



REPUBLIC OF KENYA

**Analytical Report
on Fertility
and Nuptiality**

Volume IV





REPUBLIC OF KENYA

Kenya 1999 Population and Housing Census

Volume IV Analytical Report on Fertility and Nuptiality

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Ministry of Finance and Planning
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List of Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
ASFR	Age Specific Fertility Rate
CBR	Crude Birth Rate
CBS	Central Bureau of Statistics
CEB	Children Ever Born
CIDA	Canadian International Development Agency
DFID	Department For International Development
DFRDS	District Focus for Rural Development Strategy
EA	Enumeration Area
FP	Family Planning
HIV	Human Immunodeficiency Virus
ICPD	International Conference for Population and Development
KCPS	Kenya Contraceptive Prevalence Survey
KDHS	Kenya Demographic and Health Survey
KFS	Kenya Fertility Survey
MAFB	Mean Age at First Birth
MCH/FP	Maternal and Child Health care and Family Planning
NCPD	National Council for Population and Development
NDS	National Demographic Survey
OCR	Optical Character Recognition
PPRs	Parity Progression Ratios
ROK	Republic of Kenya
SAP	Structural Adjustment Programme
SMAM	Singulate Mean Age at Marriage
STI	Sexually Transmitted Infection
TFR	Total Fertility Rate
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development

Foreword

The Kenya 1999 Population and Housing Census was the fourth to be carried out since independence and the sixth since 1948 when the first census was conducted in Kenya. It was carried out on a de facto basis with the night of 24/25 August being taken as a reference date under the provision of the Statistics Act (Cap. 112) of the Laws of Kenya and Legal Notice No. 121 of 11 September 1998 and amendment No. 25 of 22 February 1999.

The main objective of this census was to collect demographic and socio-economic data required for policy formulation and decision making in planning processes. This objective was emphasised by the 1999 census theme, "Counting Our People for Development". Basic results of the 1999 census were published in Volumes I and II in January 2001. This second set comprising nine analytical reports addresses topics of fertility and nuptiality, mortality, migration and urbanisation, population projections, education, labour force, housing and gender dimensions. Highlights of the demographic indicators are presented in the Population Dynamics monograph.

Preparation of the analytical monographs involved collaborative efforts of both local and external experts, the Population Studies and Research Institute (PSRI), and various government ministries and departments. The monographs were authored under supervision of a lead consultant. The authors and consultants were recruited on competitive basis, ensuring that such persons had adequate knowledge of the subject they were to analyse and were familiar with Kenya demographic data. For the first time, university students in demography were attached to lead monograph authors.

Scanning technology was used for the first time to capture census data. This method reduced the data processing period to a record 6 months. In an effort to achieve internal consistency and minimise errors to acceptable levels, rigorous editing and validation of the data were carried out before analysing the results. The information presented in these reports is therefore based on more cleaned data sets, and is to be preferred in case there are differences in the results published in Volumes I and II.

This monograph presents analyses of fertility and nuptiality data collected during the 1999 census. The results show that the total fertility rate (TFR) has declined over the last 30 years from 7.8 births per woman during the 1969-79 period to 6.6 births during the 1979-89 period, and 5.0 births during the 1989-99 intercensal period. Consequently, the population growth rate decelerated from 3.4% annually during the 1979-89 period to 2.9% annually during the period 1989-99. The fall in fertility during the 1989-99 period is largely explained by improvements in female education, late marriages as indicated by increasing mean age at first marriage and increased use of modern contraceptive methods.

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Acknowledgement

The Kenya 1999 Population and Housing Census, with the theme "counting our people for development", was conducted in August 1999. It was the sixth national census, after those conducted in 1948, 1962, 1969, 1979 and 1989. Provisional results were released in February 2000, and basic reports were subsequently released in two volumes in January 2001 after a rigorous data processing exercise. This monograph is one of the nine that are a culmination of an ambitious, synchronised and all-inclusive in-depth analysis process addressing various topical areas regarding the demographic, social and economic profiles of the Kenyan population.

The census, being an enormous, complex and costly operation, was accomplished through concerted efforts of many organisations, institutions, government ministries and individuals who assisted in a variety of ways to prepare, collect, compile, process, analyse and publish the results. The Government of Kenya, through the Central Bureau of Statistics of the Ministry of Finance and Planning, wishes to thank them all for their inputs into this noble process.

The Government extends sincere gratitude to the development partners, particularly United Nations Population Fund (UNFPA), United Nations Development Programme (UNDP), United States Agency for International Development (USAID) and the Department for International Development (DFID) for providing technical and/or financial support. Very special thanks are extended to UNFPA and DFID for providing further technical and financial support for the compilation and dissemination of the nine monographs, and also to USAID, in collaboration with the United States Bureau of the Census, for supporting further data processing and the compilation of two sets of United Nations style tables and a census data sheet.

Further gratitude is due to the authors of the nine monographs, the technical support staff and other national and international professionals for their commitment and tireless efforts to successfully undertake the in-depth analysis exercise. Last but not least, all Kenyans deserve special thanks for their patience and willingness to provide the requisite information.

We sincerely hope that the data contained in this monograph will be fully utilised in the national development planning process by all stakeholders for the welfare of the people of Kenya.

David S.O. Nalo

Director of Statistics

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Executive Summary

In Kenya, fertility increased rapidly during the 1960s and 1970s, culminating in the highest ever recorded total fertility rate (TFR) of 8.0 in 1979. The increase was attributed to improvement in the standard of living, low contraceptive use, low age at marriage and high value accorded to children. These demographic trends posed diverse challenges to the Government in so far as provision of basic needs was concerned. In fact, the introduction of structural adjustment programmes (SAPs) during the 1980s compounded these challenges.

The Government, realising the adverse socio-economic consequences of rapid population growth, formulated integrated population policy guidelines in 1984 which accorded fertility reduction utmost priority. The family planning programme was enhanced and integrated in the District Focus for Rural Development Strategy.

The International Conference for Population and Development (ICPD) 1994 impact on Kenya's policy formulation led to the adoption of a National Population Policy for Sustainable Development which was published in a sessional paper of 1996. The policy emphasises reproductive health (including family planning, sexual health and reproductive rights) which now replaces the more restricted emphasis on maternal and child health care and family planning (MCH/FP). It outlines Kenya's goals, objectives and targets to guide the implementation of the population programmes up to the year 2010. These include an infant mortality rate of 59 and TFR of 2.5. This will affect service delivery points for the supply of contraceptives.

The noted efforts have begun to bear fruit. The fertility transition in Kenya has begun, and the innovators of this transition are predominantly educated women and those residing in urban areas for which age at marriage increased remarkably. The momentum of this transition appears to have been more pronounced in urban areas and in Central province. However, in 1999, a number of districts in Nyanza and Western provinces, a majority of districts in Rift Valley province, and all districts in North Eastern province, remained corridors of high fertility, although fertility declined in most of them. It is also observed that while fertility declined for most age groups during the 1989-99 period, for adolescents aged 15-19 years, it increased marginally for some regions and population sub-groups.

The total fertility rate (TFR) for the 1989-99 intercensal period was 5.0, a drop from 6.6 during the 1979-89 decade. Incomplete parity progression ratios (PPRs) showed that while fertility increased in the 1960-70 decade, it fell during the 1980-90 period. The 1999 census data, however, showed that it declined during the decade mainly for women aged 20-39 years, just as was the case during the 1979-89 decade. In addition, cohort parity progression ratios from the 1969 census, when compared with those of 1979, 1989 and 1999, showed a remarkable consistency, thus suggesting fairly good quality data. The cohort PPRs also showed a rising trend in fertility at higher parities for cohorts of women born between the late 19th century and the 1940s and a declining trend for the younger women 20-29 years old at the time of the 1999 census.

Evidence of lower TFR in 1999 was recorded in urban centres, being 3.9 compared to 5.9 in the rural areas during the 1989-99 period. Average parity for women aged 40-44 years was also lower in urban areas when compared with rural areas. The figures were 4.7 and 6.7 for urban and rural areas, respectively. North Eastern province with a TFR of 7.0 and Western province with 6.0

reported very high fertility. Also, Nyanza province with 5.5 and Rift Valley province with 5.8 also reported high TFRs. On the other hand, Nairobi reported the lowest TFR of 3.0. Among the districts, Mandera reported the highest TFR with 7.6 and the lowest was Nairobi with 3.0. There were several districts with over 7 births per woman. These were Moyale 7.4, Wajir 7.1, Narok 7.2, Samburu 7.2, Trans Mara 7.4, West Pokot 7.5 and Mt. Elgon 7.1.

Women who had attained secondary and above level of education had much lower TFRs of 5.0 and 4.8 for the 1979-89 period and 1989-99 period, respectively. Women with no education had TFRs of 7.5 and 6.8 for the two intercensal periods, respectively. However, the largest fall in fertility was reported by women with primary level of education whose TFR dropped from 7.9 during 1969-79 to 6.5 during the 1989-99 period, representing a drop of 1.4 births per woman.

Reference to marital status indicates that single women continued to have the lowest TFR of 3.4, while married women had the highest TFR of 6.1 during the 1989-99 decade. The widowed had TFR of 5.5, while divorced and separated had a TFR of 4.7. Singulate mean age at marriage (SMAM) in Kenya has steadily increased since 1969 for both males and females. In 1989 it was estimated as 21.6 years for females and 26.0 years for males. In 1999, it increased marginally to 22.3 years for females and 26.5 years for males. In 1999, the district with the highest SMAM for females was Embu in Eastern province, while both Homa Bay and Migori districts in Nyanza province reported the lowest SMAM with 18.9 years each.

Finally, the mean age at first birth also increased marginally from 20 years in 1989 to 21 years in 1999. However, the highest change was reported by women in urban centres whose mean age at first birth rose from 20.5 years in 1989 to 22.8 years in 1999.

The observed demographic trends make it necessary for the Government to intensify integration of population variables into socio-economic and cultural developments. There is need also for publicity and early mapping activities to be given considerable attention in order to improve the quality of fertility responses in future censuses.

Chapter 1

Fertility and Nuptiality

The Kenya 1999 Population and Housing Census was the sixth to be conducted since 1948 and the fourth since the country's independence in 1963. All persons who were in Kenya on the census night (24/25 August) were legally bound to allow census officials access to their households and premises and to provide the required information (RoK 2001). A census secretariat (technical committee) was established to take charge of all technical, administrative and logistical aspects of the census. Unlike in the previous censuses, the Government mounted an elaborate publicity and advocacy campaign to sensitise and mobilise Kenyans to support and own the census and rebuild public confidence in the exercise (RoK 2001). Further reference regarding details on preparations and execution could be obtained from the Kenya 1999 Population and Housing Census, Volume I.

1.1 Objectives

The main objective of this census was to ascertain the country's population size by enumerating all persons within the borders of Kenya on the census night of 24/25 August 1999. The specific objectives were to:

- Collect data on composition and spatial distribution of the population;
- Ascertain levels and trends of fertility, mortality and migration;
- Establish rate and pattern of urbanisation;
- Collect data on levels of education attained by the population;
- Obtain information on size and utilisation of the labour force;
- Collect information on housing conditions and availability of social amenities.

1.2 Methods of Data Collection

1.2.1 Data Collection Procedures

Household to household canvassing was used to enumerate all persons within the borders of Kenya on the census night and records made as per the questionnaire in Appendix 1. Vagrants, travellers and institutional populations were enumerated on the census night (midnight of 24/25 August), while the household-based population was covered during the period 24/25 August to 31 August 1999. Census officials took the Oath of Secrecy which guaranteed confidentiality of the information collected.

1.2.2 Types of Data Collected

The Kenya 1999 Population and Housing Census collected data at individual, household and institutional levels. The types of data collected were diverse and included sex, age, marital status, tribe/nationality, religion, place of birth, previous residence, duration of residence, orphanhood, literacy

and educational attainment, labour force particulars, fertility and mortality (see Appendix 1).

This volume focuses on the analysis of data collected on fertility and nuptiality cross-classified with some of the aforementioned characteristics. All women aged 12 years and above were asked particulars regarding the number of children they had borne alive and whether the children were living in the household, living elsewhere or were dead; the exact date, sex and survival status of the last live birth.

A *live birth* was defined simply as any child who showed any sign of life at birth. This was to avoid the inclusion of stillbirths and late foetal deaths among those who were borne alive (RoK 1996).

Although efforts were made to generate complete and accurate data on fertility and nuptiality, common problems of census in developing countries had to be tackled in this analysis. Such problems include over-reporting of live births by younger women, under-reporting of live births by older women, age misreporting and wrong dating of events.

Regarding information on nuptiality, individuals were asked to state their marital status as single, monogamously or polygamously married, widowed, divorced or separated. Due to the social-cultural milieu in the country, no standard concept of nuptiality was used. Responses were thus recorded as given by the respondents.

1.2.3 Data Quality

Demographic data collection in Kenya and elsewhere in sub-Saharan Africa is riddled with many problems of administration and logistics. These give rise to coverage and content errors, which vary both in nature and magnitude from one country to another and from one region to another. Coverage errors result from omission of certain pockets of the population, while content errors pertain to misreporting or misclassification of events. The errors cause biases and distortions in the estimates based on such data.

In this section, only content errors in the reports of women of reproductive age (15-49 years) are examined. The discussion revolves around features that might bias the fertility and nuptiality estimates from the data. Fertility estimates in this monograph are based on lifetime and current fertility data, while nuptiality estimates are obtained from data on marital status.

Lifetime fertility data were collected by asking each woman aged 12 years and above to state the total number of children she had born alive disaggregated by sex, those living with her in the household, those living elsewhere (away) and those who had died, as of the census night. Current fertility information, on the other hand, was elicited by asking the same women, particularly those that had had at least one live birth, to state the month and year of the last live birth, if it was a multiple birth and the survival status of the birth.

In all these analyses, the age and sex structure of the population plays a pivotal role in helping to explain the levels, trends and patterns of fertility and nuptiality. Therefore, the quality of the data is assessed mainly by examining the extent of age misreporting for women of reproductive age. Examining average parities, parity distributions and proportions childless will achieve further insights into the quality of reporting of fertility data for various cohorts. It should be noted that editing rules, especially the treatment of women whose reported parity was considered too high for their age, do change from census to census. The quality of nuptiality data is influenced by individual perceptions. The validation of such data is embedded in the cultural norms and practices that determine a respondent's perceptions and engagement in various marital statuses and conditions. Consequently, the quality of nuptiality data could not be precisely ascertained. Nuptiality data have, therefore, been utilised as reported. Less than 1% of all persons in Kenya on the census night did not state their marital status.

1.2.4 Data Capture Methodology

The 1999 census, unlike its predecessors, utilised the optical character recognition (OCR) approach, popularly known as scanning, to capture data from the main questionnaires. This technological advance was quite attractive as it was cost-effective and time saving. However, it was quite apparent during data processing that scanning had introduced unique problems that required complex solutions. In particular, some appreciable degree of misreading occurred in the reports of children ever born (columns P40 to P47), mostly involving higher parity women. The questionnaire was designed such that in each of these columns, a small box was placed that had to be checked if a particular woman reported ten or more children in any of the columns. However, it emerged that both the enumerators and the scanners made errors in these columns and thus corrupted the reports of higher parity women. Also, columns for dead female children suffered from lack of quality control during scanning.

Despite these problems, substantial improvements were made to minimise the errors over time. Additionally, the data were edited meticulously in consonance with recent United Nations recommendations (United Nations 2001).

1.2.5 Age Heaping

Figure 1.1 shows the distribution of Kenyan women of reproductive age in single years according to the 1999 census data. The declining saw-edged pattern with peaks (or spikes) on ages ending with digits 0 and 5 is a familiar feature of sub-Saharan African population censuses data. It shows preference for or heaping on terminal digits 0 and 5 due to lack of knowledge of actual age, among other things. The Myers Index of 16.4 for females indicates high preference for terminal digits 0 and 5. Further, Figure 1.2 indicates that digit preference (or avoidance) was higher for females than males.

Figure 1.1 Distribution of Women of Reproductive Age by Age in Single Years, 1999

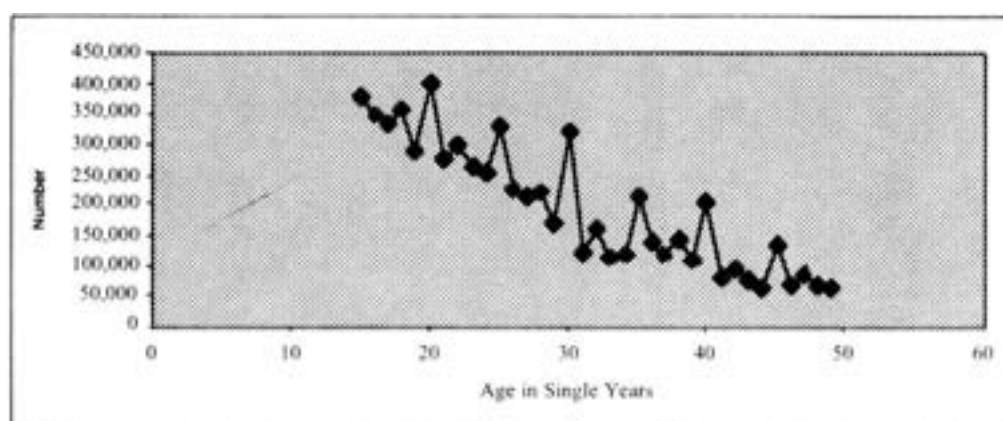
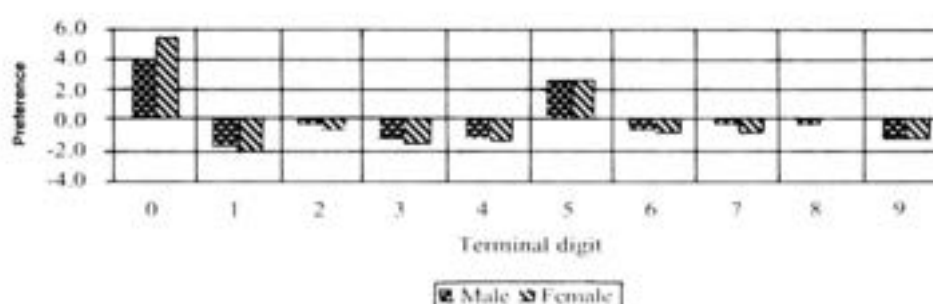


Figure 1.2 Myers Index of Digit Preference or Avoidance, 1999



1.2.6 Five-Year Age Group Distortions

One way of mitigating the impact of single year age distortions on the fertility indices is by aggregating them into 5-year age groups as shown in Figure 1.3. As expected, the figure shows a roughly monotonic decrease in the percentages with increasing age. However, the age ratios in Figure 1.4 show some slight but significant transfer of females from age group 30-34 to 35-39. Overall, the age ratio score of 7.3 for females suggests only modest inconsistencies in the grouped age data (see Figure 1.5).

Figure 1.3 Percentage Distribution of Women of Reproductive Age, 1999

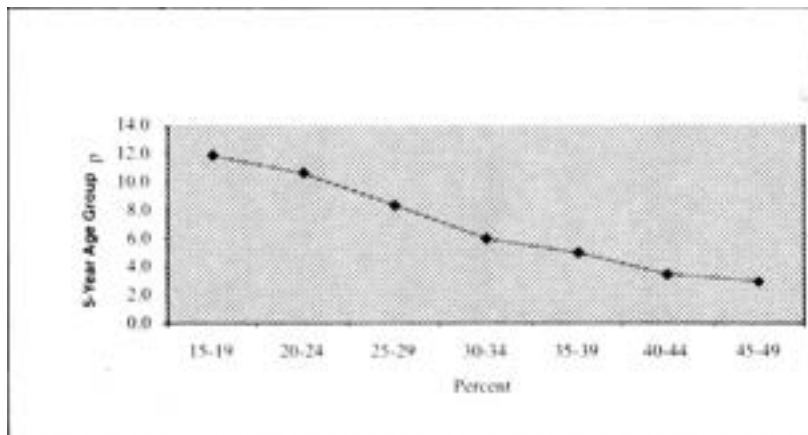


Figure 1.4 Age Ratios of Women Aged 10-54 Years by 5-Year Age Groups: 1989 KDHS and 1989 and 1999 Censuses

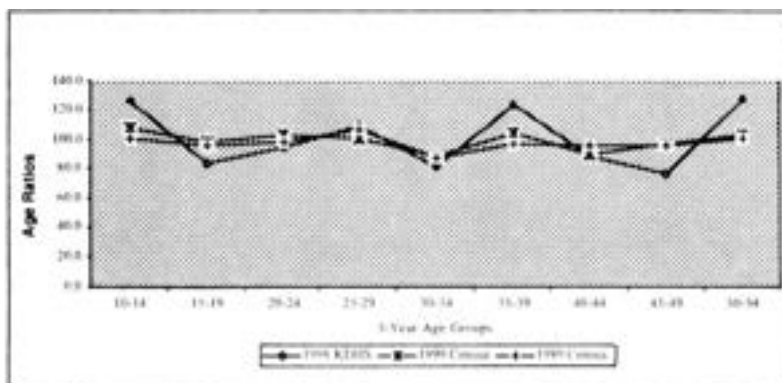
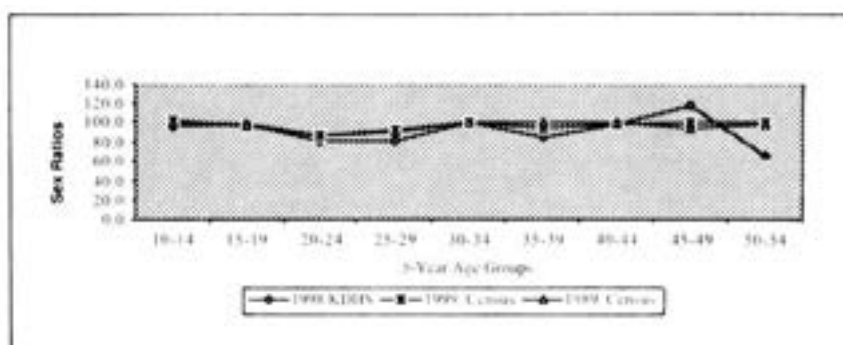


Figure 1.5 Sex Ratios of Persons Aged 10-54 Years by 5-Year Age Groups: 1989 KDHS and 1989 and 1999 Censuses



1.2.7 Eligible Age Boundary Effects

Analyses of demographic data have indicated that female age misreporting occurs more frequently at the boundaries of the lower and upper age cut-off for the respondents to the female questionnaire; this may lead to exclusion of some eligible women (aged 12-49 years) from responding to the fertility questionnaire (Rutstein and Bicego 1990). Such errors can be discerned by examining the age ratios (for women) and the sex ratios for the age groups immediately above and below the eligible age boundaries as shown in Table 1.1.

Table 1.1 Age Ratios and Sex Ratios for Upper and Lower Boundary Age Groups Based on 1998 KDHS, and 1989 and 1999 Censuses

Age Group	Age Ratios			Sex Ratios		
	1999 Census	1989 Census	1998 KDHS	1999 Census	1989 Census	1998 KDHS
10-14	107.7	101.5	126.9	101.8	101.2	96.5
15-19	98.3	96.1	85.2	97.6	98.1	98.6
20-24	103.9	99.0	95.0	88.3	87.8	82.5
40-44	90.5	97.0	89.2	99.7	101.0	98.5
45-49	97.8	97.0	76.1	100.0	95.8	117.7
50-54	103.8	101.4	128.3	101.0	98.0	67.7

The table suggests some modest transfer of eligible women to age groups at the upper and lower boundaries for both the 1999 and 1989 censuses. This is exemplified by the relatively low age ratios at 15-19 and 45-49 age groups relative to 10-14 and 50-54 age groups, although the sex ratios do not seem to be unusually high at the former relative to the latter to support this postulation. However, the 1998 KDHS shows a clearer and significant transfer of eligible women (women aged 15-49 years) outside the reproductive age range. This might result in slight distortions in fertility indices in the census, albeit not significant relative to the survey.

1.2.8 Lifetime Fertility Data

Errors affecting the quality of lifetime fertility data are omission, mainly due to recall lapse by older women, particularly of dead children, or children who left the household soon after birth, . Also, errors in such data can and do occur due to wrongful inclusion of still births, late foetal deaths and foster children among children ever born. Data on current fertility, on the other hand, are mostly affected by incorrect dating of recent births.

Table 1.2 shows the proportional distribution of women aged 15-49 with parity N and above (N^+) for different periods of time (1969, 1979, 1989 and 1999 censuses). Examination of the parity progression ratios (PPRs) for birth cohorts has the added advantage of testing the internal consistency of data. It traces a birth cohort of women from one period to another to see if the PPRs in one period are consistent with those of the other period. The underlying principle is that if no differentials with respect to mortality and migration of women are assumed, the proportion with parity N and above (N^+) can only increase with time (Muhwava and Timaeus 1996).

As expected, the proportion with parity N^+ rose consistently from 1989 to 1999 for all birth cohorts at all parities, thus strengthening confidence in the internal and external consistency of the 1999 census parity data. The rise was, however, steeper for younger cohorts, albeit at lower as opposed to higher parities. This implies that the new entrants to the reproductive age bracket wasted no time at all in having their first, second and, perhaps, third child, but attained their completed family size soon afterwards. This observation is in consonance with other reviews in the literature.

Table 1.2 Tracing Approximate Cohorts of Women With Parity N⁺ for Different Periods

Cohort	Proportion of Women With Parity			N ⁺	
	1	2	3	4	5
1969 Census					
15-19	0.241	0.081	0.024	0.007	0.002
20-24	0.744	0.538	0.315	0.154	0.070
25-29	0.884	0.810	0.690	0.523	0.343
30-34	0.915	0.871	0.810	0.725	0.609
35-39	0.922	0.885	0.836	0.774	0.693
40-44	0.919	0.878	0.833	0.777	0.702
45-49	0.918	0.877	0.835	0.780	0.715
1979 Census					
15-19	0.216	0.069	0.022	0.008	0.003
20-24	0.734	0.518	0.302	0.151	0.071
25-29	0.891	0.811	0.690	0.524	0.341
30-34	0.921	0.882	0.827	0.751	0.643
35-39	0.930	0.900	0.859	0.807	0.739
40-44	0.925	0.895	0.858	0.813	0.756
45-49	0.924	0.892	0.855	0.810	0.755
1989 Census					
15-19	0.163	0.051	0.018	0.008	0.002
20-24	0.657	0.434	0.231	0.105	0.047
25-29	0.858	0.760	0.616	0.435	0.261
30-34	0.904	0.860	0.793	0.697	0.568
35-39	0.918	0.887	0.844	0.783	0.701
40-44	0.918	0.892	0.856	0.809	0.749
45-49	0.918	0.892	0.859	0.816	0.763
1999 Census					
15-19	0.204	0.067	0.010	0.002	0.000
20-24	0.668	0.390	0.187	0.073	0.024
25-29	0.852	0.689	0.482	0.298	0.160
30-34	0.943	0.869	0.738	0.578	0.416
35-39	0.960	0.919	0.846	0.738	0.605
40-44	0.963	0.930	0.880	0.809	0.714
45-49	0.965	0.936	0.895	0.840	0.765

Notice also that the PPRs were lower for corresponding age groups for 1989 and 1999 compared to 1969 and 1979, indicating diminishing propensity for higher parities with time. When the cohorts are traced from 1969 to 1999, the expected trends are exhibited except for some anomalous trends noticed for cohorts 20-24 and 25-29 at parity 1⁺ and 25-29 in 1969 at parities 2⁺ and 3⁺.

1.3 Methods of Data Analysis

Kenya, like many other countries in sub-Saharan Africa, does not have a complete, reliable and accurate vital registration system. It is estimated that about 40% of births are registered (RoK 1996:3). This problem has necessitated the use of demographic surveys and population censuses to collect data on lifetime and current fertility. The indices of fertility levels and trends used in this report are average parities, total fertility rate (TFR), age-specific fertility rate (ASFR), age-specific birth order rate, relative age-specific fertility rate and crude birth rate (CBR). These direct measures give unreliable values because of errors of omission and commission previously discussed. Making comparisons between lifetime fertility and current fertility sometimes enables such data to be adjusted.

In order to reduce substantial errors inherent in such direct estimates of fertility levels and trends, it is recommended that indirect methods based on various techniques of data graduation be used (United Nations 1983). The suitability of indirect methods, however, depends on the assumptions made about the nature of the data collected and the procedure used in their computation. For most developing countries such as Kenya, the assumptions often made have proved to be unrealistic to and inconsistent with the changing demographic conditions. This has thus rendered the results of some indirect estimates of fertility levels liable to bias.

According to the United Nations (1983), Brass (1981) and Zaba (1981), the graduation of current fertility is best achieved by fitting a relational Gompertz fertility model as is used in this report. For details of its application see Appendix 2. The Gompertz model has several advantages: for example, besides smoothing irregularities and providing the required ASFR, it also minimises the effects of possible errors in the parities reported by older women (RoK 1996:17). The other method for estimating fertility for the intercensal period is to construct a hypothetical cohort from the differences between the average parities recorded in two censuses from the same cohort of women. Several studies have found this methodology appropriate for rapidly changing fertility situations similar to that observed in Kenya (RoK 1996:3).

The problem of women with zero parity (childlessness) and women not stating their parities could also be reduced by applying the El Badry correction. This correction method tends to adjust average parities upwards. A scrutiny of the 1999 census data on fertility reveals that enumerators apparently did not fill in zeros in appropriate columns whenever respondents indicated that they had never given birth. This was therefore coded as not stated during data processing. Since a proportion of the women whose parity was not stated was assumed to be actually childless, the method devised by El Badry (1961) could be used in the analysis to correct the average parities.

Trends in fertility can be ascertained by using simpler methods such as comparing ratios of children ever borne (CEB) to women by 5-year age groups, for different census periods. A more robust technique of measuring fertility trends is the parity progression ratios (PPRs), that is, the proportion of women going from an n th to an $n+1$ birth. This index is a sensitive measure of fertility change, but it is also very robust to data errors such as in time location of births and confusion between childlessness and failure to report a birth (Brass and Jolly 1993:53). This report uses this method extensively. It is noted, however, that the proportion going from parity zero to parity one (i.e., from childlessness to first birth) is still affected by the not stated response as was the case with the 1989 census (RoK 1996:11). For the remainder of the ratios, it is assumed that both the numerator and the denominator are affected in equal proportions, so that the errors cancel out.

Analysis of nuptiality levels and trends has been based on proportions in different marital statuses as portrayed by various censuses. Hajnal's (1953) method has been applied on both proportions of single males and females and those childless females by age group to produce indices for singulate mean age at first marriage (SMAM) and mean age at first birth (MAFB), respectively. The proportion of childless women was obtained as the ratio of women reported as childless to all those whose parities were stated.

Chapter 2

Studies in Fertility and Nuptiality

There are several studies on fertility and nuptiality on Kenya. National surveys include the Kenya fertility Survey (KFS) in 1977/78. Kenya Contraceptive Prevalence Survey (KCPS) in 1984, National Demographic Surveys (NDS) of 1977, 1979 and 1984, and the Kenya Demographic and Health Surveys (KDHS) of 1989, 1993 and 1998. All these studies supplement census data which were collected in 1948, 1962, and decennially since 1969. Local and international research institutes and universities have also conducted many other ethnographic studies with a national locus.

fertility studies already undertaken could be broadly categorised into two groups, First, the policy-oriented studies aim at investigating how best to influence the levels and trends of fertility and nuptiality to conform to the broad national development objectives. Second, the category of social science-oriented studies aims at examining the determinants of fertility and nuptiality levels and trends, as well as their determinants.

Brass and Jolly (1993:x) have identified policy studies as focusing on the social dynamics of adolescent fertility, factors affecting contraceptive use and the effects of mortality on child survival and general health. On the other hand, social science research has centred on levels and trends of fertility and nuptiality, the proximate determinants of fertility, the impact of HIV/AIDS on fertility, and the links between demographic variables and fertility and nuptiality.

from these studies some observations could be made regarding fertility regime in this country. Brass and Jolly (1993:2) succinctly summarise these as follows:

- Kenya, once reputed as a country having one of the highest population growth rate in the world during the 1960s and 1970s, is now on a path of fertility transition. However, the different regions and population sub-groups are at different levels of fertility decline,
- fertility reduction has occurred more sharply in urban areas than in rural areas. The middle (25-34 years) age group and older (35-49 years) population of women have contributed more substantially to fertility decline than the younger age groups (except in Western Province). The decline has occurred at all birth orders, a pattern that is clearly distinct from fertility decline in Latin America and Asia, where fertility decline began in the middle parities and then to lower birth orders.
- The fertility pattern observed in Kenya is similar to that in Botswana, Nigeria and Zimbabwe.
- The roles played by proximate determinants of fertility vary by regions and by population sub-groups. Nevertheless, increase in contraceptive use and an increase in employment in the modern sector have primarily determined fertility reduction. The reductions by level of education were also clearly noticeable in the lower parities and more pronounced with secondary and above level of education.
- Age at first marriage is steadily increasing as well as the proportion remaining single for both men and women. Marriage has also remained fairly stable and the proportion of unions that are polygamous is steadily declining.

2.1 Fertility History

A systematic description of fertility history of Kenya is limited by gaps in fertility records and variations in the nature and quality of fertility data collected by the various censuses since the first national census was taken in 1948. At the 1948 census, ages were recorded only in broad classes, and limited information on birth was collected (Brass and Jolly 1993:14). Moreover, no complete enumeration was done. The 1962 and 1969 censuses used probability samples of 10% to collect data on fertility, but the coverage was restricted to only adult women whose living children were enumerated.

On the other hand, the 1979, 1989 and the 1999 censuses undertook complete enumeration without sampling. Information on births has been more detailed and based on the same questionnaire, thus making comparison of fertility and nuptiality data more feasible.

2.2 Rate of Natural Increase

An observation of the rate of natural increase (birth rate minus death rate) indicates that Kenya was experiencing a rising trend in the rate of natural increase from 1948, reaching a peak in 1975-79 and, thereafter, starting to decline (Brass and Jolly 1993:17). This trend as portrayed in Table 2.1 and is corroborated by a similar trend showing TFR from 1948 to 1998 as depicted by Table 2.2.

There has been discourse in literature relating to the exact causes of fertility rise in the country before the 1980s. Doubts have been expressed as to whether the increase in fertility in the 1960s and 1970s was due to improved birth reporting or was real as implied in the application of PPRs to the 1969 and 1979 fertility data (Brass and Jolly 1993). Further examination of fertility data of this period suggests that fertility increase during this period was real. Brass and Jolly (1993) quoting a study by Blacker state that the main causes of fertility increase between 1970s and 1980s was due primarily to bio-social factors such as shorter birth intervals attributed to declines in breastfeeding and post-partum abstinence along with lengthening reproductive lives (increase in average life expectancy). Others attribute the noted increase in fertility to better nutrition and prenatal health care and reduced foetal mortality (Brass and Jolly 1993).

Table 2.1 Annual Rates of Intercensal Growth, 1948-99

Census Year	% Growth per year
1948	—
1962	3.34
1969	3.38
1979	3.37
1989	3.40
1999	2.90

Table 2.2 Measures of Fertility, 1940-98

Period	TFR per woman
1940-1955	5.5
1958-1962	7.0
1965-1969	7.6
1975-1979	7.9
1985-1989	6.7
1993-1998	4.7*

**Based on the KDHS period 1993-1998*

2.3 Population Policy and the Family Planning Programme

The Government's concern over the rapidly rising population growth rate in the 1960s and 1970s stimulated the adoption of policy strategies that laid the foundation for the onset of fertility transition in the late 1980s. For example, the Government officially adopted family planning policy in 1967 by establishing a maternal child health and family planning programme (MCH/FP) in the Ministry of Health. To further consolidate policy strategies, the Government established in 1982 the National Council for Population and Development (NCPD), a unit in the then Ministry of

Planning and National Development and now falling under the Ministry of Finance and Planning, to be in charge of population policy and to co-ordinate all research activities on population and development in the country. In the same year, the Government launched the Decentralisation Policy under the framework of the District Focus for Rural Development Strategy (DFRDS). This policy led to the establishment of district population offices in selected key districts.

The role of district population officers was to enhance integration of family planning services in all spheres of district planning process and to co-ordinate all population activities undertaken by non-governmental organisations at the district level. In 1984, the NCPD launched the Population Policy Guidelines which became the blueprint in integrating population issues into the development planning process with greater emphasis on an intensified family planning programme. The entrenchment of these policy strategies into the national spheres of the development process and the political goodwill that emerged in the late 1980s and early 1990s in support of family planning services partly contributed to the fertility reductions in the late 1980s as depicted in Table 2.2.

The fall in fertility that commenced in the late 1970s is corroborated by several other nationwide studies such as the KDHS of 1989, 1993 and 1998. This change emerged with the changing processes in knowledge, attitude and practice of family planning as reported in these studies (see Table 2.3).

There is ample evidence that increase in contraceptive use accelerated towards the late 1980s. Contraceptive use increased almost fourfold within a period of 12 years and continued throughout the 1990s. Increase in the use of contraceptives rose from 5.6% to 27% to 29.9% in 1977/78, 1989 and 1998, respectively. Macrae et al (2001) argue that the increased use of contraceptives has a negative impact on fertility and the Index of Contraception (Cc) declined from 0.95 to 0.76 to 0.70 from 1977/78 to 1989 and 1993, respectively. Thus, Brass and Jolly (1993:21) categorically state that, in Kenya, fertility is now a crucial process governing growth, because Kenya has now completed the first phase of a classic demographic transition, declining mortality coupled with relatively constant fertility. Today, there is clear evidence of widespread awareness and approval of family planning and sharply increasing (and also more effective) use of contraception as indicated in Table 2.3. There is evidence that the proportion of currently pregnant women found by the mentioned surveys is steadily declining and the proportion of women who desire no more children has also been steadily increasing.

Macrae et al (2001) support the view that contraceptives are used by most Kenyan women either to delay the first birth or space births, or stop childbearing altogether. The pill, injection and female sterilisation are the most popular modern methods whereas post-partum abstinence is the most popular traditional method.

Conclusively, the mean ideal family size has also been declining since 1978. The use of modern contraceptive methods increased from 4.3% in the late 1970s to 23.6%, among currently

Table 2.3 Indicators of Family Planning Knowledge, Practice and Attitude in Kenya, 1977-98

Indicators	KFS 1977/78	KDHS 1988-89	KDHS 1993	KDHS 1998
Current use of any method (%)	5.6	27.0	25.9	29.9
Current use of modern method (%)	4.3	18.0	20.7	23.6
Ever use of any method (%)	29.0	39.0	45.6	51.3
Knows any method (%)	81.0	90.0	95.6	96.8
Knows a modern method (%)	84.0	88.4	95.2	96.3
Currently pregnant (%)	13.0	8.9	8.2	7.4
Desires no more children (%)	32.0	49.4	51.8	53.1
Mean ideal family size (number of children)	6.2	4.4	3.7	3.8

Source: Brass and Jolly 1993

married women (NCPD 1999). Fertility reduction is therefore expected to have continued between the 1989 and 1999 censuses.

Although the Government has launched several strategies to fight poverty such as the Social Dimensions of Development Programme and the Poverty Eradication Commission, many development challenges arise from increased poverty. In 1994-95 the Government spent 16.1 % of its total recurrent and development budget on education (RoK 1995). The structural adjustment programmes (SAPs) involving cost sharing have had a negative impact, and the quality of education services has declined. Consequently, many children from poor families are not enrolling in schools and some communities have reverted to giving girls second priority in families with boys. The national completion rates for girls at primary school level are only 35%, against 55% for boys (RoK 1994b). Factors responsible for female student dropout are not just economic or gender-linked; a survey in some districts revealed that about 10,000 girls per year drop out because of pregnancy (RoK 1988). Out of this number, 66% became pregnant while in primary school. More importantly, 40% of all documented school pregnancies terminate in abortion (Rogo 1993).

2.4 Adolescent Fertility

The concept of adolescence is controversial, especially when comparison is made between developed and developing countries. In some developing countries, adolescence is defined broadly to embrace physiological features and socio-cultural factors that determine the rights of passage from childhood to adulthood. In this monograph, the debate is avoided but the concept of adolescence embraces only two age groups, namely 12-14 and 15-19 years. The former refers to the early adolescent period and the latter to the late adolescent period.

The 1998 KDHS reports that about 50% of adolescents begin child bearing in Kenya by age 19. By age 17 and 18 years, the proportions are 20% and 30%, respectively. Further evidence from the 1998 KDHS shows that 22% of rural adolescents were mothers as opposed to 17.5% in urban areas. In non-educated adolescents, 40%, were found to be mothers compared to 26% of adolescents with primary level of education and 8% with secondary education. Thus, there is a very high level of pregnancy among adolescents. Provincial analysis reveals that Coast and Rift Valley provinces experienced high percentages (28%) of pregnancy among adolescents aged 15-19 years (NCPD 1999). Another study by the Centre for the Study of Adolescence carried out in 1999 found that about 10,000 girls dropped out of primary and secondary schools due to pregnancy. Similarly, a study by the Centre for Reproductive Health Studies carried out in 1996 found that one in ten maternal deaths was due to complications of unsafe abortions (CRHCS 1996). An increasing number of such abortions are from adolescents. Moreover, the 1998 KDHS shows that over 80% of adolescents aged 15-19 years did not believe themselves to be at risk of contracting AIDS; 70% of these adolescents therefore still engaged in high risk, unprotected, unsafe sexual practices.

Although sexual activity among adolescents is high, contraceptive use remains low, thus leading to high levels of teenage pregnancy and related consequences. Nevertheless, the 1998 KDHS shows that contraceptive use was higher among married women 15-19 years old than among unmarried ones. It was found that only 16% of all married women 15-19 were using a contraceptive method at the time of the KDHS. Furthermore, 30% of sexually active unmarried adolescents aged 15-19 years reported using a method of contraception as opposed to only 18% of currently married women of the same age group. Also, 59% of sexually active unmarried men aged 15-19 reported using a family planning method.

In Kenya today, early marriage is higher in rural areas as well as in areas reporting low levels of education. Early marriage contributes to a longer reproductive period. It has also been observed that in Nyanza, Coast and Eastern provinces, people in most communities marry at a younger age. A study by Ocholla-Ayayo and Ottieno (1988) found that in the former South Nyanza district (now

divided into Suba, Homa Bay and Migori districts), 15% of girls married before age 15 years. KDHS 1998 also reports that 11% of girls aged 15-19 left school before completing primary due to early marriage, while 11.3% got pregnant while at school and had to leave. The rural adolescents therefore tend to marry earlier than their urban counterparts. The Maendeleo ya Wanawake study (1994) confirmed that most adolescents who became pregnant before marriage did not marry, and those who did marry ended up in divorce in the first year of marriage.

In summary, fertility rates among adolescents in Kenya appear to have remained high despite declines experienced among other age groups. This is partly due to high sexuality among adolescents. The 1998 KDHS reports that most adolescents began sexual activity at about 16.2 years for boys and 16.8 years for girls. The 1998 KDHS thus found ASFR for adolescents aged 15-19 years to be high at 111 children per 1,000 live births, and fertility among rural adolescents was high among women with no education.

There is evidence from many studies worldwide that adolescents become sexually active early and have multiple sexual partners. Further evidence based on the 1998 KDHS reveals that 44% of women aged 15-19 years had sexual encounters and nearly 80% of young people had sexual intercourse before age 20 with a median age at first intercourse of 17 years.

It is against this background that adolescent fertility levels, trends and differentials are examined using the 1999 census database. It should be emphasised that as is common with all censuses in developing countries, age mis-statements heavily affect fertility information among adolescents and errors related to reports of live births.

2.5 Evidence of Fertility Decline, 1977-89

Evidence of fertility decline in Kenya has been the subject of several academic research documents. The work of Brass and Jolly (1993), which is based on several demographic analyses and statistical tests, is the most comprehensive and convincing. It is thus referred to extensively in this report. To summarise the issue, Brass and Jolly (1993:68) state: For Kenya as a whole, all age-groups contributed to the overall fertility decline of 19%, but the reduction at the late stage was more than double those at earlier ages.

The cohort analysis of fertility patterns confirms that fertility reduction from the late 1980s affected all regions in the country as well as all population sub-groups. It was only in Western province where the moderate to substantial fertility reductions yielded, on average, a very small fertility reduction compared with the experiences in other provinces.

According to Brass and Jolly (1993), Central province experienced the greatest fertility reduction of 31% in 1984-88. All districts in the province also experienced fertility reductions, although Kirinyaga district exhibited the greatest reduction of 36.5%. The second ranked region was Coast province with a fertility decline of 27%. This reduction occurred in the early reproductive age group below 24 years, while the reduction in fertility among the older women aged 35-49 years was average.

Nairobi province exhibited an anomalous pattern, with virtually no change affecting the younger ages but a large reduction of 37% for women in the middle reproductive ages 25-34 years. This anomaly could be attributed to the relatively small sample size of Nairobi women compared to that of other provinces. Nairobi is also a major destination for in-migrants from different parts of the country, a phenomenon that could affect the fertility regime because the majority of in-migrants have large family sizes.

Brass and Jolly (1993) further observe that in Nyanza province fertility reduction was exhibited by all districts and population sub-groups. Relatively small reductions were observed in Kisumu district and the former South Nyanza district. However, large fertility reductions were recorded in Kisii and Siaya districts. It is noted that Kisii district is experiencing acute population pressure that

has triggered massive out-migration and limitation of family size while Siaya district is a traditional out-migration area in Nyanza province.

In Rift Valley province, fertility in all districts experienced reduction. Relatively large declines were recorded by Nakuru and Uasin Gishu districts. Contradictory evidence for decline was observed in Kericho district, which is another important destination for in-migrant labourers working in tea plantations. Eastern province also recorded moderate fertility declines with Machakos district yielding contradictory results. North Eastern province was excluded from the analysis because it was never covered by the major national sample surveys used in the analysis.

Urban fertility reduction was 23% compared to rural decline of 17%, presumably because increased urbanisation stimulated increased contraception and hence accelerated contraceptive prevalence rate in the country. Decline by level of education was dramatic. All the three categories of educational attainment registered substantial declines as follows: no schooling 15% . primary 17% and secondary and above 19% . fertility declines were, therefore, very similar regardless of women's educational levels (Brass and Jolly 1993).

2.6 Evidence of Fertility Decline, 1989-98

The 1993 KDHS data demonstrated a dramatic declining trend implying a drop of 1.3 births on the 1989 KDHS. The total fertility rate estimate of 6.7 for the 1989 KDHS had dropped to 5.4 for the 3 years prior to the 1993 KDHS. Such a large fall in so short a time raised eyebrows and was considered by many to be unrealistic (Macrae et al 2001:160). It was suspected that fertility rates for the various time periods had been distorted by misdating of births, those in the most recent period being displaced backwards in time. Macrae et al argue that such errors were aggravated in the 1993 survey by inclusion of questions on the heights of children under-5 and mothers, or enumerators wanting to avoid such questions deliberately inflating the age of their children. After subjecting the 1993 KDHS data sets to the rigorous tests that Brass had applied to the 1989 data sets, the authors concluded that the 1993 KDHS rates had been inflated.

The 1998 KDHS gave a total fertility rate of 4.7 thus implying a fall of 0.7 births on that of the 1993 KDHS. Macrae et al (2001) constructed a hypothetical cohort from the average parities of the 1993 and 1998 surveys and found a TFR of 4.6. In addition, they calculated PPRs of the 1969, 1979 and 1989 censuses and compared them with PPRs from the 1993 and 1998 KDHS. From the results obtained, they concluded that there was a general rise in the PPRs, starting with the earliest cohorts of women covered by the data, i.e., those born in the late 19th century and increasing steadily to those born in the 1940s. There was also a marked downturn in the PPRs for women in the youngest cohorts shown by the 1989 census, and this continued sharply for the younger women in the two DHS. This decline was apparent at all parities.

Macrae et al (2001) were thus able to confirm the conclusions made by Brass and Jolly (1993) that from the end of the first World War until the late 1970s fertility in Kenya was rising slowly but steadily. TFR rose from six births in the early 1920s to about eight in the late 1970s. They admit that the causes of this rise were complex but were probably due to declines in pathological sterility (particularly among coastal women), shortening of birth intervals due to reductions in breastfeeding and declines in adult mortality reducing the prevalence of widowhood. However, in the late 1970s or early 1980s, there was an abrupt and dramatic change, and fertility began to fall rapidly. By the early 1990s, fertility had fallen to under 6 and by late 1990s, to less than 5 (Macrae et al 2001:169).

2.7 Nuptiality

The proportion of women in regular sexual contact determines the risk of exposure to pregnancy in a society. In Kenya, entry into sexual union often occurs at an early age. Also, unlike some other

sub-Saharan African countries, most women in Kenya spend most of their lives in the married state despite changes of partners because re-marriage is common especially in situations of widowhood. The 1998 KDHS reports that only 19% of women in the reproductive cohorts were widowed, divorced or no longer living with a man and that there was virtually no change in the marital patterns of women between the 1993 KDHS and that of 1998. It should be emphasised that in the 1950s and 1960s, sexual intercourse outside marriage was socially stigmatised, and marriage marked the start of a socially accepted active sexual life. Consequently, marriage was almost universal, since the proportion never married by age 45-49 was always below 3% as reported by all past censuses as well as the 1993 and 1998 DHS.

2.7.1 Age at First Marriage

There is evidence that age at first marriage for women 20-29 years has been steadily increasing. The 1977/78 KFS reports that the median age at first union for women was 17.5 years. The provincial pattern is depicted in Table 2.4. The median age at first union has increased by almost two years for all provinces in the country. Kenya, therefore, like Nigeria with the median age at first marriage of 19.2 years, is one of the few countries in sub-Saharan Africa that experiences a relatively higher age at first marriage (Brass and Jolly 1993). Further evidence from the 1998 KDHS shows that the median age at first marriage, among women in Kenya has been rising over the last two decades. The rise was from around 18 years among women aged 40-49 years to 19 years for women aged 30-39 years and 20 years for women aged 25-29 years. Men, on the other hand, tend to enter into first union at a relatively later age than women. The median age at first marriage for men aged 25-54 years was 25 years compared with 19 years for women aged 25-49 years.

Table 2.4 Median Age at First Marriage for Women by Province

Province	KFS 1977/78	KDHS 1998	Difference, KFS and KDHS
Kenya	17.5	19.2	+1.7
Nairobi	-	21.9	N/A
Central	18.8	20.7	+1.9
Coast	16.4	18.3	+ 1.9
Eastern	18.7	19.8	+ 1.1
Nyanza	16.5	17.5	+ 1.0
Rift-Valley	-	18.7	N/A
Western	16.8	18.9	+2.1

Note. N/A = not applicable

2.7.2 Marriage Patterns

The effect of marriage patterns on fertility has been well summarised in the work of Brass and Jolly (1993). Their report shows that changes in marriage patterns reduced fertility from a hypothetical total fecundity by about 0.9 births at the time of the KFS, and by about 1.1 births at the time of the 1989 KDHS. Marriage either increases the duration of reproductive life (as in the case of early age at marriage) or decreases the duration (as in the case of late age at marriage). The 1998 KDHS further reports that the proportion of women married by age 20 declined from around two-thirds among women aged 35-49 years to less than a half among women aged under 30 years. Among men, only 13% were married by age 20 compared with 57% of women. In addition, urban women married nearly 2 years later than rural women. Nonetheless, the difference between the two groups

of women was narrowing, suggesting that the marriage patterns between the two regions was becoming more or less similar. This is also the experience being noted between non-educated and formally educated women.

The provincial analysis reveals that women from Nyanza and Coast had the lowest median age at marriage averaging around 18 years, while Nairobi province had the highest 22 years (Table 2.4). Conclusively, the effect of changing marriage patterns on fertility was greater on the younger cohorts 15-24 years because of the greater proportion of women remaining single in these cohorts.

Polygamy is also observed to be declining in Kenya. The 1977/78 KFS reported that about 30% of married women were in polygamous unions; this dropped to 16% according to the 1998 KDHS report. Married men in polygamous union tended to vary with age but ranged from 2-3% among those under 30 years to 15% among those over 40 years. Polygamy was also higher in rural areas than in urban areas and is inversely related to the level of educational attainment. The proportion of women in polygamous unions thus decreased from 29% among women with no education to 11% among women with secondary and above level of education (NCPD 1999:69).

2.8 Other Proximate Determinants of Fertility

2.8.1 Age at First Sexual Intercourse

Age at first sexual intercourse is another measure of the risk of pregnancy. The 1998 KDHS reports that the median age at first sexual intercourse for women rose slowly in recent years from a median of around 16 years among women aged 40-49 years to 17 years among those aged 25-29 years. Moreover, about 56% of women aged 15-19 years were reported to have never had sex. This proportion drops to 11% for women aged 20-24 years, and by age 25-29 almost all women have become sexually active. It is observed that in Kenya significant childbearing occurs out of wedlock, a fact that is never taken into account when marital fertility is considered. This explains why age at first birth is lower than age at first marriage (Westoff 1991).

The data from males show a different scenario, one of decreasing age at first sex from about 18 years for the age of 50-54 years in 1998 to around 16 years for the cohort 20-24 years. The median age at first sex for all men was 16.8 years, compared with 16.7 years for women. Although men enter into marital union on average 5 years later than women, they become sexually active at around the same time. Sexual activity began early in Nyanza province at 15.6 years and latest in Coast province, 17.8 years. Women with secondary education and higher levels of schooling on average initiated sexual relations 3 years later than those with no schooling (NCPD 1999).

2.8.2 Abortion

Abortion has played a critical role in fertility decline in some countries. In Kenya, abortion statistics are unreliable because abortion is illegal except in circumstances prescribed by law and medical considerations. A study by Robinson and Harbison (1993) estimates that the abortion rate in Kenya was about 25/1,000 women annually. Adolescents are responsible for the bulk of these cases.

2.8.3 Post-Partum Infecundity/Breastfeeding

The practice of breastfeeding and sexual abstinence after the birth of a child is a common cultural practice shrouded in sexual taboos among many communities in Kenya. This practice often reduces a woman's exposure to the risk of conception. Breastfeeding for a long time delays the return of a woman's normal pattern of ovulation. The 1977/78 KFS reports that the average duration of breastfeeding in Kenya was 17.3 months and the average duration of sexual abstinence was 3.9 months. The 1989 KDHS also found that the average duration of breastfeeding was 20.1 months.

but the length of sexual abstinence did not change much over time. Two decades later, the 1998 KDHS report found the same behavioural pattern, affirming the median duration of breastfeeding to be 21 months and the average period of abstinence remaining 3 months (NCPD 1999).

2.8.4 Pathological Sterility

Pathological or primary sterility (the inability of a woman to conceive for biological reasons) has historically been high in sub-Saharan Africa. In Kenya, the percentage of ever-married women aged 40-49 years who are childless is a good indicator of the average level of sterility in the society. The 1998 and 1993 KDHS indicate that the proportion of childless women aged 40-49 was 2.4% and 1.7%, respectively.

The proportion of women who want no more children could also be a significant factor in fertility reduction. In Kenya, many studies show that this proportion has been steadily increasing. The 1998 KDHS states that 53% of married women in the reproductive cohorts said that they wanted no more children or wished to limit their family size and therefore had already been sterilised. In fact, comparison with the findings of the 1993 KDHS indicates that there has been no change in women's fertility preference in the five years separating the two surveys. This suggests that as fertility reduction gets closer to the replacement level, the rate of fertility decline begins to slow down. Fertility experiences of men are also noted to be similar to that of women.

