75	10.20	0.70
13+		3	3	1.46	1.46	0.50

CF 5.1

Rural

Parity	Rural Wi	Rural Pi	Urban Bi	$PPR(i,i+1)$	$PPR(0,i)$
0	18	947		0.9810	
1	20	929	929	0.9785	0.9810
2	25	909	909	0.9725	0.9599
3	69	884	884	0.9219	0.9335
4	100	815	815	0.8773	0.8606
5	136	715	715	0.8098	0.7550
6	118	579	579	0.7962	0.6114
7	113	461	461	0.7549	0.4868
8	125	348	348	0.6408	0.3675
9	91	223	223	0.5919	0.2355
10	71	132	132	0.4621	0.1394
11	29	61	61	0.5246	0.0644
12	22	32	32	0.3125	0.0338
13	5	10	10	0.5000	0.0106
14+	5	5	5		0.0053
Total	947				

MCEB 6.4

Descriptive Parity Table

i	pi	Ii	di	Li	Ti	Fi
0	0.9810	1000	19	990.50	6944.56	6.94
1	0.9785	981	21	970.43	5954.07	6.07
2	0.9725	960	26	946.67	4983.63	5.19
3	0.9219	933	73	897.04	4036.96	4.32
4	0.8773	861	106	807.81	3139.92	3.65
5	0.8098	755	144	683.21	2332.10	3.09
6	0.7962	611	125	549.10	1648.89	2.70
7	0.7549	487	119	427.14	1099.79	2.26
8	0.6408	367	132	301.48	672.65	1.83
9	0.5919	235	96	187.43	371.17	1.58
10	0.4621	139	75	101.90	183.74	1.32
11	0.5246	64	31	49.10	81.84	1.27
12	0.3125	34	23	22.18	32.73	0.97
13	0.5000	11	5	7.92	10.56	1.00
14		5	5	2.64	2.64	0.50

CF 6.9

Parity	Wi	Pi	Bi	$PPR(i,i+1)$	$PPR(0,i)$
0	30	1290		0.9767	
1	37	1,260	1260	0.9706	0.9767
2	71	1,223	1223	0.9419	0.9481
3	136	1,152	1152	0.8819	0.8930
4	142	1,016	1016	0.8602	0.7876
5	173	874	874	0.8021	0.6775
6	160	701	701	0.7718	0.5434
7	143	541	541	0.7357	0.4194
8	147	398	398	0.6307	0.3085
9	102	251	251	0.5936	0.1946
10	82	149	149	0.4497	0.1155
11	30	67	67	0.5522	0.0519
12	26	37	37	0.2973	0.0287
13+	11	11	11		0.0085
	1,290				

MCEB 6.0

Descriptive Parity Table

i	pi	Ii	di	Li	Ti	Fi
0	0.9767	1000	23	988.37	6453.49	6.45
1	0.9706	977	29	962.40	5465.12	5.60
2	0.9419	948	55	920.54	4502.71	4.75
3	0.8819	893	105	840.31	3582.17	4.01
4	0.8602	788	110	732.56	2741.86	3.48
5	0.8021	678	134	610.47	2009.30	2.97
6	0.7718	543	124	481.40	1398.84	2.57
7	0.7357	419	111	363.95	917.44	2.19
8	0.6307	309	114	251.55	553.49	1.79
9	0.5936	195	79	155.04	301.94	1.55
10	0.4497	116	64	83.72	146.90	1.27
11	0.5522	52	23	40.31	63.18	1.22
12	0.2973	29	20	18.60	22.87	0.80
13+		9	9	4.26	4.26	0.50

CF 6.5

APPENDIX II: Completed fertility by Education Level
KDHS 1989
Level of education
No Education