The desire for more children, when examined in the context of ideal family size, again confirms the declining trend in fertility change. The 1998 KDHS reports an ideal family size of 3.8, about the same as 3.7 reported by the 1993 KDHS. Nevertheless, men tended to report a slightly higher number of 4.0 children, while those in polygamous unions wanted more children, about 6.1.

2.9 Concluding Remarks

Post-partum infecundity, contraceptive use and proportions married have continued to reduce fertility since the late 1970s. Macrae et al (2001) conclude that post-partum infecundity is the most important proximate determinant of fertility, and has been so since the 1970s. However, the proportions married and the use of contraception have changed ranks, with the latter taking the second position in the 1980s and 1990s. Conclusively, increased length of breastfeeding, use of modern contraception and reduced proportions of married women have consistently reduced fertility.

This literature review on fertility therefore portrays the background issues essential for the understanding of fertility and nuptiality levels and trends as based on the Kenya 1999 Population and Housing Census data.

It should be emphasised that while available evidence suggests that fertility has been declining for all regions and population sub-groups since the 1989 census, it is observed that the momentum or pace of fertility reduction varies significantly from region to region and from one population sub-group to another. In view of the rising impact of HIV/AIDS, which has caused the recent upsurge in both childhood and adult mortality during the intercensal period 1989-99, the total impact of this factor on both fertility and nuptiality is still not well established. The literature review has deliberately omitted discussion on the findings of past censuses, because this is extensively examined in the next chapters.

Chapter 3

Fertility Levels and Trends

As in the previous censuses since 1969, all females aged 12 years and above were asked to state the number of children they had ever given birth to by sex of the children and by whether children were still living at home, living elsewhere or had died. The data are drawn from columns P40-P45 of the census interview schedule (see Appendix 1).

Analysis of data quality in Chapter 1 suggests that imputed data of the 1999 census yield results that are more convenient and comparable with those of the 1998 Kenya Demographic and Health Survey, although the 1999 census was conducted 18 months later. The indices used in this chapter are, therefore, based on the imputed data set.

3.1 Average Parities (Lifetime Fertility)

The average number of children ever born (CEB) or lifetime fertility at the time of the census, by age group of mothers for the 1999 census and the previous censuses since 1969 are shown in Table 3.1. The information is compared with the KDHS data of 1989, 1993 and 1998 in order to confirm the levels and trends of change.

Table 3.1 Average Number of Children Ever Borne by Kenyan Women by Data Source 1969-99

Age group	Census				KDHS			Ratio 1999/1989 Census
	1969	1979	1989	1999	1989	1993	1998	
15-19	0.36	0.32	0.27	0.28	0.28	0.20	0.21	1.03
20-24	1.88	1.85	1.56	1.35	1.58	1.36	1.28	0.87
25-29	3.65	3.65	3.25	2.61	3.74	3.13	2.70	0.80
30-34	5.11	5.39	4.89	4.15	5.01	4.53	4.03	0.85
35-39	6.00	6.47	6.05	5.39	6.48	6.13	5.32	0.89
40-44	6.44	7.02	6.87	6.38	7.36	6.95	6.37	0.93
45-49	6.69	7.17	7.21	6.95	7.63	7.87	6.94	0.96

The average parities from the 1999 census show a consistent decline on those of the 1989 census for all age groups except 15-19 years. The decline in absolute average parities is evidently greatest among women aged 25-29 and 30-34 years, while the age group 15-19 yielded an insignificant rise. In fact, the age groups 20-39 years experienced a significant drop which were as follows: 13.5% for the age group 20-24 years, 19.7% for age group 25-29 years, 15.1% for the age-group 30-34 years and 10.9% for the age group 35-39 years.

It is further observed that the average parities from the 1999 census were higher than those of the 1998 KDHS for the age-groups 15-19, 20-24, 30-34 and 35-39 years but lower for the age

Kenya 1999 Population and Housing Census

group 25-29 and almost the same for women aged 40 years and above. Further comparison with the 1993 KDHS reveals a different trend. The 1999 census average parities for women aged 15-19 years were higher than those of the 1993 KDHS for the same age group, and the 1999 census average parities were almost the same as those of the 1993 KDHS for women aged 20-24 years. Furthermore, the 1993 KDHS average parities were significantly higher than those of the 1999 census for all women aged 25 years and above.

Analysis of average parities of the 1989 census data had the problem of the childless women and women not stating their parity solved by the application of the El Badry (1961) method (RoK 1996:5). The imputed data of the 1999 census eliminated the problem of women not stating their parity through an elaborate editing process. However, the proportions of childless women still remain. A more realistic level of average parities is, therefore, obtained when the proportion of childless women is excluded from the denominators in calculation of the mean births per mother, i.e., women who had given birth to at least one child (Table 3.2). When this adjustment is done, insignificant change in the 1999 average parities is achieved.

The 1999 census mean births per mother are evidently lower in all age groups than in the KDHS of 1989, 1993 and 1998, except for the age group 30-34 of the 1998 KDHS, for which the values are almost the same.

The problem of childlessness at the national level excluding not stated is shown in Table 3.3 which shows that the proportions of childless women in 1999 were higher than the proportions of the 1989 census for all the age groups. In addition, significant proportions of childless women in 1999 were confined to the younger women aged 29 and below. These are the age groups that also reported high proportions of single women. With the exception of the age group 15-19 years, the proportions of childless women reported by the 1999 census are higher for all age groups than the proportions of childless women reported by KDHS 1989, 1993 and 1998.

Table 3.2 Mean Births per Mother by Age Group, 1969-99

Age group	1969 Census	1979 Census	1989 Census	1999 Census	1989 KDHS	1993 KDHS	1998 KDHS
15-19	1.45	1.48	1.62	0.28	1.31	1.19	1.21
20-24	2.50	2.52	2.37	1.35	2.01	1.93	1.84
25-29	4.11	4.10	3.79	2.61	3.66	3.32	2.92
30-34	5.46	5.85	5.41	4.15	5.16	4.74	4.14
35-39	6.50	6.96	6.59	5.39	6.63	6.29	5.45
40-44	6.99	7.59	7.48	6.38	7.53	7.14	6.48
45-49	7.26	7.76	7.85	6.95	7.85	7.96	7.13

Table 3.3 Percentage of Childless Women by 5-year Age Groups, 1969-99

Age group	1969 Census	1979 Census	1989 Census	1999 Census	1989 KDHS	1993 KDHS	1998 KDHS
15-19	65.7	69.4	50.0	79.6	78.6	83.2	82.7
20-24	16.7	21.4	19.7	33.2	21.5	29.5	30.5
25-29	6.2	7.6	6.9	14.8	5.3	5.8	7.4
30-34	4.0	4.8	4.1	5.7	2.9	4.5	2.7
35-39	3.6	4.1	3.3	4.0	2.2	2.5	2.4
40-44	3.6	4.3	3.2	3.7	2.3	2.7	1.7
45-49	3.8	4.5	3.3	3.5	2.8	1.1	2.6

Note. Excluding "not stated"

3.2 Parity Distribution

Further analysis to show changes in fertility is achieved by computing the distribution of women by parity rather than by average parities. Table 3.4 shows the percentage distribution of women in each age group by parity for the decennial censuses since 1979.

When parity 10 and above is not considered, it is evident from Table 3.4 that for all age groups under 30 years there was a consistent fall in the proportions of women with parity 4 and above. The decline increases with increasing age and for all the three censuses taken since 1979. For the other parities the distributions of women show an inconsistent pattern when all the three censuses are compared.

Table 3.4 Percentage Distribution of Women in Each Age Group by Parity, 1979-99

Age group	Year	Total	0	1	2	3	4	5	6	7	8	9	10+	NS
15-19	1979	100.0	69.5	14.7	4.7	1.4	0.5	0.2	0.1	0.0	0.0	0.0	0.0	8.8
	1989	100.0	50.0	11.2	3.3	1.0	0.6	0.2	0.0	0.0	0.0	0.0	0.0	33.7
	1999	100.0	79.6	13.7	5.7	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	-
20-24	1979	100.0	21.4	21.7	21.5	15.1	8.1	3.6	1.6	0.8	0.4	0.2	0.5	5.2
	1989	100.0	19.7	22.4	20.3	12.6	5.8	3.4	1.2	0.0	0.0	0.0	0.0	14.5
	1999	100.0	33.2	27.7	20.4	11.3	4.9	1.7	0.5	0.1	0.0	0.0	0.0	-
25-29	1979	100.0	7.6	8.0	12.1	16.6	18.3	14.8	9.4	4.9	2.5	1.1	1.3	3.3
	1989	100.0	6.9	9.8	14.5	18.1	17.4	12.3	7.0	6.8	0.0	0.0	0.0	7.3
	1999	100.0	14.8	16.3	20.7	18.3	13.8	8.4	4.4	2.0	0.9	0.3	0.2	-
30-34	1979	100.0	4.8	3.9	5.5	7.6	10.8	13.9	15.1	13.2	9.4	5.7	7.1	3.1
	1989	100.0	4.1	4.4	6.7	9.6	12.9	15.0	14.7	15.9	11.2	0.0	0.0	5.6
	1999	100.0	5.7	7.4	13.1	16.0	16.2	14.1	11.2	7.5	4.5	2.3	2.0	-
35-39	1979	100.0	4.1	3.0	4.1	5.2	6.9	9.0	11.6	13.1	12.8	10.5	16.8	2.9
	1989	100.0	3.3	3.0	4.3	6.1	8.2	10.4	12.5	13.0	12.1	9.0	13.0	5.0
	1999	100.0	4.0	4.1	7.3	10.8	13.3	13.8	13.0	11.2	8.8	5.9	7.6	-
40-44	1979	100.0	4.3	3.0	3.7	4.5	5.7	7.2	9.1	10.8	16.6	11.2	16.8	2.9
	1989	100.0	3.2	2.7	3.6	4.7	6.0	7.7	9.5	11.0	11.8	9.0	13.0	5.0
	1999	100.0	3.7	3.3	5.0	7.1	9.5	11.1	11.9	11.9	11.1	8.9	16.6	-
45-49	1979	100.0	4.5	3.2	3.7	4.5	5.5	6.9	8.5	10.0	10.9	10.8	28.4	3.1
	1989	100.0	3.3	2.6	3.3	4.3	5.3	6.9	8.6	10.0	11.3	10.9	28.7	4.9
	1999	100.0	3.5	2.9	4.1	5.6	7.5	9.2	10.8	11.7	11.7	10.3	22.6	-

Further analysis indicates that the proportions of women aged 20-24 years with two or more children fell from 51.8% in 1979 to 43.3% in 1989 and 38.9% in 1999. The proportion of women of age 25-29 years with four or more children fell from 52.3% in 1979 to 43.5% in 1989 and 30.0% in 1999. Women with more than six children experienced more drastic changes. In 1979, the proportion of women aged 30-34 years, with six or more children, fell from 50.5% to 41.8% in 1989 and 27.5% in 1999; for those aged 35-39 years, the proportion with seven or more children fell from 53.2% in 1979 to 47.1% in 1989 and 33.5% in 1999; and the proportion of women aged 45-49 years with nine or more children declined from 39.2% in 1979 to 32.9% in 1999.

It is emphasised that the noted changes were affected by the problem of childless and not stated women for the 1979 and 1989 censuses. In the case of the 1999 census, only the problem of childless women is expected because the imputed data eliminated the problem of not stated. In order to circumvent these problems, the calculation of parity progression ratios (PPRs) is done. PPRs refer to the proportion of women with n children who go on to have $n+1$ children.

3.3 Parity Progression Ratios

The parity progression ratios are calculated by cumulating the women by parity so as to give the numbers with n or more children, and then dividing the numbers with $(n + 1)$ or more (RoK 1996:

II). It should be emphasised that only the proportion going from parity 0 to parity 1 (i.e.. from childless to first birth) is affected by the not stated in the case of 1979 and 1989 censuses. The imputed 1999 census data are assumed not to have this problem. For the remainder of the ratios it may be assumed that both the numerator and denominators are affected in equal proportions, so that the errors cancel out.

The PPRs for the decennial censuses since 1969 are shown in Table 3.5 and in Figures 3.1 to 3.6. The figures compare the corresponding PPRs from the 1999 census with the PPRs of all past censuses since 1969. The PPRs are designated as incomplete because they are for women who are still of childbearing age and who may therefore still have children (RoK 1996:11).

Table 3.5: Incomplete Parity Progression Ratios from the 1969-99 Censuses

Age group in years							
1969 PPRs	15-19	20-24	25-29	30-34	35-39	40-44	45-49
0 to 1	0.245	0.753	0.889	0.919	0.924	0.922	0.921
1 to 2	0.335	0.724	0.920	0.953	0.961	0.957	0.957
2 to 3	0.305	0.585	0.857	0.935	0.949	0.951	0.955
3 to 4	0.280	0.489	0.760	0.901	0.930	0.937	0.938
4 to 5		0.449	0.658	0.844	0.899	0.906	0.919
5 to 6			0.574	0.759	0.850	0.883	0.892
6 to 7			0.527	0.674	0.793	0.839	0.854
7 to 8				0.599	0.724	0.795	0.813
1979 PPRs	15-19	20-24	25-29	30-34	35-39	40-44	45-49
0 to 1	0.216	0.735	0.891	0.921	0.930	0.925	0.924
1 to 2	0.319	0.705	0.910	0.958	0.968	0.968	0.965
2 to 3	0.319	0.585	0.851	0.938	0.954	0.959	0.959
3 to 4	0.364	0.502	0.761	0.908	0.939	0.947	0.947
4 to 5		0.467	0.651	0.857	0.914	0.930	0.932
5 to 6			0.566	0.784	0.878	0.905	0.909
6 to 7			0.513	0.702	0.821	0.867	0.876
7 to 8				0.628	0.754	0.818	0.834
8 to 9				0.578	0.681	0.760	0.782
9 to 10				0.550	0.615	0.696	0.724
1989 PPRs	15-19	20-24	25-29	30-34	35-39	40-44	45-49
0 to 1	0.163	0.657	0.858	0.904	0.920	0.921	0.922
1 to 2	0.311	0.660	0.886	0.951	0.967	0.971	0.972
2 to 3	0.347	0.532	0.810	0.922	0.951	0.960	0.963
3 to 4	0.437	0.454	0.706	0.879	0.928	0.945	0.950
4 to 5		0.445	0.600	0.815	0.895	0.926	0.935
5 to 6			0.529	0.736	0.852	0.898	0.911
6 to 7			0.494	0.649	0.791	0.859	0.877
7 to 8					0.725	0.810	0.837
8 to 9					0.649	0.748	0.780
9 to 10					0.595	0.691	0.728
1999 PPRs	15-19	20-24	25-29	30-34	35-39	40-44	45-49
0 to 1	0.204	0.668	0.852	0.943	0.960	0.963	0.965
1 to 2	0.328	0.585	0.808	0.921	0.957	0.966	0.970
2 to 3	0.150	0.478	0.699	0.850	0.921	0.946	0.956
3 to 4	0.199	0.394	0.619	0.784	0.872	0.919	0.938
4 to 5		0.331	0.538	0.719	0.819	0.882	0.911
5 to 6		0.293	0.478	0.661	0.772	0.845	0.879
6 to 7		0.257	0.432	0.594	0.721	0.803	0.839
7 to 8		0.267	0.403	0.541	0.666	0.755	0.793
8 to 9			0.340	0.492	0.605	0.697	0.737
9 to 10			0.360	0.462	0.564	0.652	0.686

*The 1962 PPRs are not shown though discussed.

*The 1999 parity not stated have been edited as explained in Chapter 1

Figure 3.1 Incomplete PPRs for Women Aged 20-24 Years, 1962-99 Censuses

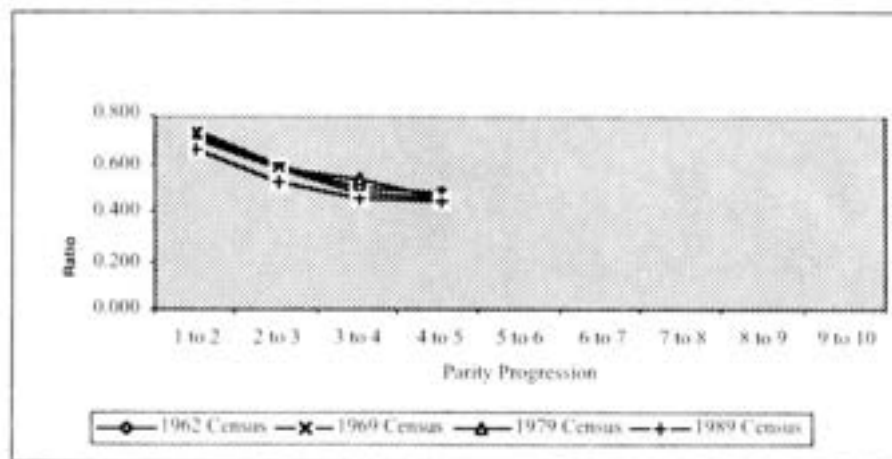


Figure 3.2 Incomplete PPRs for Women Aged 25-29 Years, 1962-99 Censuses

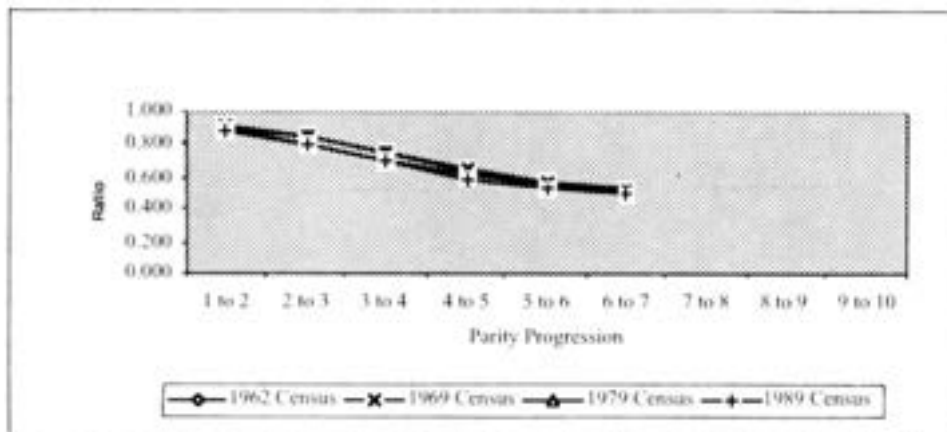


Figure 3.3 Incomplete PPRs for Women Aged 30-34 Years, 1962-99 Censuses

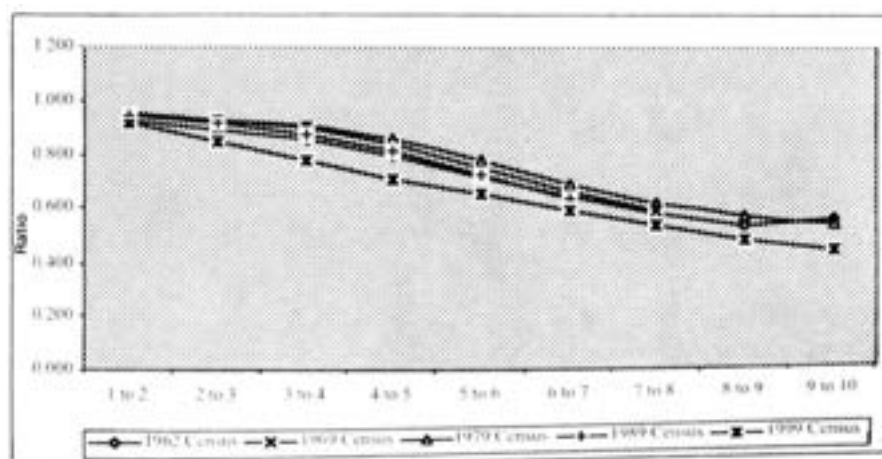


Figure 3.4 Incomplete PPRs for Women Aged 35-39 Years. 1962-99 Censuses

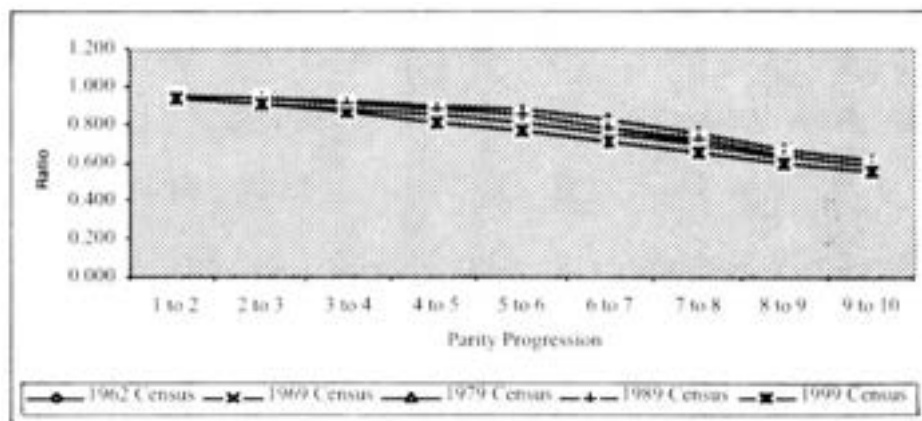


Figure 3.5 Incomplete PPRs for Women Aged 40-44 Years, 1962-99 Censuses

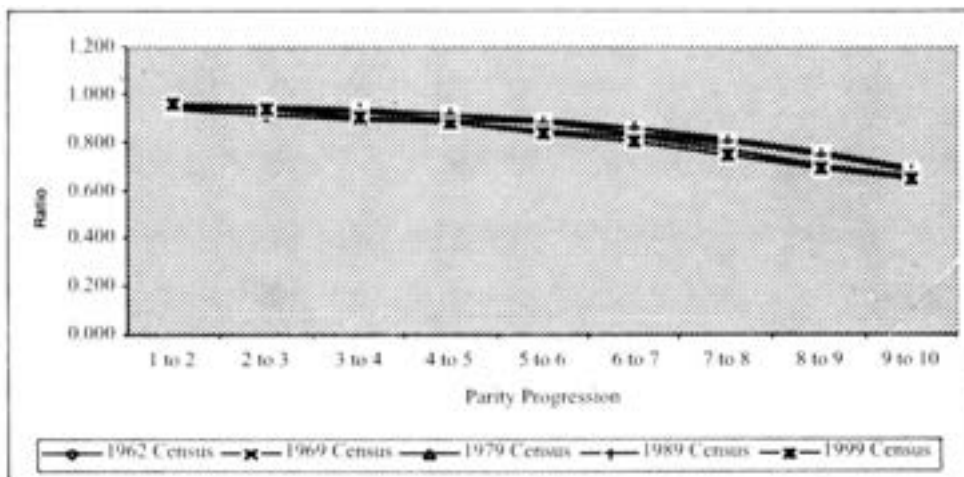
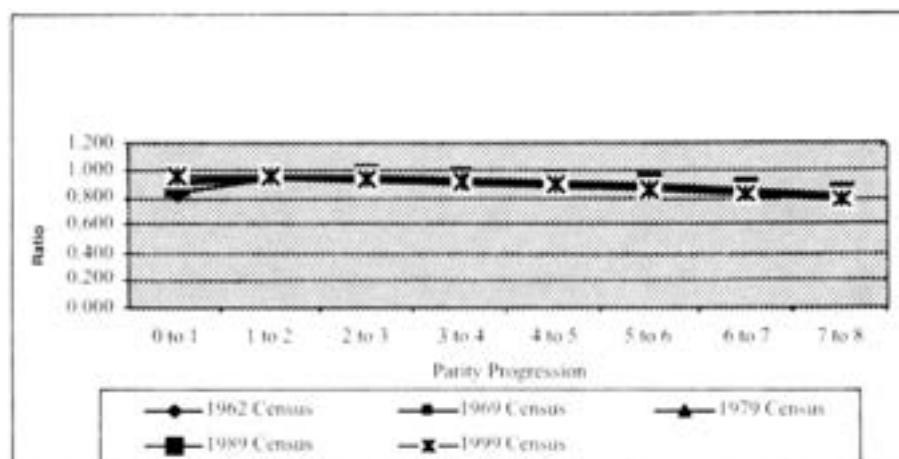


Figure 3.6 Incomplete PPRs for Women Aged 45-49 Years, 1962-99 Censuses



Further reference to Table 3.5 and the corresponding Figures 3.1 to 3.6 indicates the following features. If we disregard the PPRs showing the movement of women from parity 0 to parity 1, generally, the first distribution of women is heavily affected by reporting errors and childlessness compounded with the problem of not stated parity. Analysis of the distribution of women aged 20-24 by PPRs suggests that the ratios for the 1999 census are consistently lower than the ratios for all past censuses since 1969. The PPRs for women aged 25-29 are also lower than those of past censuses. The ratios for women aged 30-34 and 35-39 years are also consistently lower than those of past censuses.

However, when the 1999 ratios for women aged above 40 years are examined, a slightly different trend emerges. The 1999 PPRs for women aged 40-44 years are lower than the PPRs for past censuses, except for the PPRs of 1962. For the latter, the movement of women from parity 2 to 3 and parity 3 to 4 the 1999 PPRs are higher, before becoming lower again for the rest of the parities. The 1999 PPRs are also lower only when compared with the 1989 PPRs for the women aged 45-49 years. In fact, the ratios for these women show an irregular pattern with past censuses. The foregoing analysis confirms that fertility decline is a reality in this country.

Analysis of the incomplete PPRs for the past censuses reveals that for women aged 20-24 and 25-29 years, the 1989 PPRs are below those from all the past censuses; for those aged 30-34 years, they are above the PPRs of the 1962 census which are not shown, but below those of 1969 and 1979; for those aged 35-39 years they move above the 1969 ratios and closer to those of 1979. These results imply that fertility in Kenya was rising during the 1960s and 1970s, and then fell during the 1980s. Thus women in older cohorts had done most of their childbearing at a time before the onset of fertility transition (RoK 1996:11).

3.4 Current Fertility

Current fertility refers to the total number of live births in the year preceding a census or survey date, by women of reproductive age for the whole country or subset. In columns P46 and P47 of the census interview schedule, women who had been identified in answer to the questions on lifetime fertility to have borne at least one child, were asked for the month and year when their last child had been born. Women who were thus shown to have borne a child during the 12 months preceding the census were then tabulated by age group and parity, and the numbers so obtained were divided by the total numbers of women in the relevant age groups to give the age-specific fertility rates (ASFRs) shown in Table 3.6 and age-order specific fertility rates shown in Table 3.7.

Table 3.6 compares ASFRs of the 1998 KDHS with those of the 1999 census obtained by direct estimates. The differences in their relative percentages are also computed. The differences in relative percentages between the 1998 KDHS and the 1999 census indicate that the relative percentage distribution of current fertility by age groups of women in the reproductive cohorts were lower in 1999 for ages under 34 years but higher for ages above 35 years. Figure 3.7 also compares the age-specific fertility curves of the 1998 KDHS with those of the 1999 census derived by different demographic methods. The 1998 KDHS absolute values for ASFR are lower than those of the 1999 census for age groups 15-19, 20-24 and 25-29 years but show an inconsistent trend against the 1999 ASFRs derived by different methods.

Reference to Table 3.7 shows clearly that the current births were seriously under-reported. The total fertility rate of 5.1 births per woman is lower than the average parities shown in Tables 3.1 and 3.2. The total fertility rate of 5.1 is, however, higher than the total fertility rate (TFR) of 4.7 reported by the 1998 KDHS. Furthermore, the age-order rates represent the proportion of women in each age group who bore their *n*th child during the 12 months preceding the 1999 census. It should be noted that the total order rates shown in the bottom line of the table should represent the proportion of women who would go through life having *n* or more children. It is evident therefore

Kenya 1999 Population and Housing Census

that the total order rate for third births was 0.6805, implying that only two-thirds of women in Kenya had three or more children, leaving one-third with fewer children. Note that total for parity 1 exceeds 1 because of reporting errors involving childless women.

Table 3.6 Age Specific Fertility Rates, 1998-99

Age group	1998 KDHS	Relative %	1999 Census	Relative %	Differences in Relative %
15-19	0.111	11.8	0.117	11.8	0.0
20-24	0.248	26.3	0.251	25.3	-1.3
25-29	0.218	23.2	0.227	22.9	-0.3
30-34	0.188	20.0	0.183	18.5	-1.5
35-39	0.109	11.6	0.130	13.1	1.5
40-44	0.051	5.4	0.061	6.2	0.7
45-49	0.016	1.7	0.022	2.2	0.5
TFR	4.7	100.0	5.0	100.0	

Figure 3.7 ASFRs 1998 KDHS and 1999 Census

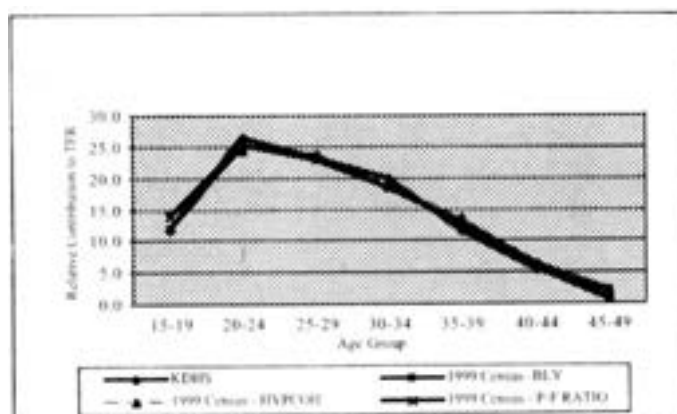


Table 3.7 Age-Specific and Age-Order Specific Fertility Rates Based on Births Reported as Occurring in the Last 12 Months for 1989 and 1999 Censuses

1989 Census											
Age group	Total	Birth order									
		1	2	3	4	5	6	7	8	9	10+
10-14	0.002	0.002	0.000								
15-19	0.076	0.051	0.017	0.005	0.002	0.001					
20-24	0.239	0.061	0.076	0.055	0.027	0.015	0.005				
25-29	0.255	0.015	0.030	0.049	0.058	0.047	0.029	0.027			
30-34	0.213	0.003	0.007	0.013	0.023	0.034	0.041	0.052	0.039		
35-39	0.160	0.001	0.002	0.005	0.008	0.013	0.018	0.025	0.028		
40-44	0.078	0.001	0.001	0.002	0.002	0.004	0.005	0.008	0.010	0.012	0.035
45-49	0.033	0.001	0.001	0.001	0.001	0.002	0.002	0.003	0.004	0.004	0.015
Total (X5)	5.270	0.671	0.671	0.643	0.603	0.570	0.505	0.575	0.405	0.198	0.431
1999 Census											
Age group	Total	Birth order									
		1	2	3	4	5	6	7	8	9	10+
10-14	0.029	0.028	0.001								
15-19	0.116	0.077	0.033	0.004	0.001						
20-24	0.249	0.087	0.081	0.050	0.021	0.007	0.002	0.001	0.000		
25-29	0.226	0.027	0.044	0.051	0.046	0.030	0.016	0.007	0.003	0.001	0.001
30-34	0.182	0.007	0.013	0.022	0.029	0.032	0.030	0.022	0.014	0.007	0.006
35-39	0.129	0.002	0.004	0.007	0.011	0.015	0.019	0.021	0.019	0.014	0.018
40-44	0.061	0.001	0.001	0.002	0.003	0.004	0.005	0.007	0.009	0.009	0.020
45-49	0.022	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.008
Total (X5)	5.070	1.148	0.892	0.681	0.560	0.450	0.375	0.300	0.240	0.170	0.265

3.5 Fertility Models

The data on current fertility could still be of value if it is assumed that under-reporting of the current births is not systematically related to the age or parity of the mother. If this is the case, then data on current births could provide information on the shape of the age-specific fertility distribution as illustrated in Figure 3.7. This information could be used in conjunction with the data on average parities for younger women to give corrected ASFRs and TFRs for the recent past.

The procedure, which involves the graduation of the reported current rates by fitting a relational Gompertz fertility model, is described in Appendix 2. The results are shown in Table 3.8 which also gives values for the 1979 and 1989 ASFRs derived by the same procedure.

Table 3.8 Relational Gompertz Fertility Models fitted to Data on Current Fertility and Average Parities

Age group	1979 Census	1989 Census	1999 Census
10-14	0.002	0.002	0.003
15-19	0.165	0.150	0.142
20-24	0.366	0.330	0.254
25-29	0.384	0.345	0.236
30-34	0.240	0.293	0.185
35-39	0.240	0.215	0.127
40-44	0.112	0.100	0.056
45-49	0.015	0.013	0.007
Total (x5)	8.042	7.235	5.042

The analysis shows that the intercensal period 1979-89 saw total fertility fall by about one birth, while the intercensal period 1989-99 saw total fertility fall by about two births. There is a problem, however, with the precise time location of these estimates. Although the shape of the fitted model is calculated from the births reported as occurring during the last 12 months, the level is determined by the average parities of women between the ages 20 -34 years. Most of the children borne by the mothers would have been born during the last two or three years prior to the census, some might have been born as far back as 20 years before. As there is ample evidence to show that fertility was clearly falling rapidly during the 1980s (Brass and Jolly 1993), the TFR of 5.04 cannot be taken as representing the level of fertility in the period 1998-99.

An alternative approach for estimating fertility for the intercensal period is to construct a hypothetical cohort from the differences between the average parities in 1989 and 1999 for the same cohorts of women. The women who were aged 15-19 years in 1989 are the same women (assuming that there is no effect of mortality and migration) as those aged 25-29 years in 1999. Their corrected average parity was 0.273 in 1989 and 2.621 in 1999; thus the average number of children born by them between 1989 and 1999 was 2.348 (i.e., 2.621-0.273). If these differences are added together for the various cohorts of women, a series of average parities can be constructed for a hypothetical cohort of women who would go through life having children at the current rates during the intercensal period. A Gompertz model can then be fitted to these average parities which will not only smooth irregularities and provide us with the required ASFRs, but also minimise the effect of possible errors in the parities reported by older women which are often considered to be unreliable.

Table 3.9 shows that the fitted model ASFRs give a TFR of 5.48. This figure is higher by 1.5% than the intercensal hypothetical cohort of 1989-99, which gave average parity of 5.350 or 5.4. for the age group 45-49 years.

Table 3.9: Average Parities of Hypothetical Cohorts 1969-79, 1979-89 and 1989-99 with fitted Relational Gompertz Fertility Models

Age group	Hypothetical Cohorts Average Parities			Fitted Models ASFRs		
	1969-79	1979-89	1989-99	1969-79	1979-89	1989-99
15-19	0.321	0.273	0.283	0.188	0.158	0.150
20-24	1.899	1.610	1.352	0.375	0.334	0.301
25-29	3.698	3.309	2.621	0.369	0.323	0.271
30-34	5.483	4.760	3.889	0.301	0.252	0.198
35-39	6.566	5.813	4.650	0.213	0.169	0.123
40-44	7.413	6.331	5.224	0.096	0.070	0.047
45-49	7.733	6.622	5.350	0.012	0.008	0.005
				TFR=6.56		TFR=5.48

The difference in fertility between the two models is therefore significant. It is emphasised that the differences in fertility yielded by the two models depends on the number of points fitted in the Gompertz model. Moreover, fitting the Gompertz model to the uncorrected average parities is also less valuable. Fitting Gompertz model to the uncorrected current births will also give lower values than when the Gompertz model is fitted to average parity corrected by the El Badry correction method. In this latter case, the fertility values tend to be higher. Before one decides on the best estimate of fertility, it is desirable to consider other evidence on fertility during the 1980s and 1990s.

The KDHS of 1998, 1993 and 1989 give demographic information on Kenya that could help one to make rational decisions on which fertility model gives the best estimate for the 1999 data. The 1998 KDHS successfully interviewed 7,881 women, while the 1989 survey interviewed 7,150 women all over the country except North Eastern province, which usually has about 5% of the total population of Kenya. The sampled women gave complete birth histories which enabled fertility rates to be constructed for various time periods prior to the survey. The 1989 KDHS thus gave a TFR of 6.7 for the 3 years preceding the survey, and Brass and Jolly (1993), after a rigorous examination of the data, found no reason to modify this figure. The TFR for the period 5-9 years before the survey, for instance, 1979-84, was 7.6, but this time Brass adjustments reduced the figure to about 7.3. These estimates thus suggest an average TFR of about 7.0 for the 1979-89 decade.

The construction of a hypothetical cohort using the average parities from the Kenya Fertility Survey 1977-78 and the 1989 KDHS gives a mean parity for the 45-49 year age group, of 6.9 births per woman. Relational Gompertz models have been fitted, but the line points are irregular so that the estimated TFR vary from 6.6 to 7.1, depending on how many points are included and the method used to fit the line (RoK 1996:18).

The 1993 and 1998 KDHS also collected complete birth histories. The 1993 KDHS gave a TFR of 5.4 for a 3-year period prior to the survey, thus implying a dramatic decline in fertility since 1989. In addition, the 1998 KDHS gave a TFR of 4.7 for a 3-year period prior to the survey. This survey again confirms a dramatic fertility decline since 1993. The 1993 KDHS thus gave a fertility drop of 1.3 births on the 1989 KDHS estimate of 6.7 births. Such a precipitous fall in so short a period has been considered by many as implausible. It is argued that the 1993 KDHS data could

have been affected by mis-dating of the births, especially the most recent births being displaced backwards in time. According to Macrae et al (2001:160), the errors affecting reported births of the 1993 KDHS could have been introduced by questions on the heights and weights of children under 5 years.

Macrae et al (2001) subjected the 1993 KDHS data to the same rigorous tests as did Brass and Jolly (1993) to the 1989 KDHS data. The tests applied by Macrae et al, however, were limited to the national data only. They found that number of births by single years prior to the survey was affected by displacement. The deficit in births at 4-5 years before is followed by an upsurge at 5-6 and 6-7 years before the survey. Therefore, they conclude that this was a deliberate misreporting by mothers or enumerators to avoid questions on children under 5. When the 1993 KDHS data were put to test using Brass techniques, it was found that TFR reported for the last 5 years before the survey was 5.53 births per woman, and that for the preceding quinquennium was 7.35 births. The latter is significantly higher than the estimates for the same period derived from both the 19X9 KDHS and the 1989 census. This finding suggests that the fertility rate for the period 5-9 years before the survey had been inflated at the expense of those in the last years. Application of the relational (Gompertz fertility model increases the TFR for 1988-93 slightly from 5.5 to 5.8, while that for 1983-88 has been reduced from 7.4 to 6.5. Against these results, it is concluded that the adjustments are sensitive to the choice of (Gompertz parameters and there are no objective criteria for determining the best choice. Blacker (2002) also applied a rigorous test to the 1993 KDHS and arrived at the same conclusion.

The calculation of the synthetic cohort using average parities for the 1989 and 1993 KDHS give a TFR of 5.6 or 5.7 births per mother. It is argued that the assumption to use a 5-year interval instead of 4 in the calculation led to a small downward bias suggesting that a TFR of 5.8 is of the right magnitude (Macrae et al 2001).

The 1998 KDHS gives a TFR of 4.7, implying a 0.7-point drop on that of the 1993 KDHS. The application of a hypothetical cohort from the average parities of the 1993 and 1998 KDHS are given in Table 3.10.

Macrae et al (2001) conclude that by the late 1980s total fertility, as shown by both the 1989 DHS and the 1989 census, had fallen well under seven births per woman: by the early 1990s it was under 6, by the late 1990s less than five, as shown by the 1993 and 1998 DHS which their calculations have broadly validated (Macrae et al 2001:169). This conclusion, however, is not supported by the analysis of the 1999 census data which has been subjected to a rigorous validation test. The 1999 census data show that TFR was in the range between 5.4 and 5.5 and not below the 5.0 implied by the 1998 KDHS.

Finally, there is need to examine the relationship between the various estimates of fertility for the 1989-99 intercensal decade and the number of children under 10 years enumerated in the 1999

Table 3.10 Hypothetical Cohort from the 1993 and 1998 KDHS

Age group	DHS 1993	DHS 1998	Hypothetical Cohort (1993-98)	Fitted Model Average Parity	ASFR
15-19	0.20	0.21	0.21	0.22	0.125
20-24	1.36	1.28	1.29	1.35	0.277
25-29	3.13	2.70	2.63	2.64	0.237
30-34	4.53	4.03	3.53	3.61	0.158
35-39	6.13	5.32	4.32	4.22	0.087
40-44	6.95	6.37	4.56	4.51	0.028
45-49	7.87	6.94	4.55	4.57	0.002
					TFR =4.577

census. This analysis is, however, dealt with in greater detail in the monograph Volume III, Population Dynamics. It is noted that given the model ASFRs obtained by the procedures already described and the number of women of childbearing age enumerated in 1989 and 1999 censuses (suitably adjusted where necessary), the numbers of births occurring in the decade 1989-99 can be readily calculated and the number of children under 10 years old in 1999 obtained. If these calculations are done, there is evidence of an appreciable under-enumeration of such children. In order to bring the projected numbers into agreement with the enumerated, the average TFR during the intercensal decade has to be moved downwards. Unfortunately, there are no objective criteria for determining what would be an acceptable level of under-count and therefore one is forced to use the subjective assessment of plausibility. This situation could be fine-tuned when the fertility models are applied at sub-national levels.

The foregoing analysis makes it absolutely necessary that the lower TFR given by the Gompertz-f model be adopted. The adopted TFR for Kenya is therefore taken to be 5.0 for the 1999 census.

3.6 Cohort Parity Progression Ratios

The foregoing analysis indicates that evidence on fertility trends is much stronger than on the precise level of fertility in 1999 or during the 1989-99 decade. The incomplete PPRs shown in Table 3.5 and illustrated by Figures 3.1 to 3.6 suggest that fertility was rising during the 1960s and early 1970s but had started to fall in the 1980s.

A rather more convincing method of examining these trends is to plot the PPRs on a cohort basis in order to show whether the proportions of women with n births to $(n+1)$ births among the younger women was greater or less than that among the older women. This method is also useful in testing the internal consistency of the data, and observing whether the PPRs derived for a given cohort of women from one census to another are congruent with those for the same cohort obtained from another census, for example, women aged 45-49 in 1979 census, 55-59 in 1989 census and 65-69 in 1999 census.

The procedure used is that devised by Feeney (1988); however, in his formulation it could only be applied to women who had completed or virtually completed their childbearing, i.e., those aged 40 years and above. Brass (1985) modified the technique to make it applicable to younger women, i.e., by projecting the incomplete PPRs shown in Table 3.5 up to the end of childbearing using the data on current fertility by birth order as shown in Table 3.7. For a further description of the method see Appendix 3.

This projection procedure is applied to the data from the 1969, 1979, 1989 and 1999 censuses but could not be applied to those of the 1962 census because the current births from that census had not been tabulated by birth order, restricting the calculations to women past childbearing age (RoK 1996:20). For the 1969 census data, PPRs could not be calculated for parities above 8 since the tabulations of both children ever born and current births had been truncated at 8 and over. The results of these applications are shown in Table 3.11 and Figures 3.8 to 3.15.

From the table and figures, various observations can be made. There is a remarkable consistency of the PPRs from the four censuses, and this is good evidence of the validity of the data. However, the trends shown by the younger cohorts of mothers appear to be more erratic since they were based largely on projected data rather than completed fertility (RoK 1996:26). There was a general rise in the PPRs starting with the cohort of women born in the late 19th century. The PPRs then increased steadily up to those born in the 1940s. It is noted that the increases were minimal at the lower parities and the lines of points for the proportion of women going from a first to a second birth, and from a second birth to a third were almost flat, but they then get steeper with increasing parity (RoK 1996:26). There was a marked fall in the PPRs for the women in the youngest cohorts

Table 3.11 Cohort Parity Progression Ratios

1999 Census										
Age group	Birth cohort	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10+
20-24	1974-79	0.876	0.845	0.799						
25-29	1969-74	0.902	0.854	0.832	0.812	0.818	0.792	0.777		
30-34	1964-69	0.942	0.890	0.850	0.824	0.810	0.785	0.761	0.690	
35-39	1959-64	0.961	0.928	0.888	0.845	0.813	0.785	0.756	0.701	
40-44	1954-59	0.967	0.948	0.923	0.888	0.853	0.815	0.773	0.721	
45-49	1949-54	0.970	0.956	0.938	0.911	0.879	0.839	0.793	0.737	0.686
50-54	1944-49	0.971	0.959	0.946	0.925	0.897	0.861	0.816	0.761	0.704
55-59	1939-44	0.971	0.962	0.951	0.934	0.908	0.874	0.830	0.773	0.721
60-64	1934-39	0.968	0.962	0.950	0.933	0.906	0.873	0.828	0.773	0.719
65-69	1929-34	0.967	0.961	0.950	0.933	0.907	0.874	0.832	0.776	0.726
70-74	1924-29	0.957	0.951	0.940	0.920	0.891	0.855	0.815	0.766	0.711
75+	Before 1924	0.957	0.948	0.932	0.907	0.874	0.841	0.800	0.757	0.709
1989 Census										
Age group	Birth cohort	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	
20-24	1964-69	0.921								
25-29	1959-64	0.944	0.923	0.889						
30-34	1954-59	0.966	0.953	0.924	0.902	0.872				
35-39	1949-54	0.971	0.960	0.938	0.918	0.887	0.849	0.811		
40-44	1944-49	0.972	0.962	0.947	0.931	0.907	0.872	0.829	0.773	
45-49	1939-44	0.972	0.963	0.950	0.935	0.910	0.876	0.836	0.778	
50-54	1934-39	0.968	0.960	0.948	0.934	0.912	0.878	0.838	0.787	
55-59	1929-34	0.967	0.959	0.948	0.933	0.910	0.879	0.840	0.792	
60-64	1924-29	0.960	0.953	0.940	0.922	0.898	0.866	0.825	0.776	
65-69	1919-24	0.960	0.953	0.939	0.920	0.896	0.862	0.825	0.775	
70-74	1914-19	0.955	0.948	0.933	0.910	0.883	0.850	0.809	0.766	
75+	Before 1919	0.954	0.946	0.928	0.902	0.871	0.831	0.795	0.749	
1979 Census										
Age group	Birth cohort	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	
20-24	1954-59	0.933								
25-29	1949-54	0.961	0.953	0.935						
30-34	1944-49	0.972	0.967	0.963	0.948	0.932				
35-39	1939-44	0.972	0.965	0.959	0.944	0.925	0.894	0.840	0.791	
40-44	1934-39	0.968	0.963	0.955	0.939	0.918	0.888	0.843	0.791	
45-49	1929-34	0.965	0.959	0.948	0.932	0.908	0.876	0.834	0.782	
50-54	1924-29	0.959	0.952	0.942	0.923	0.899	0.866	0.828	0.779	
55-59	1919-24	0.958	0.951	0.939	0.921	0.897	0.863	0.827	0.779	
60-64	1914-19	0.951	0.946	0.934	0.912	0.886	0.851	0.813	0.763	
65-69	1909-14	0.951	0.948	0.932	0.910	0.883	0.845	0.812	0.763	
70-74	1904-09	0.946	0.945	0.929	0.904	0.880	0.841	0.805	0.756	
75+	Before 1900	0.944	0.940	0.919	0.893	0.858	0.813	0.774	0.729	
1969 Census										
Age group	Birth cohort	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8		
20-24	1944-49	0.953	0.962							
25-29	1939-44	0.977	0.962	0.955	0.957					
30-34	1934-39	0.972	0.976	0.966	0.966	0.916				
35-39	1929-34	0.969	0.962	0.955	0.944	0.914	0.881			
40-44	1924-29	0.959	0.953	0.944	0.919	0.904	0.868			
45-49	1919-24	0.956	0.954	0.940	0.910	0.887	0.857	0.815		
50-54	1914-19	0.946	0.943	0.927	0.908	0.884	0.836	0.804		
55-59	1909-14	0.945	0.942	0.926	0.907	0.882	0.850	0.804		
60-64	1904-09	0.931	0.938	0.921	0.900	0.873	0.836	0.804		
65+	Before 1900	0.920	0.938	0.900	0.853	0.853	0.808	0.762		

Figure 3.8 Cohort PPRs for Women of Reproductive Age Parity 1-2

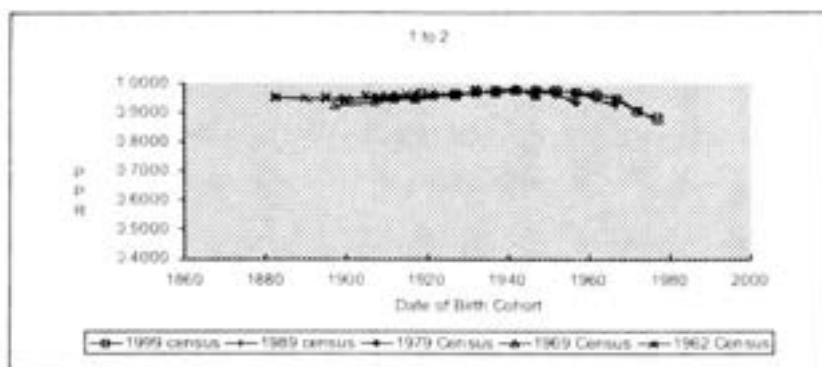


Figure 3.9 Cohort PPRs for Women of Reproductive Age Parity 2-3

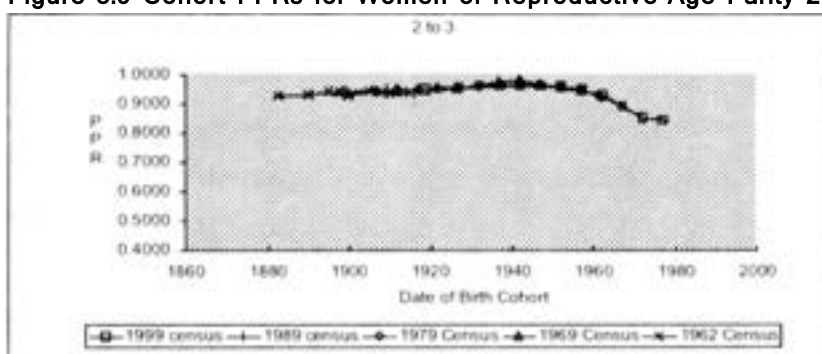


Figure 3.10 Cohort PPRs for Women of Reproductive Age Parity 3-4

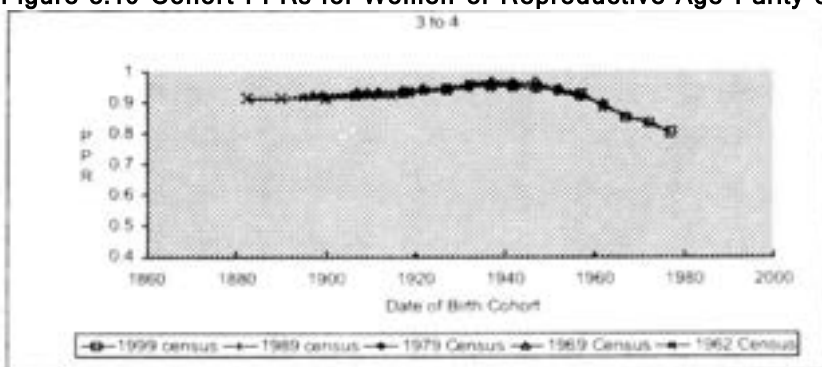


Figure 3.11 Cohort PPRs for Women of Reproductive Age Parity 4-5

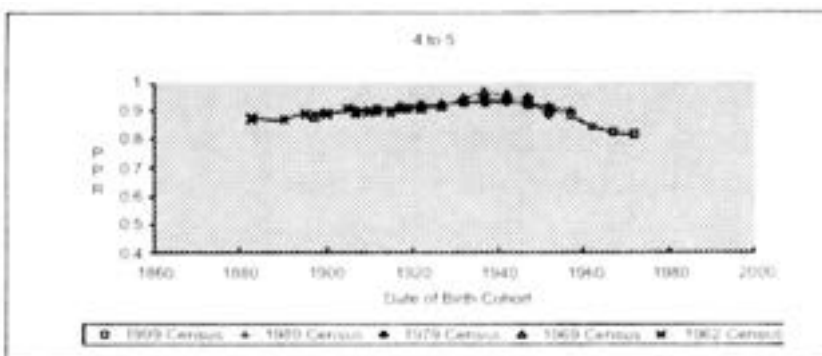


Figure 3.12 Cohort PPRs for Women of Reproductive Age Parity 5-6

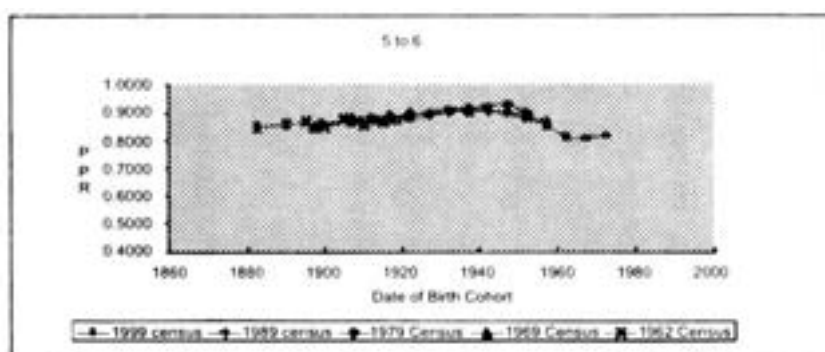


Figure 3.13 Cohort PPRs for Women of Reproductive Age Parity 6-7

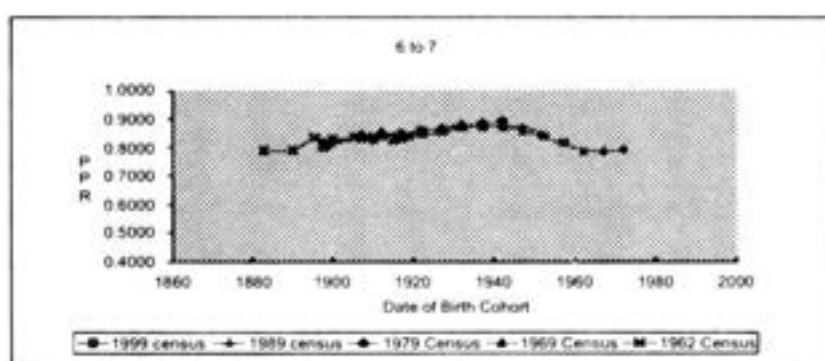


Figure 3.14 Cohort PPRs for Women of Reproductive Age Parity 7-8

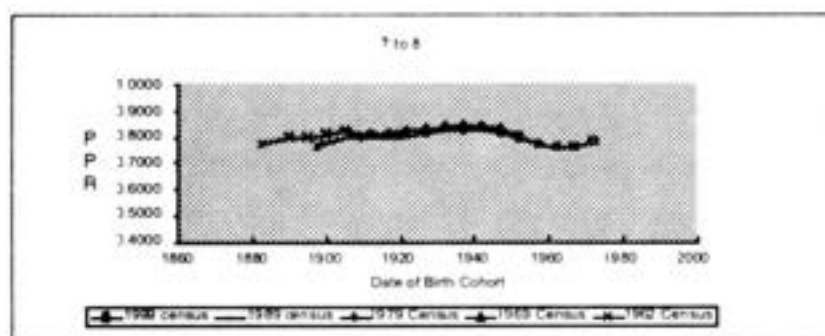
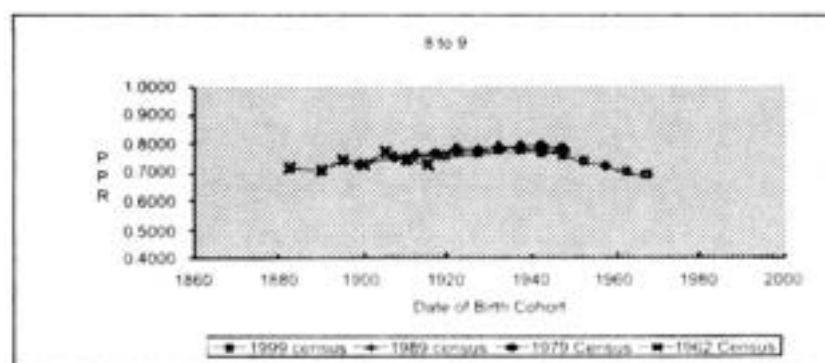


Figure 3.15 Cohort PPRs for Women of Reproductive Age Parity 8-9



Kenya 1999 Population and Housing Census

shown by the 1989 census. This downturn was apparent at all parities, even among those going from a first to a second birth (RoK 1996:26). This feature confirms Brass's similar findings from DHS data, not only for Kenya, but also for Botswana, Nigeria and Zimbabwe and provides a contrast to the patterns of fertility change in most Asian and Latin American countries when they embarked on their fertility transition (Brass and Jolly 1993:75). Further comparison between PPRs of the 1999 census and 1989 census vividly shows an erratic pattern for the movement from parity 1 to 2. However, the 1999 PPRs were consistently lower than the 1989 PPRs for all women moving from parity 2 to 3 and above (see Figures 3.8 to 3.15).

3.7 Summary

In the 1989 fertility and nuptiality monograph it is demonstrated that fertility estimates based on census data have been affected greatly by the problems of childless women and women not stating their parity, among other common problems of dating errors and mis-reporting births. Despite the application of sound demographic and mathematical models to correct these problems, the results obtained are often conflicting (RoK 1996:27). It is, however, evident that prior to the 1945 cohort the TFR had been rising by about 2.5% per annum. The TFR for the 1945 cohort, who will have done most of their childbearing between 1965 and 1980, agrees closely with the estimated TFR for 1969-79 intercensal hypothetical cohorts. Conclusively, fertility increased during the 1969-79 decade

Chapter 4

Fertility Differentials in Kenya

In Chapter 3 different demographic models and statistical procedures are used to ascertain the levels and trends in average parities and current fertility at the national level. It is noted that the quality of fertility data is greatly compromised by several errors, especially under-reporting of births and mis-dating of events, for these reasons, direct estimates of ASFRs are generally low (Brass et al 1968).

4.1 Fertility by Province and District

In 1989, the reported average parities were adjusted by the El Badry (1961) correction method. The rationale for this procedure is to reduce the problem of women with parity not stated, a condition which biases average parities downwards. The El Badry correction method, on the other hand, often biases average parities upwards. Imputation can be used as an alternative to El Badry. In fact, imputation gave much the same result as El Badry in the 1999 census data.

Since the imputed 1999 census data on CEB had no problem of women with parity not stated, the application of the El Badry correction method to the 1999 reported average parities was deemed to be irrelevant. The provincial and district reported average parities by marital status and educational attainment are in Appendix 5 and 6, respectively.

It is emphasised that even with the El Badry adjustment and heavy imputation of data, the problem of under-estimation of mean parity particularly among the older women cannot be completely eliminated. For this reason, the mean parity of women aged 40-44 years has been used to indicate levels of lifetime fertility as the case was in the 1989 analysis (RoK 1996:28). This is done for the sake of facilitating comparison between 1989 and 1999 average parities. It is known that women aged 40-44 years did most of their childbearing 10-20 years before the census, so they provide a very inappropriate index of fertility changes.

The provincial analysis of reported average parities indicates that mean parity has been lowest since 1979 for women in Nairobi and highest for women in Western province followed by Nyanza province. There has been a consistent fall in reported average parities since 1979 for Nairobi, Central, Nyanza and Western, while for the other provinces the trend is anomalous (see Table 4.1).

Nairobi province with relatively lower reported average parities experienced a fall from 5.1 births per woman aged 40-44 years in 1979 to 4.1 births per woman of the same age in 1999. Western province with the highest average parities also had a drop from 8.1 births per woman aged 40-44 years in 1979 to 7.1 births per woman aged 40-44 years in 1999. The other provinces had reported average parities between those of Nairobi and Western provinces. It is noted that for Coast province the reported average parities apparently increased from 5.8 among women aged 40-44 years in 1979 to 6.1 among women of the same age in 1999. This is plausible if it is argued that the high pathological sterility reported in some coastal communities in the 1950s (Brass 1958) has

Table 4.1 Reported Average Parities for Women Aged 40-44 Years for Selected Provinces and Districts, 1979-99

Average Parities for Women Aged 40-44				Average Parities for Women Aged 40-44			
Province/ District	1979 Census	1989 Census	1999 Census	Province/ District	1979 Census	1989 Census	1999 Census
Nairobi	5.1	4.6	4.1	Migori	-	-	7.0
Central	7.2	6.9	5.5	Nyamira (Kisii N.)	-	-	7.1
Kiambu	7.2	6.5	5.1	Rachuonyo	-	-	7.1
Kirinyaga	7.2	7.0	5.4	Siaya	6.8	6.9	6.8
Murang'a	7.0	7.1	5.7	Bondo	-	-	6.7
Nyandarua	8.0	7.7	6.4	Nyando	-	-	7.0
Nyeri	7.0	6.7	5.1	Rift Valley	7.0	7.1	7.2
Coast	5.8	5.8	6.1	Baringo	7.1	7.3	7.5
Kilifi	-	-	6.6	Bomet	-	-	7.6
Taita Taveta	7.1	6.7	6.0	Keiyo	-	-	6.8
Tana River	6.9	6.6	6.9	Kajiado	-	6.3	6.0
Kwale	-	-	6.5	Kericho	7.8	7.7	6.8
Malindi	-	-	6.6	Koibatek	-	-	7.1
Eastern	6.6	6.9	6.4	Laikipia	6.8	7.1	6.0
Embu	7.2	7.3	5.5	Marakwet	6.5	6.7	6.6
Kitui	6.5	6.9	7.0	Nakuru	7.3	7.2	6.1
Machakos	7.0	7.1	6.5	Nandi	7.1	7.6	7.2
Makueni	-	-	6.9	Narok	-	6.9	7.2
Mbeere	-	-	7.0	Trans Mara	-	-	7.6
Moyale	-	-	6.7	Trans Nzoia	7.9	7.8	7.2
Mwingi	-	-	7.3	Uasin Gishu	7.0	7.1	6.6
Meru North	-	6.6	6.6	West Pokot	6.7	6.8	7.1
Tharaka	-	-	7.1	Buret	-	-	7.4
N/Eastern	6.6	6.5	6.5	Western	8.1	7.6	7.1
Garissa	7.0	6.6	6.5	Bungoma	8.6	7.9	7.4
Mandera	-	-	6.6	Busia	7.4	7.1	6.8
Wajir	-	6.5	6.6	Mt. Elgon	-	-	7.9
Nyanza	7.5	7.3	6.9	Kakamega	8.2	7.6	7.2
Gucha (Kisii S)	-	-	7.3	Lugari	-	-	7.2
Homa Bay	-	-	6.8	Teso	-	-	7.0
Kisii Central	8.6	8.0	6.9	Vihiga	-	-	6.7
Kisumu	7.1	7.0	6.4	Butere/	-	-	7.0
Kuria	-	-	7.2	Mumias	-	-	-

NB: - means that the value is not applicable because either the district did not exist or its average parity was below 6.5

declined because of increased modern medical intervention and the general improvements in standards of living among the coastal people.

The district trends in reported average parities of women aged 40-44 years are also depicted in Table 4.1. Note that only districts with reported average parities exceeding 6.5 births per woman aged 40-44 years have been listed in order to show districts with very high fertility. It is evident that all districts in Central province have experienced sharp and consistent decline in lifetime fertility since 1979.

The decline has ranged from 8.0 births per woman for Nyandarua district in 1979 to 6.4 births in 1999, and from 7.0 births to 5.1 births for Nyeri for the same periods, respectively. The other districts exhibiting a consistent fall in reported average parities are Nairobi from 5.1 births in 1979 to 4.1 births in 1999, Taita Taveta from 7.1 to 6.0, Embu from 7.2 to 5.5. Garissa from 7.0 to 5.5, and Bungoma from 8.6 to 7.4 for the same years respectively. The remaining districts either reported an increase, no change or a small decline in lifetime fertility as shown in Table 4.1 and Appendix 4. It is observed that in 1999, only two districts in the entire country reported relatively

low average parities of women aged 40-44 years. These were Nairobi with 4.1 births per woman and Mombasa with 4.8 births. These figures reflect the impact of urbanisation on fertility.

In a situation where fertility regime is rapidly changing, a situation, which is applicable to Kenya. (Macrae et al 2001), it has been argued that, adjusting average parities of hypothetical cohorts for an intercensal period, i.e.. 1989-99, with fitted relational Gompertz fertility models (Brass 1981. Brass and Jolly 1993) gives better estimates of fertility if the best models are selected. The 1999 census average parities were therefore subjected to this procedure (see results in Appendix 7).

It is observed that the average parities for the hypothetical cohorts are consistently lower than reported parities for all regions in the country, which is expected when fertility is falling. The 1999 hypothetical average parities for women aged 40-44 years in Kenya were 5.2 births per woman compared with 5.6 for Kenya rural and 3.7 for all urban centres. The provincial average parities were also consistently lower than reported parities. For example, Nairobi had 3.4, Central 3.9, Coast 5.3. Eastern 5.5, North Eastern 6.6, Nyanza 5.9. Rift Valley 5.6 and Western 6.0.

Further reference to Appendix 7 shows that the majority of districts had average parities ranging between 4 and 6 births. Pockets which in 1999 continued to report relatively high average parities were Moyale 7.5 births. Trans Mara 7.3 and Mt. Elgon 7.1. On the other hand, pockets with relatively low average parities in 1999 were Nairobi with 3.4 births, Kiambu 3.6, Kirinyaga 3.4, Murang'a 3.8 and Nyeri 3.3, all in Central province. The other districts were Embu with 3.6 births and Nithi (South Meru) 3.4 births, both are in Eastern province.

The hypothetical cohort average parities were then fitted with the Brass relational Gompertz model-f to generate ASFRs and TFRs for the 1989-99 decade as shown in Table 4.2. The corresponding El Badry adjusted values for the 1979-89 decade are also shown for comparison.

The 1979-89 period indicated that the highest TFRs were reported in North Eastern. Nyanza, Rift Valley and Western provinces with over 7 births per woman, while the lowest was observed in Nairobi province with 3.8. The districts with the highest TFRs in each province were Nyandarua in Central province with 6.6, Tana River in Coast Province with 7.0, Mandera in North Eastern province with 7.9. Kisii in Nyanza province with 7.2, Trans Nzoia in Rift Valley province with 8.1. On the other hand, the districts with the lowest TFRs in each province were recorded in Kiambu in Central province 5.2, Mombasa in Coast province 4.3, Embu in Eastern province 7.5. Siaya in Nyanza province 6.8. Turkana in Rift Valley province 5.7 and Busia in Western province 7.1. The other districts which reported relatively low TFRs, were Faikipia 6.2, Kajiado 6.3, Isiolo 6.0. Meru 6.1 and Marsabit 6.2 (RoK 1996:33).

Table 4.2 portrays TFRs for the 1989-99 decade. Kenya had a TFR of 5.0 births per woman and the only two provinces with relatively high TFRs were North Eastern with 7.0 births and Western with 6.0 births. Relatively low TFR was reported by Nairobi with 3.0 births. The other provinces had moderately high TFRs compared to their rates during the 1979-89 decade. In fact, the 1979-89 decade showed that the highest TFRs were reported in North Eastern, Nyanza, Rift Valley and Western provinces with over 7 births per woman, while the lowest TFR was reported by Nairobi province with 3.8 births per woman.

Table 4.2 also portrays the district patterns of TFRs during the 1989-99 decade. Reference to the table shows that for all the districts which existed during the 1979-89 and 1989-99 decades, the latter had their TFRs consistently lower than those of the 1979-89 decade except for few districts with an increase, namely Samburu (7.5%), Turkana (10.5%). West Pokot (11.9%) and Marsabit (6.5%). In addition, all districts in North Eastern province exhibited very high TFRs, above six children per woman during the two intercensal periods. No district during the 1989-99 decade reported TFR above eight children per woman, as was the case in the 1979-89 decade. The districts which reported TFR of 8 children and above during the 1979-89 decade were Trans-Nzoia 8.0 and Bungoma 8.1. The districts which reported TFR of 7 children and above were Tana River 7.2, Kitui

Table 4.2 Estimated Crude Birth Rates and Total Fertility Rates by Province and District: 1979-89 and 1989-99

Region	Crude Birth Rate		Total Fertility Rate		TFR absolute change	TFR % change
	1979-89	1989-99	1979-89	1989-99	1989-99	1989-99
Kenya	48.0	41.3	6.6	5.0	-1.6	-24.2
Kenya Urban	39.1	-	4.5	2.7	-1.8	-40.0
Kenya Rural	49.5	-	7.0	5.8	-1.2	-17.1
Nairobi	35.8	32.0	3.8	3.0	-0.8	-21.1
Central	40.2	33.0	5.7	3.8	-1.9	-33.3
Kiambu	39.0	32.7	5.2	3.4	-1.8	-34.6
Kirinyaga	38.1	30.3	5.3	3.3	-2.0	-37.7
Muranga	41.6	30.4	6.3	5.0	-1.3	-20.6
Nyandarua	43.1	39.4	6.6	3.4	-3.2	-48.5
Nyeri	37.7	29.4	5.4	3.8	-1.6	-29.6
Thika	-	35.0	-	4.2	4.2	-
Maragua	-	33.3	-	5.2	5.2	-
Coast	46.2	42.8	5.8	5.2	-0.6	-10.3
Kilifi	49.2	46.6	6.1	6.0	-0.1	-1.6
Kwale	49.4	48.3	6.1	6.0	-0.1	-1.6
Lamu	44.5	36.9	6.0	4.7	-1.3	-21.7
Mombasa	42.8	35.1	4.3	3.4	-0.9	-20.9
Taita Taveta	43.4	36.1	6.4	4.7	-1.7	-26.6
Tana River	52.8	48.4	7.2	6.5	-0.7	-9.7
Malindi	-	48.0	-	6.2	6.2	-
Eastern	45.3	40.4	6.5	5.2	-1.3	-20.0
Embu	40.4	32.8	5.9	3.7	-2.2	-37.3
Isolo	46.6	43.8	6.0	6.0	0.0	0.0
Kitui	48.6	45.6	7.0	6.2	-0.8	-11.4
Makueni	-	41.6	-	5.8	5.8	-
Machakos	44.7	38.5	6.7	4.9	-1.8	-26.9
Marsabit	45.1	44.8	6.2	6.6	0.4	6.5
Mbeere	-	47.7	-	6.6	6.6	-
Meru Central	45.4	33.9	6.1	3.9	-2.2	-36.1
Moyale	-	48.8	-	7.4	7.4	-
Mwingi	-	47.6	-	6.6	6.6	-
Meru North	-	45.6	-	5.8	5.8	-
Tharaka	-	44.8	-	5.7	5.7	-
Nithi (Meru S.)	-	32.7	-	3.9	3.9	-
N/Eastern	52.2	48.6	7.6	7.0	-0.6	-7.9
Garissa	45.4	47.7	7.5	6.4	-1.1	-14.7
Mandera	49.6	49.3	7.9	7.6	-0.3	-3.8
Wajir	52.8	47.7	7.5	7.1	-0.4	-5.3
Nyanza	53.9	45.8	7.0	5.5	-1.5	-21.4
Gucha (Kisii S.)	-	44.8	-	5.1	5.1	-
Homa Bay	-	50.8	-	6.1	6.1	-
Kisii Central	53.7	42.8	7.2	4.8	-2.4	-33.3
Kisumu	53.6	43.5	6.9	5.0	-1.9	-27.5
Kuria	-	54.3	-	6.9	6.9	-
Migori	-	50.5	-	5.9	5.9	-
Nyamira (Kisii N.)	-	43.4	-	4.7	4.7	-
Rachuonvo	-	48.0	-	6.0	6.0	-
S. Nyanza	55.7	-	7.1	-	-7.1	-
Siaya	56.8	42.7	6.8	5.7	-1.1	-16.2
Suba	-	49.9	-	5.9	5.9	-
Bondo	-	45.3	-	5.8	5.8	-
Nyando	-	44.1	-	5.7	5.7	-
Rift Valley	50.0	44.7	7.1	5.8	-1.3	-18.3
Baringo	53.9	50.0	7.2	7.0	-0.2	-2.8
Bomet	-	48.8	-	6.6	6.6	-
Keiyo	-	45.7	-	5.9	5.9	-
Kajiado	46.9	40.9	6.3	4.9	-1.4	-22.2

Table 4.2 Estimated Crude Birth Rates and Total Fertility Rates by Province and District: 1979-89 and 1989-99 (continued)

Region	Crude Birth Rate		Total Fertility Rate		TFR absolute change	TFR % change
	1979-89	1989-99	1979-89	1989-99	1989-99	1989-99
E. Marakwet	49.7	47.5	7.2	6.7	-0.5	-6.9
Kericho	51.9	43.2	7.7	5.4	-2.3	-29.9
Koibatek	-	42.8	-	5.8	5.8	-
Laikipia	42.0	39.4	6.2	5.0	-1.2	-19.4
Nakuru	47.5	40.9	6.6	4.9	-1.7	-25.8
Nandi	50.3	44.3	7.6	6.0	-1.6	-21.1
Narok	53.9	51.1	7.6	7.2	-0.4	-5.3
Samburu	49.4	52.1	6.7	7.2	0.5	7.5
Trans Mara	-	54.0	-	7.4	7.4	-
Trans Nzoia	53.4	45.1	8.0	6.1	-1.9	-23.8
Turkana	50.3	44.3	5.7	6.3	0.6	10.5
Uasin Gishu	49.4	42.2	7.0	5.2	-1.8	-25.7
West Pokot	52.7	54.7	6.7	7.5	0.8	11.9
Buret	-	46.9	-	6.0	6.0	-
Western	53.3	45.0	7.6	6.0	-1.6	-21.1
Bungoma	55.3	46.6	8.1	6.4	-1.7	-21.0
Busia	54.4	47.5	7.1	6.1	-1.0	-14.1
Mt. Elgon	-	48.9	-	7.1	7.1	-
Kakamega	51.6	44.0	7.1	5.7	-1.4	-19.7
Lugari	-	44.8	-	6.1	6.1	-
Teso	-	49.0	-	6.5	6.5	-
Vihiga	-	37.6	-	5.1	5.1	-
Butere/Mumias	-	46.4	-	5.9	5.9	-

7.2, South Nyanza 7.1, Baringo 7.2, Elgeyo Marakwet 7.2, Kericho 7.7, Nandi 7.6, Narok 7.6, Uasin Gishu 7.0, Busia 7.1 and Kakamega 7.1.

It is observed that during the 1989-99 decade, the districts with relatively high TFR. for example, six and above children per woman, were Kilifi 6.0, Kwale 6.0, Tana River 6.5. Malindi 6.2. Isiolo 6.0, Kitui 6.2, Marsabit 6.6, Mbeere 6.6, Moyale 7.4, Mwingi 6.6, Garissa 6.4, Mandera 7.6, Wajir 7.1, Homa Bay 6.1, Kuria 6.9, Rachuonyo 6.0, Baringo 7.0, Bomet 6.6, Marakwet 6.7, Nandi 6.0, Narok 7.2, Samburu 7.2, Trans Nzoia 6.1, Turkana 6.3. West Pokot 7.5. Buret 6.0, Bungoma 6.4, Busia 6.1, Mt. Elgon 7.1, Lugari 6.1 and Teso 6.5.

During the 1979-89 period only two districts had relatively low TFRs below 5.0. These were Nairobi 3.8 and Mombasa 4.3. The 1989-99 decade had many more districts with relatively low TFR. These were Nairobi 3.0, Kiambu 3.4, Kirinyaga 3.3, Muranga 3.8, Nyeri 3.4. Thika 3.8, Mombasa 3.4, Embu 3.7, Meru Central 3.9, Nithi South Meru 3.9, Kisii Central 4.8, Nyamira (North Kisii) 4.7, Kajiado 4.9 and Nakuru 4.9. The increase in the number of districts which reported TFR below five births per woman is an indicator of the declining trend in fertility in most parts of the country.

4.2 Crude Birth Rates, Levels and Trends

Crude birth rate (CBR) is a measure of the proportion of births occurring annually to women aged 15-49 years to the mid-year (period) population. It is a crude measure because the denominator (mid-period population) used to derive it usually includes all the population, some who are not at risk of giving birth such as men, children and old people. It is also very sensitive to unusual annual events such as environmental catastrophes of famine, floods, earthquakes, disease epidemics and

even wars which may be confined to a particular year or period and not experienced in other years. Despite these shortcomings of the method, CBR is still a good summary indicator showing the changes in the total population in respect of births that have taken place over a given period under investigation and provides a measure of comparison with other countries.

As noted in Chapter 1, the observed general under-reporting of births occurring to women within the 12 months preceding the census made it unrealistic to derive CBRs directly from the reported births. Hence, the reported intercensal (1989-99) ASFRs were adjusted by the Gompertz relational method to generate the mid-period annual births whose ratio to the total mid-period population gave the CBRs shown in Table 4.2.

According to the Republic of Kenya (1996:36), CBR declined from about 54 per 1,000 population during the 1969-79 decade to about 48 per 1,000 population during the 1979-89 period. Table 4.2 shows that CBR declined further to 41.3 per 1000 during the 1989-99 decade. As noted in Table 4.2, CBRs are usually higher in rural areas than in urban areas and are also associated with high TFRs.

Provincial analysis shows that during the 1979-89 period several provinces—North Eastern, Nyanza, Rift Valley and Western—reported CBRs well above the national average of 48 per 1,000 population. The provincial CBRs ranged from 50 per 1,000 population in the Rift Valley to 54 per 1,000 population in Nyanza. Furthermore, the 1989-99 period had the following provinces reporting CBRs well above the national average of 41 per 1000 population: North Eastern 47, Nyanza 46, Western 45, Rift Valley 45, Coast 46 and Eastern 45. On the other hand, the provinces reporting relatively low CBRs during the 1989-99 period were Nairobi 32, Central 33 and Eastern 40.

The district pattern of CBRs during the 1979-89 period is also remarkably different from the pattern shown during the 1989-99 decade. The only districts with relatively high CBRs during the 1979-89 period were Siaya 56.8 and Bungoma 55.3, while those with relatively low CBRs were Kirinyaga 39.1, Nairobi 35.8 and Nyeri 37.7.

During the 1989-99 period, high CBRs were recorded in Homa Bay 50.8, Migori 50.5, Baringo 50.0, Narok 51.1, Samburu 52.1, Trans Nzoia 54.0 and West Pokot 54.7. Those with relatively low CBRs were Nairobi 32.0, all districts in Central province (with Nyeri reporting 29.4), Lamu 36.9, Mombasa 35.1, Taita Taveta 36.1, Embu 32.8, Machakos 38.5, Meru Central 33.9, Nithi (South Meru) 32.7 and Laikipia 39.4.

4.3 Fertility by Place of Residence

Urbanisation is significantly inversely correlated with fertility. In general, low levels of fertility are often associated with high levels of urbanisation and vice versa. Table 4.3 shows reported average parities for the 1979, 1989 and 1999 censuses by both rural and urban areas. It also shows the intercensal hypothetical cohort average parities constructed from the corrected ones, and the relational Gompertz model ASFRs fitted to the intercensal hypothetical cohort average parities for the 1979-89 and 1989-99 decades. The table also shows the computed relative ASFRs for the 1979-89 and 1989-99 periods.

Comparison of the uncorrected average parities indicates lower fertility for women in urban areas compared to women in rural areas for all age groups in 1979, 1989 and 1999. The average parities for women aged 40-44 in urban areas were 5.8, 5.2 and 4.7 for the 1979, 1989 and 1999 censuses, respectively. These figures were lower than those of the rural women aged 40-44 years whose average parities were 7.2, 7.1 and 6.7 for the three censuses, respectively.

In fact, the 1999 reported average parities for women in urban areas were consistently lower than those of their counterparts in the earlier censuses, except for the age group 15-19 where the reported average parity of 0.268 for 1999 census was slightly higher than that of 0.262 for 1989, but lower than that of 0.330 for 1979. This anomaly could be attributed to either errors in reporting

Table 4.3 Reported and Hypothetical Cohort Average Parities and Model Age Specific Fertility Rates by Residence, 1979-99

Age group	Reported Average Parities						Hypothetical Cohort Average Parities						Model ASFRs						Relative ASFRs					
	1979 Census		1989 Census		1999 Census		1979-89		1989-99		1999-99		1979-89		1989-99		1999-99		1979-89		1989-99		1999-99	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
15-19	0.319	0.330	0.265	0.262	0.287	0.268	0.273	0.271	0.287	0.268	0.268	0.165	0.135	0.160	0.108	0.119	0.149	0.136	0.137					
20-24	1.936	1.537	1.660	1.213	1.471	1.030	1.713	1.257	1.471	1.030	0.360	0.246	0.322	0.217	0.259	0.272	0.274	0.276						
25-29	3.796	3.053	3.470	2.496	2.863	1.925	3.528	2.515	2.877	1.922	0.346	0.217	0.291	0.195	0.249	0.240	0.247	0.248						
30-34	5.567	4.430	5.163	3.721	4.477	3.082	5.059	3.518	4.235	2.855	0.266	0.160	0.212	0.142	0.192	0.177	0.180	0.181						
35-39	6.644	5.322	6.322	4.635	5.724	4.031	6.165	4.150	5.020	3.366	0.174	0.102	0.137	0.088	0.125	0.113	0.116	0.112						
40-44	7.197	5.674	7.108	5.240	6.714	4.740	6.694	4.350	5.622	3.739	0.070	0.040	0.050	0.033	0.051	0.044	0.043	0.042						
45-49	7.326	5.793	7.397	5.530	7.229	5.202	6.997	4.356	5.726	3.765	0.007	0.004	0.005	0.003	0.005	0.005	0.004	0.004						
TFR											7.0	4.5	5.9	3.9	1.000	1.000	1.000	1.000	1.000					

CEB in 1999 or mis-statement of the age of women in this cohort. This pattern of average parity is also reflected in rural areas. It is also noteworthy that the observed fall in fertility, besides affecting all age groups of women, was sharper in urban areas, particularly for women aged 20-29 years.

The model ASFRs based on the hypothetical cohort average parities for the period 1979-89 showed a higher TFR in the rural areas, 7.0, compared with a lower figure of 4.5 for urban areas. A similar pattern is observed for the 1989-99 decade. The TFR of 3.9 for urban areas was lower than the 5.9 for rural areas. This pattern was observed in all the age groups, as ASFR for urban women was consistently lower than that of rural women for the two intercensal periods.

The analysis of relative ASFRs indicates that both rural and urban women depicted a typical early fertility peak with over half of the births occurring to those aged 20-29 years. It is further noted that teenage women aged 15-19 apparently contributed a higher proportion of births in urban areas than in rural areas, being 15% and 12%, respectively, for the period 1979-89 and 13.7% and 13.6% for the period 1989-99. The relatively lower total fertility observed in urban areas (3.9) for 1999 was expected and has been seen in a number of studies. Generally, urban women marry later, tend to be more educated and are more prone to social change, including use of modern contraception, especially the more effective contraceptive methods (Hill et al 1994).

4.4 Fertility by Level of Education Attained

Education is one of the most important socio-economic factors that influences fertility. Extended formal education has been found to be one of the main reasons for the postponement of marriage among educated women (Kpedkepo 1982). Higher educational attainment is also associated with the use of more effective contraceptive methods (Hill et al 1994), better nutrition and better access to health care services (Hawson et al 1996).

Tables 4.4 and Appendix 6 show fertility differentials by education for the 1969-79, 1979-89 and 1989-99 decades. With the exception of reported average parities for women aged 15-19 years, with primary and secondary education and those who attained secondary or higher level of education, the reported average parities in 1999 for all the other age groups were consistently lower than those reported by women in the same age groups during the 1979 and 1989 censuses. Moreover,

Table 4.4 Reported and Hypothetical Cohort Average Parities and Model Age Specific Fertility Rates and Education, 1969-99

Education	Reported Average Parity				Hypothetical Cohort Average Parity			Model ASFRs			Relative ASFRs		
	1969 Census	1979 Census	1989 Census	1999 Census	1969-79	1979-89	1989-99	1969--79	1979-89	1989-99	1969-79	1979-89	1989-99
None													
15-19	0.457	0.571	0.476	0.351	0.583	0.484	0.351	0.249	0.216	0.187	0.162	0.145	0.137
20-24	2.051	2.194	1.990	1.710	2.240	2.024	1.709	0.383	0.324	0.376	0.248	0.217	0.275
25-29	3.701	3.840	3.621	3.195	4.035	3.583	3.070	0.344	0.313	0.339	0.223	0.210	0.248
30-34	5.090	5.519	4.933	4.897	5.773	4.799	4.616	0.272	0.274	0.247	0.176	0.183	0.181
35-39	5.970	6.498	6.399	6.061	6.876	6.168	5.510	0.193	0.221	0.154	0.125	0.148	0.113
40-44	6.403	6.987	7.087	6.848	7.689	6.367	6.527	0.090	0.123	0.059	0.058	0.082	0.042
45-49	6.648	7.126	7.374	7.210	8.031	7.028	6.321	0.012	0.022	0.006	0.008	0.015	0.004
TFR								7.8	7.5	6.8	1.000	1.000	1.000
Primary													
15-19	0.268	0.285	0.227	0.292	0.293	0.236	0.292	0.186	0.159	0.177	0.118	0.112	0.137
20-24	1.744	1.965	1.650	1.557	2.020	1.714	1.557	0.418	0.340	0.356	0.266	0.239	0.275
25-29	3.683	3.779	3.333	2.915	3.904	3.405	2.980	0.398	0.343	0.321	0.253	0.242	0.248
30-34	5.465	5.473	4.775	4.449	5.861	4.653	4.397	0.300	0.281	0.234	0.191	0.198	0.181
35-39	6.496	6.717	6.232	5.680	7.037	5.992	5.327	0.191	0.198	0.146	0.121	0.139	0.113
40-44	7.221	7.497	7.089	6.600	7.971	6.389	6.222	0.073	0.088	0.055	0.046	0.062	0.042
45-49	7.754	7.727	7.452	7.120	8.327	6.825	6.215	0.007	0.011	0.005	0.005	0.008	0.004
TFR								7.9	7.1	6.5	1.000	1.000	1.000
Secondary*													
15-19	0.082	0.146	0.119	0.203	0.153	0.124	0.203	0.096	0.085	0.130	0.089	0.85	0.137
20-24	0.678	0.960	0.898	0.843	1.007	0.936	0.843	0.261	0.245	0.262	0.241	0.246	0.275
25-29	1.790	2.383	2.302	1.866	2.567	2.369	1.950	0.278	0.262	0.236	0.257	0.263	0.248
30-34	2.930	3.482	3.566	3.155	3.949	3.646	3.100	0.226	0.209	0.172	0.209	0.210	0.181
35-39	3.506	3.984	4.435	4.216	4.872	4.492	3.864	0.152	0.136	0.107	0.141	0.137	0.113
40-44	3.333	4.237	4.796	4.908	5.327	4.993	4.442	0.062	0.053	0.040	0.057	0.053	0.042
45-49	3.197	4.719	4.719	5.229	5.297	5.232	4.658	0.007	0.005	0.004	0.006	0.005	0.004
TFR								5.4	5.0	4.8	1.000	1.000	1.000

the average parities from the hypothetical cohorts also showed a consistent drop in fertility for all age groups and by educational categories except for women aged 15-19 in 1999 who had primary and secondary plus levels of education. Also the TFR declined from 7.8 to 7.5 to 6.8 for the uneducated women with primary level of education. Conclusively, women with secondary and above level of education had the lowest fertility as reported by the three censuses. Nevertheless, it is apparent that women with primary education recorded the sharpest fall in total fertility rate.

Relative ASFRs depict a typical early fertility peak. A consistent drop in proportions of births contributed by women above 30 years affected all categories of women regardless of their educational attainment. In addition, the proportions of births contributed by teenagers also dropped for all categories of education. Proportions changed from 16.2% to 14.5% and to 13.7% for women with no education for the three intercensal periods, respectively. For women with primary education it changed from 11.8 to 11.2 and then slightly increased to 13.7%, while for women with secondary and above level of education it changed from 8.9 to 8.5% and then increased to 13.7% in the three decades, respectively. Note that the increase observed for the 1989-99 decade could be attributed to changing fertility behaviour among adolescents (NCPD 1999).

The analysis clearly shows that clear-cut differences in fertility exist between women with little or no education and women with secondary and above level of education. While little education may not have much effect on the number of children a woman bears, secondary education is normally associated with reduced fertility. Better-educated women have low fertility partly because of the delay in marriage and also delay in first birth (RoK 1996:37).

4.5 Fertility by Marital Status

The analysis of fertility by marital status is presented in Table 4.5 and Appendix 5. The presented average parities are based on imputed data which render the application of the El Badry correction method inapplicable as explained in Chapter 1. On the other hand, fitting a Relational Gompertz model to the hypothetical average parities reported during the three decennial censuses has derived the ASFRs presented in the table.

4.5.1 Single Women

The reported average parities for women aged 40-44 years indicate that fertility for single women increased marginally from 3.4 in 1979 to 4.0 in 1989, before falling to 3.1 in 1999. It is observed that the rise or fall did not affect all age groups. The rise in reported average parities consistently affected the age group 15-19 during the 1979, 1989 and 1999 censuses. Also, the age groups 20-29 showed a consistent fall from 1979 to 1999. The other age groups showed an inconsistent trend. It is also noted that with the exception of the age groups 15-24 years in 1999, all the age groups from 25 and above in 1999 had consistently lower reported average parities than those of 1989. The analysis of the hypothetical cohort average parities shows a similar trend to that of reported parities for 1999.

It is further observed that single women continued to report the lowest fertility with TFR of 4.3 and 3.4 for the 1979-89 and 1989-99 decades, respectively. The fall in fertility, however, did not affect all age groups. In fact, the age groups 15-29 exhibited significant increase in ASFRs during the two decades, while the older age groups exhibited a declining trend. The analysis of relative ASFRs indicates that single women exhibited a broad-peaked fertility pattern during the 1979-89 and 1989-99 decades.

Table 4.5 Reported and Hypothetical Cohort Average Parities and Model Age-Specific Fertility Rates for Women aged 15-49 by Marital Status, 1979-99

Marital Status	Reported Average Parity			Hypothetical Cohort Average Parity		Model ASFRa		Relative ASFRs	
	1979 Census	1989 Census	1999 Census	1979-89	1989-99	1979-89	1989-99	1979-89	1989-99
Single									
15-19	0.084	0.108	0.170	0.108	0.170	0.060	0.094	0.070	0.137
20-24	0.701	0.612	0.642	0.612	0.642	0.152	0.189	0.176	0.276
25-29	1.620	1.562	1.235	1.586	0.235	0.187	0.170	0.217	0.248
30-34	2.686	2.604	2.253	2.515	1.253	0.187	0.124	0.217	0.181
35-39	3.248	3.447	2.645	3.413	2.645	0.164	0.077	0.190	0.112
40-44	3.430	3.953	3.133	3.782	3.133	0.095	0.029	0.110	0.042
45-49	3.477	4.281	3.077	4.446	3.077	0.017	0.003	0.020	0.004
TFR						4.3	3.4	1.000	1.000
Married									
15-19	0.911	0.949	0.770	0.949	0.770	0.259	0.167	0.183	0.137
20-24	2.239	2.083	1.787	2.083	1.787	0.278	0.337	0.197	0.276
25-29	3.897	3.581	3.005	3.619	2.826	0.255	0.303	0.180	0.248
30-34	5.611	5.175	4.435	5.019	4.139	0.232	0.221	0.164	0.181
35-39	6.698	6.313	5.674	6.035	4.919	0.209	0.137	0.148	0.112
40-44	7.293	7.155	6.671	6.563	5.635	0.143	0.052	0.101	0.042
45-49	7.462	7.476	7.228	6.813	5.834	0.038	0.005	0.027	0.004
TFR						7.3	6.1	1.000	1.000
Widowed									
15-19	1.224	1.264	0.745	1.264	0.745	0.300	0.151	0.232	0.137
20-24	2.791	2.488	2.089	2.488	2.089	0.265	0.304	0.205	0.275
25-29	4.166	3.926	3.345	3.966	2.826	0.223	0.274	0.172	0.248
30-34	5.473	5.198	4.573	4.895	4.174	0.193	0.200	0.149	0.181
35-39	6.252	6.028	5.580	5.826	4.480	0.169	0.124	0.131	0.112
40-44	6.583	6.628	6.405	6.050	5.381	0.114	0.047	0.088	0.043
45-49	6.707	6.883	6.865	6.459	5.317	0.030	0.005	0.023	0.004
TFR						6.9	5.5	1.000	1.000
Divorced									
15-19	1.010	1.024	0.885	1.024	0.885	0.238	0.128	0.257	0.137
20-24	1.983	1.942	1.722	1.942	1.722	0.203	0.256	0.220	0.274
25-29	3.148	2.922	2.604	2.936	2.465	0.162	0.231	0.125	0.248
30-34	4.199	3.879	3.551	3.838	3.331	0.133	0.169	0.144	0.181
35-39	4.923	4.581	4.310	4.369	3.853	0.108	0.105	0.117	0.113
40-44	5.184	5.049	4.884	4.688	4.336	0.066	0.040	0.071	0.043
45-49	5.340	5.175	5.254	4.621	4.526	0.015	0.004	0.016	0.004
TFR							4.7	1.000	1.000

4.5.2 Married

Analysis based on reported average parities of women aged 40-44 years indicates that married women experienced a marginal drop in fertility from 7.3 in 1979 to 7.2 in 1989 and 6.7 in 1999. The observed fall in fertility, however, did not affect all age groups. The fall in fertility consistently affected all age groups above 20 years in all the three censuses, while for the age group 15-19 years there was a marginal rise between 1979 and 1989 before fertility fell again. It is nevertheless noted that reported average parities for 1999 were consistently lower than those reported in the earlier censuses for all age groups. The hypothetical cohort average parities for the 1989-99 decade were also consistently lower than those reported for the 1979-89 decade for all age groups.

It is further observed that married women exhibited the highest TFR of 7.3 and 6.1 for the 1979-89 and 1989-99 decades, respectively. Again, this declining trend of fertility was not reflected by ASFRs for all age groups. The fall was consistent for age groups above 30 years while the younger age groups 15-29 years showed an irregular trend. It is also noted that married women depicted a broad -peaked fertility pattern during the 1979-89 and 1989-99 decades.

4.5.3 *Widowed*

The reported average parities for widowed women showed no change between the 1979 and 1989 censuses but showed a marginal drop in 1999. The relevant figures for women aged 40-44 years were 6.6 for 1979, 6.6 for 1989 and 6.4 for 1999. It is again noted that the figures for 1999 were consistently lower than those of 1989 for all age groups. The hypothetical cohort average parities for 1989-99 also showed a consistent fall from those of the 1979-89 decade for all age groups.

Widowed women also reported relatively high TFRs of 6.9 and 5.5 for the 1979-89 and 1989-99 periods. Unlike married women, the widowed indicated a rise in ASFRs among those aged 20-24, 25-29 and 30-34 years. The other age groups exhibited a declining trend between the two intercensal periods. Again these women had a broad-peaked fertility pattern for the two intercensal periods.

4.5.4 *Divorced/Separated*

The reported average parities for divorced women aged 40-44 years were 5.2 for 1979, 5.0 for 1989 and 4.9 for 1999. With the exception of the age group 15-19, the observed declining trend in fertility affected all age groups in all the three censuses. In other words, the 1999 figures were consistently lower than those of the previous censuses for all age groups. The hypothetical cohort average parities for the 1989-99 period were also consistently lower than those of the 1979-89 period for all age groups.

As expected, the TFRs for divorced and separated women were the lowest. Their TFRs were 4.9 for the 1979-89 period and 4.7 for the 1989-99 decade. With the exception of the age group 15-19, which showed an increase in ASFRs, the other age groups exhibited a decline in ASFR between 1979-89 and 1989-99. Like the other groups of women, they also exhibited a broad-peaked fertility pattern for the two intercensal periods.

In summary, significant falls in fertility were observed for women aged 20-39 years for all categories of marital status, except for single women. It is also noted that the errors pertaining to non-response by women as to their parity were inherent in these data. This is evidenced by the large contributions to overall fertility by women under 25 who were divorced or separated. For this reason, the results need to be interpreted with caution.

4.6 Adolescent Fertility

The proportion of women not stating their parity is always very high among adolescents. Nevertheless, the 1999 imputation does not invalidate comparison between the censuses because, as observed in Chapter 1, the imputed data produce comparable results.

4.6.1 *Reported Average Parity*

In columns P40 to P45 of the census form, all females aged 12 years and above were asked to give information on the number of children ever born to them and whether the children were still living at home, living elsewhere or had died. The reported average parity per woman aged 15-19 since 1969 for the decennial censuses shows a fertility drop to 1989 and then a rise between 1989 and 1999. These figures were 0.355, 0.321, 0.265 and 0.283 for the four censuses, respectively. However, the analysis of fertility based on mothers' data show a different trend. Mean births per mother 15-19 in 1969 were 1.45 compared to 1.48 for 1979 and 1.62 for 1989 before dropping to 0.30 for the 1999 census. In other words, the analysis based on mean births per mother showed a rising trend in average parity between 1969 and 1989 before falling between 1989 and 1999. What is evident is that figures before 1999 were extremely high for the age group 15-19.

It should be stressed that comparing unadjusted average parities between censuses should be taken with caution because the 1999 census data on fertility, as mentioned earlier, are based on

heavily imputed data that eliminated the problem of women with parity not stated, and the problem of childless women. In addition, data for the age group 12-14 for the earlier censuses are not available to enable comparison with the 1999 data.

Provincial analysis based on Table 4.6 shows that reported average parity of teenagers (15-19) between 1989 and 1999 increased in all provinces except in Rift Valley province which reported a drop from 0.313 in 1989 to 0.285 in 1999. In other words, for every 1,000 females aged 15-19 years in 1989 in the province, there were 313 children ever born as opposed to a lower number of 285 children ever born in 1999.

District analysis based on the same table also reveals that between the 1989 and 1999 censuses a significant increase in CEB affected women aged 15-19 years in many districts. The districts that reported a decline were relatively few and the majority were in Rift Valley province. The reported decline in CEB were as follows: Murang'a from 0.162 to 0.158, Nyeri 0.146 to 0.140, Kilifi 0.375 to 0.315, Kwale 0.384 to 0.380, Tana River 0.316 to 0.299, Isiolo 0.291 to 0.259, Marsabit 0.234 to 0.218, Mandera 0.211 to 0.182. Kisumu 0.428 to 0.355, Kajiado 0.450 to 0.419, Kericho 0.375 to 0.326, Nandi 0.283 to 0.271. Narok 0.504 to 0.482. Samburu 0.263 to 0.242, Trans Nzoia 0.313 to 0.271, Turkana 0.227 to 0.156. Uasin Gishu 0.263 to 0.234 and West Pokot 0.360 to 0.277. These figures refer to the 1989 and 1999 censuses, respectively.

Further analysis based on the 1999 reported average parities for adolescents shows that the districts which reported over 50 CEB per 1,000 adolescents aged 12-14 years were very few. These districts included Machakos with 107, Mombasa 66. Kajiado 66, Nairobi 56, Kiambu 53, Kitui 53, Narok 53, Siaya 52 and Kericho 52.

On the other hand, the districts with teenagers 15-19 years who reported over 300 CEB per 1,000 teenagers were Migori 510, Suba 494, Bondo 493, Narok 482, Rachuonyo 471. Nyando 424, Trans Mara 419, Kajiado 419, Nyamira (North Kisii) 414. Busia 396, Malindi 388, Buret 381, Kwale 380, Siaya 365, Kuria 360, Kisumu 355, Butere/Mumias 349, Bomet 333, Kericho 326, Teso 326, Mombasa 317, Kilifi 315 and Meru North 305.

Reference to Appendix 6 shows reported average parities of adolescents aged 15-19 by levels of educational attainment in 1999. It should be emphasised that substantial errors affected reports of those aged 12-14 years as explained in Chapter 1. Nevertheless, analysis of adolescents aged 15-19 years shows that their reported average parity in 1999 varied significantly with increasing levels of higher education. The non-educated reported average parity of 0.351 compared to 0.289 for those with primary 5-8 level of education and 0.231 for those with university education. This trend is replicated at provincial level and district level, although the pattern of irregularity affects many districts.

The analysis of adolescents by marital status indicates that in 1999, those who were single had significantly lower fertility (0.170) than those widowed (0.745), divorced (0.845) and separated (0.906) (see Appendix 5). This pattern existed at the district level for many districts.

Changes in fertility are best summarised by parity progression ratios. Reference to Table 3.4 shows that the proportion of women with parity 1 increased from 11.2% in 1989 to 13.7% in 1999. Those with parity 2 increased from 3.3% in 1989 to 5.7% in 1999. The proportions with higher parities were too few for analysis. However, if the distribution of women from parity 0 to 1 is disregarded because of the reporting errors and the problem of childlessness compounded by the problem of women not stating their parity as is the case with the earlier censuses, then reference to Table 3.5 shows that the 1999 PPRs for women aged 15-19 years for parity 1 to 2 were higher at 0.328 compared to lower PPRs of 0.311 for 1989. This indicates a rise in fertility among adolescents aged 15-19 years. But the 1999 PPRs for higher birth orders above 2 were lower than those of the 1989 for women of the same age group. This indicates that the rise in adolescent fertility affected mostly parity 2 or less.

Table 4.6 Reported Average Parities for Adolescents 12-19 Years, 1989-99

Region	1999 Census		1989 Census	Region	1999 Census		1989 Census
	12-14	15-19	15-19		12-14	15-19	15-19
Kenya	0.050	0.283	0.265	Mandera	0.020	0.182	0.211
Nairobi	0.056	0.251	0.217	Wajir	0.040	0.232	0.190
Central	0.043	0.196	0.168	Nyanza	0.072	0.400	0.387
Kiambu	0.053	0.225	0.190	Kisumu	0.040	0.355	0.428
Kirinyaga	0.047	0.205	0.166	Siaya	0.052	0.365	0.357
Murang'a	0.035	0.158	0.162	Rift Valley	0.042	0.285	0.313
Nyandarua	0.039	0.209	0.161	Baringo	0.045	0.234	0.233
Nyeri	0.026	0.140	0.146	Kajiado	0.066	0.419	0.450
Coast	0.040	0.324	0.322	Kericho	0.052	0.326	0.375
Kilifi	0.028	0.315	0.375	Laikipia	0.048	0.248	0.212
Kwale	0.031	0.380	0.384	Nakuru	0.038	0.255	0.247
Lamu	0.028	0.279	0.250	Nandi	0.040	0.271	0.283
Mombasa	0.066	0.317	0.282	Narok	0.053	0.482	0.504
Taita Taveta	0.044	0.223	0.193	Trans Nzoia	0.026	0.271	0.313
Tana River	0.018	0.299	0.316	Turkana	0.027	0.156	0.227
Eastern	0.066	0.236	0.172	Uasin Gishu	0.031	0.234	0.263
Embu	0.058	0.176	0.128	Samburu	0.030	0.242	0.263
Isiolo	0.034	0.259	0.291	West Pokot	0.019	0.277	0.360
Kitui	0.053	0.231	0.199	Western	0.031	0.284	0.266
Machakos	0.107	0.213	0.136	Bungoma	0.031	0.270	0.263
Marsabit	0.031	0.218	0.234	Busia	0.025	0.396	0.345
N/Eastern	0.037	0.217	0.190	Kakamega	0.041	0.277	0.245
Garissa	0.049	0.230	0.171				

Note: All districts created after the 1989 census have been excluded.

4.6.2 Current Adolescent Fertility

Reference to Table 3.6 which compares ASFRs of the 1998 KDHS and 1999 census shows that adolescents aged 15-19 years contributed 11.8% of total fertility rate in the country in both surveys. Reference to Table 3.7 showing age-specific and age-order-specific fertility rates based on births reported as occurring in the last 12 months before the 1989 and 1999 censuses again confirms a fertility rise affecting birth order 1 and 2 among adolescents aged 10-14 and 15-19 years. The observed rise for birth order 1 for women aged 10-14 was from 0.002 in 1989 to 0.028 in 1999, while for birth order 2 the rise was from 0.0003 to 0.0008 for the two censuses, respectively.

The fitted relational Gompertz fertility models to data on current fertility and average parities also confirm that fertility of adolescents increased between 1989 and 1999. Reference to Table 3.8 shows that ASFR for those aged 10-14 in 1989 was 0.002 and this increased to 0.003 in 1999, and for those aged 15-19 it declined moderately from 0.1496 in 1989 to 0.1418 in 1999.

In summary, the significance of adolescent fertility is gauged by examining the proportion of total fertility contributed by adolescent fertility in each province. For the entire country in 1999, adolescents contributed 11.8% of total fertility, whereas in Central Province they contributed 11.5%, Nairobi 14.6%, Nyanza 15.2%, Coast 12.1%, Western 10.6%, Eastern 10.2%, Rift Valley 10.6% and North Eastern 8.2%. Conclusively, the majority of districts in Nyanza and Coast provinces had very high adolescent fertility as noted in Table 4.6.

4.7 Parity Progression Ratios

Further insights into trends in fertility differentials are derived from incomplete parity progression ratios (PPRs) described in Chapter 1. These ratios were computed for the censuses of 1979, 1989 and 1999 for regions, type of residence and marital status. In addition, PPRs were computed for the

1969, 1979, 1989 and 1999 censuses for educational attainment. As already stated earlier in this chapter, the 1969 parity distribution data were not available for the other sub-groups except for levels of education attainment. Also, PPRs from childlessness (parity zero) to first birth was omitted in the analysis because it was evidently affected by errors pertaining to not stated women, the majority of whom are believed to be childless (RoK 1996).

This method of examining fertility trends is usually advantageous, especially in cases where there are other changes in fertility confusing the interpretation, for instance, increasing age at marriage or shortening of birth intervals because of less intensive breastfeeding (Brass 1985). Brass further states that experience has shown that total births of medium orders are generally well recorded for women in the relevant age groups who report children. Nevertheless, most common failures of this method are erroneous classification of mothers as childless as well as omission of children at very high birth orders. Conclusively, trends in the middle PPRs are most indicative of the adoption of family limitation on a considerable scale, and can be measured (RoK 1996).

4.7.1 Parity Progression Ratios by Region

The analysis attempts to examine trends in variations in fertility by regions up to provincial level only. It is considered that analysis by district would produce unmanageably vast information. The age group 15-19 is also disregarded in the analysis because it exhibits irregular oscillations indicating high presence of errors.

Table 4.7 shows that generally, the 1989 PPRs were lower than those of 1979 for all provinces except North Eastern. This drop in fertility did not affect all age groups because women who were aged 40 years and above showed the contrary except in Nairobi and Western provinces where the drop cuts across all age groups of women, and in Nyanza where the PPRs remained more or less the same. Drops in PPRs were moderate for lower birth orders (3 or less) but more pronounced at higher parities. Marked drops in PPRs were also recorded for women aged 25-39 years, most noticeably 30-34 years.

In 1999, PPRs were remarkably lower than those of 1989 for all age groups in only Central, Nyanza and Western provinces, for the other provinces, the pattern was inconsistent as the PPRs for either the low order births (less than 3) or higher births (above 6) for 1999 were greater than those of 1989.

4.7.2 Nairobi Province

The 1999 PPRs and parities were consistently lower than those of 1989 for all age groups except for the age group 30-34 whose PPR for birth order 6 to 7 was higher than that of 1989 (see Table 4.7A). It is observed that the greatest differences in PPRs between 1989 and 1999 were affecting the younger women below 35 years with parities less than 5 (see Figure 4.1).

4.7.3 Central Province

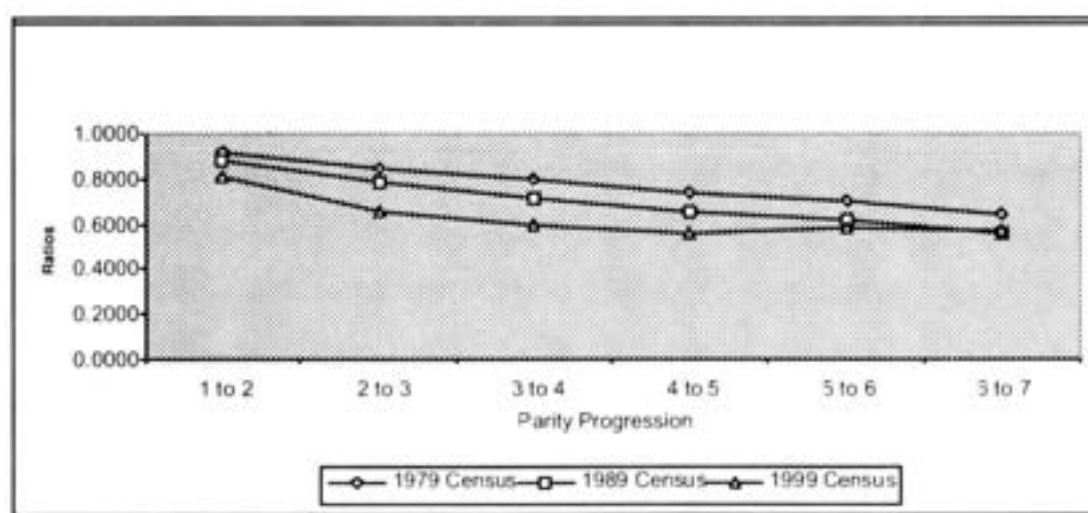
In Central province, the 1999 PPRs were consistently lower than those of 1989 for all age groups and for all birth orders. The difference was greatest among the younger women 20-29 years and middle-aged women 30-39 years with birth order ranging from 2 to 5. This pattern was unlike in 1989, where the PPRs were generally lower than those of 1979 for women under 44 years and slightly higher for women aged above 44 years.