Parity	Urban Wi	Urban Pi	Urban Bi	PPR(i,i+1)	PPR(0,i)
0	15	587		0.9744	
1	10	572	331	0.9825	0.9744
2	16	562	314	0.9715	0.9574
3	26	546	268	0.9524	0.9302
4	39	520	201	0.9250	0.8859
5	44	481	159	0.9085	0.8194
6	58	437	122	0.8673	0.7445
7	80	379	80	0.7889	0.6457
8	81	299	50	0.7291	0.5094
9	70	218	28	0.6789	0.3714
10	62	148	17	0.5811	0.2521
11	43	86	6	0.5000	0.1465
12	19	43	5	0.5581	0.0733
13+	24	24	1		0.0409
Total	587				

MCEB 7.4

Descriptive Parity Table

i	pi	li	di	Li	Ti	Fi
0	0.9744	1000	26	987.22	7850.94	7.85
1	0.9825	974	17	965.93	6863.71	7.04
2	0.9715	957	27	943.78	5897.79	6.16
3	0.9524	930	44	908.01	4954.00	5.33
4	0.9250	886	66	852.64	4046.00	4.57
5	0.9085	819	75	781.94	3193.36	3.90
6	0.8673	744	99	695.06	2411.41	3.24
7	0.7889	646	136	577.51	1716.35	2.66
8	0.7291	509	138	440.37	1138.84	2.24
9	0.6789	371	119	311.75	698.47	1.88
10	0.5811	252	106	199.32	386.71	1.53
11	0.5000	147	73	109.88	187.39	1.28
12	0.5581	73	32	57.07	77.51	1.06
13+		41	41	20.44	20.44	0.50

CF 7.9

Primary

Parity	Rural Wi	Rural Pi	Urban Bi	PPR(i,i+1)	PPR(0,i)
0	9	433		0.9792	
1	10	424	929	0.9764	0.9792
2	3	414	909	0.9928	0.9561
3	16	411	884	0.9611	0.9492
4	22	395	815	0.9443	0.9122
5	34	373	715	0.9088	0.8614
6	56	339	579	0.8348	0.7829
7	38	283	461	0.8657	0.6536
8	64	245	348	0.7388	0.5658
9	72	181	223	0.6022	0.4180
10	36	109	132	0.6697	0.2517
11	38	73	61	0.4795	0.1686
12	16	35	32	0.5429	0.0808
13	8	19	10	0.5789	0.0439
14+	11	11	5		0.0254
Total	433				

MCEB 7.6

Descriptive Parity Table

i	pi	li	di	Li	Ti	Fi
0	0.9792	1000	21	989.61	8148.96	8.15
1	0.9764	979	23	967.67	7159.35	7.31
2	0.9928	956	7	952.66	6191.69	6.48
3	0.9611	949	37	930.72	5239.03	5.52
4	0.9443	912	51	886.84	4308.31	4.72
5	0.9088	861	79	822.17	3421.48	3.97
6	0.8348	783	129	718.24	2599.31	3.32
7	0.8657	654	88	609.70	1881.06	2.88
8	0.7388	566	148	491.92	1271.36	2.25
9	0.6022	418	166	334.87	779.45	1.86
10	0.6697	252	83	210.16	444.57	1.77
11	0.4795	169	88	124.71	234.41	1.39
12	0.5429	81	37	62.36	109.70	1.36
13	0.5789	44	18	34.64	47.34	1.08
14		25	25	12.70	12.70	0.50

CF 8.2

Secondary+

Parity	Wi	Pi	Bi	PPR(i,i+1)	PPR(0,i)
0	4	51		0.9216	
1	1	47	1260	0.9787	0.9216
2	7	46	1223	0.8478	0.9020
3	12	39	1152	0.6923	0.7647
4	8	27	1016	0.7037	0.5294
5	4	19	874	0.7895	0.3725
6	5	15	701	0.6667	0.2941
7	6	10	541	0.4000	0.1961
8	3	4	398	0.2500	0.0784
9	0	1	251	1.0000	0.0196
10	0	1	149	1.0000	0.0196
11	0	1	67	1.0000	0.0196
12	1	1	37	0.0000	0.0196
13+	0	0	11		0.0000
	51				