4.7.4 Coast Province

In Coast province, the 1999 PPRs were lower than those of 1989 for women under 40 years and for all birth orders. However, the 1999 PPRs were higher than those of 1989 for women aged 40-44 years for birth order 3 or less, before getting lower again than those of 1989 for older women and

Table 4.7A Parity Progression Ratios. Nairobi Province

Age group	Year	2+/1 +	3+/2+	4+/3+	5+/4+	6+/5+	7+/6+	8+/7+	9+/8+	10+/9+
20-24	1979	0.6067	0.5119	0.4467	0.4146					
	1989	0.5335	0.4432	0.4186	0.4303					
	1999	0.4563	0.4289	0.3567	0.2926					
25-29	1979	0.8365	0.7429	0.6616	0.5712	0.5244				
	1989	0.7575	0.6505	0.5757	0.5083	0.5091				
	1999	0.6350	0.5151	0.4962	0.4732	0.4407				
30-34	1979	0.9155	0.8396	0.7968	0.7385	0.7003	0.6378			
	1989	0.8776	0.7875	0.7152	0.6495	0.6215	0.5589			
	1999	0.8142	0.6569	0.5930	0.5651	0.5874	0.5702			
35-39	1979	0.9386	0.8733	0.8404	0.8135	0.7983	0.7475	0.6978	0.6499	0.5956
	1989	0.9201	0.8538	0.7934	0.7198	0.6994	0.6508	0.6371	0.6013	0.5917
	1999	0.8915	0.7841	0.6879	0.6317	0.6358	0.6213	0.6215	0.5703	0.5473
40-44	1979	0.9299	0.8821	0.8529	0.8451	0.8310	0.8072	0.7496	0.7139	0.6585
	1989	0.9356	0.8800	0.8359	0.7731	0.7514	0.7161	0.6947	0.6533	0.6350
	1999	0.9150	0.8390	0.7566	0.6895	0.6787	0.6533	0.6627	0.6311	0.6112
45-49	1979	0.9326	0.8864	0.8483	0.8309	0.8382	0.8209	0.7753	0.7076	0.6953
	1989	0.9387	0.8776	0.8503	0.8096	0.7965	0.7604	0.7324	0.7046	0.6755
	1999	0.9287	0.8637	0.8030	0.7303	0.7131	0.6901	0.6724	0.6573	0.6471

Figure 4.1 Incomplete PPRs for Women Aged 30-34 in Nairobi Province, 1979, 1989 and 1999 Censuses

for higher birth orders. The same trend was observed among women 45-49 whose PPRs for 1999 were higher than those of 1989 for lower birth order 4 and less before becoming lower again for higher parities. The greatest differences in PPRs between 1989 and 1999 were observed among women aged 35-39 for birth order 3 to 6, while almost no change affected women 45-49 for all parities (see Figure 4.2).

4.7.5 Eastern Province

It is observed from Table 4.7D that for Eastern province, the 1999 PPRs were lower than those of 1989 for all birth orders among older women 45-49 years. For women aged 20-14 years, the 1999 PPRs were lower than those of 1989 only for lower and middle order births, 5 or less. In other words, the incomplete PPRs in 1999 for women aged 20-14 years were higher than those of 1989 for higher parities. The greatest difference between the PPRs is noted among women aged 25-34 years for lower order births, 4 and less.

Kenya 1999 Population and Housing Census

Table 4.7B Parity Progression Ratios, Central Province

Central	Year	2+/1+	3+/2+	4+/3+	5+/4+	6+/5+	7+/6+	8+/7+	9+/8+	10+/9+
20-24	1979	0.6672	0.5223	0.4329	0.4165					
	1989	0.5783	0.4416	0.3796	0.4074					
	1999	0.4535	0.3592	0.3358	0.2967					
25-29	1979	0.9247	0.8615	0.7515	0.6142	0.4999				
	1989	0.8600	0.7580	0.6212	0.5034	0.4501				
	1999	0.7317	0.5480	0.4582	0.4212	0.4194				
30-34	1979	0.9721	0.9546	0.9257	0.8642	0.7640	0.6538			
	1989	0.9492	0.9141	0.8510	0.7537	0.6559	0.5662			
	1999	0.8941	0.7633	0.6347	0.5527	0.5369	0.5256			
35-39	1979	0.9759	0.9697	0.9560	0.9327	0.8877	0.8156	0.7213	0.6200	0.5353
	1989	0.9708	0.9554	0.9255	0.8765	0.8160	0.7383	0.6688	0.5873	0.5493
	1999	0.9495	0.8857	0.7845	0.6883	0.6355	0.6082	0.5954	0.5602	0.5346
40-44	1979	0.9746	0.9710	0.9596	0.9465	0.9153	0.8688	0.8064	0.7263	0.6453
	1989	0.9763	0.9683	0.9544	0.9265	0.8900	0.8412	0.7804	0.7120	0.6492
	1999	0.9639	0.9371	0.8840	0.8123	0.7474	0.7012	0.6717	0.6355	0.5999
45-49	1979	0.9718	0.9671	0.9580	0.9413	0.9167	0.8786	0.8239	0.7572	0.6772
	1989	0.9765	0.9721	0.9603	0.9444	0.9128	0.8763	0.8239	0.7562	0.7005
	1999	0.9719	0.9567	0.9300	0.8847	0.8321	0.7742	0.7247	0.6715	0.6376

Table 4.7C Parity Progression Ratios, Coast Province

Age Group	Year	2+/1+	3+/2+	4+/3+	5+/4+	6+/5+	7+/6+	8+/7+	9+/8+	10+/9+
20-24	1979	0.7135	0.6085	0.5488	0.5081					
	1989	0.6735	0.5520	0.4721	0.4765					
	1999	0.6193	0.5041	0.4120	0.3570					
25-29	1979	0.8837	0.8274	0.7565	0.6686	0.6023				
	1989	0.8707	0.7960	0.7004	0.6112	0.5598				
	1999	0.8047	0.7077	0.6329	0.5543	0.4951				
30-34	1979	0.9283	0.9051	0.8793	0.8314	0.7772	0.7189			
	1989	0.9367	0.9017	0.8524	0.8002	0.7306	0.6563			
	1999	0.9077	0.8442	0.7865	0.7313	0.6797	0.5464			
35-39	1979	0.9352	0.9158	0.9023	0.8767	0.8414	0.8040	0.7389	0.6807	0.6272
	1989	0.9499	0.9291	0.8992	0.8740	0.8335	0.7765	0.7239	0.6594	0.6069
	1999	0.9440	0.9090	0.8714	0.8248	0.7313	0.7312	0.6628	0.6113	0.5772
40-44	1979	0.9315	0.9209	0.9059	0.8914	0.8728	0.8398	0.7876	0.7496	0.6918
	1989	0.9474	0.9322	0.9116	0.8991	0.8712	0.8314	0.7846	0.7264	0.6799
	1999	0.9557	0.9334	0.9109	0.8818	0.8477	0.8108	0.7543	0.6956	0.6353
45-49	1979	0.9274	0.9184	0.9067	0.8941	0.8741	0.8383	0.8070	0.7486	0.7058
	1989	0.9436	0.9306	0.9129	0.9044	0.8822	0.8442	0.8134	0.7576	0.7050
	1999	0.9575	0.9407	0.9223	0.9007	0.8714	0.8319	0.7866	0.7331	0.6687

Figure 4.2 Incomplete PPRs for Women Aged 45-49 Years in Coast Province, 1979, 1989 and 1999 Censuses

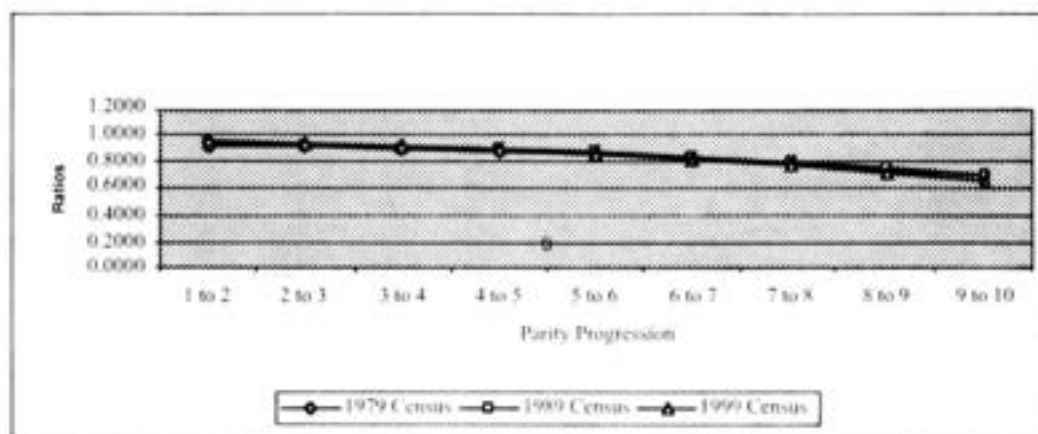


Table 4.7D Parity Progression Ratios. Eastern Province

Age Group	Year	2+/1+	3+/2+	4+/3+	5+/4+	6+/5+	7+/6+	8+/7+	9+/8+	10+/9+
20-24	1979	0.6589	0.5425	0.4787						
	1989	0.6119	0.4712	0.4102						
	1999	0.5420	0.4647	0.4022						
25-29	1979	0.9098	0.8378	0.7312	0.6178	0.5394				
	1989	0.8910	0.7959	0.6570	0.5399	0.4719				
	1999	0.8051	0.6826	0.5983	0.5289	0.4924				
30-34	1979	0.9608	0.9433	0.9099	0.8480	0.7608	0.6759			
	1989	0.9608	0.9336	0.8743	0.7888	0.6849	0.5870			
	1999	0.9264	0.8497	0.7703	0.6915	0.6443	0.5964			
35-39	1979	0.9702	0.9591	0.9429	0.9105	0.8623	0.7890	0.7094	0.6332	0.5705
	1989	0.9749	0.9626	0.9355	0.8901	0.8379	0.7616	0.6753	0.6019	0.5498
	1999	0.9622	0.9281	0.8662	0.8033	0.7481	0.7012	0.6603	0.6155	0.5867
40-44	1979	0.9662	0.9590	0.9466	0.9219	0.8850	0.8372	0.7696	0.7041	0.6255
	1989	0.9752	0.9675	0.9506	0.9325	0.8947	0.8507	0.7841	0.7132	0.6500
	1999	0.9715	0.9536	0.9221	0.8752	0.8288	0.7840	0.7356	0.6984	0.6548
45-49	1979	0.9661	0.9585	0.9418	0.9181	0.8808	0.8363	0.7788	0.7171	0.6503
	1989	0.9751	0.9686	0.9511	0.9367	0.9047	0.8595	0.8096	0.7404	0.6814
	1999	0.9751	0.9632	0.9423	0.9093	0.8725	0.8288	0.7783	0.7249	0.6755

4.7.6 North Eastern Province

In North Eastern province, the 1999 PPRs were higher than those of 1989 for all women aged 20-44 years up to birth order 4 before getting lower again for higher birth orders. It is further noted that it is only the older women 45-49 years whose 1999 PPRs were higher than those of 1989 up to birth order 5 before getting lower at higher parities. The differences in PPRs between 1989 and 1999 were very small for the lower birth orders, but the differences were more marginal with the older parities (see Table 4.7E).

4.7.7 Nyanza Province

Reference to Table 4.7F shows that in Nyanza the 1999 incomplete PPRs for all women aged 20-49 years were consistently lower than those reported by the women in the same cohorts in 1989 for all birth orders. This was not the case in the 1989 census where the PPRs were lower than those of 1979 for all birth orders and for all age groups of women, except 45-9 where they were the same as those of 1979 at the higher parities and slightly higher at lower parities.

It is further observed that the greatest differences in PPRs between 1989 and 1999 affected mostly women aged 20-29 years for birth orders 3 and above and women aged 30-39 years for birth orders 5 and above. Women aged 35-49, on the other hand, exhibited very small differences in PPRs for birth orders 4 and less. It is thus noted that in Nyanza women aged 20-34 contributed greatly to fertility decline.

4.7.8 Rift Valley Province

In Rift Valley, the incomplete PPRs for 1999 were consistently lower than those of 1989 only for women aged 20-44 years and for all birth orders. However, the 1999 PPRs for the older women 45-49 years were slightly higher by 0.3% for birth order 2 or less, before changing to be lower for higher birth orders above 4. It is further observed that the differences between 1999 PPRs and those of 1989 were greatest among women aged 20-39 years. For the younger women 20-24, marked differences affected birth orders 3 to 5 and for women aged 25-29 the differences were great for parities 3 to 5 and for women aged 30-34 the differences were great for parities 5 to 7 and for the older women parities 6 and 8. Note also the least differences between 1989 and 1999 were reported

Table 4.7E Parity Progression Ratios, North Eastern Province

Age Group	Year	2+/1+	3+/2+	4+/3+	5+/4+	6+/5+	7+/6+	8+/7+	9+/8+	10+/9+
20-24	1979	0.5966	0.4953	0.4257						
	1989	0.6713	0.5344	0.4887						
	1999	0.7289	0.5377	0.4179						
25-29	1979	0.8779	0.7735	0.6385	0.5389					
	1989	0.8996	0.8009	0.6802	0.5814					
	1999	0.9248	0.8069	0.6674	0.5402					
30-34	1979	0.9472	0.9122	0.8434	0.7541	0.6560	0.5870			
	1989	0.9582	0.9214	0.8641	0.7853	0.6924	0.6129			
	1999	0.9735	0.9313	0.8492	0.7492	0.6517	0.5720			
35-39	1979	0.9753	0.9522	0.9097	0.8628	0.7851	0.6918	0.6316	0.5661	0.5347
	1989	0.9771	0.9628	0.9323	0.8812	0.8141	0.7371	0.6626	0.5791	0.5393
	1999	0.9847	0.9681	0.9211	0.8502	0.7731	0.7046	0.6251	0.5018	0.5017
40-44	1979	0.9766	0.9646	0.9390	0.9035	0.8494	0.7861	0.7270	0.6470	0.5779
	1989	0.9758	0.9619	0.9415	0.9149	0.8612	0.8084	0.7511	0.6598	0.5895
	1999	0.9861	0.9693	0.9453	0.8995	0.8357	0.7769	0.7126	0.5965	0.5991
45-49	1979	0.9822	0.9719	0.9527	0.9292	0.8860	0.8456	0.7543	0.6924	0.6235
	1989	0.9844	0.9677	0.9513	0.9347	0.8787	0.8297	0.7711	0.7050	0.6855
	1999	0.9877	0.9760	0.9523	0.9189	0.8699	0.8066	0.7468	0.6331	0.5956

Table 4.7F Parity Progression Ratios, Nyanza Province

Age Group	Year	2+/1 +	3+/2+	4+/3+	5+/4+	6+/5+	7+/6+	8+/7+	9+/8+	10+/9+
20-24	1979	0.7729	0.6466	0.5401	0.4896					
	1989	0.7532	0.6173	0.5060	0.4638					
	1999	0.6687	0.5408	0.4287	0.3562					
25-29	1979	0.9293	0.8915	0.8164	0.7175	0.6198	0.5609			
	1989	0.9249	0.8759	0.7917	0.6777	0.5853	0.5194			
	1999	0.8766	0.7949	0.7035	0.5974	0.5154	0.4525			
30-34	1979	0.9630	0.9533	0.9351	0.9009	0.8462	0.7660			
	1989	0.9597	0.9451	0.9229	0.8798	0.8072	0.7157			
	1999	0.9482	0.9161	0.8664	0.7991	0.7216	0.6373			
35-39	1979	0.9710	0.9658	0.9560	0.9394	0.9112	0.8667	0.8098	0.7359	0.6613
	1989	0.9671	0.9615	0.9496	0.9314	0.8995	0.8454	0.7757	0.6931	0.6289
	1999	0.9645	0.9487	0.9269	0.8795	0.8259	0.7602	0.7004	0.6383	0.5941
40-44	1979	0.9719	0.9687	0.9623	0.9485	0.9312	0.9009	0.8553	0.8004	0.7341
	1989	0.9716	0.9664	0.9563	0.9454	0.9257	0.8944	0.8530	0.7903	0.7272
	1999	0.9661	0.9575	0.9442	0.9240	0.8907	0.8439	0.7881	0.7265	0.6808
45-49	1979	0.9701	0.9673	0.9602	0.9494	0.9305	0.9042	0.8666	0.8170	0.7593
	1989	0.9734	0.9679	0.9588	0.9472	0.9286	0.9025	0.8693	0.8102	0.7538
	1999	0.9680	0.9614	0.9528	0.9381	0.9128	0.8768	0.8298	0.7685	0.7117

by women aged 40-49, especially for birth orders 2 to 6. In 1989, Rift Valley province had PPRs which were lower than those of 1979 for women aged 20-39 years, but the differences between the two censuses were less than 5% in most cases (see Table 4.7G).

4.7.9 Western Province

Further reference to Table 4.7H shows that the 1999 PPRs for Western province were consistently lower than the 1989 ones for all age groups and for all birth orders. Women aged 20-39 years exhibited the greatest differences between the two censuses. Differences of about 10% were noted for women aged 20-24 with birth order 4 and women aged 25-29 with birth orders 4 and 5 and women aged 30-34 with birth orders 6 and 7 and lastly those aged 35-39 with birth orders 7 to 9. The older women, in particular those aged 40—49, showed the least differences in PPRs especially for birth order below 6.

It is further noted that for Western province the 1989 PPRs were lower than those of 1979 at all birth orders and for all age groups. The drop was, however, very slight: less than 1 % for women

Table 4.7G Parity Progression Ratios, Rift Valley Province

Age Group	Year	2+/1 +	3+/2+	4+/3+	5+/4+	6+/5+	7+/6+	8+/7+	9+/8+	10+/9+
20-24	1979	0.7299	0.5984	0.5061	0.4669					
	1989	0.6820	0.5396	0.4500	0.4292					
	1999	0.6116	0.4741	0.3842	0.3164					
25-29	1979	0.9194	0.8551	0.7606	0.6530	0.5689	0.5077			
	1989	0.9063	0.8292	0.7278	0.6094	0.5242	0.4826			
	1999	0.8466	0.7354	0.6316	0.5292	0.4632	0.4193			
30-34	1979	0.9624	0.9392	0.9017	0.8480	0.7761	0.6894			
	1989	0.9610	0.9337	0.8930	0.8277	0.7480	0.6531			
	1999	0.9416	0.8822	0.8154	0.7369	0.6560	0.5796			
35-39	1979	0.9713	0.9547	0.9346	0.9036	0.8662	0.8082	0.7483	0.6791	0.6173
	1989	0.9745	0.9582	0.9345	0.9015	0.8571	0.8005	0.7311	0.6487	0.5935
	1999	0.9684	0.9395	0.8992	0.8473	0.7891	0.7287	0.6630	0.5995	0.5537
40-44	1979	0.9715	0.9580	0.9430	0.9181	0.7891	0.8542	0.8110	0.7587	0.7080
	1989	0.9773	0.9644	0.9497	0.9268	0.8937	0.8583	0.8080	0.7507	0.6960
	1999	0.9759	0.9591	0.9320	0.9005	0.8979	0.8137	0.7597	0.6905	0.6465
45-49	1979	0.9660	0.9566	0.9403	0.9222	0.8613	0.8606	0.8208	0.7783	0.7281
	1989	0.9749	0.9656	0.9532	0.9333	0.8935	0.8726	0.8341	0.7792	0.7337
	1999	0.9784	0.9656	0.9478	0.9209	0.9059	0.8465	0.7963	0.7379	0.6828

Table 4.7H Parity Progression Ratios, Western Province

Age Group	Year	2+/1 +	3+/24	4+/3+	5+/4+	6+/5+	7+/6+	8+/7+	9+/8+	10+/9+
20-24	1979	0.7263	0.5933	0.4951						
	1989	0.7042	0.5715	0.4411						
	1999	0.6367	0.4845	0.3729						
25-29	1979	0.9236	0.8785	0.7918	0.6608	0.5580				
	1989	0.9168	0.8590	0.7581	0.6391	0.5424				
	1999	0.8684	0.7665	0.6573	0.5457	0.4634				
30-34	1979	0.9654	0.9554	0.9364	0.8932	0.8227	0.7252			
	1989	0.9612	0.9467	0.9186	0.8637	0.7837	0.6852			
	1999	0.9505	0.9135	0.8578	0.7779	0.6857	0.5891			
35-39	1979	0.9752	0.9693	0.9610	0.9417	0.9171	0.8692	0.8016	0.7343	0.6583
	1989	0.9707	0.9633	0.9512	0.9321	0.8957	0.8390	0.7754	0.6892	0.6192
	1999	0.9673	0.9523	0.9298	0.8859	0.8280	0.7560	0.6792	0.5978	0.5320
40-44	1979	0.9776	0.9753	0.9682	0.9545	0.9396	0.9125	0.8800	0.8211	0.7531
	1989	0.9765	0.9704	0.9600	0.9501	0.9306	0.8983	0.8642	0.8015	0.7396
	1999	0.9694	0.9617	0.9515	0.9296	0.8992	0.8501	0.7927	0.7233	0.6625
45-49	1979	0.9758	0.9744	0.9691	0.9593	0.9450	0.9198	0.8862	0.8404	0.7825
	1989	0.9788	0.9729	0.9647	0.9531	0.9373	0.9094	0.8791	0.8337	0.7797
	1999	0.9735	0.9651	0.9581	0.9451	0.9217	0.8867	0.8386	0.7821	0.7213

above 40 years and about 59% for women aged 25-34 years, especially for higher parities. It is thus concluded that between 1989 and 1999 the women most responsible for the fertility fall in the province were those aged 20-34 years.

4.8 Parity Progression Ratios by Place of Residence

The analysis of fertility of PPRs by place of residence (urban and rural areas) is shown in Table 4.8.

4.8.1 Urban Areas

The PPRs of urban women in 1999 were remarkably lower than those of previous censuses only for women aged 20-44 years and for all birth orders except parities 1 and 2 reported by women aged 45-49 years for which the 1999 PPRs were equal to those of 1989. The drop was greater among women aged 20-39 years, especially for birth orders 3 up to 7. Moderate changes also affected

older women aged 40-49 years with parities 5 to 8. It is also evident that the least changes also affected women aged 40—49 years with births less than 3.

Reference to the changes between 1979 and 1989 also reveals that the PPRs of urban women in 1989 showed a fall on those of 1979 for all age groups albeit to a lesser degree for women above 45 years. The drop was greater for women aged 20-34 and for all birth orders, whereas for women aged 35-39, the drop was greater for women of middle birth orders parity 3 to 6. It is concluded that for urban areas, women aged 20-39 years contributed more to fertility decline between 1989 and 1999.

4.8.2 Rural Areas

In rural areas the PPRs for women in 1999 were lower than in 1989 only for those aged 20-39 years and for all parities. However, for the older women aged 40-49 years there were no changes up to parity 4 before the 1999 PPRs became lower again than those of 1989 for higher birth orders above 4. It is thus concluded that in rural areas the younger women aged 20-34, especially those with parities 3 to 6, contributed more to fertility decline between 1989 and 1999. This trend was slightly different from that of 1979-89. During this decade the PPRs dropped for women aged 30-34 at all birth orders for women aged 35-39 at parity above 5 and for women aged 40-44 at parity 6 and above.

Table 4.8 Parity Progression Ratios for Women Aged 20-49 by Type of Residence, 1979-99

Urban Age Group	Year	2+/1 +	3+/2+	4+/3+	5+/4+	6+/5+	7+/8+	8+/7+	9+/8+	10+/9+
20-24	1979	0.6481	0.5513	0.4838	0.4486					
	1989	0.5776	0.4815	0.4415	0.4475					
	1999	0.4982	0.4457	0.3652	0.3035					
25-29	1979	0.8591	0.7843	0.7037	0.6138	0.5523	0.5030			
	1989	0.7962	0.6978	0.6236	0.5521	0.5260	0.5104			
	1999	0.6852	0.5688	0.5324	0.4960	0.4512	0.4127			
30-34	1979	0.9254	0.8782	0.8457	0.7920	0.7436	0.6700			
	1989	0.9009	0.8329	0.7708	0.7097	0.6681	0.6067			
	1999	0.8458	0.7155	0.6531	0.6182	0.6118	0.5723			
35-39	1979	0.9426	0.9046	0.8812	0.8609	0.8337	0.7840	0.7263	0.6718	0.6190
	1989	0.9333	0.8880	0.8413	0.7883	0.7572	0.7158	0.6826	0.6279	0.6020
	1999	0.9114	0.8263	0.7503	0.6973	0.6787	0.6557	0.6319	0.5812	0.5443
40-44	1979	0.9354	0.9131	0.8941	0.8795	0.8679	0.8287	0.7824	0.7411	0.6845
	1989	0.9429	0.9079	0.8765	0.8437	0.8119	0.7750	0.7484	0.6994	0.6604
	1999	0.9320	0.8766	0.8176	0.7629	0.7381	0.7106	0.6841	0.6496	0.6240
45-49	1979	0.9347	0.9176	0.8957	0.8827	0.8663	0.8404	0.8020	0.7588	0.7112
	1989	0.9426	0.9068	0.8882	0.8659	0.8465	0.8135	0.7800	0.7420	0.7047
	1999	0.9413	0.8959	0.8537	0.8045	0.7796	0.7465	0.7163	0.6787	0.6494

Rural Age Group	Year	2+/1 +	3+/2+	4+/3+	5+/4+	6+/5+	7+/6+	8+/7+	9+/8+	10+/9+
20-24	1979	0.7179	0.5905	0.5040	0.4694					
	1989	0.6798	0.5429	0.4568	0.4447					
	1999	0.6100	0.4855	0.4000	0.3364					
25-29	1979	0.9220	0.8641	0.7702	0.6572	0.5674	0.5119			
	1989	0.9101	0.8356	0.7224	0.6079	0.5295	0.4913			
	1999	0.8487	0.7337	0.6370	0.5447	0.4827	0.4353			
30-34	1979	0.9633	0.9473	0.9177	0.8660	0.7899	0.7040			
	1989	0.9624	0.9407	0.8986	0.8313	0.7453	0.6537			
	1999	0.9432	0.8848	0.8114	0.7365	0.6685	0.5970			
35-39	1979	0.9712	0.9618	0.9475	0.9214	0.8835	0.8250	0.7563	0.6820	0.6145
	1989	0.9731	0.9625	0.9417	0.9108	0.8640	0.7998	0.7292	0.6505	0.5943
	1999	0.9677	0.9421	0.8965	0.8394	0.7848	0.7283	0.6694	0.6075	0.5662
40-44	1979	0.9710	0.9646	0.9535	0.9349	0.9085	0.8710	0.8209	0.7615	0.6963
	1989	0.9750	0.9671	0.9536	0.9355	0.9067	0.8671	0.8152	0.7517	0.6926
	1999	0.9726	0.9595	0.9363	0.9003	0.8586	0.8126	0.7513	0.7007	0.6538
45-49	1979	0.9682	0.9627	0.9526	0.9363	0.9120	0.8791	0.8362	0.7842	0.7265
	1989	0.9748	0.9687	0.9562	0.9417	0.9159	0.8814	0.8412	0.7820	0.7294
	1999	0.9749	0.9654	0.9498	0.9241	0.8900	0.8478	0.7991	0.7417	0.6888

In conclusion, Table 4.8 clearly shows that fertility was generally lower in urban areas than in rural areas because the PPRs in urban areas were significantly lower than those of rural areas.

4.9 Parity Progression Ratios by Educational Attainment

Parity progression ratios by educational attainment are shown in Table 4.9 and illustrated by Figures 4.3 to 4.8. Data for 1969 have been excluded though such information was available. This is done to reduce the mass of data in the tables.

4.9.1 No Education

It is observed from Table 4.9 that 1999 PPRs for women aged 20-29 years were lower than the 1989 ones for all parities. For women aged 30-34 years the 1999 PPRs were also lower than those of 1989 but only for parities below 7 and were higher than the 1989 PPRs for higher birth orders exceeding 7 (see Figures 4.3 and 4.4). It is further observed that for women aged 35-39 years in 1999, their PPRs were also lower than the 1989 ones for all parities. But the older women aged 40-49 years showed no change in PPRs, especially for birth orders 2 and 3. These women, however, exhibited lower PPRs in 1999 than those of 1989 for higher parities above 6.

It is, therefore, concluded that among women with no education, it was the younger women 20-24 with birth order 2 to 5 and those aged 25-29 with parities 2 to 6 that largely contributed to fertility drop between 1989 and 1999. Their previous role in fertility decline between 1979 and 1989 was, however, marginal. The PPRs for women 20-39 with 3 or more children dropped marginally, while the older women had their fertility level remain more or less the same. In 1999, the fertility of older women also dropped marginally.

4.9.2 Primary Education

The 1999 PPRs for women with primary level of education were lower than those of 1989 only for women aged 20-24 and 25-29 and for all parities. However, 1999 PPRs for older women of age groups 35-39 and 40-44 were lower than those of 1989 for all parities except parity 2, and for those aged 45-49 years the 1999 PPRs were lower except for birth orders 2 and 3. It is further noted that the younger women of age groups 20-24, 25-29 and 30-34, especially those with parities 3 to 5, contributed significantly to fertility decline between 1989 and 1999. The older women contributed marginally, especially those with higher birth orders 6 to 7.

Reference to the 1989 PPRs shows that they remained well below the 1979 ones for women under 45 but more or less the same for women 45-49 (see Table 4.9). In almost all cases, the drop in PPRs increased with higher birth orders.

4.9.3 Secondary and Above Education

The 1999 PPRs show an irregular pattern when compared with those of the earlier censuses. This is also observed when the 1989 PPRs are compared with those of 1979 as depicted in Table 4.9. This irregularity is partly attributed to the low number of women in this category (RoK 1996:49). Despite this limitation, it is seen that for the younger women with parity less than 3 the PPRs have been steadily declining but rising for the older women above 40 years.

Table 4.9 Parity Progression Ratios for Women Aged 15-49 Years by Educational Attainment, 1979-99**None**

Age group	Year	2+/1+	3+/2+	4+/3+	5+/4+	6+/5	7+/6+	8+/7+
20-24	1979	0.7567	0.6337	0.5419	0.4983			
	1989	0.7616	0.6329	0.5354	0.5050			
	1999	0.7035	0.5597	0.4519	0.3791			
25-29	1979	0.9158	0.8599	0.7781	0.6835	0.6032	0.5435	
	1989	0.9252	0.8664	0.7756	0.6711	0.5864	0.5310	
	1999	0.9008	0.8108	0.7013	0.5946	0.5200	0.4739	
30-34	1979	0.9562	0.9394	0.9098	0.8626	0.7992	0.7231	0.6534
	1989	0.9595	0.9399	0.9040	0.8516	0.7762	0.6889	0.4246
	1999	0.9551	0.9219	0.8655	0.7926	0.7130	0.6359	0.5701
35-39	1979	0.9660	0.9558	0.9404	0.9142	0.8775	0.8229	0.7575
	1989	0.9683	0.9575	0.9371	0.9117	0.8698	0.8125	0.7457
	1999	0.9682	0.9515	0.9234	0.8798	0.8235	0.7614	0.6939
40-44	1979	0.9654	0.9590	0.9469	0.9269	0.9009	0.8630	0.8146
	1989	0.9706	0.9622	0.9479	0.9313	0.9039	0.8655	0.8169
	1999	0.9702	0.9581	0.9422	0.9164	0.8787	0.8317	0.7731
45-49	1979	0.9634	0.9584	0.9476	0.9300	0.9046	0.8717	0.8291
	1989	0.9709	0.9644	0.9514	0.9361	0.9120	0.8776	0.8384
	1999	0.9716	0.9615	0.9477	0.9284	0.8962	0.8573	0.8070

Primary

Age group	Year	2+/1+	3+/2+	4+/3+	5+/4+	6+/5	7+/6+	8+/7+
20-24	1979	0.7173	0.5697	0.4690	0.4166			
	1989	0.6819	0.5254	0.4303	0.4116			
	1999	0.613	0.4708	0.3887	0.3231			
25-29	1979	0.9282	0.8717	0.7676	0.6315	0.5258	0.4655	
	1989	0.9155	0.8396	0.7168	0.5861	0.4999	0.4625	
	1999	0.8579	0.7377	0.6320	0.5343	0.4707	0.4199	
30-34	1979	0.9676	0.9502	0.9223	0.8636	0.7693	0.6031	0.5730
	1989	0.9594	0.9378	0.9009	0.8282	0.7314	0.6280	0.4055
	1999	0.9443	0.8925	0.8173	0.7363	0.6634	0.5862	0.5302
35-39	1979	0.9759	0.9661	0.9513	0.9262	0.8872	0.8239	0.7465
	1989	0.9712	0.9600	0.9394	0.9077	0.8580	0.7856	0.7091
	1999	0.9646	0.9404	0.9011	0.8418	0.7823	0.7220	0.6621
40-44	1979	0.9768	0.9704	0.9601	0.9467	0.9243	0.8866	0.8301
	1989	0.9758	0.9675	0.9528	0.9326	0.9025	0.8595	0.8048
	1999	0.9694	0.9558	0.9344	0.8988	0.8530	0.8039	0.7541
45-49	1979	0.9760	0.9680	0.9570	0.9460	0.9280	0.9200	0.8550
	1989	0.9770	0.9680	0.9570	0.9430	0.9150	0.8820	0.8380
	1999	0.9736	0.9628	0.9467	0.9208	0.8865	0.8389	0.7905

Secondary plus

Age group	Year	2+/1 +	3+/2+	4+/3+	5+/4+	6+/5	7+/6+	8+/1+
20-24	1979	0.5036	0.4064	0.3659	0.3905			
	1989	0.5072	0.4120	0.3816	0.4252			
	1999	0.4487	0.4418	0.3565	0.3065			
25-29	1979	0.8072	0.6889	0.5714	0.4775	0.4385	0.4342	
	1989	0.7906	0.6724	0.5576	0.4686	0.4446	0.4622	
	1999	0.6735	0.5398	0.5032	0.4793	0.4511	0.4179	0.4000
30-34	1979	0.9088	0.8120	0.7501	0.6592	0.6058	0.5540	0.5429
	1989	0.9135	0.8422	0.7513	0.6478	0.5734	0.5039	0.3662
	1999	0.8634	0.7239	0.6398	0.5876	0.5758	0.5491	0.5234
35-39	1979	0.9310	0.8068	0.7705	0.7612	0.7557	0.6826	0.6728
	1989	0.9453	0.8890	0.8308	0.7394	0.6850	0.6271	0.5951
	1999	0.9319	0.8524	0.7562	0.6821	0.6517	0.6267	0.6076
40-44	1979	0.9301	0.8199	0.7853	0.8024	0.7974	0.7584	0.7488
	1989	0.9498	0.8875	0.8515	0.7916	0.7417	0.7088	0.6825
	1999	0.9498	0.8991	0.8265	0.7470	0.7109	0.6837	0.6686
45-49	1979	0.9206	0.8085	0.7395	0.7637	0.8172	0.8173	0.8086
	1989	0.9417	0.8650	0.8371	0.8155	0.7833	0.7408	0.7284
	1999	0.9530	0.9092	0.8588	0.7789	0.7406	0.7124	0.6886

Figure 4.3 Incomplete PPRs for Women Aged 20-24 with No Education, 1969-99 Censuses

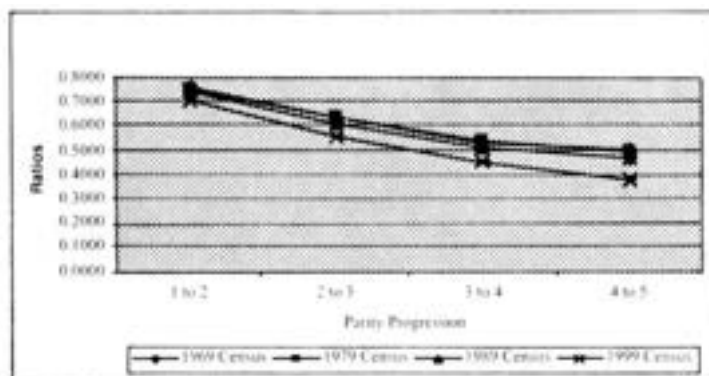


Figure 4.4 Incomplete PPRs for Women Aged 25-29 with No Education, 1969-99 Censuses

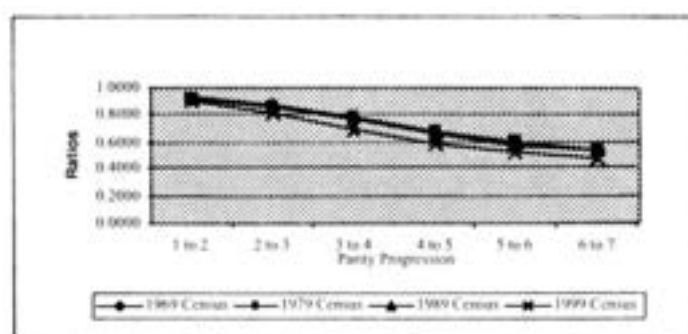


Figure 4.5 Incomplete PPRs for Women Aged 30-34 with No Education, 1969-99 Censuses

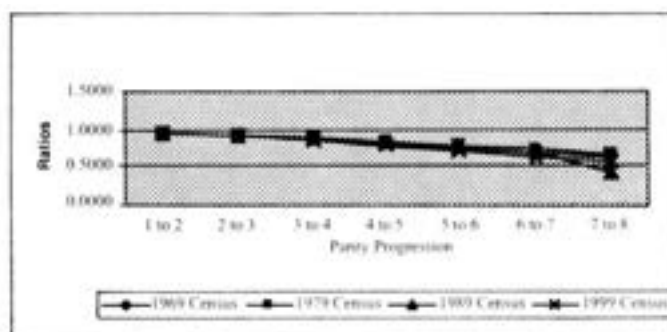


Figure 4.6 Incomplete PPRs for Women Aged 35-39 with No Education, 1969-99 Censuses

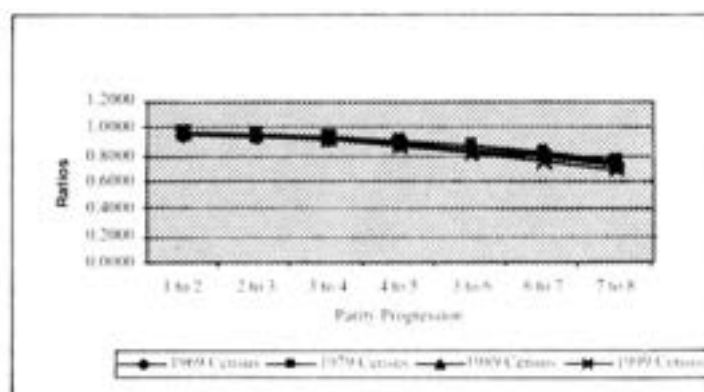


Figure 4.7 Incomplete PPRs for Women Aged 40-44 with No Education, 1969-99 Censuses

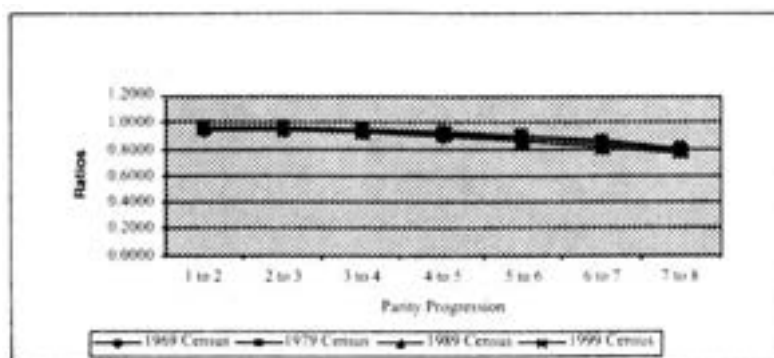
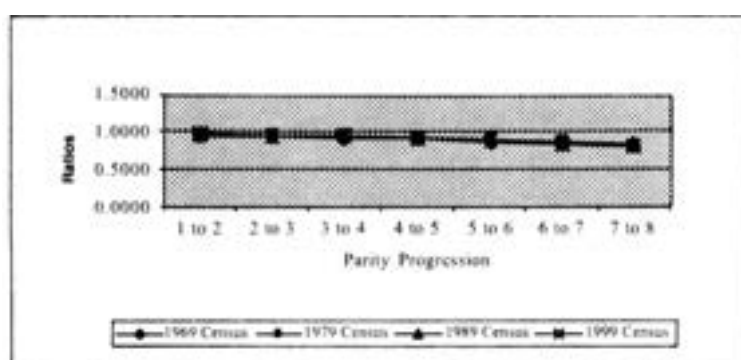


Figure 4.8 Incomplete PPRs for Women Aged 45-49 with No Education, 1969-99 Censuses



4.10 Parity Progression Ratios by Marital Status

Reference to Table 4.10 shows the incomplete parity progression ratios by marital status.

4.10.1 Single

Reference to Table 4.10 shows that the 1999 PPRs for the age group 20-24 increased up to parity 3 before falling with higher parities. This trend was unlike the trend in 1989 where PPRs presented rather unusual findings because the PPRs increased rather than decreased with higher parities. Further analysis shows an irregular trend with the age group 25-29, while the age group 30-34 in 1999 had its PPRs lower than those of 1989 up to parity 5 before starting to increase with higher birth orders. For the age group 35-39 the 1999 PPRs were lower than the 1989 ones up to parity 6 and were the same for parity 7 and then became lower again for higher parities.

With the exception of parity 9, the 1999 PPRs for the age group 40-44 were lower than those of 1989 for the other parities, and for the age group 45-49 the 1999 PPRs were lower than the 1989 ones for all parities. In summary, it is evident that among single women, those aged 30-39 contributed more to fertility drops, especially for birth orders 5 or less. It is further observed that the 1989 PPRs fell below those of 1979 for women aged 25-44, although the gap was much wider for women aged 30-39 years.

4.10.2 Married

The 1999 PPRs for married women were consistently lower than those of 1989 for the age groups 20-24, 25-29 and 35-39 and for all parities except those above 8. For the age groups 40-44 and

45-49, the 1999 PPRs showed no change from those of 1989 for parities 4 or less but became lower for all the higher birth orders. It is also seen that the gaps between 1999 and 1989 were much wider for women aged 20-39 but became narrower with increasing age of women. This indicates that women aged 20-39 contributed more to fertility fall among the married. Comparison between 1979 and 1989 shows almost a similar pattern. The gap between 1979 and 1989 in PPRs increased with birth order for each age group.

4.10.3 Widowed

It is evident that the 1999 PPRs for the widowed were very similar to those of the married women in many aspects. It is also noted that the PPRs were decreasing with higher birth orders in all age groups. Further analysis shows that the women aged 20-39 contributed much to fertility fall, especially within parities 3 to 5. On the other hand, the older women 40-45 years showed very little change, especially for parities 4 or less. Comparison between 1979 and 1989 also reflects similar features. The gaps between the PPRs for 1979 and 1989 were apparently larger for the widowed, especially at birth order 3 and above.

4.10.4 Divorced/Separated

The PPRs for 1999 were generally below those of 1989 and those of 1989 were also generally below those of 1979. For the two intercensal periods the gaps in PPRs tended to decrease with increasing age of women from age 25 and above. It is also noted that PPRs dropped with increasing birth order for nearly all age groups.

4.11 Summary

The evidence presented by the analysis of differences in PPRs among different population sub-groups clearly shows that fertility has been falling since 1979 among most population groups, especially the younger and middle age groups and for lower and middle parities. The older women above 45 years have shown a marginal drop in fertility.

Table 4.10 Parity Progression Ratios for Women Aged 20-49 by Marital Status, 1979-99 Censuses

Single

Age Group	YEAR	2+/1+	3+/2+	4+/3+	5+/4+	6-1/5	7+/6+	8+/7+	9+/8+	10+/9+
20-24	1979	0.4287	0.4066	0.4756	0.5914					
	1989	0.3914	0.3581	0.4119	0.5117					
	1999	0.4062	0.4833	0.3271	0.2789					
25-29	1979	0.7226	0.6524	0.5777	0.5056	0.4810	0.4908			
	1989	0.6611	0.5830	0.5292	0.4854	0.5144	0.5514			
	1999	0.5607	0.5328	0.5300	0.5075	0.4642	0.4382			
30-34	1979	0.8581	0.8147	0.7689	0.7068	0.6683	0.6179	0.5984		
	1989	0.8157	0.7543	0.7058	0.6512	0.6080	0.5453	0.3794		
	1999	0.7188	0.6438	0.6189	0.6113	0.6279	0.5803	0.5269		
35-39	1979	0.8837	0.8696	0.8465	0.7928	0.7669	0.7199	0.6764	0.6227	0.6024
	1989	0.8807	0.8356	0.7858	0.7513	0.7159	0.6667	0.6364	0.6010	0.6080
	1999	0.8109	0.7288	0.7020	0.6823	0.6788	0.6783	0.6271	0.6006	0.5378
40-44	1979	0.8853	0.8832	0.8812	0.8482	0.8258	0.7943	0.7422	0.6906	0.6807
	1989	0.9061	0.8792	0.8436	0.8223	0.7868	0.7497	0.7096	0.6674	0.6366
	1999	0.8535	0.7897	0.7637	0.7414	0.7294	0.7095	0.6915	0.6791	0.5920
45-49	1979	0.8927	0.8813	0.8800	0.8568	0.8254	0.7836	0.7522	0.7318	0.6929
	1989	0.9155	0.9064	0.8733	0.8617	0.8175	0.7822	0.7551	0.7060	0.6681
	1999	0.8809	0.8435	0.8044	0.7779	0.7554	0.7327	0.7059	0.6751	0.6336

Table 4.10 Parity Progression Ratios for Women Aged 20-49 by Marital Status, 1979-99 Censuses**Married**

Age Group	YEAR	2+/1 +	3+/2+	4+/3+	5+/4+	6+/5	7+/6+	8+/7+	9+/8+	10+/9+
20-24	1979	0.7456	0.5997	0.5021	0.4582					
	1989	0.7237	0.5557	0.4580	0.4387					
	1999	0.6340	0.4778	0.4050	0.3370					
25-29	1979	0.9251	0.8631	0.7699	0.6571	0.5679	0.5104			
	1989	0.9161	0.8334	0.7209	0.6074	0.5301	0.4911			
	1999	0.8474	0.7192	0.6284	0.5405	0.4792	0.4302			
30-34	1979	0.9635	0.9438	0.9155	0.8645	0.7908	0.7046	0.6288		
	1989	0.9638	0.9360	0.8916	0.8256	0.7440	0.6539	0.4145		
	1999	0.9438	0.8694	0.7976	0.7281	0.6653	0.5957	0.5409		
35-39	1979	0.9719	0.9590	0.9445	0.9210	0.8850	0.8287	0.7591	0.6853	0.6165
	1989	0.9738	0.9598	0.9374	0.9047	0.8610	0.7988	0.7306	0.6514	0.5961
	1999	0.9698	0.9367	0.8851	0.8296	0.7796	0.7254	0.6688	0.6059	0.5659
40-44	1979	0.9718	0.9634	0.9521	0.9355	0.9115	0.8750	0.8252	0.7666	0.7006
	1989	0.9762	0.9660	0.9519	0.9335	0.9057	0.8675	0.8179	0.7545	0.6953
	1999	0.9745	0.9574	0.9289	0.8914	0.8528	0.8092	0.7606	0.7002	0.6554
45-49	1979	0.9700	0.9627	0.9524	0.9379	0.9157	0.8843	0.8423	0.7899	0.7322
	1989	0.9760	0.9674	0.9555	0.9416	0.9180	0.8849	0.8447	0.7869	0.7345
	1999	0.9765	0.9636	0.9461	0.9189	0.8872	0.8461	0.7995	0.7428	0.6915

Widowed

Age Group	YEAR	2+/1 +	3+/2+	4+/3+	5+/4+	6+/5	7+/6+	8+/7+	9+/8+	10+/9+
20-24	1979	0.8027	0.6974	0.6212	0.6057					
	1989	0.8099	0.6521	0.5413	0.5819					
	1999	0.7405	0.5668	0.4728	0.3971					
25-29	1979	0.9312	0.8779	0.7840	0.6913	0.6255	0.5773			
	1989	0.9362	0.8636	0.7476	0.6460	0.5853	0.5299			
	1999	0.8925	0.7661	0.6663	0.5732	0.5199	0.4926			
30-34	1979	0.9582	0.9423	0.9050	0.8464	0.7759	0.6375			
	1989	0.9644	0.9359	0.8903	0.8140	0.7357	0.6501	0.4327		
	1999	0.9502	0.8851	0.8099	0.7329	0.6649	0.6023	0.5554		
35-39	1979	0.9659	0.9512	0.9346	0.8989	0.8500	0.7857	0.7231	0.6582	0.6056
	1989	0.9693	0.9518	0.9244	0.8851	0.8304	0.7684	0.6990	0.6354	0.5796
	1999	0.968	0.9318	0.8837	0.8190	0.7650	0.7097	0.6613	0.6065	0.5566
40-14	1979	0.9609	0.9521	0.9355	0.9101	0.8794	0.8332	0.7783	0.7104	0.6559
	1989	0.9700	0.9569	0.9385	0.9112	0.8760	0.8283	0.7733	0.7054	0.6564
	1999	0.9697	0.9498	0.9235	0.8820	0.8404	0.7875	0.7285	0.6776	0.6321
45-49	1979	0.9583	0.9532	0.9373	0.9154	0.8840	0.8466	0.7978	0.7471	0.6903
	1989	0.9689	0.9569	0.9440	0.9206	0.8878	0.8438	0.8018	0.7412	0.6855
	1999	0.9715	0.9562	0.9380	0.9080	0.8705	0.8255	0.771 1	0.7133	0.6595

Divorced/Separated

Age Group	YEAR	2+/1 +	3+/2+	4+/3+	5+/4+	6+/5	7+/6+	8+/7+	9+/8+	10+/9+
20-24	1979	0.6883	0.5351	0.4615	0.4291					
	1989	0.7039	0.5025	0.4278	0.4355					
	1999	0.6023	0.4237	0.3876	0.3474					
25-29	1979	0.8725	0.7971	0.6842	0.5823	0.5058	0.4798			
	1989	0.8754	0.7492	0.6186	0.5173	0.4752	0.4898			
	1999	0.8090	0.6299	0.5432	0.4861	0.4492	0.4323			
30-34	1979	0.9183	0.8871	0.8362	0.7663	0.6865	0.6041	0.5496		
	1989	0.9159	0.8690	0.7967	0.7154	0.6306	0.5587	0.3666		
	1999	0.8992	0.7829	0.6908	0.6226	0.5891	0.5519	0.5282		
35-39	1979	0.9260	0.9124	0.8879	0.8472	0.8029	0.7199	0.6621	0.5922	0.5674
	1989	0.9286	0.9024	0.8571	0.8060	0.7463	0.6836	0.6233	0.5892	0.5487
	1999	0.9279	0.8586	0.7854	0.7174	0.6697	0.6330	0.6092	0.5790	0.5425
40-44	1979	0.9184	0.9124	0.8985	0.8705	0.8339	0.7763	0.7336	0.6829	0.6299
	1989	0.9302	0.9131	0.8884	0.8543	0.8173	0.7608	0.7037	0.6627	0.6217
	1999	0.9256	0.8877	0.8434	0.7921	0.7441	0.7172	0.6768	0.6380	0.6117
45-49	1979	0.9115	0.9128	0.8987	0.8790	0.8496	0.8104	0.7642	0.7242	0.6674
	1989	0.9250	0.9131	0.8958	0.8687	0.8344	0.7849	0.7490	0.6801	0.6455
	1999	0.9328	0.9083	0.8714	0.8265	0.7828	0.7466	0.7039	0.6691	0.6210

Chapter 5

Nuptiality Levels and Trends

Nuptiality refers to marriage as a population phenomenon, including the rate at which it occurs, the characteristics of persons united in marriage, and the dissolution of such unions through divorce, separation, widowhood and anulment (Haupt and Kane 1998:33). The institution of marriage is, therefore, the cornerstone of human population growth.

The age pattern of the population by marital status is determined by several factors. The United Nations Economic Commission for Africa (UNECA1983) advises that nuptiality reflects the interplay between a myriad of biological, social, economic, legal, cultural and religious factors. Moreover, nuptial patterns have an impact on both fertility and mortality and, hence, constitute important demographic phenomena. It is further noted that marital characteristics of any society are dynamic and tend to vary in a spatio-temporal context.

In Kenya, as in many other developing nations, the collection, processing and interpretation of nuptiality data are influenced by problems of definition and categorisation. The utility of such data in demographic analyses and in socio-economic development planning, therefore, depends on the level of data accuracy and reliability.

Since the 1948 population census, attempts have been made to collect data on nuptiality. The data are collected at the household level and are based on an individual's declaration of marital status without further probing for the legal, religious or customary rules and regulations affecting this status. Conclusively, the data analysed in this chapter are regarded as a pragmatic response to the question on marital status as perceived by the respondents.

5.1 Marital Status by Age and Sex

5.1.1 Proportion Single

The national level of the proportion of single females aged 12 years and above indicates an insignificant intercensal increase between the 1989 and 1999 censuses. The proportion of such single women increased from 37.7% to 38.6% for the two censuses, respectively. Rural-urban analysis indicates a similar trend. In 1999, the proportion of single women age 12 years and above in urban areas was higher: 43.8% compared with 37.3% in rural areas (see Appendix 8).

The provincial analysis also reflects a similar pattern of intercensal change, except for Central and Western provinces, which experienced insignificant negative changes. Between the 1989 and 1999 censuses, slight increases were reported by all other provinces: Nairobi experienced an increase from 46.1% to 46.5%, Coast from 32.9% to 34.6%, Eastern from 30.0% to 36.0%, Nyanza from 31.8% to 34.2% and Rift Valley from 37.4% to 39.2%. The two provinces that experienced a negative change in proportion of single females were Central from 43.8% to 42.0% and Western from 35.7% to 35.5%. The observed negative changes were probably due to changes in other marital conditions as portrayed in Appendix 8.

Kenya 1999 Population and Housing Census

District-level analysis shows some significant pockets of intercensal change: 26 of 70 districts in 1999 had over 40% of their females aged 12 years and above single. The majority of these districts depicted in Table 5.1 are in the high and medium agricultural lands where population pressure is acute. The high proportions of single women in these districts are due to the high enrolment of girls in school.

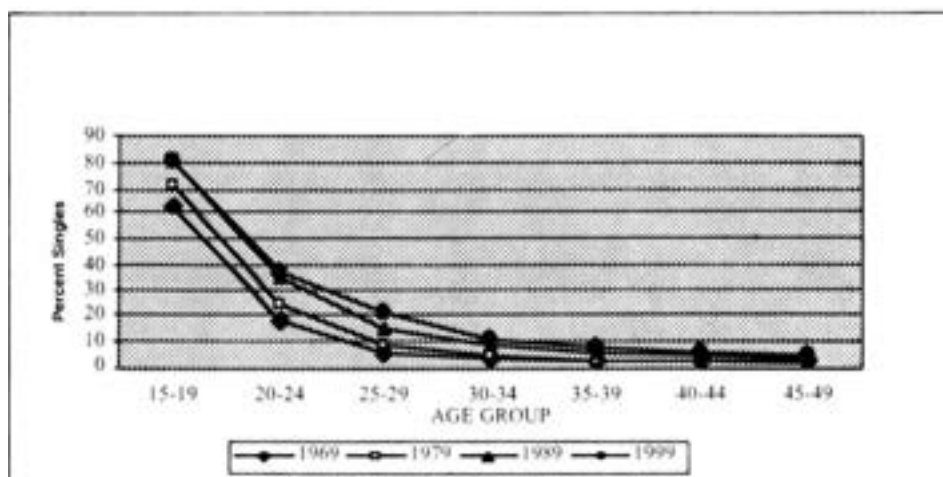
The districts with proportions below the national average (38.6%) were very few indeed. Six out of 70 districts that were in this category included Tana River with 29.6%, Marsabit (29.3%), Homa Bay (26.7%), Migori (27.4%), Suba (27.5%) and Narok (28.7%). All of these districts were characterised by high rates of polygyny and low school enrolment for females. Figure 5.1 shows that the proportions of single females in 1999 were higher than those of previous censuses for all age groups 15-49 years.

A higher proportion of males aged 12 years and above was reported as single at the national level. As in the case of females, an insignificant intercensal increase (1989-99) was observed as 51.4% of males in 1999 reported themselves as single compared with 51.2% in 1989 (see Appendix 9). The proportion of single males was also higher in rural areas (53.1%) than in urban areas (45.8%). This phenomenon is probably due to the fact that males who migrate to cities tend to be adults who are probably married thus lowering the proportion of those who are single in the urban areas (RoK 1996:52).

Table 5.1 Districts Where Over 40% of Women Aged 12 Years and Above are Single, 1999

Province	District	% Single
Nairobi	Nairobi	46.5
	Central	43.0
	Murang'a	41.2
	Nyandarua	41.2
	Nyeri	43.0
	Thika	43.0
Coast	Maragua	40.2
	Taita Taveta	41.2
	Embu	41.8
	Makueni	41.1
	Machakos	41.6
	Mbeere	40.7
Eastern	Meru Central	42.6
	Tharaka	40.9
	Nithi (Meru S.)	40.7
	Gucha (Kisii S.)	41.0
	Kisii Central	41.3
	Nyamira (Kisii N.)	42.7
Nyanza	Keiyo	43.7
	Kericho	40.5
	Koibatek	44.0
	Laikipia	40.6
	Nakuru	41.2
	Nandi	43.0
Rift Valley	Uasin Gishu	43.6
	Buret	41.2

Figure 5.1 Percentage of Single Females, 1969-99 Censuses



Analysis at the provincial level indicates that while most provinces had a slight intercensal increase in the proportions of single males, both Central and Western provinces had lower proportions of single males in 1999 than in 1989. In 1999, Central province had 52.4% of single males compared with 54.9% for 1989 and Western province had 50.9% and 52.1% for the two censuses, respectively.

Further analysis of the proportions of single males aged 12 years and above in 1999 is summarised in Table 5.2. It is observed that 38 out of 70 districts reported proportions of single males above the national average.

These districts exhibited high SMAM as shown in Table 5.4. The table also shows that only a few districts had proportions of single men below the national average, generally below 50%. The provinces not listed had no district in this category. It is evident from Table 5.3 that 15 districts, representing 21.4% of all districts in 1999 (N=70), had low proportions of single males. This situation was presumably attributable to the rise in other marital conditions as summarised in Appendix 9.

Some of these districts also had low SMAM. Figure 5.2 shows that the proportions of single males in 1999 was higher than the proportions of past censuses for age groups 20-39 years and lower than the proportions in 1989 for ages 35-49 years.

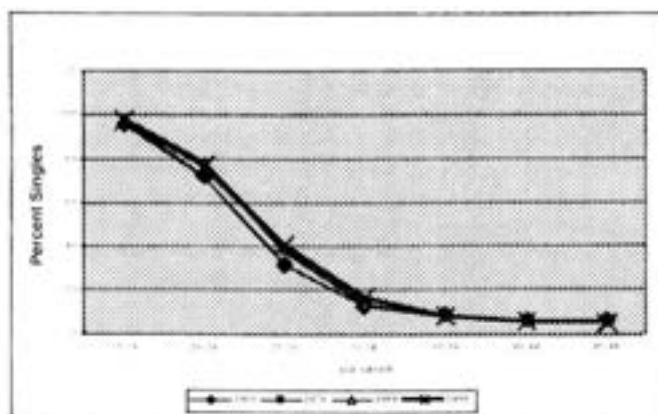
Table 5.2 Districts Where Over 50% of Single Men Aged 12 Years and Above are Single, 1999

Province	District	% Single
Central	Murang'a	56.1
	Nyandarua	54.3
	Nyeri	54.0
Coast	Maragua	55.3
	Kilifi	52.3
	Taita Taveta	55.0
Eastern	Embu	53.7
	Isiolo	52.7
	Kitui	54.5
	Makueni	57.3
	Machakos	56.3
	Marsabit	54.9
	Mbeere	54.0
	Meru Central	52.9
	Moyai	55.7
	Mwingi	54.6
	Tharaka	51.6
North Eastern	Garissa	56.0
	Mandera	55.1
	Wajir	55.2
Nyanza	Gucha (Kisii S.)	54.2
	Kisii Central	53.5
	Nyamira (Kisii N.)	54.1
	Rachuonyo	52.6
	Siaya	52.6
Rift Valley	Baringo	56.2
	Bomet	55.2
	Keiyo	53.1
	Koibatek	55.1
	Laikipia	52.3
	Nandi	53.4
	Samburu	58.1
	Turkana	60.3
	Uasin Gishu	51.9
	Bungoma	51.5
Western	Mt. Elgon	52.6
	Lugari	53.1
	Vihiga	54.0

Table 5.3 Districts Where Below 50% of Men are Single, 1999

Province	District	% Single
Nairobi	Nairobi	44.3
Central	Kiambu	49.9
Coast	Kwale	49.0
	Lamu	48.8
	Mombasa	46.5
Nyanza	Tana River	49.5
	Malindi	49.0
	Homa Bay	48.9
	Kisumu	49.4
	Migori	47.7
	Suba	49.7
Rift Valley	Buret	49.5
Western	Busia	49.2
	Teso	47.5
	Butere/Mumias	47.4

Figure 5.2 Percentage of Single Males, 1969-99 Censuses



5.1.2 Trends in Proportions Single by Age and Sex

The proportions of single females have been rising in all age groups, particularly those aged 15-19, 20-24, 25-29 and 30-34 years. Consequently, there has been a steady rise in SMAM from 18.5 years in 1962, to 19.2 years in 1969, 20.2 years in 1979, 21.6 years in 1989 and 22.3 years in 1999. Table 5.4 summarises the situation. A minimal rise characterised proportions single in all age groups during the intercensal period 1969-79. However, the 1979-89 period also witnessed yet another sharp increase in the proportion of single females in nearly all age groups. This is attributed to the rising age at marriage that affected all age groups. The intercensal period 1989-99 was characterised by a small rise in proportions of single females from 37.7% in 1989 to 38.6% in 1999. For details about trends in proportions single at both provincial and district levels, see Appendices 8 and 9.

Analysis of males shows a less dramatic change in the proportions single in all age groups in the three decades, 1969-99. Unlike the situation among females, there was no major increase in the proportions of single males between 1969 and 1979. However, the period 1979-89 experienced a small increase in the proportions of single males in all age groups. The SMAM during this period also increased marginally from 25.3 years to 26.0 years. This trend seems to have continued during the 1989-99 intercensal period as it exhibited small increases in proportions of single males in all age groups. The SMAM during this period increased marginally from 26.0 years to 26.5 years.

Table 5.4 Percentage Single and SMAM by Sex, 1969-99

Age Group	1969		1979		1989		1999	
	Male	Female	Male	Female	Male	Female	Male	Female
15-19	95.6	63.6	97.4	71.2	97.9	81.2	97.1	81.2
20-24	71.8	18.4	72.0	24.5	79.1	35.3	77.1	38.0
25-29	32.1	6.4	32.1	9.3	38.3	15.8	41.3	21.0
30-34	13.5	3.8	13.1	4.9	14.4	9.0	16.4	11.3
35-39	9.0	3.2	8.5	3.4	8.6	6.3	8.6	8.0
40-44	6.6	2.8	6.2	2.7	6.9	5.1	5.6	5.8
45-49	6.6	2.8	5.2	2.2	6.1	4.1	4.8	4.8
SMAM	25.1	19.2	25.3	20.2	26.0	21.6	26.5	22.3

5.2 Levels and Trends in Singulate Mean Age at Marriage

Singulate mean age at marriage (SMAM) is an estimate of the average number of years lived singly by those who marry before age 50. A high SMAM therefore means a high age at first marriage. For females, a high SMAM reduces lifetime fertility because of the shortened reproductive period.

The 1989 population census estimated the SMAM for females as 21.6 years, whereas that for males was 26.0 years. The 1999 census estimated SMAM for females as 22.3 years, while that for males was 26.5 years. Table 5.5 reveals that SMAM has been rising for both sexes since 1969. Whereas the SMAM for females in 1999 was higher in urban areas, 22.9 years, than in rural areas, 21.9 years, for males there was an insignificant intercensal change as SMAM remained at 26.0 and 26.5 years for the two censuses, respectively.

Table 5.5 Estimates of Singulate Mean Age at Marriage (SMAM) by Province and District, 1989-99

Region	Males (SMAM) 1989	Female (SMAM) 1989	Difference in years	Male (SMAM) 1999	Female (SMAM) 1999	Difference in years
Kenya Total	26.0	21.6	4.4	26.5	22.3	4.2
Kenya Rural	25.9	21.3	4.6	26.5	21.9	4.6
Kenya Urban	26.2	22.1	4.1	26.5	22.9	3.6
Nairobi	26.5	22.5	4.0	26.8	23.5	3.3
CENTRAL	26.6	23.1	3.5	27.5	23.7	3.8
Kiambu	26.5	23.1	3.4	27.3	23.6	3.7
Kirinyaga	26.2	23.1	3.1	27.0	23.8	3.2
Murang'a	26.7	22.8	3.9	28.7	24.2	4.5
Nyandarua	26.2	22.8	3.4	27.1	23.1	4.0
Nyeri	27.4	23.7	3.7	28.3	24.3	4.0
Thika	-	-	-	26.9	23.5	3.4
Maragua	-	-	-	28.2	23.6	4.6
COAST	26.2	20.6	5.6	26.7	21.3	5.4
Kilifi	25.8	19.9	5.9	26.6	20.9	5.7
Kwale	25.5	19.6	5.9	25.9	20.1	5.8
Lamu	25.5	20.5	5.0	26.7	21.6	5.1
Mombasa	26.6	21.5	5.1	26.9	22.3	4.6
Taita Taveta	27.4	23.1	4.3	28.5	23.4	5.1
Tana River	26.0	19.4	6.6	25.7	19.3	6.4
Malindi	-	-	-	26.1	20.6	5.5
EASTERN	26.6	22.4	4.2	27.2	23.1	4.1
Embu	26.6	23.2	3.4	28.0	24.9	3.1
Isiolo	26.9	20.3	6.6	27.5	21.2	6.3
Kitui	26.0	21.8	4.2	26.0	22.2	3.8
Makueni	-	-	-	27.5	23.2	4.3
Machakos	26.7	22.7	4.0	27.5	23.4	4.1
Marsabit	28.4	19.6	8.8	30.0	20.5	9.5
Meru	26.4	22.5	3.9	-	-	-
Mbeere	-	-	-	26.8	23.2	3.6
Meru Central	-	-	-	28.0	24.6	3.4
Moyale	-	-	-	27.3	20.1	7.2
Mwingi	-	-	-	26.3	22.6	3.7
Meru North	-	-	-	25.7	22.0	3.7
Tharaka	-	-	-	25.7	23.1	2.6
Nithi	-	-	-	27.9	24.0	3.9
N/EASTERN	26.4	19.5	6.9	26.5	20.5	6.0

Table 5.5 Estimates of Singulate Mean Age at Marriage (SMAM) by Province and District, 1989-99

Region	Male SMAM 1989	Female SMAM 1989	Difference in years	Male SMAM 1999	Female SMAM 1999	Difference in years
Garissa	26.7	20.0	6.7	26.9	20.8	6.1
Mandera	26.2	19.2	7.0	26.3	20.1	6.2
Wajir	26.3	19.4	6.9	26.3	20.4	5.9
NYANZA	25.1	20.3	4.8	25.4	20.9	4.5
Gucha	-	-	-	25.4	22.2	3.2
Kisii	24.9	21.6	3.3	-	-	-
HomaBay	-	-	-	24.6	18.9	5.7
Kisii Central	-	-	-	25.7	22.5	3.2
Kisumu	25.5	20.1	5.4	25.7	21.3	4.4
Kuria	-	-	-	24.1	19.6	4.5
Migori	-	-	-	24.2	18.9	5.3
N. Kisii	-	-	-	25.8	22.7	3.1
Rachuonyo	-	-	-	25.9	20.0	5.9
Siaya	25.9	20.4	5.5	26.3	20.9	5.4
Suba	-	-	-	24.6	19.0	5.6
Bondo	-	-	-	25.4	20.4	5.0
Nyando	-	-	-	25.7	20.4	5.3
R/VALLEY	25.8	21.1	4.7	26.3	22.1	4.2
Baringo	26.2	21.5	4.7	26.8	22.1	4.7
Bomet	-	-	-	26.2	22.0	4.2
Keiyo	-	-	-	26.1	23.2	2.9
E. Marakwet	25.1	21.3	21.3	-	-	-
Kajiado	26.1	19.8	19.8	26.6	20.9	5.7
Kericho	25.6	21.2	21.2	26.1	22.4	3.7
Koibatek	-	-	-	26.7	23.6	3.1
Laikipia	26.5	22.1	22.1	27.0	22.5	4.5
Marakwet	25.1	21.3	21.3	25.2	21.8	3.4
Nakuru	25.9	21.9	21.9	26.3	22.5	3.8
Nandi	25.9	21.7	21.7	26.5	23.1	3.4
Narok	24.7	18.6	18.6	25.6	19.1	6.5
Samburu	28.9	20.0	20.0	28.7	20.5	8.2
Trans Mara	-	-	-	24.8	19.7	5.1
Trans Nzoia	25.3	21.0	21.0	25.7	21.6	4.1
Turkana	27.8	21.5	21.5	28.6	22.9	5.7
Uasin Gishu	25.9	21.9	21.9	26.5	23.4	3.1
West Pokot	24.9	19.4	19.4	24.8	19.8	5.0
Buret	-	-	-	25.9	22.3	3.6
WESTERN	25.1	20.8	20.8	25.3	21.2	4.1
Bungoma	25.0	20.6	4.4	25.4	21.2	4.2
Busia	24.4	20.1	4.3	24.3	20.1	4.2
Mt. Elgon	-	-	-	24.8	21.0	3.8
Kakamega	25.4	21.2	4.2	25.5	21.5	4.0
Lugari	-	-	-	25.6	21.8	3.8
Teso	-	-	-	24.2	20.3	3.9
Vihiga	-	-	-	27.2	22.7	4.5
B/Mumias	-	-	-	24.3	20.3	4.0

Note: - = not applicable because the district did not exist either in 1989 or 1999.

The 1999 census further indicates that SMAM for females was highest in Central province, with 23.7 years. The next ranked province was Nairobi with 23.5 years followed by Eastern province with 23.1 years. The other provinces had values that ranged between 20.5 years for North Eastern and 23.1 years for Eastern province. The district-level analysis reveals that the top-ranked district with 24.9 years was Embu, while both Homa Bay and Migori districts reported the lowest SMAM with 18.9 years each.

The males aged 12 years and above, on the other hand, had the highest reported SMAM. At the provincial level, Central province ranked top with an SMAM of 27.5 years, while Western province reported the lowest SMAM of 25.3 years. Further analysis shows that Marsabit district reported the highest SMAM with 30 years, while Kuria district in Nyanza province reported the lowest SMAM with 24.1 years. From Table 5.5 the following observations are made. First, the largest differences between male and female SMAM in 1999 was reported by Marsabit district with 9.5 years, followed by Samburu district 8.2 years and Moyale 7.2 years. Other districts with large differences were Tana River with 6.4 years, Isiolo 6.3 years, Narok 6.5 years and all districts in North Eastern province.

Keiyo district with 2.9 years and Tharaka district with 2.6 years reported the smallest differences between male and female SMAM in 1999. Secondly, while the gap for some districts widened between 1989 and 1999, for others it narrowed. It is further observed that there seems to be a strong inverse association between SMAM and polygyny. Generally, most districts which exhibited low SMAM, especially among females, also had higher prevalence of polygyny. For example, women in Homa Bay, Kuria, Migori, Rachuonyo, Suba, Narok, Trans Mara, Kwale, Tana River, Moyale, West Pokot and Busia had very low SMAM of less than 20 years. All these districts reported relatively high proportions of females (above 10%) as in polygamous unions. Most of the districts which had SMAM of over 24 years such as Murang'a, Nyeri, Embu and Meru Central had relatively lower proportions (often less than 3%) of their women in polygamous unions.

Table 5.7 Estimates of SMAM and MAFB and Changes by Region, 1989-99

Province/ District	SMAM (Years)			MAFB (Years)		
	1989	1999	% Change	1989	1999	Change
Kenya	21.6	22.3	3.2	20.0	21.0	5.0
Kenya Rural	21.3	21.9	2.8	19.8	21.4	8.1
Kenya Urban	22.1	22.9	3.6	20.5	22.8	11.2
Nairobi	22.5	23.5	4.4	21.1	22.5	6.6
CENTRAL	23.1	23.7	2.6	20.7	21.7	4.8
Kiambu	23.1	23.6	2.2	20.7	21.9	5.8
Kirinyaga	23.1	23.8	3.0	20.6	21.6	4.9
Murang'a	22.8	24.2	6.1	20.6	21.9	6.3
Nyandarua	22.8	23.1	1.3	20.3	21.1	3.9
Nyeri	23.7	24.3	2.5	20.9	22.1	5.7
Thika	-	23.5	-	-	21.7	-
Maragua	-	23.6	-	-	21.4	-
COAST	20.6	21.3	3.4	19.6	21.0	7.1
Kilifi	19.9	20.9	5.0	19.1	20.7	8.4
Kwale	19.6	20.1	2.6	18.7	20.1	7.5
Lamu	20.5	21.6	5.4	19.7	21.2	7.6
Mombasa	21.5	22.3	3.7	20.1	21.7	8.0
Taita Taveta	23.1	23.4	1.3	20.7	21.4	3.4
Tana River	19.4	19.3	-0.5	19.5	20.4	4.6
Malindi	-	20.6	-	-	20.2	-
EASTERN	22.4	23.1	3.1	20.3	21.1	8.0
Embu	23.2	24.9	7.3	20.8	22.4	7.7
Isiolo	20.3	21.2	4.4	20.1	20.9	4.0
Kitui	21.8	22.2	1.8	19.9	20.4	2.5
Makueni	22.7	23.2	2.2	-	21.1	-
Machakos	22.7	23.4	3.1	20.5	21.0	2.4
Marsabit	19.6	20.5	4.6	20.5	21.1	2.9
Meru	22.5	-	-	20.2	-	-
Mbeere	-	23.2	-	-	21.2	-
Meru Central	-	24.6	-	-	21.9	-
Moyale	-	20.1	-	-	20.7	-
Mwingi	-	22.6	-	-	20.7	-
Meru North	-	22.0	-	-	20.5	-
Tharaka	-	23.1	-	-	22.3	-
Nithi	-	24.0	-	-	21.8	-
N/EASTERN	19.5	20.5	5.1	20.8	21.5	3.4

Note - = district did not exist

percentage change, below 5%. Only Tana River experienced a negative change of -0.5%, unlike Busia which reported no change. It is possible that the district with no change and the one with negative change could be reflecting errors in reporting age distribution by marital status. Generally, districts in Eastern and North Eastern provinces reported higher percentage change, while districts in Western province reflect the lowest changes. It should be recalled that several districts did not have their intercensal change calculated either because the districts did not exist in 1989 or were experiencing boundary changes in 1999.

Table 5.7 Estimates of SMAM and MAFB and Changes by Region, 1989-99

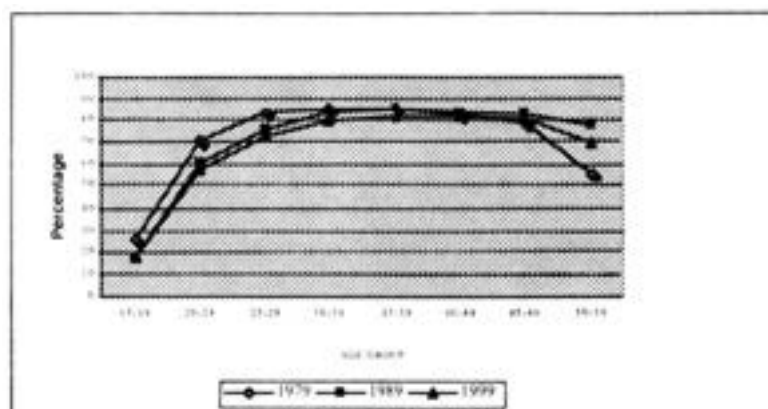
Province/ District	SMAM (Years)			MAFB (Years)		
	1989	1999	% Change	1989	1999	% Change
Gucha	21.6	22.2	2.8	-	20.9	-
Kisii	21.6	-	-	20	-	-
Homa Bay	-	18.9	-	-	18.7	-
Kisii Central	21.6	22.5	4.2	-	21.1	-
Kisumu	20.1	11.3	6.0	18.8	20.1	6.9
Kuria	-	19.6	-	-	20.1	-
Migori	-	18.9	-	-	18.9	-
N.Kisii	21.6	22.7	5.1	-	20.5	-
Rachuonyo	-	20.0	-	-	19.1	-
Siaya	20.4	20.9	2.5	19.1	19.4	1.2
Suba	-	19.0	-	-	18.9	-
Bondo	-	20.4	-	-	18.8	-
Nyando	-	20.4	-	-	19.4	-
R/VALLEY	21.1	22.1	0.0	19.7	20.8	5.6
Baringo	21.5	22.1	2.8	20.5	21.2	3.4
Bomet	-	22.0	-	-	20.3	-
Keiyo	-	23.2	-	-	20.7	-
E. Marakwet	21.3	-	-	20.1	-	-
Kajiado	19.8	20.9	5.6	18.8	20.4	8.5
Kericho	21.2	22.4	5.7	19.8	20.6	4.0
Koibatek	-	23.6	-	-	21.6	-
Laikipia	22.1	22.5	1.8	20.1	20.9	4.0
Marakwet	-	21.8	-	-	20.8	-
Nakuru	21.9	22.5	2.7	19.9	21.1	6.0
Nandi	21.7	23.1	6.5	19.8	20.5	3.5
Narok	18.6	19.1	2.7	18.4	19.2	4.3
Samburu	20.0	20.5	2.5	20.3	20.6	1.5
Trans Mara	-	19.7	-	-	19.4	-
Trans Nzoia	21.0	21.6	2.9	19.6	20.4	4.1
Turkana	21.5	22.9	6.5	21.1	23.0	9.0
Uasin Gishu	21.9	23.4	6.8	19.9	24.1	21.1
West Pokot	19.4	19.8	2.1	19.1	20.2	5.8
Buret	-	22.3	-	-	20.3	-
WESTERN	20.8	21.2	1.9	20.8	20.4	-1.9
Bungoma	20.6	21.2	2.9	20.6	20.6	0.0
Busia	20.1	20.1	0.0	20.1	19.3	-4.0
Mt. Elgon	-	21.0	-	-	20.4	-
Kakamega	21.2	21.5	1.4	21.2	20.6	-2.8
Lugari	-	21.8	-	-	20.8	-
Teso	-	20.3	-	-	19.9	-
Vihiga	-	22.7	-	-	21.4	-
B/Mumias	-	20.3	-	-	19.8	-

Note - = district did not exist

5.3 Proportions Married

The proportion of females aged 12 years and above reported as married in 1999 was lower than in 1989, though the difference was insignificant. In 1999, the proportion of married women was 53.3% compared with 54.7% in 1989 (see Figure 5.3). Among the married females, 44.1% were in monogamous unions. The proportion (54.2%) of married women was also higher in rural areas than in urban areas (49.9%).

Figure 5.3 Percentage of Married Females, 1979-99 Censuses



The provincial trend is similar to the national one. In 1989, the proportions of females aged 12 years and above for provinces were higher than proportions in 1999 in all provinces except in Central province (see Appendix 8). The 1999 census reveals that the proportions of married females were relatively lower in Nairobi province (48.4%) and Central province (49.6%) and highest in Nyanza province (56.4%) followed by Western province (55.6%) and Coast province (55.2%).

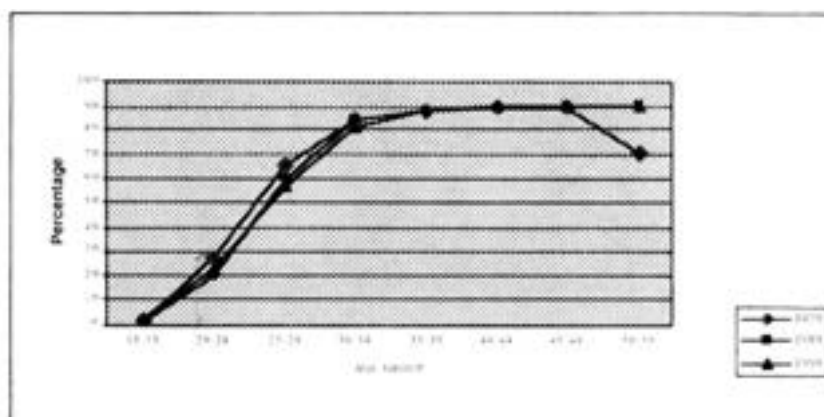
Table 5.8 (left-hand column) shows that in 1999, 12.9% of total districts (N=70) had over 60% of females aged 12 years and over reported as married. These districts had low SMAM and also low female enrolments in school. Furthermore, the districts, which had proportions of married females below 50% constituted 27.1% of total districts in 1999 (N=70). The districts listed in Table 5.8 (right-hand column) had high SMAM and high female enrolments in school. The bulk of the districts in the country, however, reported proportions of married women that ranged between 50 and 60%.

Table 5.8 Proportions of Females Aged 12 Years and Above Married for Sample Districts, 1999

District	Above 60%	District	Below 50%
Tana River	60.9	Kiambu	48.4
Marsabit	60.7	Murang'a	49.6
Homa-Bay	63.3	Nyeri	49.0
Kuria	60.3	Thika	48.8
Migori	63.5	Taita Taveta	48.8
Suba	63.1	Embu	46.6
Narok	64.4	Meru Central	48.6
Trans Mara	62.5	Keiyo	49.4
West Pokot	63.9	Koibatek	49.5

The proportion of males aged 12 years and above reported as married reveals a similar trend to that of married women. The 1999 census shows that the proportion of married men (46.4%) was lower than the 1989 census proportion of 46.8%. This trend is reflected in urban and rural areas. In rural areas the proportion of married men in 1999 was 44.5%, which is lower than 44.9% for the 1989 census. Similarly, the proportions of married males in urban centres were 52.9% and 53.6% for the two censuses, respectively (see Appendix 9). Reference to Figure 5.4 shows that the proportions of married men by age groups in 1999 were consistently lower than the proportions in other previous censuses in the age bracket 25-49 years.

Figure 5.4 Percentage of Married Males, 1979-99 Censuses



Provincial analysis, however, reveals a slightly different trend. Central province in 1999 reported a slight increase in the proportions of married males from 43.1% in 1989 to 45.3% in 1999. Western province also reported an increase from 45.5% in 1989 to 46.2% in 1999. The other provinces reported lower proportions for married males in 1999. The reported intercensal change (1989-1999) was as follows: Nairobi Province from 55.0% to 54.6%; Coast Province from 49.3% to 48.0%; Eastern from 43.7% to 43.1%; North Eastern from 46.4% to 42.5%; Nyanza from 47.6% to 46.6% and Rift valley from 47.3% to 46.1 percent.

Further analysis indicates that no district in the entire country reported the proportions of married males of more than 60%. In fact, only three districts in 1999 had proportions of married males exceeding 50% but below 55%. These were Nairobi with 54.6%; Mombasa 51.7% and Migori 50.5%. Moreover, only Turkana district with 38.5% of married males reported a proportion below 40%. Other districts had proportions of married males ranging between 41.1% for Machakos district and 49.9% for Buret district in Rift Valley province. The observed significant decline in the proportion of married men was due to the significant intercensal increase in the proportions of single males.

5.3.1 Proportions in Polygynous Unions

Several reasons have been adduced for the high prevalence of polygamy in sub-Saharan Africa. These reasons vary from one society to another, but generally include: limited social stratification, patrilineal descent structure, religion, prolonged post-partum sexual abstinence and economics (Adetunji and Moore 1999:91).

In Kenya, the proportion of women in polygamous unions is much lower than in some West African countries such as Togo and Mali where the proportions of adult women aged 15–49 in polygamous unions exceed 50% (Adetunji and Moore 1999:91). The proportion of females aged 12 years and above in polygamous unions increased from 8.5% in 1989 to 9.3% in 1999. The increase, though insignificant, affected more women in rural areas than in urban centres. Rural areas had a higher proportion, 10.4% compared to 4.6% of urban centres.

The provincial trends reflect mixed results. The 1999 census reveals that Nairobi province with 2.7% is the only province that exhibited no intercensal change. Coast province had a lower proportion of 11.4% compared with 13.2% in 1989. Also, Eastern province with 6.4% had a lower proportion in 1999 compared with 6.5% in 1989. All the other provinces reported an insignificant increase during the intercensal period. The highest proportion of 15.1% of females aged 12 years and above in polygamous unions was reported in Nyanza province. The other provinces with high proportions were Western (12.7%). North Eastern (11.5%) Coast (11.4%) and Rift Valley (10.6%).

District-level analysis depicts pockets of high polygamous unions as shown in Table 5.9. It is observed that most of the districts with high proportion of females in polygamy also had a high proportion of their males in polygamy, and some of these districts also had low enrolment of females in school. Evidence from Table 5.9 shows that polygyny is widely practised given that 47.1 % of total districts in 1999 (N=70) had over 10% of females in polygamous unions. Districts which reported over 20% of females in polygamous unions were Homa Bay (22.8%), Kuria (22.2%), Migori (24.8%), Suba (26.4%) and Bondo (20.4%). All were in Nyanza province. Others were Narok (25.1%), Trans Mara (22.7%) and West Pokot (27.1%) in Rift Valley province. West Pokot with 27.1 % was the leading district in polygamy.

Table 5.9 Districts with Over 10% of Females Aged 12 Years and Above in Polygamous Unions

Province/District	%
Coast	
Kilifi	17.3
Kwale	14.0
Tana River	18.4
Malindi	16.4
North Eastern	
Mandera	15.1
Wajir	10.2
Nyanza	
Gucha (Kisii S.)	10.0
Homa-Bay	22.8
Kisumu	14.2
Kuria	22.2
Migori	24.8
Rachuonyo	13.8
Siaya	15.9
Suba	26.4
Nyando	16.9
Bondo	20.4
Rift Valley	
Baringo	16.8
Kajiado	18.8
Marakwet	10.6
Narok	25.1
Samburu	14.5
Trans Mara	22.7
Trans Nzoia	10.2
Turkana	18.2
West Pokot	27.1
Western	
Bungoma	15.6
Busia	16.5
Mt. Elgon	16.9
Kakamega	10.1
Lugari	10.6
Teso	16.9
Butere/Mumias	16.6
Eastern	
Marsabit	11.9

Analysis of polygyny reflects a different scenario at both the national and provincial levels. The intercensal increase in polygyny doubled in a few cases. The proportion of males aged 12 years and above in polygyny in the country increased from 2.8% in 1989 to 5.2% in 1999. The proportion was higher (5.6%) in rural areas than in urban centres (3.7%).

Further provincial analysis reveals that Nyanza province had the highest proportion of polygyny of 8.2%. The other provinces with high proportions were North Eastern (7.3%), Western (6.9%) and Coast (6.1%). The lowest proportions were reported by Central province (1.8%), Nairobi (2.8%) and Eastern (3.8%). Appendix 9 shows the districts in 1999 with more than 10% of males in polygyny. These were Homa Bay (11.9%), Kuria (12.1%), Migori (12.8%), Suba (13.0%) and Bondo (10.6%). All these districts are in Nyanza province. Others were Narok (11.3%), Samburu (11.4%), Trans-Mara (11.5%) and West Pokot (13.4 percent). In 1989, no district reported more than 10% of males in polygyny.

The increase in polygyny is attributed to two factors. One is the fallacious message of zero-grazing, meaning limiting sexual relations to one's married wife(s) only. This campaign is promoted by the anti-HIV/AIDS crusaders. They assume that fidelity is the best protection. Men have, therefore, married more wives to restrict their sexual relations within marriage. The other major cause is levirate marriage, a phenomenon which is common in most patrilineal societies (a common practice in both Nyanza and Western provinces). These are also the provinces worst hit by AIDS. It is also observed that the deteriorating economic situation is forcing many young girls to find economic refuge in polygynous marriages.

5.3.2 Trends in Proportions Married by Age

The proportions of men who were married in 1969 were significantly lower than the proportion of men married in 1979 for all age groups except 15-19 and 50-59 (RoK 1996:64). The higher proportions for 1979 indicated an increase in age at marriage. However, the anomaly noted in age groups 15-19 and 50-59 years could be attributed to errors in age reporting and effects of mortality. The proportion of males married beyond age 30 years was generally above 80% and increased for subsequent censuses (see Table 5.10 and Figure 5.4). The broad age group 50-59 years in 1979 had below 80% probably because of age mis-reporting and effects of mortality at older ages.

For the period 1979-89, shown in Table 5.10, the proportions of married males in 1979 were higher than the proportions for 1989 for the younger age groups 15-19, 20-24 and 25-29 years. Therefore, the proportions of married men in 1989 were higher for the middle and older age groups above 30 years. In fact, the differences in proportions of married men tended to increase with older age groups.

Table 5.10 Percentage of Males and Females Who Were Married by Age Group, 1979-99

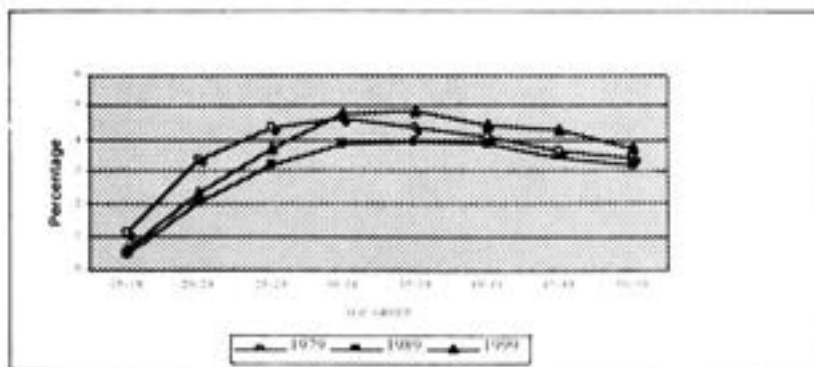
Age Group	1979 Census	Male 1989 Census	1999 Census	1979 Census	Female 1989 Census	1999 Census
15-19	2.3	1.5	2.7	27.1	17.7	18.0
20-24	26.9	20.0	22.2	71.1	61.2	58.9
25-29	65.6	60.3	57.0	84.5	76.7	73.7
30-34	83.6	83.7	80.8	86.4	84.5	80.5
35-39	87.5	88.8	88.0	86.0	85.7	82.1
40-44	89.4	89.9	90.5	82.8	84.0	81.8
45-49	89.9	90.2	90.9	79.1	82.9	80.8
50-59	70.8	90.5	91.0	56.3	78.7	70.1

Table 5.10 further reveals that the period 1989-1999 had a slightly different pattern. The proportions of married males in 1999 were higher than the proportions in 1989 for the younger age groups 15-19 and 20-24 years, but the 1989 proportions of married men were higher than the proportions for 1999 for the middle age groups 25-29, 30-34 and 35-39 years. Again, the proportions for the 1999 census were higher for the older age groups 40-44, 45-49 and 50-59 years.

The proportions married among females reveal a different scenario. Whereas the proportions married in 1979 fell consistently up to 1989 for all age groups below 39 years (RoK 1996:64), the trend for 1969 and 1989 for those above 40 years was irregular. Nevertheless, Table 5.10 reveals that in 1999 the proportions of married females were significantly lower than the proportions in 1989 for all age groups 15 to 59 years. This trend could be due to increase in age at marriage and increase in maternal mortality (see Figure 5.3).

5.4 Proportions Divorced and Separated

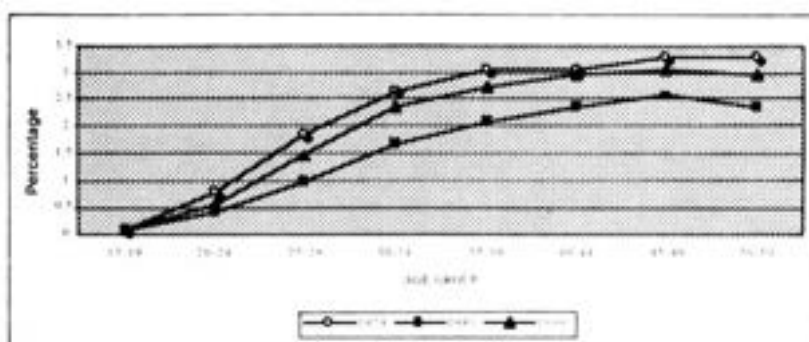
The proportions of females aged 12 years and above who were divorced and separated increased marginally from 2.2% in 1989 to 2.7% in 1999. The proportion was also higher in urban areas with 3.4% compared to rural areas with 2.5% (see Appendix 8). Furthermore, Figure 5.5 shows that the proportions of females aged 30-59 years who were divorced/separated in 1999 were consistently higher than in past censuses. The proportions were, however, between those of 1979 and 1989 for the younger age groups.

Figure 5.5 Percentage of Females Divorced and Separated, 1979-99 Censuses

Further analysis reveals that in 1999 the proportions of females divorced and separated were highest in the Coast province (4.7%). The other provinces had various proportions: Nairobi 3.0%, Central 3.0%, Eastern 3.0%, North Eastern 3.7%, Nyanza 1.2%, Rift Valley 2.4% and Western 2.5%.

District levels and patterns confirm that marital unions in Kenya are changing at a slow pace because no district reported a proportion of divorced and separated of more than 10%. The highest proportions were reported by Lamu district (7.7%) and Kwale district (6.5%). On the other hand, the districts with very low proportions of divorced and separated females were Homa Bay (0.7%), Migori (0.8%), Rachuonyo (0.8%), and Suba (0.9%). All these districts are in Nyanza province. The majority of the districts in the country had proportions ranging between 1.0% and 4.5%.

The level of divorce and separation among males aged 12 years and above is also relatively low throughout the country. The proportions among males increased from 1.1 % in 1989 to 1.5% in 1999. The proportion of divorced and separated men was also higher in rural areas (1.6%) than in urban centres (0.9%) in 1999. Figure 5.6 shows that the proportions of males divorced/separated in 1999 by age groups were consistently lower than those of 1979 but higher than those of 1989 for all age groups 15-59 years. The provincial levels were extremely low in 1999, ranging between 0.8% in Nairobi and 2.0% in Western province.

Figure 5.6 Percentage of Males Divorced and Separated, 1979-99 Censuses

The districts with relatively high proportions of divorced and separated males were Lamu (3.8%). Kwale (2.7%), Kitui (2.4%), Mwingi (2.5%), Nithi (Meru South, 2.6%) and Busia (2.4%). Those with extremely low proportions were Samburu (0.4%) and Buret (0.5%). All the other districts had low proportions that ranged between 0.7% and 2.4%.

The proportions of males and females who were divorced and separated by age groups 15 to 59 years are summarised in Table 5.11. This table shows that the proportions of divorced and separated in 1979 were higher than the proportions for 1989 for all age groups (see Figures 5.5 and 5.6). Furthermore, the period 1989-99 saw the proportions for 1999 higher than those for 1989 for all the age groups except that of 15-19 years which shows no change. The percentage increase during the intercensal period was marginal, ranging between 0.2% for the age group 25-29 years and 0.7% for the age groups 35-39 and 40-44 years. The marginal increase in proportions of females divorced and separated since 1979 indicates that, generally, in Kenya, marital unions have been changing at a slow pace. This is due to re-marriages and levirate marriages in the situations of deceased husband.

Table 5.11 Percentage of Males and Females Who Were Divorced and Separated by Age Group, 1979-99 Censuses

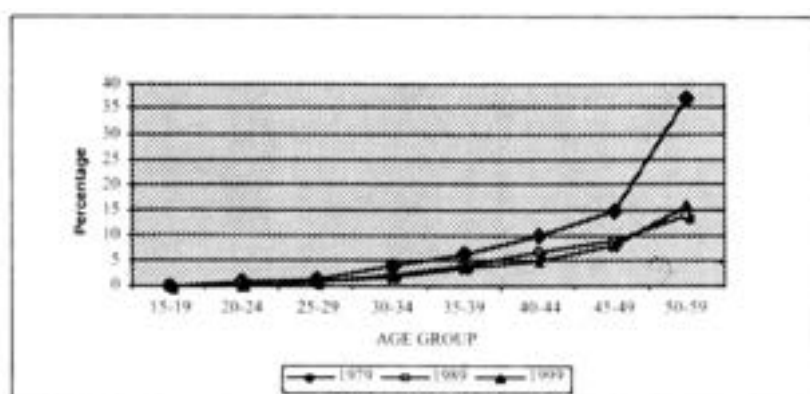
Age Group	1979 Census	Male 1989 Census	1999 Census	1979 Census	Female 1989 Census	1999 Census
15-19	0.1	0.1	0.1	1.1	0.5	0.6
20-24	0.8	0.4	0.6	3.4	2.1	2.4
25-29	1.9	1.0	1.5	4.4	3.2	3.8
30-34	2.7	1.7	2.4	4.7	3.9	4.8
35-39	3.1	2.1	2.8	4.4	4.0	4.9
40-44	3.1	2.4	3.0	4.1	3.9	4.5
45-49	3.3	2.6	3.1	3.7	3.5	4.3
50-59	3.3	2.4	3.0	3.5	3.2	3.8

5.5 Proportions Widowed

Apparently, widowhood affects females more than males. Intercensal increase (1989-99) in widowhood among females aged 12 years and above was marginal from 5.1% in 1989 to 5.4% in 1999. In 1999, the proportions of females widowed in rural areas (6.0%) doubled that of urban areas (2.9%). Figure 5.7 shows that the proportions of widowed females in 1999 by age group were lower than the proportions in past censuses for all age groups 15-49 years. Provincial analysis ranks Nyanza province (8.3%) as leading, followed by Western (6.5%) and Coast (5.7%). On the other hand, Nairobi province (2.2%) and Rift Valley (3.9%) reported the lowest proportions (see Appendix 8).

There is evidence in Appendix 8 that the levels of widowhood among females aged 12 years and above have been rising since 1989. This is partly due to the intercensal increase in the incidence of HIV/AIDS and the deterioration countrywide in the provision of health care services or just aging of the population. It is apparent that this rising trend in widowhood was not accurately captured by the 1999 census which portrays lower values than those of previous censuses as seen in Figure 5.7.

Figure 5.7 Percentage of Widowed Females, 1979-99 Censuses



The top ranked districts in the incidence of widowhood in 1999 were Siaya 14.4%, Bondo 10.7%, Nyando 10.5%, Rachuonyo 9.9%, Homa Bay 9.2%, Busia 9.4%, Kisumu 8.5%, Suba 8.5%, Vihiga 8.4%, Migori 8.2% and Moyale 8.5%. With the exception of Moyale in North Eastern province, the other districts are within the Lake Victoria Basin, an area ravaged by endemic malaria and HIV/AIDS. It is also observed that most of the districts with very low proportions of widowhood were in Rift Valley province (Appendix 8). Further reference to Table 5.12 indicates that 26 out of

Table 5.12 Proportions of Females Aged 12 Years and Above Widowed, 1999

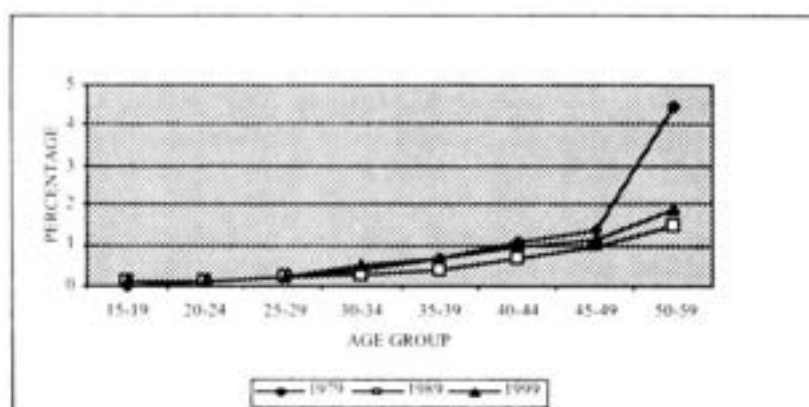
Province/District	Above 6.0%
Central	
Murang'a	7.3
Maragua	6.5
Coast	
Kilifi	6.8
Kwale	6.2
Taita Taveta	6.3
Tana River	6.0
Malindi	6.0
Eastern	
Isiolo	6.4
Kitui	6.2
Marsabit	7.8
Moyale	8.5
Nyanza	
Homa Bay	9.2
Kisumu	8.5
Kuria	6.1
Migori	8.2
Rachuonyo	9.9
Siaya	14.4
Suba	8.5
Nyando	10.5
Bondo	10.7
Rift Valley	
Samburu	6.7
Western	
Busia	9.4
Kakamega	6.2
Teso	6.3
Vihiga	8.4
Butere/Mumias	7.5

70 districts could be regarded to have moderate to high proportions of females widowed in 1999. Most districts in the country, however, had proportions that ranged between the 2.2% in Nairobi and 5.8% in Lamu.

Further examination reveals that men in general experienced very low levels of widowhood. The proportions of widowed men stabilised at 0.7% for both 1989 and 1999. However, the proportion of male widowers in rural areas (0.8%) doubled the proportion of male widowers in urban areas (0.4%) in 1999. At the provincial level, the highest proportion of male widowers was reported in North Eastern province with 1.0% followed by Nyanza province with 0.9%, Eastern province with 0.8% and Coast province with 0.8%. The other provinces reported very low proportions. Figure 5.8 shows that the proportions in 1999 by age groups (25-59) were between those of 1979 and 1989.

The district-level picture of males widowed is similar to that of females widowed. The top ranked district in 1999 was Siaya with a mere 2.0% (see Table 5.13). The second ranked district was Vihiga with 1.8%. The majority of the districts in the country had proportions below 1.0%. The lowest proportions were reported by Bomet and Trans Mara with 0.2% each, both in

Figure 5.8 Percentage of Widowed Males, 1979-99 Censuses



Rift Valley province where most of the districts with very low proportions are located. It is noted that men experience low proportions of widowhood because men tend to remarry more often than women. Also, the survival rate of women is higher at older ages, hence their state of widowhood dominates (RoK 1996).

Widowhood affects females, especially those aged 40 years and above (RoK 1996:65). This past trend now changing due to HIV/AIDS which now affects more of the younger and middle-aged women 20 to 45 years (NASOP 1994).

Table 5.14 further shows the trends in proportions of males and females widowed since 1979. It is noted that, generally, higher trends in female widowhood, especially above 40 years, reflect higher male mortality, age differences at marriage between females and males, and the effect of remarriage of males who have been widowed (RoK 1996:65).

Reference to Table 5.14 shows that the proportions of males widowed in 1979 were higher than the proportions for 1989 for the age groups above 30 years. For the period 1989-99, the

proportions of males widowed in 1999 for the younger age groups below 30 years had not changed much since 1979. Yet for the age groups above 30 years, the proportions of males widowed were higher in 1999 than 1989 (see Figure 5.8).

The situation among females shows that the proportions of females widowed in 1969 were generally higher than the proportions in 1979 for all age groups except 45-49 years (RoK 1996:65). Yet Table 5.14 suggests that the proportions of women widowed have been steadily lower since 1979 for all age groups except for the broad age groups 50 to 59 years. It was expected that in 1999, due to the impact of HIV/AIDS mortality, the trend should rise as exhibited in broad age groups 50-59 years. From another perspective, the consistent fall in proportions of female widowhood in 1999 raises questions about the accuracy of mortality data (see Figure 5.7).

Table 5.13 Proportions of Males Widowed by Districts, 1999

Region	% Widowed
Central	
Murang'a	1.1
Maragua	1.0
Coast	
Lamu 1.2	
Taita Taveta	1.1
Eastern	
Kitui	1.1
Nithi (Meru S.)	1.0
North Eastern	
Garissa	1.1
Wajir	1.1
Nyanza	
Homa Bay	1.1
Rachuonyo	1.1
Siaya	2.0
Nyando	1.2
Bondo	1.3
Western	
Busia	1.2
Teso	1.1
Vihiga	1.8

Table 5.14 Percentage of Males and Females Who Were Widowed by Age Group, 1979-99 Censuses

Age Group	1979 Census	Male 1989 Census	1999 Census	1979 Census	Female 1989 Census	1999 Census
15-19	0.0	0.1	0.1	0.2	0.1	0.1
20-24	0.1	0.1	0.1	0.7	0.4	0.2
25-29	0.2	0.2	0.2	1.1	1.0	0.7
30-34	0.4	0.3	0.5	3.8	2.3	1.6
35-39	0.7	0.4	0.7	6.1	3.8	3.3
40-44	1.1	0.7	1.0	10.3	6.7	5.0
45-49	1.4	1.0	1.2	14.8	9.3	7.8
50-59	4.5	1.5	1.9	37.2	14.1	16.0

5.6 Trends in Population of Childless Women

The proportion of childless women by age and their mean age at first birth (MAFB) is presented in Table 5.15 for 1969, 1979, 1989 and 1999 censuses.

The proportions of childless women increased for all age groups during the 1969-79 period and declined from during the 1979-89 for all ages except 20-24. The period 1989-99 again experienced an increase in proportion childless for women in all age groups. It is also observed that the 1989 proportions remained higher than 1969 for women under 30 years and lower for women above 30 years. The 1999 proportions, however, are higher for all age groups compared to past censuses. Consequently, the number of years lived, on average, by women in the childless state for women who gave birth before age 59 rose marginally from 19.6 years in 1969 to 20 years in 1989 and 21 years in 1999. Further analysis of the proportion childless indicates no sharp changes. The district levels of proportions of childless women in 1999 are shown in Appendix 10.

Table 5.15 Percentage Childless Women by Age and Mean Age at First Birth, 1969-99 Censuses

Age Group	1969	1979	1989	1999
15-19	73.3	76.3	75.4	77.7
20-24	19.0	22.5	23.1	35.6
25-29	6.9	7.8	7.4	15.0
30-34	4.5	4.9	4.3	7.7
35-39	4.1	4.2	3.4	5.4
40-44	3.9	4.4	3.3	4.8
45-49	4.2	4.6	3.4	4.4
MAFB	19.6	19.9	20.0	21.0

5.7 Trends in Mean Age at First Birth

Regional trends in MAFB are shown in Table 5.7. The MAFB for Kenyan women during the 1989-99 period increased by one year from 20 years in 1989 to 21 years in 1999. The highest change of 11.2% was reported by urban women whose MAFB rose from 20.5 years in 1989 to 22.8 years in 1999. For rural women, MAFB increased by only 8.1% from 19.8 to 21.4 years for the two censuses, respectively.

The provincial trends in MAFB show that three provinces exhibited significant changes. The highest increase of 8% was reported by women in Eastern province whose MAFB rose from 20.3 years in 1989 to 21.1 years in 1999. The second ranked province was Coast (7.1%) where the MAFB increased from 19.6 to 21.0 years; the third ranked province was Rift Valley with an increase of 5.6%. The MAFB for women in Rift Valley province rose from 19.7 years in 1989 to 20.8 years in 1999. The only province with a negative change was Western which reported -1.9% with its MAFB falling from 20.8 years to 20.4 years for the two censuses, respectively.

Several districts reported high percentage change in MAFB during the 1989-99 period. For example, Uasin Gishu had its MAFB rise from 19.9 years to 24.1 years, representing an increase of 21.1%; Turkana increased from 21.1 years to 23.0 years, representing 9.0%; Kajiado from 18.8 years to 20.4 years, yielding 8.5%; Kilifi with 8.4%, increasing from 19.1 years to 20.7 years; and Mombasa with 8.0%, increasing from 20.1 years to 21.7 years. The districts which exhibited a negative change were Busia with -4.0% with MAFB falling from 20.1 years to 19.3 years and Kakamega with -2.8% with a decline from 21.2 years to 20.6 years. It should be stressed that the 1979-89 period had more districts with a negative change in MAFB than was the case during the 1989-99 period.

Reference to Table 5.6 further indicates that in 1989 women who had secondary education reported the highest level of SMAM of 23.5 years, while those with no education had the least, 19.0 years.

5.8 The Link Between Trends in SMAM and MAFB

Further reference to Tables 5.6 and 5.7 shows that regions with high SMAM also realised high MAFB. Yet in North Eastern province, the relatively low SMAMs were countered with relatively high MAFB, largely because all or most births take place within marriage (RoK 1996:63). Therefore, it appears that women in all provinces, except North Eastern, had their first birth before they married. This was attested to by the relatively low MAFBs compared to SMAMs.

Trends in SMAM and MAFB indicated mixed signals. Between 1979 and 1989, only Baringo and Nandi districts reported the largest gains in SMAM; they also had large gains in MAFB. Many districts showed declines in MAFB and SMAM. During the period 1989-99, the districts with large gains in SMAM coupled with large gains in MAFB were Murang'a, Embu and Kisumu. Otherwise, many districts during the 1979-89 period showed declines in SMAM, but only Tana River showed a decline in SMAM during the 1989-99 period. The districts with gains in SMAM but declines in MAFB were Marsabit, Mandera, Wajir and Nandi.

It is observed that while the situation in the period 1979-89 had most districts gain in SMAM, these gains were offset by declines in MAFB in many districts. Thus, declines in fertility realised from late marriage were suppressed by declining trends in MAFB for most districts. The situation during the 1989-99 period saw relatively lower percentage gains in SMAM compared to relatively higher percentage gains in MAFB for most districts except those in Western province. Conclusively, increases in MAFB had supplementary effects in accelerating fertility decline.

5.9 Summary

The foregoing analysis clearly indicates that the proportions of single males and females have been steadily rising since the 1969 census. Similarly, there have been marginal increases in proportions polygynous, divorced and separated. The increases, however, have varied between the younger and older women and men.

It is further observed that increased SMAM has been significant since 1979. Consequently, the proportions married have been consistently falling while MAFB has increased during the intercensal period 1989-99. Further analysis indicates that proportions polygynous for most districts in Kenya are below those experienced by most countries in West Africa. Yet, despite marginal increases in proportions divorced and separated, in general, marriage is changing at a slow pace in the country and universal marriage is still the norm for women above 30 years.

Chapter 6

Summary, Conclusions and Recommendations

Fertility has been and still is a major determinant of population growth in Kenya. During the 1960s and 1970s, fertility increased rapidly and a TFR of 8.0 was recorded in 1979 (RoK 1980 and 1982). The noted rapid increase in fertility was attributed to improvements in the standard of living, particularly health, low contraceptive prevalence rate, low age at marriage and high value accorded to children (Dow and Linda 1983). Thereafter, fertility started falling, though it still remains high compared to developed societies. The momentum of fertility decline in the country varies significantly between regions and population sub-groups. Evidence from the 1999 census shows that between 1989 and 1999 fertility increased marginally for adolescents aged 12-19 years.