MCEB 4.1

Descriptive Parity Table

i	pi	li	di	Li	Ti	Fi
0	0.9216	1000	78	960.78	4637.25	4.64
1	0.9787	922	20	911.76	3676.47	3.99
2	0.8478	902	137	833.33	2764.71	3.07
3	0.6923	765	235	647.06	1931.37	2.53
4	0.7037	529	157	450.98	1284.31	2.43
5	0.7895	373	78	333.33	833.33	2.24
6	0.6667	294	98	245.10	500.00	1.70
7	0.4000	196	118	137.25	254.90	1.30
8	0.2500	78	59	49.02	117.65	1.50
9	1.0000	20	0	19.61	68.63	3.50
10	1.0000	20	0	19.61	49.02	2.50
11	1.0000	20	0	19.61	29.41	1.50
12	0.0000	20	20	9.80	9.80	0.50
13+		0	0	0.00	0.00	#DIV/0!

CF 4.6

HS 1993

e of place of residence

education

ity	Urban Wi	Urban Pi	Urban Bi	PPR(i,i+1)	PPR(0,i)
	11	516		0.9787	
	15	505	331	0.9703	0.9787
	22	490	314	0.9551	0.9496
	22	468	268	0.9530	0.9070
	30	446	201	0.9327	0.8643
	30	416	159	0.9279	0.8062
	42	386	122	0.8912	0.7481
	59	344	80	0.8285	0.6667
	73	285	50	0.7439	0.5523
	76	212	28	0.6415	0.4109
	56	136	17	0.5882	0.2636
	34	80	6	0.5750	0.1550
	22	46	5	0.5217	0.0891
	24	24	1		0.0465
al	516				

Cohort TFR 7.4

Descriptive Parity Table

i	pi	Ii	di	Li	Ti	Fi
0	0.9787	1000	21	989.34	7937.98	7.94
1	0.9703	979	29	964.15	6948.64	7.10
2	0.9551	950	43	928.29	5984.50	6.30
3	0.9530	907	43	885.66	5056.20	5.57
4	0.9327	864	58	835.27	4170.54	4.83
5	0.9279	806	58	777.13	3335.27	4.14
6	0.8912	748	81	707.36	2558.14	3.42
7	0.8285	667	114	609.50	1850.78	2.78
8	0.7439	552	141	481.59	1241.28	2.25
9	0.6415	411	147	337.21	759.69	1.85
10	0.5882	264	109	209.30	422.48	1.60
11	0.5750	155	66	122.09	213.18	1.38
12	0.5217	89	43	67.83	91.09	1.02
13+		47	47	23.26	23.26	0.50

CF 7.9

mary

rity	Rural Wi	Rural Pi	Urban Bi	PPR(i,i+1)	PPR(0,i)
	8	502		0.9841	
	12	494	929	0.9757	0.9841
	9	482	909	0.9813	0.9602
	16	473	884	0.9662	0.9422
	36	457	815	0.9212	0.9104
	49	421	715	0.8836	0.8386
	54	372	579	0.8548	0.7410
	65	318	461	0.7956	0.6335
	71	253	348	0.7194	0.5040
	70	182	223	0.6154	0.3625
	44	112	132	0.6071	0.2231
	32	68	61	0.5294	0.1355
	20	36	32	0.4444	0.0717
	7	16	10	0.5625	0.0319
+	9	9	5		0.0179
tal	502				

MCEB 7.4

Descriptive Parity Table

i	pi	Ii	di	Li	Ti	Fi
0	0.9841	1000	16	992.03	7856.57	7.86
1	0.9757	984	24	972.11	6864.54	6.98
2	0.9813	960	18	951.20	5892.43	6.14
3	0.9662	942	32	926.29	4941.24	5.24
4	0.9212	910	72	874.50	4014.94	4.41
5	0.8836	839	98	789.84	3140.44	3.74
6	0.8548	741	108	687.25	2350.60	3.17
7	0.7956	633	129	568.73	1663.35	2.63
8	0.7194	504	141	433.27	1094.62	2.17
9	0.6154	363	139	292.83	661.35	1.82
10	0.6071	223	88	179.28	368.53	1.65
11	0.5294	135	64	103.59	189.24	1.40
12	0.4444	72	40	51.79	85.66	1.19
13	0.5625	32	14	24.90	33.86	1.06
14		18	18	8.96	8.96	0.50