The intercensal population growth rates also increased from 3.3% annually during the 1962-69 decade to 3.4% annually during both the 1969-79 and 1979-89 decades before taking a downturn to 2.9% annually during the 1989-99 decade. The total population size corresponding with these growth rates also showed dramatic population increases from 10.6 million in 1969 to 15.3 million in 1979 to 21.4 million in 1989 and 28.7 million in 1999 (RoK 2001).

The observed demographic trends posed diverse challenges to the Government with regards to the provision of basic needs services such as health, education, food, employment and housing. Moreover, rapid urbanisation and environmental degradation began to emerge as development issues associated with rapid population growth. The introduction of structural adjustment programmes (SAPs) in the course of the 1980s compounded the challenges.

The Government, in realising the adverse socio-economic consequences of the rapid population growth rate, formulated an integrated population policy in 1984 (NCPD 1984), which prioritised the reduction of fertility as a development strategy. The family planning programme was enhanced and integrated in the District Focus for Rural Development Strategy. Evidence of a fertility decline was noted by 1989 (NCPD 1989, Kelly and Nobbe 1990, Cross et al 1991). This decline has been largely attributed to the increase in modern contraceptive prevalence rate from 27% in 1989 to 32% in 1998.

The Kenya 1999 Population and Housing Census was carried out at a time when diverse socio-economic and demographic structural changes were taking place. Thus, the findings with regard to fertility levels and nuptiality provide useful information for the 1989-99 decade.

6.1 Data Quality and Methodology

There is evidence in Chapter 1 that reporting errors and mis-dating of age affected the 1999 fertility and nuptiality data. These problems also affected all the past censuses since 1962 and are prevalent in censuses of developing nations. However, attempts were made to use appropriate demographic and statistical techniques to graduate the 1999 census data to enable effective comparison with previous census data having undergone similar procedures. For example, the censuses of 1969, 1979 and 1989 had significant percentages of younger women not stating their parities. Thus, a method devised by El Badry (1961) corrected their average parities as detailed in Chapter 1. The

1999 data did not have the problem of women not stating parity because of imputation. Thus, the EI Badry correction method was deemed irrelevant and not applied.

Furthermore, due to gross under-reporting observed for children born within the 12 months prior to the census, data on current births were disregarded. Average parities from the 1999 census data, as in previous censuses, were fitted with the relational Gompertz model to derive fertility levels. Applying the resulting intercensal ASFRs to obtain the mid-period annual births also indirectly generated the CBRs.

6.2 Fertility Levels and Trends

The TFR during the 1989-99 intercensal period was 5.0, a drop from about 7.8 during the 1969-79 intercensal period and 6.6 during the 1979-89 decade. Incomplete PPRs showed that fertility rose in the 1960-70 decade and fell during the 1980-90 decade. The analysis of the distribution of women aged 20-39 years by PPRs shows that the ratios for the 1999 census were consistently lower than the ratios for all past censuses. Further reference to cohort PPRs from the 1969 census onwards up to 1999 also shows a consistent pattern suggesting fairly good quality data.

The cohort PPRs showed a rising trend in fertility at higher parities for cohorts of women born between the late 19th century and the 1940s. For the younger women, fertility declined at all parities. In conclusion, the PPRs of the 1999 census were consistently lower than the 1989 PPRs for all women, moving from parity 2 to 3 and above.

6.2.1 Fertility by District

The provincial average parities of women aged 40-44 years in 1999 ranged from a low of 4.1 children ever born per woman in Nairobi to the highest figure of 7.1 children per woman in Western province. District average parities also ranged from 4.1 children per woman in Nairobi to 7.9 children per woman in Mt. Elgon in Western province. The same pattern existed in 1989 with provincial estimates ranging from 4.8 in Nairobi to 7.9 in Western province for the same age group of women, while the districts estimates ranged from 4.8 for both Kisii and Bungoma.

Intercensal cohort TFRs for the period 1989-99 indicate that only two provinces had relatively high TFRs above the national average of 5.0 births per woman. The provinces with high TFRs were North Eastern at 7.0 and Western province at 6.0. Relatively low TFR of 3.0 births was reported by Nairobi. The other provinces had moderately high TFRs when compared to their rates during the 1979-89 decade.

Among the districts with relatively high TFRs during the 1989-99 period were Kilifi at 6.0, Kwale 6.0, Tana River 6.5, Malindi 6.2, Isiolo 6.0. Kitui 6.2. Marsabit 6.6, Mbeere 6.6, Moyale 7.4. Mwingi 6.6. Garissa 6.4. Mandera 7.6, Wajir 7.1, Homa Bay 6.1, Kuria 6.9. Rachuonyo 6.0. Baringo 7.0, Bomet 6.6, E. Marakwet 6.7, Nandi 6.0, Narok 7.2. Samburu 7.2. Trans Mara 7.4. Trans Nzoia 6.1. Turkana 6.3. W. Pokot 7.5, Buret 6.0, Bungoma 6.4. Busia 6.1. Mt. Elgon 7.1, Lugari 6.1 and Teso 6.5.

The districts which reported relatively low TFRs were Nairobi 3.0, Kiambu 3.4, Kirinyaga 3.3. Nyandarua 3.4. Nyeri 3.8, Mombasa 3.4. Embu 3.7. Meru Central 3.9, Nithi (South Meru) 3.9. The noted increase in the number of districts which reported TFR below live births per woman in 1989-99 period is an indicator of the declining trend in fertility in most parts of the country.

6.2.2 Fertility by Place of Residence

Urbanisation is clearly inversely correlated with fertility. Lower fertility was observed for women in urban areas in 1979, 1989 and 1999. Children ever born for women aged 40-44 years for the three censuses were 5.8, 5.2 and 4.7, respectively. These figures were lower for women aged 40-44 in rural areas whose average parities were 7.2, 7.1 and 6.7 for the three censuses, respectively. The

fall in fertility in 1999 affected all age groups and was sharper in urban areas, especially among women aged 20-39 years. Reference to Table 4.3 shows that ASFR for rural teenagers (15- 19) was higher than that of urban areas. The TFR for rural women was 7.0 during the 1979-89 period and 5.9 during the 1989-99 decade, while for urban women TFR was 4.5 and 3.9 for the two intercensal periods respectively. The relatively lower fertility (3.9) observed in urban areas for 1999 was expected and has been revealed in a number of studies. Generally, urban women marry later, tend to be more educated and thus are more prone to social change, including use of modern contraception, especially the more effective contraceptive methods (Hill et al 1994).

6.2.3 Fertility by Level of Education

As shown in Table 4.4. the distribution between the fertility of women with no education and those with primary education was not clear-cut, but women who had attained secondary and higher levels of education had much lower fertility. These figures were much lower when compared with those of non-educated women whose TFRs were 7.8, 7.5 and 6.8 for the three intercensal periods, respectively.

Further evidence shows that the fertility decline did not affect all age groups; for women with no education, it rose during 1969-79 and fell during 1979-89 for those aged 15-39 years. For the 1989-99 period, reported average parities showed a consistent fall for all age groups 15-49 years. For those with primary education, fertility rose during 1969-79 and fell during 1979-89 for age groups 20-49, while during 1989-99 fertility rose only for the age group 15-19 years but fell for all age groups 20-49 years.

For secondary level of education, fertility trend for 15-19 years was irregular between 1969 and 1999. but for women aged 20-49 years fertility rose consistently between 1969-79. During 1979-89, fertility rose only for age groups 30-49 and declined for the rest. During the 1989-99 decade fertility rose for the age groups 15-19, 40-44 and 45-49 but declined for the others. These observations were also confirmed by PPRs.

6.2.4 Fertility by Marital Status

It was observed from Table 4.5 that single women continued to exhibit the lowest fertility with a TFR of 3.4 during the 1989-99 period, while married women had the highest TFR of 6.1 during the same period. On the other hand, the widowed reported a TFR of 5.5, while divorced and separated reported a TFR of 4.7 births per woman.

Evidence from reported average parities as portrayed in Table 4.5 shows that for single women aged 40-44 years fertility rose marginally from 3.4 during 1969-79 to 3.9 during 1979-89. before falling again to 3.1 during 1989-99. For married women of the same age group reported parities were 7.3, 7.2 and 6.7, for widowed women it was 6.6, 6.6. and 6.4 and for divorced and separated it was 5.2, 5.0 and 4.9 for the three intercensal periods, respectively. It should be emphasised that, except for single women who exhibited an irregular trend, the 1999 fertility rates for women aged 20-49 years were consistently lower than those of 1989 among the married, widowed, divorced and separated. This pattern is reflected too by the PPRs.

6.3 Nuptiality Levels and Trends

Nuptiality as a demographic factor has been tremendously affected by socio-economic and socio-cultural developments that have taken place in the country. These changes have significantly impacted on fertility levels previously discussed in this chapter and Chapter 3.

6.3.1 Proportions Single

The national level of proportions of single females aged 12 years and above indicates an insignifi-

cant intercensal increase between the 1989 and 1999 censuses. The proportion of such single women increased from 37.7% to 38.6%) between the two censuses. The rural-urban analysis indicates a similar trend. In 1999, the proportion of single women aged 12 years and above in urban areas was higher, 43.8%; compared with 37.8% in rural areas. In 1989, the proportions were 43.2% in urban areas and 36.7% in rural areas.

Provincial analysis indicates that apart from Central and Western provinces, which experienced a negative trend in proportions of single females, the other provinces recorded marginal increases during 1989-99. The districts which reported over 40% of females aged 12 years and above as single were Kiambu 43, Murang'a 41, Nyandarua 41, Nyeri 43, Thika 43, Maragua 40, Embu 45, Makueni 41, Machakos 42, Mbeere 41, Meru Central 43, Tharaka 41, Nithi, S. Meru 41, Gucha, S. Kisii 43, Keiyo 44, Kericho 41, Koibatek 44, Laikipia 41, Nakuru 41, Nandi 43, Uasin Gishu 44, and Buret 41 (see Table 5.1).

A high proportion of males aged 12 years and above was also reported as single in 1999, 51.4% compared to 51.2% in 1989. The proportion was higher in rural areas (53.1 %) as opposed to urban areas (45.8%). A majority of districts had their proportions of single males higher than that of the national average which was 51.4%. The districts with relatively low percentages of single males in 1999 were Nairobi 44, Kiambu 50, Kwale 49, Lamu 49, Mombasa 47, Tana River 49, Malindi 49, Homa Bay 49, Kisumu 49, Migori 48, Suba 50, Busia 49, Teso 47 and Butere/Mumias 47% (see Table 5.3).

6.3.2 Proportions Married

The proportion of females aged 12 years and above reported as married in 1999 was apparently lower than in 1989, though the difference was insignificant. In 1999, the proportion of married women was 53.3% compared with 54.7% in 1998. Among the married females, 44.1% were in monogamous unions. The proportion of married women was also higher in rural areas, 49.9%).

Nairobi province with 48.4% and Central province with 49.6%) reported the lowest proportions of married women in 1999. On the other hand, Nyanza province with 56.4%) and Western province with 55.6%, followed by Coast province with 55.2%) reported the highest proportions of married women. The districts which reported over 60%) of married women were Tana River 61, Marsabit 61, Homa Bay 63, Kuria 60, Migori 64, Suba 63, Narok 64, Trans Mara 63 and West Pokot 64. These districts had early age at marriage and high levels of illiteracy among women. The analysis of married males reveals a similar pattern. In 1999, 46.4% of males were married. 44.5%) of males were married in rural areas compared to 52.9%) in urban areas. The proportions of married men by age groups in 1999 were consistently lower than proportions in other previous censuses, especially from age 25 to 49 years (see Appendix 9).

The proportion of females aged 12 years and above in polygamous unions increased from 8.5% in 1989 to 9.3%) in 1999. The rural areas had a higher proportion of 10.4% compared to 4.6%) in urban areas.

The districts with relatively high proportions of women in polygamous unions were West Pokot 27, Suba 26, Narok 25, Migori 25, Homa Bay 23, Kuria 22 and Trans Mara 23. These districts tended to have early age at marriage and low female literacy rates. On the other hand, the districts which reported very low levels of polygamy were those with relatively high female enrolment in school and high singulate mean age at marriage. The majority of these districts were in Central and Nairobi provinces.

The proportion of males in polygamy in 1999 was 5.2%, an increase from 2.8%) in 1989. The proportion of polygamous unions was also higher in rural areas, being 5.6% as opposed to 3.7%) in urban areas. Provincial analysis shows that a relatively low proportion of polygamy was recorded in Central province with 1.8%. Districts with relatively high polygamy were West Pokot 13%, Migori 13%), Homa Bay 12%, Suba 13%.. Kuria 12%) and Trans Mara 12%).

6.3.2 *Proportion Divorced and Separated*

The proportion of females aged 12 years and above who were divorced and separated increased marginally from 2.2% in 1989 to 2.7% in 1999. The proportion was also higher in urban areas with 3.4% compared to 2.5% in rural areas. Lamu district with 7.7% and Kwale district with 6.5% reported the highest proportions of females divorced and separated in 1999. On the other hand, very low proportions in 1999 were reported by Homa Bay with 0.7%, Migori 0.8%, Rachuonyo 0.8% and Suba 0.9%.

The level of divorce and separation among males aged 12 years and above was also relatively low throughout the country. The proportions among males increased from 1.1 % in 1989 to 1.5% in 1999. The proportion of divorced and separated men was also higher in rural areas with 1.6% compared with 0.9% in urban centres.

The districts with relatively high proportions of divorced and separated males were Lamu 3.8%, Kwale 2.7%, Meru South 2.6%) and Mwingi 2.5%. Those with relatively low proportions were Samburu 0.4% and Buret 0.5%).

6.3.3 *Proportion Widowed*

Apparently, widowhood affects females more than males. Intercensal increase (1989-99) in widowhood among females aged 12 years and above was marginal from 5.1%) in 1989 to 5.4%. in 1999. The reported proportions of women widowed in 1999, in rural areas was 6.0%) compared to 2.9%) in urban areas. There is evidence that the increase in proportions widowed since 1989 has been due to the HIV/AIDS pandemic. The top ranked districts in the incidence of widowhood in 1999 were Bondo 11%), Nyando 11%), Rachuonyo 10%), Siaya 14%. Homa Bay 9% ad Busia 9% (see Table 5.12).

Men in general experienced very low levels of widowhood. The proportion of men widowed in 1989 and 1999 was 0.7%). The proportion in rural areas was 0.8% compared to 4%. in urban areas. The district scenario of males widowed is similar to that of females. The top ranked districts in 1999 were Siaya district with 2.0%, followed by Vihiga with 1.8%), while the districts with the lowest proportions were Bomet and Trans Mara with 0.2% each. It is argued that men experience low proportions of widowhood because men tend to remarry more often than women. Also, the survival rate of women is higher at older ages, thus their numbers tend to dominate (RoK 1996).

6.4 Estimate of Singulate Mean Age at Marriage

The mean age at first marriage for females in 1999 was 22.3 years and that of males was 26.5 years. In 1989, the corresponding figures were 21.6 years for females and 26.0 years for males. It was higher in urban areas (22.9 years) than in rural areas (21.9 years). It is noted that for males there was insignificant rural-urban difference during the intercensal period as SMAM remained at 26-26.5 years.

The 1999 census further indicates that SMAM for females was highest in Central province with 23.7 years. The next ranked province was Nairobi with 23.5 years followed by Eastern province with 23.1 years. At the district level, the top ranked district with 24.9 years was Embu, while the lowest SMAM was reported by both Homa Bay district and Migori district with 18.9 years each.

The males, on the other hand, had the highest reported SMAM, with Central province ranked top with an SMAM of 27.5 years, while Western province reported the lowest SMAM of 25.3 years. The district, which reported the highest SMAM was Marsabit with 30 years, while the lowest SMAM was reported by Kuria district in Nyanza province, with 24.1 years. Marsabit district reported the largest differences between male and female mean age at marriage in 1999 with 9.5 years, followed by Samburu district with 8.2 years and Moyale 7.2 years. On the other hand, the

smallest differences between male and female SMAM in 1999 were reported by Keiyo district with 2.9 years and Tharaka district 2.6 years.

A strong association between SMAM and polygyny was apparent. Most districts which reported low SMAM, especially among females, also exhibited a higher proportion of their females in polygyny.

Women with secondary and above level of education stayed the longest in single status. Reference to Table 5.6 shows that in 1999 such women stayed on average 23.6 years before marriage compared to 23.5 years in 1989. Those with no education stayed 20.8 years in 1999 compared with 19.0 years in 1989. Those with primary stayed for 21.3 years and 21.1 years for the two censuses, respectively.

6.5 Trends in Percentage Single by Age and Sex

The proportions of single females have been rising in all age groups, particularly those aged 15-19, 20-24, 25-29 and 30-34 years. Consequently, there has been a steady rise in SMAM from 19.2 years in 1989 to 22.3 years in 1999. The intercensal period 1989-99 was, however, characterised by a small rise in proportions of single females from 37.7% in 1989 to 38.6% in 1999.

Males showed a less dramatic change in the proportions single in all age groups from 1969-99. Their SMAM during the 1989-99 period increased marginally from 26 years to 26.5 years.

Table 5.7 shows that, overall, SMAM for Kenyan women increased by 3.2% during the 1989-99 period. Significant changes during the 1989-99 intercensal period were reported by Embu with 7.3%, Uasin Gishu 6.8%, Turkana 6.5%, Nandi%, Murang'a 6.1%. and Kisumu 6.0%. Only Tana River district experienced a negative change of -0.5%. and Busia district reported no change.

6.6 Trends in Proportions of Childless Women

The proportion of childless women increased during the 1969-79 and declined during the 1979-89 decade for all age groups except 20-24 years. The 1989-99 decade again experienced increases in proportions of childless women in all age groups. It is further noted that the 1999 proportions are higher for all age groups in past censuses. Consequently, the mean age at first birth rose marginally from 19.6 years in 1969 to 20 years in 1989 and 21 years in 1999. The highest change in MAFB of 11.2% was reported by women in urban centres whose MAFB rose from 20.5 years in 1989 to 22.8 years in 1999. In addition, women with secondary and above level of education reported the highest MA1B of 21.3 years, while those with no education reported the least, 18.7 years.

6.7 Relationship Between Fertility and Nuptiality

Several studies in developing countries, especially in Asia (Cho and Retherford 1973. Hull and Hull 1977) show that communities initiated their fertility transition through postponement of marriage: hence a rise in age at marriage was one of the major policy strategies.

Since the majority (about 95%) of women in Kenya stay married during their reproductive period (15-49 years), age at marriage becomes an important milestone in their reproductive history. There is evidence from the 1989 and 1999 censuses that in regions where SMAM were high (such as Nairobi and Central provinces), fertility was low. Also, women with secondary and above level of education reporting high SMAM had relatively low fertility.

The steady rise in the estimates of SMAM since 1969 has been paralleled by the rapid increase in the school enrolment ratios for both boys and girls. This has significantly contributed to the delay in marriage which, in turn, should have a depressing effect on fertility. Apparently, its optimum impact on fertility may not have been realised since it has, to some extent, been counteracted by a merely marginal rise in mean age at first birth or a decline altogether as was the case in Tana River district with an SMAM of 0.5 between 1989 and 1999. The relatively low SMAM in

North Eastern province was countered with relatively high MAFB, largely because all or most births take place within marriage (RoK 1996:63). Therefore, it appears that women in all provinces except North Eastern had their first birth before they married. This was attested to by the relatively lower MAFB compared to their SMAM.

6.8 Conclusions

Several studies (Macrae et al 2001, Brass and Jolly 1993, Kelly and Nobbe 1990, Cross et al 1991) support the notion that the onset of demographic transition in Kenya is a reality. However, the determinants of its momentum are still to be precisely ascertained. The significant contributors are educated women and those residing in urban areas. Improvements in the family planning programme and the government's policy of integrating population planning in socio-economic planning have provided the means to curtail fertility (RoK 1998:71).

The TFR of 5.0 derived during the 1989-99 intercensal period re-affirms findings from the 1998 KDHS of 4.7 that Kenya has begun to experience a demographic transition. While the momentum of this transition appears to have been more pronounced in urban areas and in Central province, all districts in Nyanza and Western provinces and a majority of the districts in Rift Valley province remain corridors of high fertility although fertility decline was reported in most of them during the 1989-99 decade.

Female education is identified as a strategic motivator towards low fertility as evidenced by low TFR exhibited by those who had attained secondary and above level of education. Education impacts on fertility through many avenues such as use of modern contraception, delaying marriage and changing attitude on ideal family size.

Fertility increased in the decades of the 1960s and 1970s and declined in the 1980s. The TFR rose to about 7.8 during the 1969-79 decade then dropped to 6.6 during 1979-89 and dropped further to 5.0 during the 1989-99 period. The rise in fertility was to women born between the late 19th century and 1940s who had attained high parities, while the decline was to younger women mainly between 20-39 years and was affecting all parities.

Further evidence shows that marriage was almost universal, and the majority stayed in a married state. Age at marriage rose remarkably between 1989 and 1999. The high proportion of single persons below age 20 years was likely due to substantial increase in school enrolment ratios both at primary and secondary levels. These gains, however, are now diminished by HIV/AIDS which, apart from increasing poverty levels, also threatens the fabric of marriage. The period 1989-99 has seen a marginal rise in divorce and separation rates compared to the situation in 1989. Widowhood has also increased, especially among females. Polygamy is predominantly a rural phenomenon and particularly prevalent in Coast, Nyanza and Western provinces. It also increased marginally among females during the 1989-99 intercensal period. Its future survival will depend on how socio-economic development tackles the problem of poverty in the nation.

6.9 Recommendations

The association between fertility and mortality will determine Kenya's future demographic trends. With the recent upsurge in infant and childhood mortality due to the HIV/AIDS pandemic, the current momentum of fertility decline will be affected. The findings presented in this monograph, therefore, raise diverse, salient issues and challenges which should be seriously considered in the context of sustainable socio-economic, socio-cultural and socio-political development.

There is evidence that TFR has appreciably declined from 7.8 during the 1969-79 period to 6.6 during the 1979-89 period and to 5.0 during the 1989-99 intercensal period. The in-built population momentum will determine Kenya's future population size. The current youthful population age-sex structure is already putting pressure on the economy through increased demand for basic

needs such as health care, education, housing, food and employment. This trend will require many more resources to sustain the population.

Part of the solution is to drastically reduce the population growth rate. Fertility transition appears to have been pronounced in districts in Central province and in urban areas. Similar conducive environments need to be created in the remaining districts in order to accelerate fertility decline.

Several factors have been identified to play a crucial role in the reduction of fertility during the 1989-99 period. Female education, late age at marriage, rapid urbanisation and increased modern contraceptive prevalence rate are important factors. These are particularly noticeable in the face of increasing adolescent fertility. The government therefore, should find ways and means of supporting more female higher education and creating employment opportunities in both the modern and informal sectors for the youth. This strategy is bound to increase the desire for small family size among future couples.

Trends and patterns of nuptiality appear to have been substantially influenced by trends in socio-economic and socio-cultural developments, particularly in education, health and urbanisation. Although the SMAM increased marginally for both sexes, the contribution of adolescents to fertility is still alarmingly high. It is very important for the government to redress the problems of young people through increased awareness, education and access to reproductive health services. The situation has been compounded by the increasing incidence of HIV/AIDS/STI among the youth.

In order to improve future census coverage on fertility data, it is proposed that the following strategies be adopted and implemented:

- Mapping census enumeration area households should be an on-going yearly exercise. This will enable accurate location and updating of household units and cater for politically instigated changes in EAs. This exercise is possible if the annual budget has a census vote.
- Publicity proved to be very effective during the 1999 census exercise. A public relations unit should therefore be created at CBS to carry on with public education and find new strategies of depoliticising census enumeration.
- Census coverage on fertility of the labour force has continued to yield poor results for comparative analysis. There is need for a commissioned study on how best to integrate labour force variables into the study of fertility levels and trends.
- Storage of past census data at CBS is done haphazardly. There is need to set up a separate census data library at CBS.

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C: Information Regarding Females aged 12 years and above

[illegible]

D: Housing Conditions and Amenities - To Be Asked Of The Household Head Or Any Other Responsible Persons

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Structure No. of continuation form:

Appendix 2: The Relational Gompertz Fertility Model

Like the logit life table system, the relational Gompertz fertility model consists essentially of a standard schedule of fertility by age which is modified mathematically until it fits the observed distribution. The modification is made with three parameters, two of which determine the relative shape of the age specific distribution, and the third, the level of fertility. The first of the shape parameters, alpha (**a**), controls the general location of the curve on the age scale, and the second, beta (**b**), the width of the distribution. The third parameter is the total fertility rate. Further descriptions of the model may be found in UN Manual X (1983, pp. 25-26), and in Newell (1988, pp. 175-178).

The model was used to estimate fertility from the data on current births (children ever born in the last 12 months) and average parities of the intercensal hypothetical cohorts. The fitting procedure used was that devised by Zaba (1981) and described by Brass (1981); Brass' notation has been used. The steps of the calculations for the first of these applications were as follows:

1. The current age specific fertility rates, $f(x)$, were cumulated (multiplying by 5), to the upper end of each age group, $f(i)$. As the rates were based on births occurring during the previous 12 months, the women were, on average, half a year younger when the births occurred.
2. The cumulated fertilities at age x , $f(x)$, were divided by those at age $x + 5$, and the Gompertz transformations or "Gompits" (double negative logarithms) of these ratios calculated, $z(x)$.
3. A set of standard values, $e(x)$, were subtracted from the Gompits and the results plotted against another set of standard values, $g(x)$. After the exclusion of the deviant points at the upper end of the distribution, a straight line was fitted by least squares. The slope of this line gives the beta parameter of the model, and the intercept, after a small modification, alpha. (The modification consists of subtracting 0.48 ($\beta - 1$) from the intercept. When β is close to 1, this correction can be ignored.)
4. Similar calculations were carried out using the average parities in place of the cumulated current fertilities and the points plotted on the same graph. These points were not used in the computation of the parameters but can be used to throw light on the trends in fertility and the patterns of error in the data.

The Gompits of the average parities of the standard fertility distribution, $Y_s(i)$, were multiplied by β and added to α ; and "anti-Gompits" (double negative exponential) calculated. These values represented the model relative parities, the proportion which each average parity would form of the total fertility, $P(i)/F$ where F is the total fertility rate.

5. Division of the reported average parities by these model relative parities gives the implied TFRs which were inspected for consistency, and those for the 20-24, 25-29 and 30-34 age groups were averaged to give the best estimate of the TFR.
6. Model ASFRs were then obtained by repeating step 5 with the model Gompits at ages 15, 20 . . . etc, calculating first the differences, and then multiplying them by the estimated TFR.

The use of the model with the intercensal hypothetical cohorts followed essentially the same procedure except that only the average parities were used, and the parameters were obtained from the slope and intercept of the line to the "P" points. The line need not necessarily be fitted by least squares, and the "group average" method can sometimes be used with advantage.

Lotus spreadsheets were constructed to carry out these calculations.

Appendix 3: Projection of Cohort Parity Progression Ratios

The procedure used is that described by Brass in his paper "P-F Synthesis and Parity Progression Ratios" (1985). The rationale of the method can be summarised briefly. The parity distributions of women under the age of 50 are "incomplete" in that they are still of childbearing age and some of them will have more children. Of those who have reached parity n by the time of the census, how many more will go on to have $n + 1$ before they are 50?

The current age-order specific fertility rates, calculated from the numbers of women bearing children into the 12 months before the census, represent the proportions of women in each age group who bore their n th child during that year. Thus cumulating of the rates by age (multiplying by 5-year age groups are used) will show how many women can be expected to have " n " children by various ages among a cohort going through life having children at the current rates. Thus, as we subtract the number who have had " n " children by age " a " from the number having " n " children at age 50, we get the extra number to be added to those who have already had " n " children by age 1, and we calculate the complete parity progression ratios.

Two technical points may be noted: First, the data on children ever born give us the number with " n " children at the midpoints of the age groups. The cumulated current rates give the numbers at the end of the age groups. The latter must therefore be interpolated to bring them in line with the midpoints. This is done by linear interpolation of the Gompits. Second, it is recognised that the data on current births are often seriously under-reported, but if the under-reporting is independent of parity, the errors tend to cancel out.

The steps of the calculations were as follows:

1. From the table of women by age group and parity, the distributions in each age group were cumulated by parity so as to show the numbers with 0 or more, 1 or more; and division of these numbers by the total women in the age group gives the proportions in each age groups with 0+...up to 10+parity.
2. From the table of women bearing children in the 12 months before the survey by age group and parity, the numbers in each age parity cell were divided by the total number in the age group to give age-order specific fertility rates.
3. The age-order rates were cumulated by age, multiplying by 5, to the upper end of each age groups (19.5, 22.5,... etc) (remembering that the women were on average half a year younger when they bore their children), and the cumulated number divided the numbers so obtained at age 49.5.
4. The Gompits (double negative logarithms) were obtained, and linear interpolations made between neighbouring pairs so as to give the values at the midpoints of the age groups (22.5, 27.5, ... etc). The anti-Gompits (double negative exponentials) of these values therefore gave the relative cumulated age-order rates at the age points.
5. The results of step 4 were subtracted from 1 and multiplied by the cumulated age-order rates at age 49.5. This gives the proportions of women who could be expected to progress to the parity concerned, between the age point and the end of reproduction.
6. Since the results of step 1 give the proportions of women who have already reached the parity concerned by that age, the addition of the results of 1 and 5 gives the proportion of all women in the age group who can be expected to reach that parity.
7. The division of the results of 6 for parity " $n + 1$ " by those for parity " n " gives the PPRs from " n " to " $n + 1$ ".

Appendix 4: Reported Average Parities, Kenya 1999 Census

AGE GROUP	KENYA	KENYA RURAL	KENYA URBAN	NAIROBI	CENTRAL	Kiambu	Kirinyaga	Murang'a	Nyandarua
15-19	0.283	0.287	0.268	0.251	0.196	0.225	0.205	0.158	0.209
20-24	1.352	1.471	1.030	0.898	1.047	1.025	0.981	1.027	1.271
25-29	2.611	2.863	1.925	1.679	2.070	1.961	1.875	2.142	2.505
30-34	4.147	4.477	3.082	2.712	3.321	3.130	2.989	3.489	3.887
35-39	5.386	5.724	4.031	3.560	4.436	4.131	4.086	4.683	5.175
40-44	6.384	6.714	4.740	4.106	5.530	5.083	5.363	5.738	6.430
45-49	6.947	7.229	5.202	4.530	6.424	5.950	6.396	6.609	7.427
AGE GROUP	Nyeri	Thika	Maragua	COAST	Kilifi	Kwale	Lamu	Mombasa	T Taveta
15-19	0.14	0.232	0.189	0.324	0.315	0.380	0.279	0.317	0.223
20-24	0.921	1.063	1.131	1.408	1.542	1.691	1.315	1.107	1.216
25-29	1.886	2.083	2.306	2.547	2.79	2.958	2.497	2.005	2.378
30-34	3.037	3.374	3.767	4.029	4.508	4.498	3.963	3.143	3.743
35-39	4.033	4.5	4.997	5.214	5.731	5.686	5.157	4.069	4.962
40-44	5.125	5.514	6.126	6.143	6.601	6.456	6.124	4.802	6.045
45-49	6.004	6.349	6.942	6.473	6.828	6.738	6.993	5.106	6.795
AGE GROUP	T River	Malindi	EASTERN	Embu	isblo	Kitui	Makueni	Machakos	Marsabit
15-19	0.299	0.388	0.236	0.176	0.259	0.231	0.213	0.281	0.218
20-24	1.593	1.665	1.271	0.897	1.421	1.452	1.328	1.343	1.325
25-29	3.051	2.925	2.625	1.896	2.775	2.999	2.865	2.649	2.821
30-34	4.823	4.543	4.156	3.154	4.360	4.668	4.534	4.197	4.313
35-39	5.907	5.818	5.394	4.316	5.360	5.996	5.790	5.447	5.325
40-44	6.866	6.647	6.429	5.536	6.108	6.986	6.859	6.525	5.843
45-49	7.111	6.806	7.037	6.594	6.413	7.418	7.412	7.292	6.011
AGE GROUP	Mbeere	Meru C.	Moyale	Mwingi	Meru N	Tharaka	Nithi	NORTH EASTERN	Garissa
15-19	0.236	0.162	0.236	0.281	0.305	0.122	0.183	0.217	0.230
20-24	1.207	0.910	1.645	1.509	1.460	1.016	1.016	1.491	1.353
25-29	2.724	1.902	3.268	3.063	2.990	2.524	2.014	3.193	2.982
30-34	4.184	3.122	5.022	4.885	4.604	4.393	3.332	4.794	4.636
35-39	5.720	4.185	5.952	6.342	5.844	6.009	4.449	5.893	5.714
40-44	7.045	5.200	6.719	7.300	6.602	7.068	5.435	6.554	6.519
45-49	7.535	5.990	7.065	7.664	6.922	7.405	6.329	6.941	6.837

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AGE GROUP	Mandera	Wajir	NYANZA	Gucha	H/Bay	K.Central	Kisumu	Kuria	Migori
15-19	0.182	0.232	0.400	0.312	0.500	0.268	0.355	0.360	0.510
20-24	1.571	1.567	1.696	1.451	1.991	1.354	1.489	1.838	1.997
25-29	3.283	3.319	3.166	3.005	3.462	2.853	2.837	3.437	3.417
30-34	4.801	4.927	4.902	4.833	5.131	4.515	4.447	5.192	5.162
35-39	5.975	5.974	6.060	6.107	6.096	5.783	5.629	6.416	6.271
40-44	6.573	6.568	6.921	7.273	6.816	6.900	6.453	7.215	7.026
45-49	7.015	6.967	7.354	7.931	7.091	7.559	6.929	7.531	7.270
AGE GROUP	Nyamira	Rachuonyo	Siaya	Suba	Bondo	Nyando	RIFT VALLEY	Baringo	Bomet
15-19	0.414	0.471	0.365	0.494	0.493	0.424	0.285	0.234	0.333
20-24	1.564	1.963	1.748	1.986	1.949	1.798	1.446	1.483	1.671
25-29	3.096	3.442	3.207	3.435	3.345	3.278	2.837	3.179	3.266
30-34	4.720	5.276	5.003	5.118	5.063	5.094	4.446	5.239	5.047
35-39	5.996	6.324	6.040	6.335	6.155	6.328	5.762	6.666	6.512
40-44	7.069	7.126	6.759	6.972	6.783	6.999	6.755	7.562	7.640
45-49	7.916	7.373	7.046	7.517	7.033	7.404	7.254	7.777	8.157
AGE GROUP	Keiyo	Kajiado	Kericho	Koibatek	Laikipia	Marakwet	Nakuru	Nandi	Narok
15-19	0.234	0.419	0.326	0.196	0.248	0.186	0.255	0.271	0.482
20-24	1.437	1.448	1.530	1.191	1.278	1.462	1.280	1.477	1.879
25-29	3.004	2.607	2.857	2.675	2.485	3.158	2.466	2.928	3.443
30-34	4.695	4.053	4.473	4.534	3.832	4.876	3.873	4.669	5.002
35-39	5.844	5.175	5.837	6.229	5.042	6.059	5.097	6.082	6.315
40-44	6.756	6.016	6.822	7.068	6.004	6.559	6.122	7.234	7.251
45-49	6.906	6.543	7.408	7.675	6.779	6.920	6.844	7.748	7.524
AGE GROUP	Samburu	T.Mara		Turkana	U. GishuT.	W.Pokot	BureNzoia	WESTERN	Bungoma
15-19	0.242	0.419	0.271	0.156	0.234	0.277	0.381	0.284	0.273
20-24	1.531	1.915	1.494	1.101	1.249	1.662	1.710	1.546	1.521
25-29	3.114	3.622	2.913	2.656	2.490	3.384	3.159	2.984	2.959
30-34	4.606	5.400	4.619	4.405	4.077	5.127	4.919	4.756	4.810
35-39	5.765	6.931	6.065	5.332	5.466	6.326	6.270	6.079	6.272
40-44	6.400	7.589	7.241	6.151	6.596	7.085	7.387	7.111	7.376
45-49	6.765	8.000	7.816	6.431	7.254	7.138	7.952	7.668	7.983
AGE GROUP	Busia	Mt.Elgon	Kakamega	Lugari	Teso	Vihiga	B/Mumias		
15-19	0.396	0.245	0.277	0.221	0.326	0.201	0.349		
20-24	1.864	1.533	1.474	1.433	1.693	1.249	1.715		
25-29	3.365	3.164	2.897	2.828	3.153	2.591	3.203		
30-34	4.974	5.221	4.661	4.668	4.815	4.364	4.908		
35-39	6.146	6.786	5.047	6.006	5.960	5.615	6.113		
40-44	6.838	7.886	7.248	7.222	7.015	6.697	6.965		
45-49	7.162	8.661	7.837	7.921	7.459	7.418	7.408		

Appendix 5: Kenya 1999 Population Census, Reported Average Parity by Marital Status and District

Region	Marital Status	Age Group							
		12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
KENYA	single	0.050	0.170	0.642	1.173	2.223	2.972	3.484	3.879
	monogamous	0.087	0.769	1.763	2.954	4.371	5.625	6.652	7.255
	polygamous	0.081	0.772	2.002	3.377	4.785	5.890	6.738	7.143
	married	0.086	0.770	1.786	3.005	4.435	5.674	6.671	7.228
	widowed	0.080	0.745	2.089	3.345	4.573	5.580	6.405	6.865
	divorced	0.147	0.845	1.725	2.571	3.515	4.230	4.794	5.137
	separated	0.194	0.906	1.720	2.626	3.578	4.376	4.971	5.373
NAROBÍ	single	0.055	0.162	0.465	0.853	1.582	2.116	2.494	2.920
	monogamous	0.081	0.698	1.356	2.083	3.031	3.896	4.440	4.790
	polygamous	0.137	0.607	1.439	2.281	3.105	3.823	4.410	5.010
	married	0.085	0.694	1.359	2.093	3.036	3.890	4.438	4.806
	widowed	0.135	0.716	1.747	2.478	3.295	4.029	4.450	4.989
	divorced	0.053	0.861	1.635	2.181	2.902	3.445	3.781	4.092
	separated	0.172	0.947	1.484	2.160	2.843	3.377	3.790	4.350
CENTRAL	single	0.043	0.146	0.589	1.143	2.065	2.754	3.307	3.776
	monogamous	0.049	0.652	1.478	2.415	3.613	4.773	5.909	6.832
	polygamous	0.063	0.300	1.123	2.153	3.255	4.366	5.458	6.322
	married	0.049	0.637	1.470	2.409	3.601	4.758	5.885	6.801
	widowed	0.057	0.729	1.776	2.842	3.761	4.766	5.775	6.445
	divorced	0.229	0.921	1.726	2.446	3.424	4.126	4.829	5.381
	separated	0.136	0.886	1.633	2.388	3.258	4.069	4.718	5.136
Kiambu	single	0.053	0.169	0.582	1.133	1.978	2.624	3.196	3.715
	monogamous	0.067	0.657	1.449	2.297	3.444	4.503	5.491	6.399
	polygamous	0.000	0.274	1.113	1.933	3.021	3.902	4.861	5.763
	married	0.065	0.640	1.441	2.289	3.430	4.481	5.463	6.370
	widowed	0.143	0.804	1.826	2.770	3.539	4.448	5.438	6.140
	divorced	0.000	0.906	1.789	2.533	3.430	4.095	4.917	5.082
	separated	0.231	0.963	1.587	2.392	3.188	3.832	4.551	5.199
Kikuyu	single	0.047	0.154	0.564	1.064	1.908	2.535	3.171	3.644
	monogamous	0.040	0.598	1.321	2.140	3.208	4.379	5.672	6.715
	polygamous	0.000	0.333	1.057	1.887	3.034	4.283	5.685	6.348
	married	0.039	0.587	1.316	2.134	3.202	4.374	5.673	6.680
	widowed	0.000	0.933	1.782	2.762	3.358	4.457	5.667	6.571
	divorced	0.333	0.929	1.543	2.218	3.176	3.577	4.560	5.262
	separated	0.071	0.848	1.494	2.228	2.978	3.882	4.464	5.073
Murang'a	single	0.035	0.121	0.552	1.037	1.885	2.638	3.310	3.479
	monogamous	0.052	0.691	1.569	2.552	3.793	4.960	6.002	6.933
	polygamous	0.000	0.290	1.169	2.225	3.490	4.557	5.680	6.304
	married	0.051	0.671	1.565	2.546	3.786	4.948	5.990	6.905
	widowed	0.000	0.550	2.044	2.868	3.972	5.040	5.972	6.397
	divorced	0.000	1.176	1.592	2.213	3.344	3.722	4.457	5.130
	separated	0.333	0.750	1.554	2.374	3.114	4.079	4.505	4.938

Kenya 1999 Population and Housing Census

Region	Marital Status	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Nyandarua	single	0.039	0.152	0.731	1.377	2.573	3.399	4.138	4.524
	monogamous	0.048	0.681	1.659	2.831	4.169	5.504	6.820	7.866
	polygamous	0.000	0.363	1.479	2.743	3.851	5.266	6.519	7.355
	married	0.045	0.672	1.656	2.829	4.157	5.493	6.800	7.822
	widowed	0.083	1.200	1.857	3.000	4.234	5.336	6.351	7.235
	divorced	0.143	0.650	1.804	2.715	3.812	4.748	5.458	6.343
	separated	0.091	1.028	1.856	2.659	3.764	4.700	5.608	5.742
Nyeri	single	0.026	0.103	0.513	1.088	1.940	2.597	3.128	3.621
	monogamous	0.039	0.608	1.394	2.233	3.329	4.374	5.529	6.420
	polygamous	0.188	0.192	1.200	1.947	2.902	3.869	4.904	5.944
	married	0.046	0.590	1.391	2.228	3.318	4.361	5.505	6.400
	widowed	0.000	0.810	1.633	2.682	3.498	4.444	5.356	6.082
	divorced	0.000	0.958	1.767	2.328	3.133	3.899	4.402	4.716
	separated	0.000	0.729	1.528	2.157	3.093	3.845	4.604	4.993
Thika	single	0.062	0.174	0.623	1.193	2.155	2.928	3.267	3.870
	monogamous	0.048	0.664	1.469	2.432	3.663	4.821	5.933	6.798
	polygamous	0.000	0.378	0.993	2.222	3.175	4.341	5.239	6.166
	married	0.046	0.653	1.454	2.427	3.644	4.800	5.899	6.760
	widowed	0.071	0.517	1.695	2.787	3.871	4.867	5.742	6.340
	divorced	0.500	1.082	1.785	2.359	3.380	4.202	4.824	5.599
	separated	0.200	0.917	1.720	2.464	3.451	4.208	4.791	5.120
Maragua	single	0.035	0.142	0.604	1.124	2.174	2.840	3.467	3.850
	monogamous	0.048	0.692	1.623	2.692	4.059	5.322	6.455	7.307
	polygamous	0.200	0.257	1.140	2.323	3.663	4.542	5.419	6.216
	married	0.052	0.674	1.612	2.684	4.045	5.290	6.393	7.238
	widowed	0.000	0.500	1.733	3.240	4.254	5.094	6.371	6.907
	divorced	0.000	0.857	1.599	2.498	3.512	4.258	4.816	5.352
	separated	0.000	0.867	1.682	2.487	3.319	4.328	4.794	4.705
COAST	single	0.039	0.150	0.588	1.020	2.052	2.613	3.247	3.333
	monogamous	0.125	0.775	1.762	2.857	4.215	5.432	6.393	6.780
	polygamous	0.124	0.747	2.056	3.347	4.681	5.826	6.636	6.916
	married	0.125	0.772	1.800	2.931	4.307	5.524	6.462	6.821
	widowed	0.110	0.627	1.993	3.099	4.401	5.293	5.986	6.235
	divorced	0.137	0.897	1.804	2.567	3.517	4.143	4.626	4.961
	separated	0.213	0.894	1.696	2.627	3.592	4.348	5.065	5.361
Kilifi	single	0.025	0.123	0.607	1.016	2.500	3.302	4.133	4.282
	monogamous	0.146	0.773	1.905	3.161	4.732	6.041	7.066	7.326
	polygamous	0.129	0.731	2.028	3.375	4.771	5.865	6.615	6.768
	married	0.144	0.767	1.926	3.206	4.743	5.982	6.885	7.082
	widowed	0.195	0.507	2.204	3.284	4.687	5.560	6.023	6.373
	divorced	0.250	1.000	1.957	2.652	3.580	4.457	4.523	4.951
	separated	0.300	0.910	1.698	2.548	3.697	4.361	4.944	5.725

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Region	Marital Status	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Kwale	single	0.029	0.154	0.743	1.001	2.533	2.957	3.715	3.356
	monogamous	0.135	0.791	1.946	3.256	4.658	5.948	6.773	7.119
	polygamous	0.106	0.782	2.187	3.615	4.866	6.026	6.750	7.150
	married	0.131	0.790	1.986	3.328	4.709	5.970	6.766	7.129
	widowed	0.121	0.542	2.261	3.362	4.656	5.639	6.241	6.511
	divorced	0.125	1.005	1.881	2.848	3.978	4.412	4.990	5.120
	separated	0.176	0.880	1.678	2.903	3.952	4.635	5.098	5.366
Lamu	single	0.027	0.113	0.480	0.813	1.524	1.856	2.179	3.591
	monogamous	0.087	0.814	1.744	2.868	4.261	5.469	6.413	7.473
	polygamous	0.000	0.500	1.667	3.000	4.116	5.532	6.338	6.298
	married	0.087	0.799	1.741	2.873	4.253	5.472	6.407	7.394
	widowed	0.250	0.615	1.524	3.316	4.308	5.634	6.483	6.420
	divorced	0.000	0.757	1.570	2.470	3.633	4.200	4.803	5.523
	separated	0.000	0.714	1.750	2.026	3.545	4.667	5.619	6.250
Mombasa	single	0.065	0.186	0.526	0.960	1.718	2.106	2.610	2.489
	monogamous	0.130	0.762	1.497	2.337	3.390	4.342	5.050	5.421
	polygamous	0.231	0.638	1.652	2.508	3.571	4.483	5.214	5.519
	married	0.137	0.755	1.506	2.349	3.407	4.356	5.069	5.432
	widowed	0.000	0.769	1.626	2.484	3.630	4.369	5.149	5.156
	divorced	0.125	0.861	1.757	2.252	3.000	3.562	4.011	4.336
	separated	0.400	1.000	1.604	2.311	3.127	3.856	4.812	4.616
Taita Taveta	single	0.044	0.140	0.599	1.197	1.985	2.616	3.324	3.459
	monogamous	0.060	0.720	1.713	2.764	4.105	5.401	6.475	7.338
	polygamous	0.000	0.701	2.094	3.182	4.435	5.433	6.376	6.743
	married	0.059	0.718	1.734	2.789	4.125	5.403	6.466	7.277
	widowed	0.000	0.600	1.564	3.063	4.128	5.043	6.271	6.666
	divorced	0.000	0.659	1.756	2.822	3.742	4.322	4.737	5.277
	separated	0.000	0.966	1.821	2.682	3.491	4.303	5.283	5.734
Tana River	single	0.018	0.070	0.401	0.766	2.267	2.480	3.088	3.909
	monogamous	0.041	0.726	1.804	3.212	4.949	6.089	7.101	7.293
	polygamous	0.059	0.716	1.956	3.412	4.963	6.054	6.923	7.419
	married	0.044	0.725	1.835	3.266	4.953	6.076	7.027	7.347
	widowed	0.059	0.590	1.540	3.275	5.034	5.934	6.537	6.754
	divorced	0.000	0.628	1.488	2.514	3.603	4.106	5.672	5.289
	separated	0.000	0.821	1.304	2.615	3.831	5.205	5.857	6.524
Malindi	single	0.056	0.180	0.698	1.242	2.463	3.241	3.482	4.107
	monogamous	0.140	0.834	1.955	3.206	4.736	5.998	6.884	6.921
	polygamous	0.139	0.834	2.269	3.603	5.017	6.291	7.115	7.362
	married	0.140	0.834	2.012	3.289	4.812	6.090	6.972	7.099
	widowed	0.067	0.833	2.175	3.557	4.919	5.614	6.019	6.359
	divorced	0.250	0.955	1.853	2.655	3.751	4.744	4.889	5.288
	separated	0.133	0.828	1.952	2.866	3.903	4.853	5.255	5.395

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Region	Marital Status	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
EASTERN	single	0.066	0.176	0.687	1.364	2.529	3.382	4.038	4.450
	monogamous	0.081	0.715	1.719	2.979	4.397	5.645	6.723	7.356
	polygamous	0.060	0.649	1.855	3.200	4.571	5.627	6.434	6.954
	married	0.080	0.712	1.725	2.991	4.410	5.643	6.683	7.290
	widowed	0.083	0.546	2.051	3.308	4.459	5.522	6.338	6.842
	divorced	0.125	0.811	1.719	2.742	3.660	4.456	5.118	5.330
	separated	0.066	0.872	1.739	2.698	3.711	4.589	5.336	5.576
Embu	single	0.057	0.142	0.517	1.053	1.997	2.668	3.264	3.846
	monogamous	0.085	0.627	1.379	2.246	3.400	4.633	5.891	6.957
	polygamous	0.000	0.523	1.371	2.255	3.443	4.520	5.605	6.662
	married	0.081	0.623	1.379	2.246	3.401	4.629	5.877	6.940
	widowed	0.000	0.571	1.775	2.694	3.703	4.564	6.040	6.612
	divorced	0.000	0.600	1.526	2.367	3.043	3.797	4.648	5.419
	separated	0.000	0.847	1.582	2.302	3.131	3.835	4.735	5.428
Isiolo	single	0.033	0.118	0.452	0.903	2.049	2.748	2.869	2.486
	monogamous	0.125	0.762	1.840	3.073	4.539	5.565	6.400	6.697
	polygamous	0.000	0.809	1.841	3.366	4.946	5.879	6.462	6.660
	married	0.105	0.767	1.840	3.111	4.605	5.619	6.413	6.688
	widowed	0.000	1.000	2.103	3.213	4.078	5.075	5.508	5.980
	divorced	0.500	0.758	1.606	2.698	3.312	4.196	4.922	5.236
	separated	0.000	0.682	1.739	2.961	4.028	4.500	4.840	5.316
Kitui	single	0.053	0.165	0.777	1.659	3.262	4.148	4.959	4.534
	monogamous	0.068	0.638	1.813	3.311	4.864	6.271	7.343	7.841
	polygamous	0.000	0.655	1.883	3.310	4.820	5.880	6.583	7.170
	married	0.064	0.638	1.816	3.311	4.860	6.215	7.179	7.672
	widowed	0.133	0.556	2.062	3.714	4.809	5.895	6.810	7.108
	divorced	0.250	0.838	1.723	3.008	4.019	5.052	5.683	5.627
	separated	0.000	0.900	1.794	2.922	4.333	5.126	6.100	6.248
Makueni	single	0.066	0.170	0.747	1.602	2.954	3.991	4.456	5.028
	monogamous	0.102	0.661	1.775	3.227	4.798	6.058	7.191	7.739
	polygamous	0.000	0.516	1.861	3.279	4.531	5.621	6.596	7.228
	married	0.097	0.655	1.777	3.229	4.781	6.021	7.119	7.659
	widowed	0.000	0.500	2.063	3.480	4.897	5.804	6.721	7.100
	divorced	0.000	0.946	1.759	2.856	4.056	4.930	5.272	5.251
	separated	0.091	0.709	1.777	2.886	4.094	5.016	5.988	5.782
Machakos	single	0.107	0.243	0.856	1.625	2.826	3.786	4.591	5.121
	monogamous	0.142	0.705	1.759	2.980	4.436	5.678	6.770	7.582
	polygamous	0.130	0.524	1.748	2.863	4.207	5.286	6.290	7.123
	married	0.141	0.696	1.759	2.976	4.425	5.655	6.728	7.529
	widowed	0.000	0.444	2.294	3.092	4.385	5.698	6.577	7.169
	divorced	0.400	0.797	1.929	2.886	3.957	4.853	5.357	5.616
	separated	0.125	0.869	1.852	2.888	3.882	4.842	5.825	5.985

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Region	Marital Status	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Marsabit	single	0.031	0.096	0.436	0.754	1.923	2.649	3.135	2.857
	monogamous	0.044	0.572	1.662	3.028	4.417	5.507	6.053	6.198
	polygamous	0.000	0.644	1.631	3.115	4.326	5.198	5.478	5.923
	married	0.041	0.579	1.658	3.043	4.399	5.439	5.932	6.129
	widowed	0.000	0.526	1.517	2.977	4.289	5.322	5.632	5.566
	divorced	0.000	0.421	1.517	2.347	3.944	4.758	4.745	6.083
	separated	0.000	0.833	1.750	2.910	3.906	4.538	6.727	6.462
Mbeere	single	0.095	0.201	0.684	1.598	2.508	3.585	4.461	4.418
	monogamous	0.115	0.632	1.619	3.025	4.439	6.004	7.345	7.897
	polygamous	0.444	0.353	1.563	3.039	4.449	5.886	6.896	7.212
	married	0.164	0.626	1.617	3.026	4.439	5.993	7.285	7.788
	widowed	0.167	0.222	1.950	3.000	4.449	5.796	7.151	7.626
	divorced	0.000	0.917	1.991	2.964	3.779	4.417	5.720	5.703
	separated	0.000	0.923	1.614	2.673	3.736	4.813	6.029	6.217
Meru Central	single	0.027	0.122	0.511	0.975	1.758	2.380	2.820	3.172
	monogamous	0.034	0.632	1.381	2.264	3.382	4.437	5.480	6.283
	polygamous	0.000	0.464	1.383	2.415	3.490	4.474	5.350	6.099
	married	0.032	0.624	1.381	2.268	3.386	4.439	5.470	6.266
	widowed	0.000	0.500	1.743	2.823	3.725	4.440	5.351	5.966
	divorced	0.000	0.778	1.508	2.327	3.057	3.654	4.429	4.871
	separated	0.000	0.876	1.573	2.227	3.066	3.876	4.657	4.910
Moyale	single	0.026	0.078	0.419	0.772	2.214	2.500	2.846	3.100
	monogamous	0.000	0.770	1.995	3.532	5.271	6.229	6.956	7.339
	polygamous	0.000	0.542	1.845	3.308	4.762	5.365	6.493	7.268
	married	0.000	0.762	1.988	3.520	5.230	6.145	6.914	7.333
	widowed	0.200	0.222	1.786	3.286	4.824	5.506	6.280	6.775
	divorced	0.000	0.690	1.589	2.796	3.460	4.415	5.605	4.864
	separated	0.000	0.286	1.773	2.625	3.704	4.952	5.000	6.833
Mwingi	single	0.082	0.214	0.864	1.621	3.363	4.334	4.699	5.351
	monogamous	0.117	0.699	1.904	3.438	5.148	6.680	7.790	8.132
	polygamous	0.000	0.758	2.090	3.520	5.021	6.357	6.950	7.276
	married	0.108	0.703	1.914	3.445	5.132	6.625	7.605	7.911
	widowed	0.000	1.333	1.970	3.542	5.058	6.370	7.050	7.459
	divorced	0.000	0.809	1.696	3.115	4.058	5.016	5.236	5.849
	separated	0.000	0.807	1.826	3.120	4.374	5.438	6.069	5.495
Meru North	single	0.054	0.184	0.720	1.366	2.455	3.060	3.872	3.865
	monogamous	0.044	0.906	1.906	3.362	4.878	6.116	6.912	7.232
	polygamous	0.053	0.812	2.080	3.430	4.871	5.822	6.525	6.780
	married	0.045	0.900	1.918	3.369	4.877	6.062	6.828	7.120
	widowed	0.206	0.480	2.354	3.545	4.492	5.814	6.129	6.601
	divorced	0.125	0.921	1.666	2.754	3.541	4.426	5.264	4.844
	separated	0.083	0.990	1.771	2.716	3.694	4.817	5.070	5.791

Kenya 1999 Population and Housing Census

Region	Marital Status	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Tharaka	single	0.021	0.073	0.338	0.886	2.097	3.179	3.723	3.194
	monogamous	0.000	0.628	1.566	2.921	4.694	6.426	7.491	7.857
	polygamous	0.000	0.375	1.823	3.222	4.591	5.798	6.937	7.043
	married	0.000	0.616	1.578	2.947	4.681	6.325	7.367	7.649
	widowed	0.000	0.400	1.889	3.173	4.506	5.488	6.542	7.141
	divorced	0.000	0.571	1.605	2.182	3.615	4.070	5.310	5.704
	separated	0.000	0.821	1.543	2.477	3.731	4.767	5.327	6.143
Meru South	single	0.063	0.149	0.592	0.943	1.757	2.381	2.923	2.876
	monogamous	0.032	0.687	1.422	2.354	3.557	4.670	5.706	6.617
	polygamous	0.000	0.200	1.539	2.612	3.866	4.709	5.973	6.344
	married	0.030	0.668	1.426	2.361	3.569	4.672	5.725	6.590
	widowed	0.000	0.125	2.444	3.141	3.964	4.861	5.351	6.422
	divorced	0.000	0.750	1.333	2.182	2.885	4.056	4.583	5.213
	separated	0.333	0.861	1.570	2.271	3.157	3.913	4.377	5.000
N/EASTERN	single	0.037	0.088	0.346	0.721	2.060	3.194	2.986	3.234
	monogamous	0.062	0.694	1.954	3.480	4.939	5.990	6.647	7.028
	polygamous	0.018	0.592	1.861	3.461	5.058	6.202	6.963	7.372
	married	0.054	0.684	1.942	3.477	4.964	6.040	6.744	7.138
	widowed	0.012	0.446	1.098	3.012	4.412	5.349	6.088	6.504
	divorced	0.074	0.743	1.404	2.308	3.473	4.476	5.047	5.541
	separated	0.182	0.493	1.169	2.292	3.602	4.863	5.338	4.750
Garissa	single	0.049	0.110	0.408	0.816	2.252	3.063	3.490	3.500
	monogamous	0.086	0.752	1.888	3.351	4.819	5.892	6.638	7.010
	polygamous	0.000	0.538	1.517	3.088	4.851	5.905	6.841	7.179
	married	0.073	0.734	1.846	3.316	4.824	5.894	6.694	7.057
	widowed	0.000	0.453	0.674	2.813	4.283	5.021	6.212	6.423
	divorced	0.000	0.649	1.306	2.099	3.287	4.143	5.224	5.663
	separated	0.400	0.421	0.883	2.631	3.259	4.375	5.207	4.692
Mandera	single	0.020	0.049	0.216	0.429	1.626	2.509	2.048	3.360
	monogamous	0.000	0.632	1.964	3.509	4.899	6.007	6.627	7.065
	polygamous	0.050	0.557	2.054	3.650	5.107	6.368	7.056	7.458
	married	0.015	0.623	1.978	3.538	4.955	6.119	6.787	7.226
	widowed	0.029	0.303	1.813	3.050	4.346	5.448	5.794	6.410
	divorced	0.000	0.604	1.361	2.346	3.487	4.527	4.939	5.385
	separated	0.000	0.418	1.194	2.214	3.583	5.304	5.813	4.000
Wajir	single	0.039	0.096	0.356	0.775	2.043	3.817	2.868	2.476
	monogamous	0.067	0.695	2.005	3.573	5.075	6.059	6.669	7.015
	polygamous	0.000	0.676	1.974	3.574	5.164	6.236	6.956	7.423
	married	0.058	0.693	2.001	3.573	5.092	6.095	6.748	7.127
	widowed	0.031	0.554	1.683	3.149	4.547	5.520	6.197	6.651
	divorced	0.154	0.922	1.520	2.476	3.616	4.703	5.004	5.607
	separated	0.000	0.610	1.473	2.000	3.782	4.805	5.229	5.000

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Region	Marital Status	12-14	19-19	20-24	25-29	30-34	35-39	40-44	45-49
NYANZA	single	0.071	0.242	0.840	1.295	2.649	3.359	3.590	3.770
	monogamous	0.126	0.861	1.996	3.475	5.103	6.302	7.255	7.736
	polygamous	0.105	0.869	2.104	3.494	4.932	5.924	6.666	6.996
	married	0.122	0.862	2.014	3.479	5.057	6.191	7.051	7.461
	widowed	0.098	0.939	2.341	3.618	5.020	6.063	6.804	7.298
	divorced	0.242	0.913	1.776	2.677	3.730	4.383	4.766	5.216
	separated	0.306	0.969	1.793	2.722	3.755	4.436	4.813	5.475
Gucha	single	0.053	0.227	0.772	1.214	2.847	3.485	4.093	3.802
	monogamous	0.050	0.782	1.850	3.400	5.053	6.326	7.514	8.196
	polygamous	0.038	0.626	1.629	3.264	4.720	5.942	6.985	7.594
	married	0.049	0.773	1.849	3.386	5.002	6.245	7.374	8.017
	widowed	0.000	0.324	2.497	3.791	5.417	6.107	7.247	7.884
	divorced	0.500	0.809	1.684	2.729	3.568	4.628	5.397	5.952
	separated	0.444	0.988	1.685	2.755	3.984	4.424	5.102	6.237
H/Bay	single	0.049	0.215	0.872	0.917	2.232	2.875	3.438	2.796
	monogamous	0.069	0.891	2.161	3.722	5.336	6.368	7.303	7.371
	polygamous	0.043	0.942	2.167	3.602	5.080	5.954	6.530	6.896
	married	0.064	0.902	2.163	3.682	5.237	6.192	6.961	7.140
	widowed	0.154	1.066	2.180	3.649	5.102	5.892	6.331	7.161
	divorced	0.000	1.222	1.810	2.578	3.892	5.591	5.000	4.875
	separated	0.333	0.804	1.574	2.375	2.246	3.814	4.125	6.500
Kisii Cantral	single	0.047	0.190	0.898	1.251	2.306	3.100	3.574	3.583
	monogamous	0.082	0.738	1.770	3.239	4.769	6.025	7.122	7.798
	polygamous	0.125	0.568	1.893	3.046	4.369	5.437	6.538	7.163
	married	0.084	0.728	1.787	3.228	4.731	5.955	7.037	7.695
	widowed	0.083	0.500	2.339	3.818	5.101	6.030	6.927	7.534
	divorced	0.000	0.841	1.774	2.701	3.902	4.287	4.792	5.806
	separated	1.000	1.241	1.771	2.467	3.762	4.253	4.926	5.686
Kisumu	single	0.040	0.202	0.687	1.057	1.868	2.465	2.691	2.980
	monogamous	0.057	0.837	1.856	3.178	4.711	5.922	6.856	7.310
	polygamous	0.042	0.841	1.767	3.182	4.434	5.517	6.296	6.648
	married	0.053	0.837	1.842	3.175	4.637	5.800	6.662	7.057
	widowed	0.000	0.929	2.275	3.485	4.661	5.791	6.366	7.021
	divorced	0.429	0.960	1.708	2.597	3.132	3.861	3.872	4.580
	separated	0.000	0.905	1.796	2.815	3.500	3.716	4.016	4.705
Kuria	single	0.042	0.129	0.597	0.920	3.089	3.901	3.034	4.750
	monogamous	0.159	0.835	2.092	3.663	5.368	6.635	7.338	7.852
	polygamous	0.000	0.866	2.248	3.741	5.277	6.438	7.403	7.536
	married	0.127	0.840	2.132	3.690	5.330	6.543	7.369	7.696
	widowed	1.000	0.949	2.181	3.801	5.063	6.219	7.059	7.018
	divorced	0.000	1.067	1.625	2.825	3.372	4.105	5.120	6.545
	separated	0.250	1.033	1.783	2.993	4.411	5.065	5.366	6.393

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Region	Marital Status	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Migori	single	0.075	0.253	0.915	1.096	2.843	3.785	3.312	3.211
	monogamous	0.185	0.852	2.150	3.657	5.343	6.574	7.377	7.653
	polygamous	0.121	0.852	2.223	3.631	5.140	6.117	6.845	7.102
	married	0.172	0.852	2.171	3.648	5.254	6.364	7.107	7.377
	widowed	0.037	1.056	2.377	3.718	5.027	6.073	7.033	7.160
	divorced	0.000	0.818	1.737	2.515	4.311	4.260	5.974	5.737
	separated	0.444	0.720	1.753	2.769	3.655	4.892	5.094	6.250
Nyamira	single	0.145	0.341	0.994	1.827	3.088	4.109	4.416	4.802
	monogamous	0.171	0.865	1.933	3.424	4.934	6.163	7.253	8.114
	polygamous	0.180	0.769	2.037	3.374	4.925	5.939	6.970	7.659
	married	0.172	0.860	1.938	3.421	4.933	6.134	7.203	8.022
	widowed	0.053	0.455	2.346	3.443	4.780	6.090	7.126	8.120
	divorced	0.429	1.061	1.755	2.927	4.134	4.763	5.275	5.556
	separated	0.143	1.192	1.874	2.965	3.918	5.077	5.474	5.589
Rachuonyo	single	0.084	0.277	1.018	1.216	3.354	3.151	3.847	2.939
	monogamous	0.146	0.948	2.177	3.760	5.446	6.575	7.454	7.722
	polygamous	0.209	0.970	2.202	3.535	5.135	5.975	6.676	7.016
	married	0.158	0.950	2.181	3.718	5.370	6.412	7.205	7.492
	widowed	0.444	1.014	2.416	3.606	5.185	6.227	7.130	7.205
	divorced	0.000	1.474	2.508	2.882	3.980	4.862	4.273	5.714
	separated	0.333	1.083	1.919	2.648	4.411	4.435	4.800	5.043
Siaya	single	0.051	0.213	0.880	1.152	2.519	2.879	3.236	3.734
	monogamous	0.124	0.877	2.029	3.534	5.263	6.347	7.141	7.446
	polygamous	0.067	0.861	2.171	3.550	4.926	5.828	6.473	6.638
	married	0.113	0.875	2.051	3.538	5.168	6.180	6.891	7.119
	widowed	0.130	1.103	2.294	3.556	5.021	6.044	6.627	7.099
	divorced	0.000	1.020	1.848	2.527	3.205	4.368	3.908	4.041
	separated	0.000	0.822	1.806	2.779	3.626	4.074	4.725	4.953
Suba	single	0.058	0.226	0.957	1.181	2.899	3.627	1.857	4.182
	monogamous	0.168	0.879	2.141	3.714	5.352	6.631	7.326	7.908
	polygamous	0.172	0.897	2.168	3.576	4.984	6.198	6.814	7.285
	married	0.169	0.883	2.149	3.661	5.185	6.411	7.050	7.549
	widowed	0.000	0.976	2.441	3.479	5.142	6.233	6.920	7.648
	divorced	0.000	0.500	1.769	2.467	4.750	3.400	6.333	6.143
	separated	0.000	0.833	1.687	2.435	3.923	5.160	5.350	5.471
Bondo	single	0.110	0.326	1.179	1.572	3.266	3.658	4.570	4.951
	monogamous	0.206	0.964	2.165	3.641	5.326	6.550	7.255	7.486
	polygamous	0.154	0.953	2.159	3.520	4.980	5.884	6.415	6.612
	married	0.188	0.962	2.163	3.606	5.204	6.278	6.865	7.073
	widowed	0.250	0.839	2.419	3.535	4.899	6.028	6.753	7.200
	divorced	0.000	0.615	1.894	2.643	4.176	4.296	6.143	5.708
	separated	0.333	1.063	1.909	2.881	3.405	5.507	4.125	4.759

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Region	Marital Status	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Nyando	single	0.073	0.249	0.893	1.223	2.492	3.315	3.195	3.742
	monogamous	0.136	0.902	2.048	3.578	5.344	6.686	7.440	7.937
	polygamous	0.095	0.878	2.059	3.473	4.898	5.954	6.631	6.894
	married	0.127	0.898	2.050	3.553	5.210	6.439	7.120	7.499
	widowed	0.188	1.153	2.382	3.655	5.135	6.356	6.823	7.322
	divorced	0.000	0.682	1.520	2.500	3.922	3.750	4.235	5.900
	separated	0.200	1.000	1.848	2.635	3.828	4.318	5.244	5.357
R/VALLEY	single	0.041	0.164	0.713	1.393	2.611	3.503	4.081	4.473
	monogamous	0.080	0.753	1.837	3.159	4.672	6.027	7.047	7.582
	polygamous	0.058	0.784	2.032	3.515	4.984	6.110	7.004	7.370
	married	0.077	0.757	1.859	3.213	4.730	6.045	7.036	7.525
	widowed	0.084	0.732	2.168	3.417	4.628	5.710	6.561	6.919
	divorced	0.147	0.775	1.816	2.751	3.804	4.564	5.239	5.534
	separated	0.221	0.919	1.818	2.843	3.905	4.837	5.381	5.901
Baringo	single	0.044	0.134	0.546	1.101	2.528	3.444	3.796	3.821
	monogamous	0.128	0.802	1.982	3.423	5.333	6.865	7.796	8.029
	polygamous	0.000	0.924	2.362	3.913	5.677	6.843	7.613	7.808
	married	0.109	0.833	2.065	3.552	5.440	6.858	7.731	7.947
	widowed	0.000	1.368	2.121	3.966	5.256	6.545	7.415	7.564
	divorced	0.333	1.208	1.926	3.255	4.181	5.058	5.244	5.389
	separated	1.000	1.076	1.739	3.147	4.545	5.385	6.058	6.054
Bomet	single	0.058	0.207	0.934	1.794	3.222	3.943	5.199	5.259
	monogamous	0.051	0.731	2.020	3.676	5.389	6.855	7.942	8.464
	polygamous	0.063	0.823	2.008	3.497	5.169	6.649	7.587	8.068
	married	0.053	0.735	2.019	3.659	5.360	6.817	7.855	8.349
	widowed	0.000	0.368	2.149	3.634	5.118	6.509	7.189	8.121
	divorced	0.333	0.667	2.118	2.876	4.030	5.219	6.405	4.031
	separated	0.000	0.860	1.799	3.075	4.202	5.155	5.822	6.328
Keiyo	single	0.057	0.186	0.836	1.828	3.149	3.659	3.978	4.877
	monogamous	0.028	0.799	1.876	3.359	5.029	6.237	7.192	7.281
	polygamous	0.000	0.778	2.157	3.612	4.618	5.845	6.633	6.852
	married	0.026	0.798	1.887	3.373	4.993	6.193	7.118	7.214
	widowed	0.000	0.333	2.455	3.259	4.963	5.762	6.552	6.384
	divorced	0.000	1.143	2.450	3.571	4.225	4.762	5.061	4.300
	separated	0.000	1.083	1.921	2.940	4.014	5.227	5.456	5.849
Kajiado	single	0.064	0.227	0.683	1.228	2.265	3.200	3.483	3.901
	monogamous	0.122	0.789	1.725	2.710	3.949	5.066	5.802	6.443
	polygamous	0.095	0.841	2.118	3.551	5.044	6.063	6.975	7.255
	married	0.117	0.802	1.812	2.935	4.312	5.434	6.277	6.768
	widowed	0.083	0.585	2.446	3.291	4.475	5.376	6.162	6.805
	divorced	0.000	0.764	1.810	2.688	3.540	4.110	4.788	5.551
	separated	0.500	1.023	1.718	2.651	3.612	4.561	5.336	5.347

Kenya 1999 Population and Housing Census

Region	Marital Status	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Kericho	single	0.052	0.200	0.851	1.518	2.723	3.765	4.160	4.505
	monogamous	0.063	0.774	1.899	3.287	4.821	6.209	7.225	7.764
	polygamous	0.059	0.699	1.882	3.027	4.576	5.570	6.562	7.147
	married	0.063	0.770	1.898	3.266	4.796	6.124	7.120	7.662
	widowed	0.222	1.094	2.247	3.281	4.645	5.975	6.833	7.162
	divorced	0.000	0.933	1.984	2.969	3.714	4.706	4.887	5.576
	separated	0.143	0.813	1.940	2.865	4.098	4.864	5.548	6.081
Koibatek	single	0.017	0.138	0.559	1.181	2.680	3.572	3.902	4.794
	monogamous	0.014	0.752	1.759	3.107	4.807	6.569	7.506	8.050
	polygamous	0.000	0.654	2.013	3.271	5.018	6.726	7.186	7.648
	married	0.014	0.749	1.770	3.118	4.827	6.591	7.444	7.960
	widowed	0.000	0.667	1.400	3.096	4.663	6.029	6.614	7.076
	divorced	0.000	1.000	1.962	2.780	4.545	5.475	5.326	5.467
	separated	0.000	0.778	1.729	2.886	4.145	5.022	5.295	5.286
Laikipia	single	0.047	0.155	0.661	1.396	2.437	3.369	3.750	4.555
	monogamous	0.135	0.708	1.683	2.772	4.037	5.287	6.340	7.070
	polygamous	0.000	0.790	1.928	3.296	4.938	5.633	6.465	7.106
	married	0.126	0.716	1.699	2.805	4.099	5.319	6.353	7.074
	widowed	0.250	1.000	2.065	3.028	4.131	5.251	5.661	6.644
	divorced	0.000	0.700	1.875	2.649	3.854	4.480	5.484	5.893
	separated	0.200	0.673	1.792	2.539	3.720	4.565	5.241	6.078
Marakwet	single	0.021	0.103	0.598	1.239	2.035	2.826	3.157	3.212
	monogamous	0.103	0.700	1.836	3.519	5.169	6.382	6.925	7.253
	polygamous	0.000	0.645	2.140	3.567	5.073	6.085	6.366	6.569
	married	0.093	0.697	1.859	3.524	5.152	6.324	6.801	7.086
	widowed	0.167	0.857	1.880	3.913	4.870	5.640	5.983	6.661
	divorced	0.000	0.700	1.719	2.117	3.778	4.229	4.583	4.923
	separated	0.000	0.902	1.656	2.882	4.366	4.966	4.658	5.444
Nakuru	single	0.038	0.159	0.685	1.316	2.331	3.085	3.745	4.357
	monogamous	0.070	0.700	1.656	2.822	4.198	5.472	6.519	7.265
	polygamous	0.026	0.608	1.753	2.932	4.174	5.333	6.248	6.956
	married	0.066	0.696	1.661	2.828	4.197	5.459	6.491	7.232
	widowed	0.059	0.741	2.044	3.085	4.101	4.987	6.134	6.516
	divorced	0.214	0.691	1.747	2.662	3.666	4.333	5.095	5.450
	separated	0.088	0.929	1.849	2.655	3.588	4.507	4.993	5.881
Nandi	single	0.040	0.185	0.846	1.703	3.190	4.302	4.968	5.543
	monogamous	0.068	0.790	1.928	3.316	4.961	6.412	7.642	8.172
	polygamous	0.095	0.759	1.900	3.303	4.630	5.942	7.069	7.439
	married	0.070	0.789	1.927	3.315	4.931	6.359	7.554	8.049
	widowed	0.167	0.464	2.183	3.591	4.755	5.972	7.003	7.304
	divorced	0.333	0.800	2.130	2.968	4.500	4.812	5.336	5.466
	separated	0.000	0.985	1.915	3.236	4.098	5.035	5.519	6.145

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Region	Marital Status	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Narok	single	0.053	0.220	0.869	1.596	3.111	3.934	4.585	4.329
	monogamous	0.089	0.806	2.047	3.599	5.130	6.606	7.695	8.029
	polygamous	0.103	0.879	2.173	3.815	5.244	6.351	7.129	7.423
	married	0.093	0.825	2.085	3.680	5.180	6.493	7.434	7.745
	widowed	0.250	0.931	2.236	3.810	5.150	6.230	7.191	7.172
	divorced	0.000	0.660	1.830	2.878	4.099	5.028	5.651	5.864
	separated	0.000	0.991	1.941	3.302	3.978	5.568	5.965	7.103
Samburu	single	0.030	0.113	0.688	1.435	2.557	3.619	4.144	4.250
	monogamous	0.043	0.622	1.882	3.348	4.773	6.015	6.574	7.017
	polygamous	0.000	0.569	1.730	3.314	4.695	5.692	6.517	6.794
	married	0.036	0.613	1.853	3.341	4.754	5.931	6.558	6.947
	widowed	0.000	0.769	2.000	3.284	4.604	5.470	6.161	6.482
	divorced	0.500	0.793	1.406	2.355	4.113	4.643	5.286	5.000
	separated	0.000	0.789	1.836	2.905	4.500	4.672	5.500	5.481
T. Mara	single	0.066	0.217	0.963	1.734	3.460	4.798	4.733	6.157
	monogamous	0.054	0.821	2.094	3.804	5.530	7.138	7.787	8.307
	polygamous	0.050	0.835	2.328	3.983	5.533	6.903	7.618	8.023
	married	0.053	0.823	2.144	3.863	5.531	7.035	7.707	8.168
	widowed	0.000	0.917	2.246	4.035	5.549	6.694	7.323	7.302
	divorced	0.000	0.826	1.962	3.268	4.159	6.023	7.269	6.846
	separated	0.000	0.846	1.871	3.101	4.576	5.977	6.420	5.000
T. Nzoia	single	0.026	0.148	0.682	1.247	2.337	3.042	3.684	3.854
	monogamous	0.070	0.759	1.867	3.242	4.845	6.348	7.511	8.162
	polygamous	0.029	0.758	1.991	3.423	4.952	6.216	7.427	8.022
	married	0.064	0.759	1.877	3.264	4.863	6.319	7.488	8.120
	widowed	0.000	0.682	2.126	3.483	4.694	5.853	6.946	7.315
	divorced	0.000	0.935	1.969	2.819	3.791	4.791	5.604	5.620
	separated	0.400	1.056	1.840	2.892	3.927	4.910	5.825	6.012
Turkana	single	0.026	0.073	0.305	0.644	1.742	2.624	3.383	3.377
	monogamous	0.135	0.752	1.825	3.109	4.559	5.341	6.142	6.427
	polygamous	0.097	0.605	1.913	3.368	4.795	5.661	6.514	6.755
	married	0.123	0.721	1.845	3.184	4.638	5.461	6.294	6.564
	widowed	0.167	0.630	1.974	3.294	4.464	5.358	5.950	6.172
	divorced	15.300	0.761	1.582	2.576	3.675	4.513	4.870	5.655
	separated	0.500	0.873	1.481	2.489	3.579	4.339	4.645	5.388
U. Gishu	single	0.031	0.153	0.675	1.312	2.515	3.532	4.029	4.313
	monogamous	0.061	0.744	1.704	2.877	4.386	5.785	6.950	7.563
	polygamous	0.040	0.602	1.803	2.960	4.313	5.666	6.790	7.542
	married	0.059	0.738	1.708	2.882	4.379	5.770	6.920	7.550
	widowed	0.111	0.423	2.100	3.149	4.372	5.432	6.289	6.956
	divorced	0.000	0.696	2.115	2.719	3.387	4.212	5.068	5.512
	separated	0.333	0.853	2.064	2.721	3.758	4.610	5.192	5.526

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Region	Marital Status	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
W. Pokot	single	0.019	0.102	0.623	1.212	2.588	2.854	3.480	2.890
	monogamous	0.034	0.702	1.916	3.536	5.236	6.433	7.257	7.410
	polygamous	0.013	0.735	1.955	3.725	5.304	6.512	7.248	7.198
	married	0.026	0.709	1.927	3.608	5.267	6.472	7.252	7.293
	widowed	0.000	0.810	2.400	3.794	5.005	6.014	6.483	6.705
	divorced	0.000	0.694	1.293	2.540	3.875	4.542	4.917	5.448
	separated	0.333	0.942	1.776	2.738	4.142	4.813	5.116	5.630
Buret	single	0.070	0.246	1.092	1.952	3.423	4.227	5.112	4.870
	monogamous	0.098	0.808	2.043	3.585	5.309	6.691	7.721	8.367
	polygamous	0.111	0.787	2.036	3.185	4.642	6.003	7.208	7.662
	married	0.099	0.807	2.043	3.551	5.242	6.601	7.646	8.252
	widowed	0.000	0.385	2.435	3.783	4.830	6.498	7.625	7.558
	divorced	0.000	0.667	1.854	3.030	4.308	5.072	5.854	5.889
	separated	0.200	0.846	1.767	3.188	4.374	5.283	6.044	6.864
WESTERN	single	0.030	0.144	0.637	1.003	2.249	2.904	3.020	3.360
	monogamous	0.061	0.807	1.908	3.311	4.969	6.333	7.429	8.047
	polygamous	0.066	0.759	2.056	3.434	4.902	6.156	7.098	7.612
	married	0.062	0.803	1.925	3.331	4.955	6.286	7.328	7.903
	widowed	0.116	0.816	2.222	3.579	4.945	5.981	7.025	7.437
	divorced	0.100	0.896	1.753	2.561	3.489	4.238	4.720	5.060
	separated	0.257	0.948	1.709	2.623	3.679	4.343	4.929	5.161
Bungoma	single	0.031	0.143	0.611	0.940	2.413	3.131	3.547	3.293
	monogamous	0.062	0.797	1.870	3.283	5.028	6.565	7.750	8.453
	polygamous	0.061	0.709	1.997	3.337	4.935	6.332	7.376	8.002
	married	0.061	0.790	1.885	3.293	5.005	6.490	7.602	8.249
	widowed	0.250	0.698	2.202	3.446	4.984	6.123	7.275	7.524
	divorced	0.125	0.940	1.854	2.580	3.515	4.322	4.771	5.233
	separated	0.000	0.942	1.664	2.595	3.687	4.500	5.104	5.171
Busia	single	0.024	0.176	0.746	1.060	2.088	2.768	2.802	2.575
	monogamous	0.055	0.898	2.156	3.653	5.221	6.472	7.291	7.551
	polygamous	0.118	0.858	2.249	3.634	4.977	6.023	6.678	7.149
	married	0.070	0.894	2.171	3.649	5.152	6.320	7.043	7.384
	widowed	0.222	1.226	2.398	3.683	4.961	6.030	6.594	6.890
	divorced	0.000	0.953	1.679	2.891	3.321	4.346	4.301	4.293
	separated	1.000	0.976	1.998	2.734	3.867	4.211	4.643	5.000
Mt. Elgon	single	0.015	0.114	0.582	1.221	2.789	3.165	3.265	5.348
	monogamous	0.000	0.743	1.869	3.465	5.447	7.068	8.288	8.931
	polygamous	0.091	0.802	1.970	3.457	5.308	6.971	7.951	8.711
	married	0.020	0.748	1.882	3.463	5.407	7.034	8.142	8.826
	widowed	0.200	0.667	2.294	3.478	5.274	6.549	7.537	8.548
	divorced	0.000	0.813	1.792	2.622	4.049	4.908	5.550	6.741
	separated	0.000	0.863	1.795	3.111	4.328	4.971	6.250	6.171

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Region	Marital Status	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Kakamega	single	0.040	0.156	0.635	1.041	2.253	2.954	2.816	3.585
	monogamous	0.078	0.794	1.858	3.247	4.899	6.324	7.549	8.211
	polygamous	0.122	0.707	2.075	3.425	4.740	6.097	7.223	7.742
	married	0.085	0.788	1.879	3.271	4.872	6.278	7.469	8.089
	widowed	0.043	0.568	2.180	3.415	4.682	5.885	7.275	7.753
	divorced	0.200	0.750	1.690	2.411	3.628	4.291	5.080	5.079
	separated	0.200	0.925	1.661	2.601	3.611	4.356	4.787	5.167
Lugari	single	0.025	0.117	0.615	1.068	2.133	3.211	3.265	3.675
	monogamous	0.125	0.726	1.833	3.163	4.898	6.230	7.546	8.285
	polygamous	0.000	0.634	1.993	3.286	4.897	6.198	7.236	7.942
	married	0.099	0.720	1.847	3.178	4.898	6.223	7.464	8.176
	widowed	0.000	1.400	2.361	3.876	4.796	5.604	7.419	7.799
	divorced	0.000	0.778	1.986	2.788	3.615	4.564	4.991	6.217
	separated	0.000	0.900	1.700	2.586	3.817	4.737	5.634	5.537
Teso	single	0.023	0.136	0.652	0.993	1.924	2.543	3.096	3.162
	monogamous	0.096	0.829	1.973	3.436	5.090	6.301	7.549	7.912
	polygamous	0.043	0.891	2.001	3.470	4.882	5.877	6.773	7.286
	married	0.080	0.835	1.977	3.444	5.028	6.141	7.221	7.643
	widowed	0.000	0.667	2.292	3.582	5.072	5.980	6.719	7.367
	divorced	0.000	0.714	1.653	2.505	3.211	3.967	4.373	4.262
	separated	0.500	1.000	1.833	2.630	3.547	3.926	4.573	5.179
Vihiga	single	0.034	0.129	0.618	0.980	2.127	2.473	2.707	3.143
	monogamous	0.042	0.708	1.703	3.035	4.608	5.880	6.969	7.738
	polygamous	0.000	0.381	1.593	2.966	4.256	5.248	6.287	6.665
	married	0.040	0.696	1.700	3.033	4.591	5.839	6.913	7.638
	widowed	0.167	0.742	1.991	3.349	4.733	5.754	6.831	7.402
	divorced	0.000	1.051	1.584	2.300	3.432	3.993	4.689	4.613
	separated	0.250	1.000	1.566	2.359	3.298	3.895	4.423	5.306
B/ Mumias	single	0.027	0.149	0.677	0.969	2.285	2.964	2.758	3.485
	monogamous	0.058	0.838	2.025	3.482	5.109	6.362	7.280	7.880
	polygamous	0.028	0.789	2.076	3.505	4.932	6.080	6.871	7.120
	married	0.051	0.831	2.034	3.488	5.058	6.268	7.132	7.587
	widowed	0.000	0.927	2.096	3.836	5.284	6.106	7.035	7.296
	divorced	0.000	1.068	1.812	2.629	3.281	3.653	3.945	4.976
	separated	0.400	0.935	1.714	2.786	3.848	4.349	4.703	4.411

Kenya 1999 Population and Housing Census

Appendix 6: Reported Average Parity by Age, Educational Attainment and District, 1999

Region	Level of Education	Age Group							
		12-14	15-19	20-24	26-29	30-34	35-39	40-44	45-49
		4.898							
KENYA	Never	0.045			3.198		6.062	8.845	7.210
	Primary 1-4	0.050	0.304	1.699	3.157	4.857	6.054	6.939	7.395
	Primary 5-8	0.052	0.280	1.532	2.864	4.381	5.503	6.368	6.895
	Secondary 1-2	0.071	0.190		2.535	3.952	5.016	5.780	6.013
	Secondary 3-4	0.117	0.200	0.728	1.702	2.991	3.990	4.641	5.022
	Secondary 5-6	0.093	0.164	0.565	1.568	2.423	3.349	3.983	4.350
	University	0.193	0.231	0.441	1.127	2.078	2.872	3.311	3.514
NAIROBI	Never	0.062	0.328	1.201	1.805	3.477	4.343	4.856	5.263
	Primary 1-4	0.057	0.288	1.270	2.026	3.310	4.112	4.692	5.095
	Primary 5-8	0.054	0.279	1.173	2.143	3.244	4.084	4.582	5.063
	Secondary 1-2	0.049	0.187	1.088	2.004	3.007	3.839	4.369	4.525
	Secondary 3-4	0.107	0.193	0.588	1.339	2.359	3.166	3.664	3.987
	Secondary 5-6	0.067	0.130	0.404	1.264	2.014	2.853	3.429	3.600
	University	0.287	0.170	0.331	0.830	1.671	2.433	2.862	3.018
CENTRAL	Never	0.057	0.309	1.414	2.288	4.019	5.322	6.384	7.029
	Primary 1-4	0.042	0.260	1.356	2.478	3.938	5.101	6.165	6.914
	Primary 5-8	0.043	0.201	1.281	2.373	3.678	4.778	5.683	6.372
	Secondary 1-2	0.057	0.146	1.027	2.182	3.392	4.376	5.107	5.502
	Secondary 3-4	0.111	0.166	0.594	1.479	2.627	3.529	4.186	4.740
	Secondary 5-6	0.000	0.205	0.523	1.359	2.112	3.080	3.756	4.353
	University	0.111	0.246	0.367	1.003	1.983	2.875	3.384	3.929
Kiambu	Never	0.068	0.347	1.451	2.016	3.823	5.025	5.962	6.670
	Primary 1-4	0.054	0.305	1.364	2.463	3.709	4.854	5.826	6.509
	Primary 5-8	0.051	0.239	1.268	2.331	3.545	4.544	5.305	6.072
	Secondary 1-2	0.061	0.169	1.172	2.166	3.286	4.199	4.951	5.356
	Secondary 3-4	0.149	0.196	0.628	1.493	2.605	3.422	4.101	4.555
	Secondary 5-6	0.000	0.143	0.458	1.423	2.045	3.194	3.500	4.230
	University	0.000	0.190	0.438	0.958	2.049	2.888	3.404	3.455
Kirinyaga	Never	0.070	0.269	1.311	2.230	3.932	5.125	6.262	6.946
	Primary 1-4	0.045	0.280	1.340	2.334	3.584	4.621	5.859	6.808
	Primary 5-8	0.046	0.204	1.125	2.049	3.190	4.235	5.299	6.153
	Secondary 1-2	0.086	0.146	0.819	1.852	2.908	3.889	4.595	5.245
	Secondary 3-4	0.125	0.159	0.522	1.328	2.348	3.215	3.957	4.511
	Secondary 5-6	0.000	0.000	0.517	1.540	2.014	3.085	3.309	4.162
	University	0.333	0.143	0.362	0.957	1.858	3.037	3.814	4.000
Murang'a	Never	0.057	0.231	1.264	2.332	4.144	5.563	6.492	7.012
	Primary 1-4	0.032	0.233	1.274	2.445	3.976	5.293	6.267	6.999
	Primary 5-8	0.036	0.161	1.265	2.417	3.807	4.908	5.835	6.513
	Secondary 1-2	0.026	0.119	0.888	2.299	3.540	4.723	5.253	5.791
	Secondary 3-4	0.000	0.102	0.492	1.444	2.726	3.719	4.360	5.089
	Secondary 5-6	0.000	0.000	0.857	1.173	2.097	2.700	4.119	4.400
	University	0.000	0.667	0.275	0.903	1.946	2.833	3.667	4.174

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Region	Level of Education	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Nyandarua	Never	0.041	0.285	1.606	2.769	4.470	6.027	7.198	8.032
	Primary 1-4	0.039	0.232	1.544	2.671	4.464	5.839	6.988	7.748
	Primary 5-8	0.039	0.212	1.435	2.739	4.131	5.398	6.524	7.108
	Secondary 1-2	0.028	0.168	1.165	2.422	3.927	4.895	5.591	5.992
	Secondary 3-4	0.053	0.191	0.720	1.779	3.006	4.016	4.674	5.644
	Secondary 5-6	0.000	0.167	0.600	1.667	2.453	3.544	3.882	5.938
	University	0.000	0.222	0.349	1.241	2.299	3.303	4.000	4.583
Nyeri	Never	0.041	0.316	1.443	2.028	3.785	4.688	5.829	6.395
	Primary 1-4	0.027	0.199	1.150	2.194	3.573	4.613	5.766	6.547
	Primary 5-8	0.024	0.145	1.163	2.191	3.399	4.442	5.361	6.078
	Secondary 1-2	0.065	0.099	0.881	2.027	3.284	4.140	4.944	5.317
	Secondary 3-4	0.136	0.125	0.534	1.420	2.491	3.318	3.980	4.625
	Secondary 5-6	0.000	0.071	0.415	1.102	2.002	2.713	3.802	4.123
	University	0.000	0.100	0.304	0.877	1.832	2.808	3.019	4.176
Thika	Never	0.062	0.354	1.400	2.315	3.947	5.222	6.302	6.879
	Primary 1-4	0.060	0.297	1.395	2.579	4.076	5.216	6.151	6.838
	Primary 5-8	0.063	0.239	1.279	2.429	3.793	4.888	5.750	6.393
	Secondary 1-2	0.063	0.175	1.092	2.184	3.341	4.372	5.119	5.503
	Secondary 3-4	0.087	0.184	0.634	1.478	2.669	3.624	4.187	4.698
	Secondary 5-6	0.000	0.357	0.586	1.308	2.177	3.302	4.000	4.254
	University	0.000	0.283	0.372	1.091	1.989	2.827	3.253	4.061
Maragua	Never	0.049	0.305	1.333	2.648	4.295	5.754	6.749	7.301
	Primary 1-4	0.034	0.227	1.367	2.641	4.288	5.461	6.539	7.275
	Primary 5-8	0.035	0.192	1.326	2.536	4.008	5.197	6.161	6.889
	Secondary 1-2	0.040	0.135	0.993	2.396	3.824	4.881	5.653	5.944
	Secondary 3-4	0.077	0.145	0.565	1.523	2.929	4.048	4.743	5.084
	Secondary 5-6	0.000	0.500	0.571	1.281	2.248	2.952	4.040	5.158
	University	0.000	0.625	0.273	1.164	1.902	2.188	3.563	4.167
COAST	Never	0.034	0.443	1.904	3.315	4.842	5.873	6.564	6.738
	Primary 1-4	0.039	0.355	1.733	2.955	4.395	5.379	6.129	6.629
	Primary 5-8	0.048	0.279	1.392	2.507	3.800	4.764	5.583	6.061
	Secondary 1-2	0.083	0.185	1.110	2.180	3.399	4.428	5.091	5.293
	Secondary 3-4	0.157	0.206	0.654	1.457	2.659	3.557	4.294	4.571
	Secondary 5-6	0.000	0.242	0.642	1.539	2.306	3.187	3.667	3.957
	University	0.143	0.273	0.537	1.159	2.070	3.005	3.148	3.184
Kilifi	Never	0.031	0.463	1.970	3.376	4.996	6.053	6.784	6.927
	Primary 1-4	0.023	0.308	1.742	3.042	4.770	5.750	6.487	6.697
	Primary 5-8	0.034	0.235	1.406	2.556	4.057	5.113	6.044	6.488
	Secondary 1-2	0.069	0.127	0.959	2.056	3.616	4.813	5.279	6.372
	Secondary 3-4	0.222	0.136	0.517	1.370	2.690	3.849	4.738	4.956
	Secondary 5-6	0.000	0.333	0.385	1.457	2.227	3.261	3.618	3.059
	University	0.000	0.000	0.538	1.077	2.393	3.302	3.605	3.833

Kenya 1999 Population and Housing Census

Region	Level of Education	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Kwale	Never	0.029	0.502	2.050	3.539	5.030	6.032	6.632	6.816
	Primary 1-4	0.032	0.392	1.900	3.123	4.486	5.632	6.156	6.780
	Primary 5-8	0.032	0.287	1.561	2.702	4.137	5.221	5.915	6.537
	Secondary 1-2	0.032	0.187	1.114	2.331	3.618	4.627	5.415	6.337
	Secondary 3-4	0.250	0.206	0.671	1.465	2.705	3.683	4.799	4.730
	Secondary 5-6	0.000	0.500	0.786	1.463	2.130	3.065	3.240	4.696
	University	0.000	0.500	0.923	1.308	2.593	3.846	2.810	3.111
Lamu	Never	0.029	0.401	1.586	2.714	4.057	5.169	6.021	6.811
	Primary 1-4	0.025	0.331	1.481	2.661	4.258	5.506	6.591	7.750
	Primary 5-8	0.032	0.239	1.314	2.675	4.182	5.339	6.565	7.555
	Secondary 1-2	0.000	0.074	1.142	2.000	4.188	5.048	6.050	6.077
	Secondary 3-4	0.000	0.254	0.679	1.452	2.688	3.771	5.167	4.455
	Secondary 5-6	0.000	0.000	0.000	1.167	2.636	2.500	2.333	1.500
	University	0.000	0.000	0.000	1.375	1.600	3.000	1.333	1.500
Mombasa	Never	0.062	0.418	1.547	2.684	3.751	4.649	5.312	5.544
	Primary 1-4	0.066	0.362	1.452	2.409	3.619	4.341	4.991	5.303
	Primary 5-8	0.065	0.320	1.273	2.278	3.381	4.224	4.874	5.061
	Secondary 1-2	0.104	0.226	1.153	2.131	3.206	4.220	4.830	4.657
	Secondary 3-4	0.089	0.242	0.681	1.448	2.600	3.374	4.046	4.336
	Secondary 5-6	0.000	0.222	0.587	1.551	2.298	3.262	3.753	3.972
	University	0.000	0.172	0.482	1.149	2.054	2.867	3.099	3.163
Taita Taveta	Never	0.052	0.452	1.898	3.099	4.839	5.818	6.480	6.948
	Primary 1-4	0.041	0.312	1.735	3.140	4.431	5.569	6.477	7.172
	Primary 5-8	0.044	0.211	1.324	2.537	3.862	4.878	5.866	6.606
	Secondary 1-2	0.042	0.154	1.010	2.287	3.533	4.453	5.169	5.841
	Secondary 3-4	0.364	0.126	0.595	1.478	2.753	3.775	4.622	5.222
	Secondary 5-6	0.000	0.250	2.286	1.733	2.311	3.043	3.538	4.444
	University	0.000	0.800	0.875	1.341	1.700	2.682	4.000	3.000
Tana River	Never	0.018	0.263	1.604	3.230	5.014	6.117	6.961	7.171
	Primary 1-4	0.016	0.394	1.725	3.139	4.951	5.683	6.799	6.920
	Primary 5-8	0.021	0.348	1.761	2.903	4.475	5.352	6.409	6.853
	Secondary 1-2	0.071	0.193	1.302	2.633	4.019	4.638	5.619	6.778
	Secondary 3-4	0.000	0.215	0.807	1.955	3.011	4.006	4.536	5.710
	Secondary 5-6	0.000	0.000	2.000	1.167	3.083	2.500	8.500	6.000
	University	0.000	0.000	0.333	1.286	2.250	5.667	5.333	0.000
Malindi	Never	0.054	0.537	2.079	3.528	5.114	6.202	6.836	6.915
	Primary 1-4	0.057	0.378	1.879	3.239	4.888	6.076	6.836	6.898
	Primary 5-8	0.065	0.311	1.498	2.706	4.028	5.105	6.042	6.688
	Secondary 1-2	0.053	0.170	1.113	2.232	3.389	4.506	5.610	4.960
	Secondary 3-4	0.143	0.210	0.668	1.481	2.733	3.817	4.118	4.896
	Secondary 5-6	0.000	0.000	0.533	1.583	2.514	2.882	2.923	3.333
	University	0.333	0.000	0.478	1.070	1.971	2.938	2.438	3.059

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Region	Level of Education	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
EASTERN	Never	0.062	0.318	1.599	3.126	4.838	6.064	6.807	7.227
	Primary1-4	0.066	0.268	1.565	3.119	4.757	5.891	6.871	7.287
	Primary 5-8	0.068	0.230	1.382	2.791	4.299	5.436	6.361	6.938
	Secondary 1-2	0.089	0.180	1.093	2.548	3.964	5.064	5.880	6.163
	Secondary 3-4	0.084	0.188	0.709	1.753	3.064	4.075	4.777	5.310
	Secondary 5-6	0.200	0.170	0.754	1.826	2.613	3.488	3.983	5.013
	University	0.333	0.254	0.558	1.317	2.303	3.297	3.954	4.135
Embu	Never	0.064	0.279	1.290	2.142	4.153	5.380	6.531	7.291
	Primary1-4	0.057	0.234	1.203	2.358	3.802	5.000	6.314	6.870
	Primary 5-8	0.058	0.178	1.077	2.188	3.464	4.566	5.563	6.474
	Secondary 1-2	0.056	0.143	0.843	1.944	3.013	4.317	5.109	5.437
	Secondary 3-4	0.033	0.112	0.507	1.300	2.496	3.447	4.048	4.897
	Secondary 5-6	1.000	0.286	0.786	1.429	2.055	2.782	3.793	4.550
	University	0.000	0.000	0.545	1.056	2.104	2.744	3.839	3.778
Isiolo	Never	0.039	0.357	1.807	3.318	4.932	5.964	6.461	6.623
	Primary1-4	0.029	0.264	1.733	2.890	4.317	5.111	5.532	5.970
	Primary 5-8	0.036	0.185	1.270	2.468	3.714	4.416	5.430	4.950
	Secondary 1-2	0.125	0.151	0.890	2.148	3.585	3.707	4.733	4.412
	Secondary 3-4	0.000	0.148	0.546	1.436	2.444	3.274	3.669	4.098
	Secondary 5-6	0.000	0.000	0.000	2.200	1.808	3.471	3.182	5.000
	University	0.000	0.000	1.000	1.474	2.400	5.000	3.000	5.000
Kitui	Never	0.059	0.326	1.638	3.290	5.094	6.336	7.107	7.449
	Primary1-4	0.052	0.241	1.629	3.292	5.019	6.205	7.298	7.598
	Primary 5-8	0.054	0.231	1.560	3.147	4.824	6.059	6.999	7.576
	Secondary 1-2	0.121	0.168	1.225	2.955	4.426	5.558	6.472	6.577
	Secondary 3-4	0.000	0.183	0.842	2.057	3.498	4.765	5.573	5.728
	Secondary 5-6	0.333	0.000	0.800	1.967	2.888	3.444	5.067	3.571
	University	0.000	0.000	0.364	1.120	2.191	4.292	4.000	4.400
Makueni	Never	0.078	0.326	1.459	2.778	4.893	5.932	7.048	7.387
	Primary1-4	0.064	0.242	1.570	3.256	5.035	6.182	7.216	7.629
	Primary 5-8	0.070	0.211	1.455	3.054	4.697	5.959	6.855	7.414
	Secondary 1-2	0.107	0.170	1.189	2.822	4.517	5.591	6.531	6.927
	Secondary 3-4	0.000	0.190	0.821	2.168	3.645	4.775	5.541	6.032
	Secondary 5-6	0.000	0.200	0.517	2.405	3.167	4.103	4.852	6.727
	University	1.000	0.125	0.631	1.491	2.717	3.563	4.600	5.000
Machakos	Never	0.126	0.369	1.503	2.534	4.407	5.958	6.991	7.561
	Primary1-4	0.105	0.295	1.581	3.051	4.659	5.940	6.966	7.532
	Primary 5-8	0.108	0.280	1.500	2.916	4.505	5.668	6.618	7.265
	Secondary 1-2	0.150	0.254	1.315	2.687	4.147	5.350	6.117	6.647
	Secondary 3-4	0.111	0.281	0.904	2.021	3.426	4.498	5.186	5.907
	Secondary 5-6	0.167	0.176	0.980	1.986	2.998	3.941	3.984	5.643
	University	0.000	0.318	0.754	1.526	2.583	3.544	4.559	4.208

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Region	Level of Education	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Marsabit	Never	0.027	0.230	1.369	2.905	4.351	5.375	5.862	6.037
	Primary1-4	0.024	0.236	1.341	2.995	4.706	5.349	5.806	5.529
	Primary 5-8	0.064	0.182	1.388	2.538	4.211	5.085	5.955	5.304
	Secondary 1-2	1.000	0.168	1.076	2.480	3.773	4.818	3.333	3.750
	Secondary 3-4	0.000	0.150	0.686	1.644	3.000	3.538	3.300	4.333
	Secondary 5-6	0.000	0.000	0.500	2.000	2.000	4.250	1.000	0.000
	University	0.000	0.000	0.000	1.250	1.000	3.000	2.667	0.000
Mbeere	Never	0.136	0.296	1.610	3.026	4.698	6.396	7.354	7.654
	Primary1-4	0.090	0.221	1.479	3.269	4.654	6.165	7.400	7.665
	Primary 5-8	0.098	0.237	1.295	2.852	4.292	5.667	6.828	7.480
	Secondary 1-2	0.091	0.240	0.881	2.530	4.069	5.041	6.271	6.197
	Secondary 3-4	0.286	0.219	0.752	1.961	3.253	4.399	5.417	5.958
	Secondary 5-6	0.000	0.000	1.286	1.692	2.878	3.966	6.889	5.000
	University	0.000	0.667	0.656	1.300	2.615	3.429	3.000	3.444
Meru Central	Never	0.027	0.252	1.226	2.284	4.204	5.042	5.907	6.548
	Primary1-4	0.026	0.221	1.278	2.454	3.865	4.912	5.804	6.365
	Primary 5-8	0.028	0.166	1.084	2.149	3.340	4.357	5.201	5.762
	Secondary 1-2	0.000	0.109	0.788	2.005	3.142	4.033	4.704	5.053
	Secondary 3-4	0.250	0.117	0.493	1.329	2.468	3.397	4.114	4.577
	Secondary 5-6	0.000	0.333	0.553	1.404	2.109	3.118	3.359	4.828
	University	0.000	0.000	0.336	0.932	1.946	3.024	3.300	4.317
Moyale	Never	0.024	0.279	1.788	3.402	5.034	6.019	6.714	7.118
	Primary1-4	0.026	0.173	1.429	3.463	5.255	5.282	7.222	6.500
	Primary 5-8	0.038	0.174	1.512	2.866	5.404	5.444	6.905	5.750
	Secondary 1-2	0.000	0.152	1.050	1.857	3.333	4.200	6.000	0.000
	Secondary 3-4	0.000	0.235	0.835	2.012	4.088	6.250	6.400	0.000
	Secondary 5-6	0.000	0.000	0.000	3.000	2.000	2.000	0.000	10.000
	University	0.000	0.000	0.000	3.000	5.000	4.000	2.000	0.000
Mwingi	Never	0.095	0.377	1.893	3.581	5.357	6.759	7.444	7.726
	Primary1-4	0.082	0.303	1.702	3.303	5.261	6.525	7.530	7.459
	Primary 5-8	0.076	0.264	1.560	3.127	4.919	6.200	7.125	7.714
	Secondary 1-2	0.000	0.241	1.150	2.933	4.365	5.719	6.896	7.456
	Secondary 3-4	0.250	0.250	0.803	2.011	3.600	4.787	5.438	5.894
	Secondary 5-6	0.500	0.000	2.000	1.583	3.071	4.618	8.250	4.000
	University	0.000	2.000	0.667	1.678	2.725	4.000	2.000	3.333
Meru North	Never	0.070	0.398	1.744	3.437	5.015	6.150	6.678	6.970
	Primary1-4	0.050	0.339	1.733	3.390	4.982	6.063	6.869	7.112
	Primary 5-8	0.057	0.279	1.470	2.956	4.435	5.546	6.449	6.754
	Secondary 1-2	0.000	0.181	1.033	2.614	4.091	5.177	5.566	6.309
	Secondary 3-4	0.083	0.211	0.653	1.690	3.126	4.260	4.961	5.046
	Secondary 5-6	0.000	0.125	0.792	1.814	2.864	3.560	4.296	4.267
	University	0.000	0.667	0.740	1.646	1.957	3.259	5.500	3.200

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Region	Level of Education	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Tharaka	Never	0.027	0.164	1.423	3.310	5.276	6.605	7.226	7.571
	Primary1-4	0.022	0.126	1.236	2.967	4.820	6.008	7.308	7.192
	Primary 5-8	0.007	0.117	1.004	2.498	4.164	5.545	6.570	6.860
	Secondary 1-2	0.000	0.073	0.510	1.960	3.552	5.333	6.024	6.400
	Secondary 3-4	0.000	0.083	0.460	1.315	2.559	4.014	5.117	6.538
	Secondary 5-6	0.000	0.000	0.000	1.000	2.667	3.182	5.000	0.000
	University	0.000	0.000	0.167	0.364	2.667	2.500	0.000	0.000
Meru South	Never	0.089	0.309	1.443	2.250	4.612	5.508	6.379	7.109
	Primary1-4	0.069	0.229	1.319	2.555	4.329	5.305	6.133	6.751
	Primary 5-8	0.056	0.187	1.141	2.229	3.530	4.574	5.340	6.074
	Secondary 1-2	0.065	0.126	0.885	2.071	3.174	4.255	4.752	5.134
	Secondary 3-4	0.000	0.148	0.603	1.418	2.522	3.475	4.069	4.912
	Secondary 5-6	0.000	0.000	0.300	1.674	2.157	2.917	4.048	5.222
	University	0.000	0.250	0.383	1.273	2.196	3.171	3.923	4.125
N/EASTERN	Never	0.036	0.232	1.573	3.257	4.821	5.924	6.569	6.953
	Primary1-4	0.041	0.176	1.297	3.054	4.722	5.613	5.882	6.659
	Primary 5-8	0.036	0.144	1.129	2.681	4.724	5.466	6.159	6.286
	Secondary 1-2	0.038	0.116	0.675	2.475	3.843	4.744	6.179	6.727
	Secondary 3-4	0.000	0.147	0.666	1.901	3.563	4.495	5.735	6.706
	Secondary 5-6	0.000	0.250	1.267	2.500	2.955	4.286	5.000	4.286
	University	1.000	0.900	0.750	1.941	2.478	5.611	6.100	3.500
Garissa	Never	0.050	0.244	1.479	3.078	4.686	5.781	6.545	6.867
	Primary1-4	0.048	0.213	1.062	2.723	4.694	5.410	6.212	6.692
	Primary 5-8	0.042	0.163	1.067	2.594	4.504	5.104	6.172	5.800
	Secondary 1-2	0.051	0.162	0.623	2.356	3.650	4.355	6.000	6.857
	Secondary 3-4	0.000	0.164	0.609	1.833	3.384	4.271	5.340	6.267
	Secondary 5-6	0.000	0.400	1.333	3.167	2.750	3.818	6.000	4.000
	University	1.000	0.667	0.813	1.810	2.474	6.364	5.778	7.000
Mandera	Never	0.019	0.194	1.609	3.311	4.800	5.978	6.574	7.026
	Primary1-4	0.023	0.149	1.781	3.434	5.066	5.553	5.556	4.750
	Primary 5-8	0.028	0.110	1.279	2.971	5.112	6.081	6.926	5.917
	Secondary 1-2	0.000	0.078	0.596	3.118	3.846	8.000	6.250	0.000
	Secondary 3-4	0.000	0.133	0.676	1.818	4.106	5.652	6.938	10.000
	Secondary 5-6	0.000	0.000	1.000	1.000	5.000	7.000	0.000	6.000
	University	0.000	0.000	0.000	1.429	4.000	3.667	0.000	0.000
Wajir	Never	0.039	0.251	1.628	3.370	4.951	5.994	6.585	6.962
	Primary1-4	0.050	0.156	1.477	3.284	4.495	6.018	5.429	8.714
	Primary 5-8	0.036	0.150	1.137	2.661	4.791	5.608	5.768	7.61
	Secondary 1-2	0.040	0.092	0.814	2.457	4.294	5.300	6.429	6.500
	Secondary 3-4	0.000	0.130	0.786	2.085	3.667	4.532	5.700	0.000
	Secondary 5-6	0.000	0.000	1.333	0.000	2.750	4.000	4.000	0.000
	University	0.000	1.667	0.667	3 000	2.000	5.000	9.000	0.000