CF 7.9

condary +

rity	WI	PI	BI	PPR(i,i+1)	PPR(0,i)
	2	75		0.9733	
	5	73	1260	0.9315	0.9733
	9	68	1223	0.8676	0.9067
	7	59	1152	0.8814	0.7867
	7	52	1016	0.8654	0.6933
	10	45	874	0.7778	0.6000
	12	35	701	0.6571	0.4667
	8	23	541	0.6522	0.3067
	5	15	398	0.6667	0.2000
	6	10	251	0.4000	0.1333
	2	4	149	0.5000	0.0533
	1	2	67	0.5000	0.0267
	0	1	37	1.0000	0.0133
+	1	1	11		0.0133
	75				

MCEB 5.2

Descriptive Parity Table

i	pi	Ii	di	Li	Ti	Fi
0	0.9733	1000	27	986.67	5673.33	5.67
1	0.9315	973	67	940.00	4686.67	4.82
2	0.8676	907	120	846.67	3746.67	4.13
3	0.8814	787	93	740.00	2900.00	3.69
4	0.8654	693	93	646.67	2160.00	3.12
5	0.7778	600	133	533.33	1513.33	2.52
6	0.6571	467	160	386.67	980.00	2.10
7	0.6522	307	107	253.33	593.33	1.93
8	0.6667	200	67	166.67	340.00	1.70
9	0.4000	133	80	93.33	173.33	1.30
10	0.5000	53	27	40.00	80.00	1.50
11	0.5000	27	13	20.00	40.00	1.50
12	1.0000	13	0	13.33	20.00	1.50
13+		13	13	6.67	6.67	0.50

CF 5.7

KDHS 1998

Level of Education

No Education

Parity	Urban Wi	Urban Pi	Urban Bi	PPR(i,i+1)	PPR(0,i)
0	12	442		0.9729	
1	11	430	331	0.9744	0.9729
2	15	419	314	0.9642	0.9480
3	18	404	268	0.9554	0.9140
4	28	386	201	0.9275	0.8733
5	33	358	159	0.9078	0.8100
6	49	325	122	0.8492	0.7353
7	55	276	80	0.8007	0.6244
8	55	221	50	0.7511	0.5000
9	72	166	28	0.5663	0.3756
10	57	94	17	0.3936	0.2127
11	19	37	6	0.4865	0.0837
12	12	18	5	0.3333	0.0407
13+	6	6	1		0.0136
Total	442				

MCEB 7.1

Descriptive Parity Table

i	pi	ii	di	Li	Ti	Fi
0	0.9729	1000	27	986.43	7604.07	7.60
1	0.9744	973	25	960.41	6617.65	6.80
2	0.9642	948	34	931.00	5657.24	5.97
3	0.9554	914	41	893.67	4726.24	5.17
4	0.9275	873	63	841.63	3832.58	4.39
5	0.9078	810	75	772.62	2990.95	3.69
6	0.8492	735	111	679.86	2218.33	3.02
7	0.8007	624	124	562.22	1538.46	2.46
8	0.7511	500	124	437.78	976.24	1.95
9	0.5663	376	163	294.12	538.46	1.43
10	0.3936	213	129	148.19	244.34	1.15
11	0.4865	84	43	62.22	96.15	1.15
12	0.3333	41	27	27.15	33.94	0.83
13+		14	14	6.79	6.79	0.50

CF 7.6

Primary

Parity	Rural Wi	Rural Pi	Urban Bi	PPR(i,i+1)	PPR(0,i)
0	7	559		0.9875	
1	13	552	929	0.9764	0.9875
2	18	539	909	0.9666	0.9642
3	32	521	884	0.9386	0.9320
4	41	489	815	0.9162	0.8748
5	48	448	715	0.8929	0.8014
6	78	400	579	0.8050	0.7156
7	81	322	461	0.7484	0.5760
8	78	241	348	0.6763	0.4311
9	67	163	223	0.5890	0.2916
10	48	96	132	0.5000	0.1717
11	22	48	61	0.5417	0.0859
12	18	26	32	0.3077	0.0465
13	4	8	10	0.5000	0.0143
14+	4	4	5		0.0072
Total	559				

MCEB 6.9

Descriptive Parity Table

i	pi	ii	di	Li	Ti	Fi
0	0.9875	1000	13	993.74	7399.82	7.40
1	0.9764	987	23	975.85	6406.08	6.49
2	0.9666	964	32	948.12	5430.23	5.63
3	0.9386	932	57	903.40	4482.11	4.81
4	0.9162	875	73	838.10	3578.71	4.09
5	0.8929	801	86	758.50	2740.61	3.42
6	0.8050	716	140	645.80	1982.11	2.77
7	0.7484	576	145	503.58	1336.31	2.32
8	0.6763	431	140	361.36	832.74	1.93
9	0.5890	292	120	231.66	471.38	1.62
10	0.5000	172	86	128.80	239.71	1.40
11	0.5417	86	39	66.19	110.91	1.29
12	0.3077	47	32	30.41	44.72	0.96
13	0.5000	14	7	10.73	14.31	1.00
14		7	7	3.58	3.58	0.50

CF 7.4

Secondary +

Parity	Wi	Pi	Bi	PPR(i,i+1)	PPR(0,i)
0	3	166		0.9819	
1	5	163	1260	0.9693	0.9819
2	9	158	1223	0.9430	0.9518
3	28	149	1152	0.8121	0.8976
4	26	121	1016	0.7851	0.7289
5	20	95	874	0.7895	0.5723
6	27	75	701	0.6400	0.4518
7	18	48	541	0.6250	0.2892
8	15	30	398	0.5000	0.1807
9	8	15	251	0.4667	0.0904
10	4	7	149	0.4286	0.0422
11	1	3	67	0.6667	0.0181
12	2	2	37	0.0000	0.0120
13+	166	0	11		0.0000

MCEB 5.2

Descriptive Parity Table

i	pi	ii	di	Li	Ti	Fi
0	0.9819	1000	18	990.96	5716.87	5.72
1	0.9693	982	30	966.87	4725.90	4.81
2	0.9430	952	54	924.70	3759.04	3.95
3	0.8121	898	169	813.25	2834.34	3.16
4	0.7851	729	157	650.60	2021.08	2.77
5	0.7895	572	120	512.05	1370.48	2.39
6	0.6400	452	163	370.48	858.43	1.90
7	0.6250	289	108	234.94	487.95	1.69
8	0.5000	181	90	135.54	253.01	1.40
9	0.4667	90	48	66.27	117.47	1.30
10	0.4286	42	24	30.12	51.20	1.21
11	0.6667	18	6	15.06	21.08	1.17
12	0.0000	12	12	6.02	6.02	0.50
13+		0	0	0.00	0.00	#DIV/0!

CF 5.7

KDHS 2003

Education Level

No Education

Parity	Urban Wi	Urban Pi	Urban Bi	PPR(i,i+1)	PPR(0,i)
0	10	404		0.9752	
1	9	394	331	0.9772	0.9752
2	16	385	314	0.9584	0.9530
3	16	369	268	0.9566	0.9134
4	23	353	201	0.9348	0.8738
5	49	330	159	0.8515	0.8168
6	33	281	122	0.8826	0.6955
7	55	248	80	0.7782	0.6139
8	66	193	50	0.6580	0.4777
9	49	127	28	0.6142	0.3144
10	43	78	17	0.4487	0.1931
11	13	35	6	0.6286	0.0866
12	19	22	5	0.1364	0.0545
13+	3	3	1		0.0074
Total	404				