Kenya 1999 Population and Housing Census

Region	Level of Education	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
NYANZA	Never	0.109	0.527	1.954	3.378	5.271	6.365	7.059	7.360
	Primary1-4	0.067	0.358	1.940	3.545	5.310	6.426	7.186	7.575
	Primary 5-8	0.074	0.427	1.880	3.380	5.081	6.154	6.953	7.394
	Secondary 1-2	0.098	0.303	1.496	3.075	4.723	5.716	6.507	6.857
	Secondary 3-4	0.140	0.321	1.074	2.337	3.917	5.001	5.666	6.186
	Secondary 5-6	0.154	0.269	1.049	2.314	3.218	4.230	5.506	5.525
	University	0.100	0.354	0.727	1.824	2.916	3.904	4.280	4.849
Gucha	Never	0.067	0.387	1.631	3.233	5.489	6.683	7.685	8.140
	Primary1-4	0.049	0.288	1.746	3.527	5.442	6.581	7.591	8.136
	Primary 5-8	0.055	0.330	1.636	3.242	4.960	6.070	7.094	7.702
	Secondary 1-2	0.102	0.269	1.303	3.021	4.563	5.730	6.363	7.055
	Secondary 3-4	0.128	0.289	1.057	2.273	3.918	5.021	5.889	6.541
	Secondary 5-6	1.000	0.308	1.065	2.474	3.159	4.185	5.650	4.846
	University	0.000	0.333	0.789	2.008	3.295	4.907	5.333	6.125
H/Bay	Never	0.052	0.652	2.201	3.459	5.186	6.135	6.828	7.024
	Primary1-4	0.049	0.449	2.223	3.667	5.319	6.248	6.981	7.247
	Primary 5-8	0.049	0.542	2.076	3.588	5.293	6.222	6.922	7.200
	Secondary 1-2	0.048	0.295	1.776	3.354	4.909	5.796	6.477	6.582
	Secondary 3-4	0.000	0.306	1.260	2.625	4.219	5.329	5.599	6.596
	Secondary 5-6	0.000	0.500	1.750	2.192	3.213	3.660	6.286	7.500
	University	0.000	0.667	1.179	2.038	2.842	4.364	3.000	3.615
Kisii Central	Never	0.054	0.337	1.710	3.275	5.377	6.533	7.353	7.941
	Primary1-4	0.044	0.246	1.720	3.436	5.161	6.324	7.302	7.903
	Primary 5-8	0.052	0.283	1.583	3.088	4.661	5.827	6.773	7.227
	Secondary 1-2	0.041	0.224	1.247	2.856	4.454	5.252	6.227	6.577
	Secondary 3-4	0.060	0.265	0.858	2.120	3.574	4.663	5.415	5.599
	Secondary 5-6	0.000	0.000	0.966	2.181	2.963	4.192	5.040	4.905
	University	0.000	0.000	0.567	1.774	2.975	4.313	4.063	5.143
Kisumu	Never	0.035	0.381	1.668	2.977	4.883	6.091	6.738	7.046
	Primary1-4	0.039	0.300	1.746	3.234	4.956	6.143	6.918	7.389
	Primary 5-8	0.040	0.395	1.738	3.235	4.872	6.006	6.725	7.017
	Secondary 1-2	0.058	0.248	1.470	2.874	4.418	5.481	6.220	6.591
	Secondary 3-4	0.111	0.263	0.887	2.049	3.473	4.474	5.011	5.424
	Secondary 5-6	0.500	0.257	0.649	1.890	2.944	3.899	4.619	5.353
	University	0.000	0.214	0.523	1.303	2.427	3.171	3.445	3.676
Kuria	Never	0.075	0.501	1.907	3.451	5.341	6.561	7.227	7.603
	Primary1-4	0.039	0.338	2.032	3.753	5.427	6.524	7.487	7.382
	Primary 5-8	0.046	0.366	1.896	3.460	5.193	6.331	7.153	7.640
	Secondary 1-2	0.091	0.238	1.271	2.914	4.649	5.861	6.500	7.238
	Secondary 3-4	0.000	0.364	0.972	2.272	3.983	5.196	6.048	5.800
	Secondary 5-6	0.000	0.000	0.250	2.667	2.615	4.286	3.000	4.667
	University	0.000	0.000	0.714	3.000	2.167	6.000	1.333	3.000

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Region	Level of Education	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Migori	Never	0.090	0.547	2.062	3.482	5.129	6.337	6.923	7.147
	Primary1-4	0.075	0.438	2.102	3.658	5.406	6.563	7.262	7.473
	Primary 5-8	0.080	0.543	2.106	3.551	5.280	6.333	7.113	7.446
	Secondary 1-2	0.179	0.383	1.772	3.247	5.048	5.844	6.965	6.647
	Secondary 3-4	0.067	0.398	1.317	2.492	4.285	5.334	6.044	6.419
	Secondary 5-6	0.000	0.429	1.407	2.585	3.570	4.426	5.500	5.250
	University	0.000	0.700	0.926	2.060	3.815	4.700	4.826	5.889
Nyamira	Never	0.246	0.671	2.009	3.535	5.352	6.591	7.502	8.056
	Primary1-4	0.141	0.389	1.766	3.522	5.306	6.529	7.352	8.186
	Primary 5-8	0.138	0.411	1.775	3.321	4.854	6.014	7.035	7.814
	Secondary 1-2	0.156	0.376	1.441	3.079	4.655	5.746	6.236	6.985
	Secondary 3-4	0.264	0.403	1.174	2.513	3.979	5.110	5.843	6.859
	Secondary 5-6	0.000	0.600	1.000	2.738	3.853	5.245	6.340	6.474
	University	0.000	0.778	0.949	2.436	3.174	4.267	5.333	5.500
Rachuonyo	Never	0.115	0.581	2.201	3.605	5.644	6.274	7.246	7.250
	Primary1-4	0.082	0.380	2.132	3.709	5.512	6.617	7.224	7.434
	Primary 5-8	0.087	0.504	2.073	3.550	5.323	6.404	7.127	7.588
	Secondary 1-2	0.180	0.374	1.772	3.288	5.200	6.177	6.823	7.560
	Secondary 3-4	0.167	0.378	1.366	2.770	4.515	5.550	6.277	6.576
	Secondary 5-6	0.000	0.000	1.429	2.385	4.143	4.588	7.286	5.000
	University	0.000	0.400	1.367	2.000	3.714	4.500	4.167	6.111
Siaya	Never	0.056	0.479	1.988	3.474	5.257	6.203	6.772	6.999
	Primary 1-4	0.049	0.355	1.933	3.379	5.184	6.220	6.828	7.224
	Primary 5-8	0.055	0.378	1.858	3.343	5.144	6.113	6.854	7.093
	Secondary 1-2	0.069	0.263	1.544	3.038	4.828	5.684	6.663	6.987
	Secondary 3-4	0.267	0.260	1.010	2.291	3.948	4.932	5.805	6.215
	Secondary 5-6	0.000	0.375	0.696	2.280	2.740	4.057	5.905	4.143
	University	1.000	0.375	0.756	1.938	2.696	4.500	4.650	6.353
Suba	Never	0.128	0.628	2.008	3.232	5.336	6.527	7.046	7.572
	Primary1-4	0.055	0.424	2.076	3.748	5.453	6.608	6.994	7.538
	Primary 5-8	0.064	0.520	2.082	3.509	5.139	6.299	6.964	7.533
	Secondary 1-2	0.000	0.387	1.729	3.447	4.860	5.985	7.076	6.893
	Secondary 3-4	0.000	0.431	1.351	2.616	4.219	5.437	6.047	6.754
	Secondary 5-6	0.000	0.000	1.400	2.714	2.706	4.000	7.750	6.250
	University	0.000	0.000	0.706	1.357	2.333	2.250	4.500	1.000
Bondo	Never	0.249	0.616	2.075	3.087	5.128	6.114	6.595	6.783
	Primary1-4	0.103	0.421	2.107	3.409	5.190	6.152	6.863	6.886
	Primary 5-8	0.107	0.519	2.039	3.514	5.242	6.312	6.947	7.42
	Secondary 1-2	0.128	0.402	1.834	3.269	4.849	6.067	6.784	7.227
	Secondary 3-4	0.000	0.356	1.412	2.677	4.291	5.524	6.144	6.967
	Secondary 5-6	0.000	0.250	1.455	2.389	3.528	4.381	6.714	5.400
	University	0.000	0.000	0.667	1.900	3.225	4.200	5.500	7.667

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Region	Level of Education	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Nyando	Never	0.126	0.572	2.096	3.451	5.254	6.355	6.976	7.338
	Primary 1-4	0.068	0.355	1.903	3.566	5.466	6.628	7.289	7.579
	Primary 5-8	0.078	0.445	1.940	3.465	5.243	6.424	6.994	7.565
	Secondary 1-2	0.095	0.347	1.642	3.252	4.937	6.050	8.837	6.701
	Secondary 3-4	0.286	0.379	1.225	2.459	4.295	5.642	6.053	8.500
	Secondary 5-6	0.000	0.000	1.533	2.553	3.317	4.289	6.400	7.929
	University	0.000	0.000	0.775	2.444	3.273	4.100	6.792	5.737
R/VALLEY	Never	0.038	0.349	1.681	3.263	4.980	6.181	7.019	7.344
	Primary 1-4	0.041	0.294	1.780	3.395	5.141	6.452	7.341	7.744
	Primary 5-8	0.044	0.286	1.620	3.058	4.634	5.808	8.712	7.221
	Secondary 1-2	0.075	0.198	1.214	2.630	4.034	5.116	5.876	6.172
	Secondary 3-4	0.137	0.207	0.776	1.833	3.185	4.214	4.889	5.336
	Secondary 5-6	0.053	0.142	0.586	1.710	2.669	3.667	4.398	4.990
	University	0.182	0.280	0.541	1.383	2.388	3.276	3.868	4.088
Baringo	Never	0.042	0.388	2.010	3.805	5.687	6.924	7.801	7.768
	Primary 1-4	0.046	0.241	1.853	3.886	5.814	7.052	7.933	8.056
	Primary 5-8	0.045	0.202	1.570	3.315	5.268	6.548	7.462	7.524
	Secondary 1-2	0.044	0.117	1.048	2.576	4.660	5.647	6.494	7.357
	Secondary 3-4	0.375	0.144	0.745	1.961	3.764	5.053	5.873	6.667
	Secondary 5-6	0.000	0.000	0.000	1.857	3.279	5.727	7.143	0.000
	University	0.000	0.000	0.580	1.670	3.091	4.400	5.833	6.818
Bo met	Never	0.067	0.360	1.778	3.370	5.535	7.048	7.809	8.307
	Primary 1-4	0.060	0.311	1.921	3.648	5.538	6.861	7.893	8.258
	Primary 5-8	0.053	0.343	1.819	3.454	5.125	6.336	7.451	7.830
	Secondary 1-2	0.113	0.270	1.218	2.890	4.522	5.876	8.815	6.523
	Secondary 3-4	0.143	0.315	0.953	2.165	3.769	4.739	8.058	8.209
	Secondary 5-6	0.000	0.000	1.111	2.190	3.490	4.739	5.836	5.000
	University	0.000	0.667	0.745	1.826	3.417	3.154	3.692	0.000
Keiyo	Never	0.046	0.402	1.705	2.836	5.216	5.801	8.544	8.355
	Primary 1-4	0.057	0.212	1.733	3.484	5.327	8.063	7.094	7.220
	Primary 5-8	0.058	0.247	1.654	3.405	4.978	6.117	6.850	7.393
	Secondary 1-2	0.105	0.198	1.236	3.030	4.699	5.384	6.238	7.341
	Secondary 3-4	0.167	0.187	0.943	2.182	3.775	4.803	5.884	8.274
	Secondary 5-6	0.000	0.333	0.500	1.765	3.292	5.150	5.833	7.600
	University	0.000	0.667	0.781	2.030	2.920	4.300	5.786	3.833
Kajiado	Never	0.076	0.622	2.030	3.414	5.067	6.079	6.870	7.155
	Primary 1-4	0.059	0.409	1.651	2.863	4.258	5.259	8.065	6.578
	Primary 5-8	0.063	0.338	1.429	2.540	3.842	4.927	5.506	6.121
	Secondary 1-2	0.088	0.222	1.163	2.288	3.279	4.238	5.029	5.220
	Secondary 3-4	0.176	0.261	0.721	1.581	2.720	3.635	4.158	4.664
	Secondary 5-6	0.000	0.000	0.699	1.559	2.541	3.290	3.927	4.648
	University	0.000	0.378	0.437	1.188	2.101	3.253	3.622	4.129

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Region	Level of Education	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Kericho	Never	0.070	0.415	1.811	3.183	4.916	6.381	7.200	7.568
	Primary1-4	0.049	0.333	1.841	3.406	5.143	6.369	7.086	7.555
	Primary 5-8	0.054	0.338	1.729	3.126	4.686	5.875	6.748	7.324
	Secondary 1-2	0.079	0.247	1.308	2.669	4.221	5.105	5.673	6.355
	Secondary 3-4	0.250	0.266	0.870	1.917	3.333	4.308	5.208	5.521
	Secondary 5-6	9.000	0.125	0.833	1.625	2.820	4.011	5.059	6.778
	University	0.000	0.143	0.602	1.588	2.673	3.635	4.233	5.235
Koibatek	Never	0.027	0.404	1.711	3.133	5.396	6.936	7.464	7.641
	Primary1-4	0.016	0.158	1.525	3.550	5.260	6.815	7.366	8.063
	Primary 5-8	0.016	0.209	1.464	3.026	4.854	6.379	7.029	7.713
	Secondary 1-2	0.071	0.162	0.872	2.594	4.331	5.511	5.909	6.868
	Secondary 3-4	0.000	0.128	0.648	1.856	3.343	4.404	5.133	5.970
	Secondary 5-6	0.000	0.000	0.800	1.529	2.951	4.294	3.000	0.000
	University	0.000	0.000	0.429	1.419	2.640	4.000	5.000	7.000
Laikipia	Never	0.054	0.472	1.871	3.343	4.956	6.128	6.771	7.169
	Primary1-4	0.042	0.271	1.556	2.958	4.553	5.649	6.428	7.207
	Primary 5-8	0.051	0.219	1.388	2.627	4.020	5.167	5.944	6.586
	Secondary 1-2	0.100	0.162	1.168	2.485	3.633	4.499	5.486	6.107
	Secondary 3-4	0.045	0.176	0.664	1.649	2.801	3.832	4.396	4.921
	Secondary 5-6	0.000	0.000	0.350	1.508	2.524	3.319	3.881	4.615
	University	1.000	0.000	0.529	1.207	2.144	3.114	3.439	3.450
Marakwet	Never	0.027	0.309	1.926	3.715	5.239	6.297	6.579	6.869
	Primary1-4	0.023	0.178	1.988	3.698	5.360	6.431	7.033	7.092
	Primary 5-8	0.018	0.192	1.587	3.305	4.990	5.898	6.215	7.075
	Secondary 1-2	0.000	0.147	1.045	3.099	4.036	5.427	5.604	7.250
	Secondary 3-4	0.000	0.083	0.800	1.986	3.455	4.629	5.405	5.450
	Secondary 5-6	0.000	0.000	2.000	4.500	3.200	3.250	5.000	0.000
	University	0.000	1.000	0.667	1.385	2.556	2.000	4.667	0.000
Nakuru	Never	0.035	0.382	1.699	3.031	4.810	6.065	6.852	7.431
	Primary1-4	0.038	0.286	1.613	3.040	4.596	5.948	6.798	7.283
	Primary 5-8	0.038	0.267	1.493	2.785	4.229	5.303	6.207	6.631
	Secondary 1-2	0.073	0.184	1.260	2.456	3.688	4.631	5.399	5.571
	Secondary 3-4	0.159	0.193	0.725	1.686	2.861	3.803	4.371	4.941
	Secondary 5-6	0.250	0.204	0.739	1.571	2.303	3.360	3.807	5.200
	University	0.000	0.065	0.465	1.161	2.244	2.731	3.412	3.558
Nandi	Never	0.037	0.382	1.742	3.262	5.117	6.498	7.448	7.749
	Primary1-4	0.039	0.276	1.842	3.563	5.394	6.749	7.653	8.011
	Primary 5-8	0.044	0.283	1.660	3.175	4.856	6.008	7.166	7.692
	Secondary 1-2	0.077	0.189	1.113	2.700	4.386	5.547	6.449	6.532
	Secondary 3-4	0.125	0.176	0.789	1.941	3.445	4.614	5.429	6.430
	Secondary 5-6	0.000	0.103	0.285	1.717	3.422	4.130	5.390	6.200
	University	0.000	0.000	0.581	1.677	2.392	3.702	4.310	5.300

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Region	Level of Education	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Narok	Never	0.051	0.634	2.089	3.711	5.284	6.446	7.378	7.549
	Primary1-4	0.054	0.458	2.090	3.838	5.394	6.763	7.637	7.967
	Primary 5-8	0.055	0.399	1.868	3.348	4.854	6.096	7.052	7.640
	Secondary 1-2	0.032	0.262	1.280	2.865	4.198	5.764	5.798	5.725
	Secondary 3-4	0.500	0.268	0.848	1.956	3.385	4.601	5.094	5.558
	Secondary 5-6	0.000	0.333	0.636	1.783	2.800	3.840	4.455	7.250
	University	0.000	0.000	0.310	1.711	3.258	5.150	2.417	6.200
Samburu	Never	0.027	0.230	1.552	3.255	4.727	5.888	6.494	6.789
	Primary1-4	0.027	0.266	1.721	3.199	4.821	5.630	6.077	6.475
	Primary 5-8	0.054	0.289	1.752	3.016	4.502	5.185	5.709	6.633
	Secondary 1-2	0.100	0.170	1.240	2.465	3.779	4.552	4.529	6.100
	Secondary 3-4	0.000	0.312	0.738	1.693	2.994	3.938	4.073	4.800
	Secondary 5-6	0.000	0.000	1.000	1.250	2.667	5.000	7.200	0.000
	University	1.000	0.000	0.909	1.240	1.917	2.750	1.500	6.000
T.Mara	Never	0.062	0.599	2.259	3.966	5.647	7.079	7.669	7.987
	Primary1-4	0.064	0.390	2.052	3.867	5.638	7.150	7.732	8.403
	Primary 5-8	0.082	0.378	1.868	3.530	5.259	6.391	7.092	7.618
	Secondary 1-2	0.111	0.365	1.452	2.914	4.565	6.235	6.308	8.700
	Secondary 3-4	0.000	0.361	1.036	2.164	4.008	6.088	6.558	7.389
	Secondary 5-6	0.000	0.000	0.000	3.286	2.273	3.909	9.000	6.000
	University	0.000	0.000	1.167	1.714	2.286	7.000	7.667	3.000
T.Nzoia	Never	0.034	0.385	1.936	3.397	5.176	6.478	7.482	7.821
	Primary1-4	0.023	0.295	1.827	3.420	5.280	6.715	7.885	8.352
	Primary 5-8	0.029	0.269	1.656	3.151	4.907	6.267	7.371	7.980
	Secondary 1-2	0.069	0.191	1.282	2.840	4.308	5.689	6.529	7.074
	Secondary 3-4	0.154	0.216	0.789	1.966	3.469	4.765	5.674	5.897
	Secondary 5-6	0.000	0.000	0.444	2.154	2.958	3.918	4.963	4.857
	University	0.000	0.545	0.495	1.435	2.522	3.186	4.464	4.531
Turkana	Never	0.027	0.144	1.050	2.669	4.432	5.351	6.164	6.439
	Primary1-4	0.029	0.262	1.511	2.855	4.520	5.429	6.000	6.113
	Primary 5-8	0.028	0.205	1.500	2.863	4.416	5.270	5.648	6.000
	Secondary 1-2	0.158	0.100	0.969	2.380	3.548	4.420	6.053	6.000
	Secondary 3-4	0.000	0.212	0.772	1.704	3.203	4.050	5.129	5.526
	Secondary 5-6	0.000	0.333	1.500	4.300	2.867	5.000	0.000	0.000
	University	0.000	0.000	0.435	1.605	2.111	2.286	4.333	7.000
U.Gishu	Never	0.031	0.399	1.689	2.915	4.686	6.094	6.975	7.460
	Primary1-4	0.029	0.231	1.650	3.105	4.935	6.341	7.345	7.955
	Primary 5-8	0.034	0.240	1.515	2.907	4.514	5.765	6.772	7.182
	Secondary 1-2	0.058	0.187	1.146	2.523	4.006	5.096	5.759	6.237
	Secondary 3-4	0.088	0.187	0.704	1.759	3.151	4.135	4.755	5.059
	Secondary 5-6	0.000	0.103	0.670	1.534	2.542	3.770	3.978	4.162
	University	0.000	0.313	0.540	1.351	2.255	3.453	4.040	3.750

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Region	Level of Education	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
W. Pokot	Never	0.020	0.345	1.863	3.602	5.300	6.429	7.148	7.143
	Primary1-4	0.018	0.223	1.744	3.589	5.364	6.532	7.206	7.449
	Primary 5-8	0.018	0.233	1.563	3.191	4.788	6.042	6.590	7.348
	Secondary 1-2	0.000	0.186	1.076	2.838	4.177	5.635	5.745	6.118
	Secondary 3-4	0.000	0.240	0.704	1.938	3.448	4.521	5.597	5.353
	Secondary 5-6	0.000	0.000	1.667	1.889	2.389	3.857	3.833	2.000
	University	0.000	0.000	0.556	1.947	3.222	3.500	3.000	0.000
Buret	Never	0.081	0.436	2.050	3.260	5.011	6.424	7.459	7.883
	Primary1-4	0.069	0.348	1.826	3.451	5.413	6.615	7.782	8.042
	Primary 5-8	0.073	0.403	1.911	3.432	5.206	6.451	7.480	8.233
	Secondary 1-2	0.083	0.287	1.449	3.064	4.582	5.641	6.757	6.682
	Secondary 3-4	0.063	0.291	1.127	2.298	3.900	5.097	5.848	7.153
	Secondary 5-6	0.000	0.600	1.000	2.742	3.882	4.306	7.045	4.400
	University	0.000	1.143	0.987	1.753	2.949	5.300	4.688	5.385
WESTERN	Never	0.031	0.453	1.976	3.399	5.270	6.443	7.382	7.769
	Primary 1-4	0.029	0.307	1.910	3.456	5.270	6.506	7.441	7.966
	Primary 5-8	0.034	0.288	1.721	3.208	4.948	6.222	7.159	7.666
	Secondary 1-2	0.046	0.197	1.311	2.876	4.649	5.861	6.700	7.015
	Secondary 3-4	0.085	0.191	0.812	2.081	3.717	5.018	5.830	6.322
	Secondary 5-6	0.250	0.182	0.730	1.947	3.150	4.268	5.045	6.286
	University	0.000	0.211	0.600	1.572	2.892	3.708	5.050	4.861
Bungoma	Never	0.037	0.338	1.727	3.040	5.155	6.520	7.611	8.006
	Primary1-4	0.027	0.259	1.826	3.318	5.367	6.811	7.842	8.412
	Primary 5-8	0.036	0.288	1.737	3.289	5.159	6.559	7.521	8.088
	Secondary 1-2	0.050	0.224	1.325	2.926	4.775	6.147	7.073	7.306
	Secondary 3-4	0.088	0.203	0.900	2.174	3.892	5.321	6.245	6.759
	Secondary 5-6	0.000	0.313	0.972	2.213	3.269	4.498	5.157	6.725
	University	0.000	0.375	0.629	1.704	3.022	3.787	5.895	4.868
Busia	Never	0.026	0.585	2.237	3.789	5.387	6.323	6.932	7.171
	Primary 1-4	0.023	0.436	2.216	3.761	5.306	6.322	7.001	7.235
	Primary 5-8	0.027	0.391	1.959	3.442	5.011	6.199	6.921	7.327
	Secondary 1-2	0.000	0.237	1.495	3.054	4.620	5.933	6.500	7.234
	Secondary 3-4	0.000	0.241	0.879	2.281	3.698	5.082	5.626	5.815
	Secondary 5-6	0.000	0.000	0.313	2.171	3.205	4.103	4.056	6.333
	University	0.000	0.000	0.952	1.583	3.100	3.765	6.714	4.583
Mt. Elgon	Never	0.004	0.270	1.844	3.271	5.541	7.056	8.127	8.408
	Primary1-4	0.015	0.231	1.831	3.548	5.761	7.282	8.207	9.142
	Primary 5-8	0.019	0.257	1.707	3.407	5.279	6.795	7.804	8.752
	Secondary 1-2	0.000	0.203	1.063	2.860	4.928	6.379	7.222	8.111
	Secondary 3-4	0.000	0.133	0.826	2.106	4.122	5.463	6.420	6.977
	Secondary 5-6	1.000	0.000	0.667	1.667	3.438	4.714	0.000	7.000
	University	0.000	0.000	0.692	1.000	3.600	0.000	3.333	6.000

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Region	Level of Education	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Kakamega	Never	0.051	0.426	1.842	3.289	5.290	6.585	7.765	8.204
	Primary1-4	0.038	0.309	1.860	3.373	5.155	6.511	7.526	8.103
	Primary 5-8	0.042	0.277	1.670	3.151	4.923	6.192	7.223	7.677
	Secondary 1 -2	0.057	0.199	1.324	2.879	4.531	5.740	6.665	6.802
	Secondary 3-4	0.071	0.224	0.759	1.992	3.577	4.843	5.589	6.154
	Secondary 5-6	0.000	0.000	0.542	1.689	3.052	4.000	4.470	6.083
	University	0.000	0.000	0.579	1.772	2.831	3.578	4.873	4.818
Lugari	Never	0.019	0.333	1.840	3.133	5.125	6.236	7.518	8.214
	Primary1-4	0.024	0.223	1.668	3.375	5.191	6.654	7.691	8.349
	Primary 5-8	0.030	0.239	1.649	3.100	4.936	6.272	7.459	7.945
	Secondary 1 -2	0.050	0.135	1.254	2.718	4.773	5.904	6.642	6.719
	Secondary 3-4	0.000	0.130	0.735	2.047	3.739	4.937	5.660	5.975
	Secondary 5-6	0.000	0.000	0.769	2.333	3.096	4.286	6.160	6.688
	University	0.000	0.000	0.273	1.194	2.793	3.636	5.333	6.000
Teso	Never	0.023	0.511	2.078	3.589	5.182	6.216	7.267	7.469
	Primary 1-4	0.023	0.335	2.058	3.653	5.225	6.310	7.327	7.669
	Primary 5-8	0.026	0.314	1.762	3.240	4.900	5.984	6.912	7.409
	Secondary 1 -2	0.000	0.231	1.374	2.746	4.586	5.836	6.410	7.406
	Secondary 3-4	0.000	0.175	0.846	2.071	3.711	4.904	5.424	6.291
	Secondary 5-6	0.000	0.000	0.182	2.371	3.032	4.314	5.692	6.600
	University	0.000	0.000	0.588	1.541	2.464	4.313	5.000	4.333
Vihiga	Never	0.022	0.349	1.629	2.738	4.896	6.156	7.193	7.830
	Primary 1-4	0.035	0.229	1.489	2.988	4.978	6.101	7.056	7.637
	Primary 5-8	0.034	0.205	1.433	2.816	4.528	5.755	6.693	7.260
	Secondary 1 -2	0.066	0.148	1.186	2.711	4.427	5.399	6.237	6.742
	Secondary 3-4	0.063	0.152	0.691	1.871	3.480	4.667	5.491	5.952
	Secondary 5-6	1.000	0.000	0.576	1.476	3.098	3.852	5.206	5.867
	University	0.000	0.125	0.632	1.342	2.705	3.492	4.130	5.261
B/ Mumias	Never	0.026	0.538		3.611	5.383	6.519	7.154	7.528
	Primary 1-4	0.027	0.378	2.055	3.621	5.368	6.350	7.074	7.520
	Primary 5-8	0.029	0.343	1.858	3.341	4.935	6.079	6.930	7.300
	Secondary 1 -2	0.021	0.221	1.380	2.995	4.704	5.767	6.556	6.787
	Secondary 3-4	0.231	0.202	0.851	2.175	3.732	4.930	5.846	6.297
	Secondary 5-6	0.000	0.500	0.952	1.948	3.078	4.667	5.111	5.167
	University	0.000	0.571	0.515	1.411	3.016	4.000	4.789	4.200

Appendix 7: Hypothetical Cohort Average Parities, 1989–99

Age Grp	KENYA	KENYA RURAL	KENYA URBAN	NAIROBI	CENTRAL	Kiambu	Kirinyaga	Murang'a	Nyandarua
15-19	0.283	0.287	0.268	0.251	0.196	0.225	0.205	0.158	0.209
20-24	1.352	1.471	1.03	0.898	1.047	1.025	0.981	1.027	1.271
25-29	2.621	2.877	1.922	1.707	2.094	1.990	1.91	2.134	2.547
30-34	3.889	4.235	2.855	2.564	3.053	2.863	2.715	3.13	3.679
35-39	4.650	5.02	3.366	3.031	3.548	3.305	3.167	3.562	4.468
40-44	5.224	5.622	3.739	3.358	3.906	3.590	3.449	3.845	5.068
45-49	5.350	5.726	3.765	3.344	3.969	3.711	3.515	3.838	5.176
Age Grp	Nyeri	Thika	Maragua	COAST	Kilifi	Kwale	Lamu	Mombasa	T. Taveta
15-19	0.14	0.232	0.189	0.324	0.315	0.380	0.279	0.317	0.223
20-24	0.921	1.063	1.131	1.408	1.542	1.691	1.315	1.107	1.216
25-29	1.876	2.119	2.329	2.534	2.719	2.932	2.504	2.026	2.4
30-34	2.74	3.145	3.512	3.829	4.205	4.342	3.567	2.986	3.587
35-39	3.041	3.803	4.071	4.573	4.97	5.125	4.291	3.518	4.236
40-44	3.301	4.303	4.615	5.258	5.785	5.791	4.253	4.049	4.719
45-49	3.191	4.608	4.68	5.379	5.86	5.938	5.018	4.105	4.777
Age Grp	T. River	Malindi	EASTERN	Embu	Isiolo	Kitui	Makueni	Machakos	Marsabit
15-19	0.299	0.388	0.236	0.176	0.259	0.231	0.213	0.281	0.218
20-24	1.593	1.665	1.271	0.897	1.421	1.452	1.328	1.343	1.325
25-29	3.021	2.927	2.683	1.939	2.732	3.026	2.938	2.79	2.795
30-34	4.618	4.363	3.996	2.887	4.083	4.558	4.469	4.147	4.133
35-39	5.438	5.265	4.845	3.366	4.901	5.481	5.477	4.986	5.081
40-44	6.244	5.989	5.455	3.614	5.351	6.241	6.292	5.636	5.642
45-49	6.172	6.133	5.639	3.7	5.77	6.404	6.444	5.833	5.996
Age Grp	Mbeere	Meru Central	Moyale	Mwingi	Meru North	Tharaka	Nithi	N/EASTERN	Garissa
15-19	0.236	0.162	0.236	0.281	0.305	0.122	0.183	0.217	0.23
20-24	1.207	0.910	1.645	1.509	1.46	1.016	1.016	1.491	1.353
25-29	2.827	1.851	3.26	3.14	3.082	2.433	1.984	3.215	3.035
30-34	4.227	2.559	5.162	4.832	4.591	3.936	2.875	4.743	4.538
35-39	5.658	2.834	6.173	5.941	5.724	5.24	3.231	5.869	5.558
40-44	6.463	2.884	7.547	6.829	6.318	6.129	3.435	6.614	6.328
45-49	6.933	2.795	8.142	7.11	6.617	6.616	3.531	6.660	6.038

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Age Grp	Mandera	Wajir	NYANZA	Gucha	H/Bay	Kisii Central	Kisumu	Kuria	Migori
15-19	0.182	0.232	0.4	0.312	0.5	0.268	0.355	0.36	0.51
20-24	1.571	1.567	1.696	1.451	1.991	1.354	1.489	1.838	1.997
25-29	3.249	3.357	3.171	3.028	3.447	2.832	2.757	3.282	3.412
30-34	4.786	4.906	4.559	4.44	4.879	4.025	3.896	4.787	4.916
35-39	5.977	6.047	5.327	5.18	5.595	4.66	4.558	5.75	5.735
40-44	6.781	6.733	5.894	5.74	6.198	4.952	4.964	6.505	6.445
45-49	7.02	6.917	5.999	5.812	6.155	4.92	5.095	6.75	6.474
Age Grp	Nyamira	Rachuonyo	Siaya	Suba	Bondo	Nyando	R/VALLEY	Baringo	Bomet
15-19	0.414	0.471	0.365	0.494	0.493	0.424	0.285	0.234	0.333
20-24	1.564	1.963	1.748	1.986	1.949	1.798	1.446	1.483	1.671
25-29	3.221	3.398	3.212	3.414	3.478	3.342	2.801	3.175	3.216
30-34	4.44	4.996	4.741	4.861	5.057	4.882	4.137	5.021	4.837
35-39	5.262	5.774	5.488	5.801	6.049	5.906	4.97	6.018	5.929
40-44	5.536	6.625	6.234	6.336	6.763	6.615	5.556	6.827	6.851
45-49	5.879	6.616	6.273	6.787	7.305	7.049	5.711	6.836	7.188
Age Grp	Keiyo	Kajiado	Kericho	Koibatek	Laikipia	Marakwet	Nakuru	Nandi	Narok
15-19	0.234	0.419	0.326	0.196	0.248	0.186	0.255	0.271	0.482
20-24	1.437	1.448	1.530	1.191	1.278	1.462	1.28	1.477	1.879
25-29	2.989	2.562	2.800	2.633	2.517	3.095	2.468	2.909	3.403
30-34	4.466	3.651	4.122	4.024	3.603	4.672	3.596	4.279	4.741
35-39	5.183	4.314	4.838	5.039	4.316	5.504	4.285	5.117	5.813
40-44	5.79	4.69	5.318	5.336	4.631	5.799	4.721	5.858	6.536
45-49	5.551	4.918	5.348	5.755	4.792	5.886	4.849	5.921	6.826
Age Grp	Samburu	T. Mara	T. Nzoia	Turkana	U. Gishu	W. Pokot	Buret	WESTERN	Bungoma
15-19	0.242	0.419	0.271	0.156	0.234	0.277	0.381	0.284	0.273
20-24	1.531	1.915	1.494	1.101	1.249	1.662	1.71	1.546	1.521
25-29	3.087	3.519	2.861	2.576	2.454	3.293	3.157	2.991	2.956
30-34	4.574	5.175	4.259	4.036	3.728	4.821	4.748	4.494	4.49
35-39	5.556	6.545	5.085	4.943	4.441	5.811	5.628	5.327	5.382
40-44	6.231	7.308	5.781	5.851	4.979	6.369	6.509	6.023	6.13
45-49	6.689	8.034	5.775	6.339	5.047	6.59	6.682	6.115	6.194
Age Grp	Busia	Mt. Elgon	Kakamega	Lugari	Teso	Vihiga	B/Mumias		
15-19	0.396	0.245	0.277	0.221	0.326	0.201	0.349		
20-24	1.864	1.533	1.474	1.433	1.693	1.249	1.715		
25-29	3.408	3.133	2.919	2.794	3.126	2.537	3.297		
30-34	4.89	4.913	4.394	4.36	4.56	3.872	4.882		
35-39	5.822	6.073	5.287	5.121	5.354	4.473	5.731		
40-44	6.319	7.063	6.103	6.043	6.166	5.03	6.308		
45-49	6.533	7.563	6.274	6.192	6.362	5.041	6.289		

Appendix 8: Percentage Distribution of Female Population Aged 12 and Above by Marital Status and District, 1999 Census

Province/ District	Single	Married Monogamy	Married Polygamy	Married Total	Widowed	Divorced	Separated
KENYA TOTAL	38.6	44.1	9.3	53.3	5.4	1.2	1.5
KENYA RURAL	37.3	43.8	10.4	54.2	6.0	1.1	1.4
KENYA URBAN	43.8	45.3	4.6	49.9	2.9	1.8	1.6
NAIROBI	46.5	45.7	2.7	48.4	2.2	1.5	1.5
Kiambu	43.0	46.1	2.3	48.4	5.2	1.3	2.2
Kirinyaga	40.0	47.2	4.0	51.2	5.1	1.3	2.4
Muranga	41.2	47.4	2.3	49.6	7.3	0.8	1.0
Nyandarua	41.1	47.5	3.1	50.6	4.6	1.9	1.9
Nyeri	43.0	46.8	2.2	49.0	5.7	1.0	1.3
Thika	43.0	46.2	2.6	48.8	5.0	1.4	1.8
Maragua	40.2	47.6	3.2	50.8	6.5		

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Province/ District	Single	Married Monogamy	Married Polygamy	Married Total	Widowed	Divorced	Separated
Baringo	39.4	37.2	16.8	54.0	4.5	0.7	1.5
Bomet	39.7	45.7	9.9	55.6	3.3	0.4	1.1
Keiyo	43.7	44.0	5.4	49.4	4.3	0.6	2.0
Kajiado	34.6	40.1	18.8	59.0	3.8	1.3	1.4
Kericho	40.5	47.4	6.3	53.8	3.8	0.6	1.3
Koibatek	44.0	42.4	7.0	49.5	4.2	0.9	1.4
Laikipia	40.6	47.7	5.0	52.7	3.7	1.5	1.5
Marakwet	37.6	45.5	10.6	56.0	3.6	0.7	2.1
Nakuru	41.2	47.8	4.1	51.9	3.8	1.4	1.7
Nandi	43.0	44.5	5.8	50.3	4.6	0.6	1.5
Narok	28.7	39.4	25.1	64.4	4.7	1.0	1.2
Samburu	32.2	45.0	14.5	59.5	6.7	0.8	0.8
Trans Mara	32.5	39.8	22.7	62.5	3.1	0.6	1.3
Trans Nzoia	37.9	45.1	10.2	55.3	3.9	1.1	1.8
Turkana	39.7	34.3	18.2	52.6	5.0	1.1	1.6
Uasin Gishu	43.6	44.7	6.8	51.5	2.9	0.7	1.3
West Polot	30.8	36.8	27.1	63.9	3.5	0.7	1.1
Buret	41.2	47.5	6.2	53.7	3.3	0.5	1.3
R.VALLEY	39.2	43.8	10.6	54.5	3.9	0.9	1.5
Bungoma	36.7	40.5	15.6	56.1	4.6	0.9	1.7
Busia	30.1	41.6	16.5	58.0	9.4	0.8	1.6
Mt. Elgon	37.1	38.6	16.9	55.5	4.2	1.0	2.2
Kakamega	36.5	44.6	10.1	54.7	6.2	1.0	1.6
Lugari	38.7	43.8	10.6	54.4	4.2	1.1	1.6
Teso	32.4	41.9	16.9	58.8	6.3	1.1	1.5
Vihiga	38.4	47.4	3.4	50.8	8.4	0.7	1.6
B/ Mumias	31.3	42.6	16.6	59.2	7.5	0.8	1.2
WESTERN	35.3	43.0	12.7	55.6	6.5	0.9	1.6

Appendix 9: Percentage Distribution of Male Population Aged 12 and Above by Marital Status and District, 1999 Census

Province/ District	Single	Married Monogamy	Married Polygamy	Married Total	Widowed	Divorced	Separated
KENYA TOTAL	51.4	41.3	5.2	46.4	0.7	0.6	0.9
KENYA RURAL	53.1	38.9	5.6	44.5	0.8	0.6	1.0
KENYA URBAN	45.8	49.2	3.7	52.9	0.4	0.5	0.5
NAIROBI	44.3	51.8	2.8	54.6	0.4	0.4	0.4
Kiambu	49.9	46.4	1.6	48.0	0.7	0.4	1.0
Kirinyaga	51.4	43.9	2.2	46.1	0.7	0.6	1.3
Muranga	56.1	39.9	1.4	41.3	1.1	0.5	1.0
Nyandarua	46.0	49.3	2.5	51.8	0.7	0.7	0.9
Nyeri	54.0	42.4	1.4	43.9	0.8	0.5	0.9
Thika	50.0	46.0	1.9	47.9	0.7	0.5	0.9
Maragua	55.3	40.2	1.8	42.0	1.0	0.6	1.1
CENTRAL	52.4	43.5	1.8	45.3	0.7	0.5	1.0
Kilifi	52.3	36.7	8.8	45.4	0.8	0.9	0.7
Kwale	49.0	40.1	7.3	47.4	0.9	1.5	1.2
Lamu	48.8	43.8	2.4	46.2	1.2	3.0	0.8
Mombasa	46.5	48.0	3.6	51.7	0.6	0.8	0.5
Taita Taveta	55.0	39.1	2.7	41.8	1.1	1.0	1.1
Tana River	49.5	38.5	9.9	48.3	0.9	0.9	0.4
Malindi	49.0	39.8	8.6	48.4	0.7	1.2	0.7
COAST	49.4	41.9	6.1	48.0	0.8	1.1	0.7
Embu	53.7	42.0	1.9	43.9	0.7	0.6	1.2
Isiolo	52.6	38.1	6.9	45.1	0.7	1.1	0.6
Kitui	54.5	37.0	5.0	42.0	1.0	1.0	1.4
Makueni	57.3	36.6	3.4	40.0	0.9	0.8	1.1
Machakos	56.3	38.3	2.9	41.1	0.7	0.8	1.1
Marsabit	54.9	37.3	6.7	43.9	0.5	0.4	0.3
Mbeere	54.0	39.6	3.8	43.4	0.7	0.7	1.2
Meru Central	52.9	42.1	2.2	44.3	0.8	0.8	1.3
Moyale	55.7	36.3	5.8	42.1	0.6	0.9	0.8
Mwingi	54.6	36.4	5.6	42.0	0.9	1.0	1.5
Meru North	50.1	42.0	5.8	47.8	0.7	0.5	1.0
Tharaka	51.6	40.9	5.2	46.1	0.8	0.7	0.8
Meru South	51.2	42.9	2.4	45.3	1.0	0.5	2.1
EASTERN	54.2	39.2	3.8	43.1	0.8	0.7	1.2
Garissa	56.0	35.1	6.6	41.7	1.1	0.8	0.4
Mandera	55.1	34.4	8.8	43.2	0.7	0.8	0.3
Wajir	55.2	35.8	6.8	42.6	1.1	0.7	0.4
N. EASTERN	55.4	35.2	7.3	42.5	1.0	0.8	0.3
S. Kisii	54.2	39.0	5.4	44.5	0.5	0.3	0.6
H/Bay	48.9	36.9	11.9	48.8	1.1	0.4	0.8
Kisii Central	53.5	40.9	4.0	44.9	0.7	0.3	0.6
Kisumu	49.4	40.3	8.0	48.4	0.9	0.4	0.9
Kuria	50.8	35.6	12.1	47.7	0.5	0.2	0.8
Migori	47.7	37.7	12.8	50.5	0.7	0.3	0.7
Nyamira	54.1	40.9	3.9	44.8	0.5	0.2	0.5
Rachuonyo	52.6	36.5	8.5	45.0	1.1	0.4	0.9
Siaya	52.0	35.4	8.4	43.9	2.0	0.9	1.3
Suba	49.7	35.3	13.0	48.3	0.8	0.4	0.9
Nyando	51.0	37.3	8.8	46.1	1.2	0.5	1.1
Bondo	51.1	35.2	10.6	45.9	1.3	0.5	1.2
NYANZA	51.4	38.2	8.2	46.4	0.9	0.4	0.8

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Province/ District	Single	Married Monogamy	Married Polygamy	Married Total	Widowed	Divorced	Separated
KENYA TOTAL	51.4	41.3	5.2	46.4	0.7	0.6	0.9
Baringo	56.2	33.7	8.3	42.0	0.7	0.4	0.8
Bomet	55.2	38.8	5.0	43.9	0.2	0.2	0.5
keiyo	53.1	41.0	3.5	44.4	0.8	0.3	1.4
Kajiado	51.0	39.4	8.1	47.5	0.4	0.5	0.6
Kericho	50.8	43.7	4.1	47.8	0.4	0.2	0.7
Koibatek	55.1	38.6	4.2	42.7	0.8	0.5	0.9
Laikipia	52.3	42.2	3.8	45.9	0.5	0.6	0.7
Marakwet	50.7	41.3	6.0	47.3	0.6	0.4	0.9
Nakuru	50.2	45.2	3.0	48.2	0.5	0.5	0.6
Nandi	53.4	41.0	3.5	44.6	0.7	0.3	1.1
Narok	51.4	35.8	11.3	47.1	0.4	0.5	0.6
Samburu	58.1	29.7	11.4	41.2	0.3	0.2	0.2
Trans Mara	51.0	36.4	11.5	47.9	0.2	0.3	0.6
Trans Nzoia	51.4	40.6	6.0	46.5	0.5	0.5	1.0
Turkana	60.3	27.9	10.6	38.5	0.4	0.3	0.5
Uasin Gishu	51.9	42.6	4.2	46.8	0.4	0.3	0.6
West Polot	50.4	34.7	13.4	48.1	0.5	0.5	0.6
Buret	49.5	45.4	4.3	49.7	0.3	0.1	0.4
R. VALLEY	52.3	40.3	5.9	46.1	0.5	0.4	0.7
Bungoma	51.5	38.4	8.3	46.7	0.4	0.5	0.9
Busia	49.2	38.3	9.0	47.3	1.2	0.9	1.5
Mt. Elgon	52.6	36.7	8.4	45.1	0.4	0.6	1.3
Kakamega	51.3	40.4	5.4	45.8	0.9	0.8	1.2
Lugari	53.1	39.4	5.5	44.9	0.6	0.5	0.9
Teso	47.5	40.3	9.2	49.5	1.1	0.8	1.1
Vihiga	54.0	39.5	2.1	41.6	1.8	0.9	1.7
B/ Mumias	47.4	40.5	9.1	49.5	0.9	0.7	1.4
WESTERN	50.9	39.3	6.9	46.2	0.9	0.4	1.3

Appendix 10: Kenya 1999 Population Census, Percentage Childless and Mean Age at First Birth by District

AGE GROUP	KENYA	KENYA RURAL	KENYA URBAN	NBI	CENTRAL	kiambu	Kirinyaga	Murang'a	Nyandarua
15-19	79.6	79.3	80.7	81.9	85.1	83.5	84.2	87.6	84.4
20-24	33.2	29.3	43.9	48.7	38.2	39.7	37.0	40.0	31.2
25-29	14.8	12.2	21.8	25.5	15.4	17.3	15.1	15.1	11.2
30-34	5.7	4.5	9.6	11.5	5.4	6.6	5.4	5.0	3.9
35-39	4.0	3.3	6.5	7.5	3.4	4.1	3.3	2.8	2.4
40-44	3.7	3.3	5.9	6.8	3.0	3.7	2.7	2.4	2.3
45-49	3.5	3.2	5.8	6.0	2.5	2.7	2.1	2.6	1.9
MAFB	21.0	21.4	22.8	22.5	21.7	21.9	21.6	21.9	21.1

AGE GROUP	Nyeri	Thika	Maragua	COAST	Kilifi	Kwale	Lamu	Mombasa	T. Taveta
15-19	88.9	82.8	85.4	77.2	77.4	73.0	79.7	78.6	83.4
20-24	41.8	38.9	34.9	33.7	30.0	24.6	34.6	43.3	36.4
25-29	15.9	16.7	13.5	18.0	16.4	14.7	19.1	23.5	15.2
30-34	5.1	6.1	4.4	8.1	6.0	6.1	8.4	12.0	7.3
35-39	3.5	3.8	3.0	5.9	4.3	4.9	6.2	9.3	4.6
40-44	2.8	3.5	2.8	5.1	3.9	4.2	5.7	8.1	4.0
45-49	2.6	3.1	2.5	5.4	4.4	5.2	5.2	8.2	3.7
MAFB	22.1	21.7	21.4	21.0	20.7	20.1	21.2	21.7	21.4

AGE GROUP	T. River	Malindi	EASTERN	Embu	Isiolo	Kitui	Makueni	Machakos	Marsabit
15-19	79.1	73.5	83.3	87.3	81.6	83.1	85.3	81.4	83.9
20-24	26.2	28.2	34.6	46.5	32.0	27.8	34.1	33.8	33.9
25-29	11.1	15.7	12.7	18.2	12.7	9.7	11.1	13.0	11.6
30-34	4.8	7.3	4.4	5.7	4.5	3.7	4.3	4.4	3.0
35-39	3.8	5.5	3.0	3.8	3.2	3.2	3.1	3.0	2.6
40-44	3.2	5.5	2.8	3.0	3.7	3.3	2.8	2.8	2.4
45-49	3.9	5.5	2.6	2.0	3.4	3.6	2.6	2.3	2.8
MAFB	20.4	20.2	21.1	22.4	20.9	20.4	21.1	21.0	21.1

AGE GROUP	Mbeere	Meru Central	Moyale	Mwingi	Meru North	Tharaka	Nithi	N. EASTERN	Garissa
15-19	84.2	87.1	83.7	80.5	77.8	90.9	86.5	85.6	85.1
20-24	39.0	42.2	28.0	29.3	28.0	45.1	38.3	36.8	42.5
25-29	11.7	15.7	10.2	11.7	10.6	15.1	15.0	12.1	15.6
30-34	4.6	5.0	4.3	4.0	4.2	4.2	4.3	4.2	5.5
35-39	2.7	3.0	2.7	3.1	2.9	2.4	2.5	2.6	3.3
40-44	2.0	2.7	3.8	3.6	2.8	2.0	2.1	2.7	3.2
45-49	2.8	2.4	3.0	3.0	2.6	2.2	1.9	2.5	3.5
MAFB	21.2	21.9	20.7	20.7	20.5	22.3	21.8	21.5	21.9

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AGE GROUP	Mandera	Wajir	NYANZA	Gucha	H/bay	Kisii Central	Kisumu	Kuria	Migori
15-19	87.3	84.6	71.8	77.4	65.0	80.1	73.9	75.0	63.9
20-24	32.5	34.3	25.0	31.4	18.0	32.1	29.7	22.7	18.3
25-29	10.2	10.3	12.5	13.5	11.7	12.8	14.3	10.6	12.0
30-34	3.4	3.6	5.5	4.2	6.4	4.6	7.1	4.1	6.0
35-39	2.2	2.3	4.6	3.0	5.8	2.9	5.7	3.2	5.8
40-44	2.2	2.7	5.0	2.3	6.6	2.0	6.5	3.1	6.1
45-49	2.3	1.8	5.2	1.9	7.5	1.9	6.6	3.2	6.7
MAFB	21.2	21.3	19.8	20.9	18.7	21.1	20.1	20.1	18.9

AGE GROUP	Nyamira	Rachuonyo	Siaya	Suba	Bondo	Nyando	RIFT VALLEY	Baringo	Bomet
15-19	73.3	67.2	73.4	65.0	67.3	70.1	79.2	83.7	76.4
20-24	30.7	19.0	21.8	17.0	19.1	21.6	29.9	33.4	24.0
25-29	11.6	11.8	12.5	11.0	12.1	12.7	12.2	11.4	9.7
30-34	4.4	5.1	5.8	6.3	6.6	5.5	4.4	3.2	3.3
35-39	2.5	5.1	6.2	6.1	6.2	5.0	2.9	2.1	2.6
40-44	2.3	5.4	6.6	6.5	7.2	5.8	2.6	2.0	1.3
45-49	1.8	5.5	6.9	5.7	7.5	6.0	2.4	1.8	1.9
MAFB	20.5	19.1	19.4	18.9	18.8	19.4	20.8	21.2	20.3

AGE GROUP	Keiyo	Kajiado	Kericho	Koibatek	Laikipia	Marakwet	Nakuru	Nandi	Narok
15-19	84.2	70.9	75.4	85.7	81.6	85.8	80.7	79.9	66.5
20-24	30.1	30.4	26.6	37.6	32.1	29.0	32.0	28.1	18.3
25-29	10.2	13.3	12.4	14.1	11.9	9.9	13.6	10.8	7.7
30-34	4.0	4.9	4.4	4.0	4.2	4.2	5.4	3.6	3.4
35-39	2.9	3.3	3.0	2.4	3.1	3.1	3.6	2.4	2.2
40-44	3.2	3.4	2.6	2.6	2.6	3.4	3.0	2.5	2.5
45-49	3.0	2.9	2.0	2.2	2.5	2.8	2.8	2.4	2.8
MAFB	20.7	20.4	20.6	21.6	20.9	20.8	21.1	20.5	19.2

AGE GROUP	Samburu	T.Mara	T. Nzoia	Turkana	U. Gishu	W.Pokot	Buret	WESTERN	Bungoma
15-19	81.9	71.3	79.0	89.5	82.2	79.4	73.6	78.7	79.2
20-24	28.7	17.9	26.2	50.7	34.7	23.4	25.8	26.7	26.8
25-29	8.5	7.4	10.9	20.7	14.1	7.6	11.9	12.0	11.9
30-34	3.2	2.6	3.5	6.5	4.7	3.1	4.4	4.7	4.5
35-39	2.3	2.1	2.6	3.4	3.1	2.3	2.9	3.7	3.4
40-44	2.2	2.5	2.6	2.6	3.0	2.4	2.5	3.6	3.1
45-49	2.2	1.8	2.4	2.3	2.4	2.5	2.4	3.6	3.0
MAFB	20.6	19.4	20.4	23.0	24.1	20.2	20.3	20.4	20.6

AGE GROUP	Busia	Mt Elgon	Kakamega	Lugari	Teso	Vihiga	B/Mumias
15-19	70.7	80.5	79.8	82.9	75.9	84.6	74.1
20-24	19.2	24.2	29.6	28.9	22.0	34.4	22.9
25-29	9.8	9.5	12.9	12.1	10.0	15.4	10.7
30-34	5.2	3.4	4.8	3.6	4.8	5.0	5.0
35-39	4.9	2.6	3.6	3.1	4.8	3.3	4.3
40-44	5.2	2.4	3.3	3.0	4.3	2.9	4.4
45-49	5.7	2.2	3.3	2.6	4.4	3.0	4.4
MAFB	19.3	20.4	20.6	20.8	19.9	21.4	19.8

Appendix 11: Hajnal's Formula for Estimation of SMAM

The assumption is that a cohort of women are passing through life, and the proportion single among them at each age group is given in the percentage distribution of single women by age. It is further assumed that no woman dies between age 15 and 55. The task is to calculate the mean age at first marriage of women marrying before they reach age 50. The steps are as follows.

1. Add the proportions single up to and including the age group 45-49 and multiply the sum by 5.
2. Add 1500 (number of years lived by 100 women up to and including age 15).
3. Average the proportions for 45-49 and 50-54 (to find out those who never marry).
4. Multiply the result by 50 and subtract it from (2). to estimate the number of years lived by those who marry.
5. Subtract the result of (3) from 100 (to get the number that marry).
6. Divide the result of (4) by the result of (5) (to get the average number of years lived in single state by women who marry).

This gives the final result (Hajnal 1953:130).

Appendix 12: List of Contributors

Main Contributors to the Kenya 1999 Population and Housing Census Analytical Reports

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