MCEB 7.0

Descriptive Parity Table

i	pi	Ii	di	Li	Ti	Fi
0	0.9752	1000	25	987.62	7475.25	7.48
1	0.9772	975	22	964.11	6487.62	6.65
2	0.9584	953	40	933.17	5523.51	5.80
3	0.9566	913	40	893.56	4590.35	5.03
4	0.9348	874	57	845.30	3696.78	4.23
5	0.8515	817	121	756.19	2851.49	3.49
6	0.8826	696	82	654.70	2095.30	3.01
7	0.7782	614	136	545.79	1440.59	2.35
8	0.6580	478	163	396.04	894.80	1.87
9	0.6142	314	121	253.71	498.76	1.59
10	0.4487	193	106	139.85	245.05	1.27
11	0.6286	87	32	70.54	105.20	1.21
12	0.1364	54	47	30.94	34.65	0.64
13+		7	7	3.71	3.71	0.50

CF 7.5

Primary

Parity	Rural Wi	Rural Pi	Urban Bi	PPR(i,i+1)	PPR(0,i)
0	10	524		0.9809	
1	11	514	929	0.9786	0.9809
2	14	503	909	0.9722	0.9599
3	30	489	884	0.9387	0.9332
4	57	459	815	0.8758	0.8760
5	80	402	715	0.8010	0.7672
6	79	322	579	0.7547	0.6145
7	64	243	461	0.7366	0.4637
8	64	179	348	0.6425	0.3416
9	49	115	223	0.5739	0.2195
10	36	66	132	0.4545	0.1260
11	16	30	61	0.4667	0.0573
12	6	14	32	0.5714	0.0267
13	4	8	10	0.5000	0.0153
14+	4	4	5		0.0076
Total	524				

MCEB 6.4

Descriptive Parity Table

i	pi	Ii	di	Li	Ti	Fi
0	0.9809	1000	19	990.46	6889.31	6.89
1	0.9786	981	21	970.42	5898.85	6.01
2	0.9722	960	27	946.56	4928.44	5.13
3	0.9387	933	57	904.58	3981.87	4.27
4	0.8758	876	109	821.56	3077.29	3.51
5	0.8010	767	153	690.84	2255.73	2.94
6	0.7547	615	151	539.12	1564.89	2.55
7	0.7366	464	122	402.67	1025.76	2.21
8	0.6425	342	122	280.53	623.09	1.82
9	0.5739	219	94	172.71	342.56	1.56
10	0.4545	126	69	91.60	169.85	1.35
11	0.4667	57	31	41.98	78.24	1.37
12	0.5714	27	11	20.99	36.26	1.36
13	0.5000	15	8	11.45	15.27	1.00
14		8	8	3.82	3.82	0.50

CF 6.9

Secondary+

Parity	Wi	Pi	Bi	PPR(i,i+1)	PPR(0,i)
0	10	362		0.9724	
1	17	352	1260	0.9517	0.9724
2	41	335	1223	0.8776	0.9254
3	90	294	1152	0.6939	0.8122
4	62	204	1016	0.6961	0.5635
5	44	142	874	0.6901	0.3923
6	48	98	701	0.5102	0.2707
7	24	50	541	0.5200	0.1381
8	17	26	398	0.3462	0.0718
9	4	9	251	0.5556	0.0249
10	3	5	149	0.4000	0.0138
11	1	2	67	0.5000	0.0055
12	1	1	37	0.0000	0.0028
13+	0	0	11		0.0000
	362				

MCEB 4.2

Descriptive Parity Table

i	pi	Ii	di	Li	Ti	Fi
0	0.9724	1000	28	986.19	4693.37	4.69
1	0.9517	972	47	948.90	3707.18	3.81
2	0.8776	925	113	868.78	2758.29	2.98
3	0.6939	812	249	687.85	1889.50	2.33
4	0.6961	564	171	477.90	1201.66	2.13
5	0.6901	392	122	331.49	723.76	1.85
6	0.5102	271	133	204.42	392.27	1.45
7	0.5200	138	66	104.97	187.85	1.36
8	0.3462	72	47	48.34	82.87	1.15
9	0.5556	25	11	19.34	34.53	1.39
10	0.4000	14	8	9.67	15.19	1.10
11	0.5000	6	3	4.14	5.52	1.00
12	0.0000	3	3	1.38	1.38	0.50
13+		0	0	0.00	0.00	#DIV/0!

CF 4.7