



REPUBLIC OF KENYA

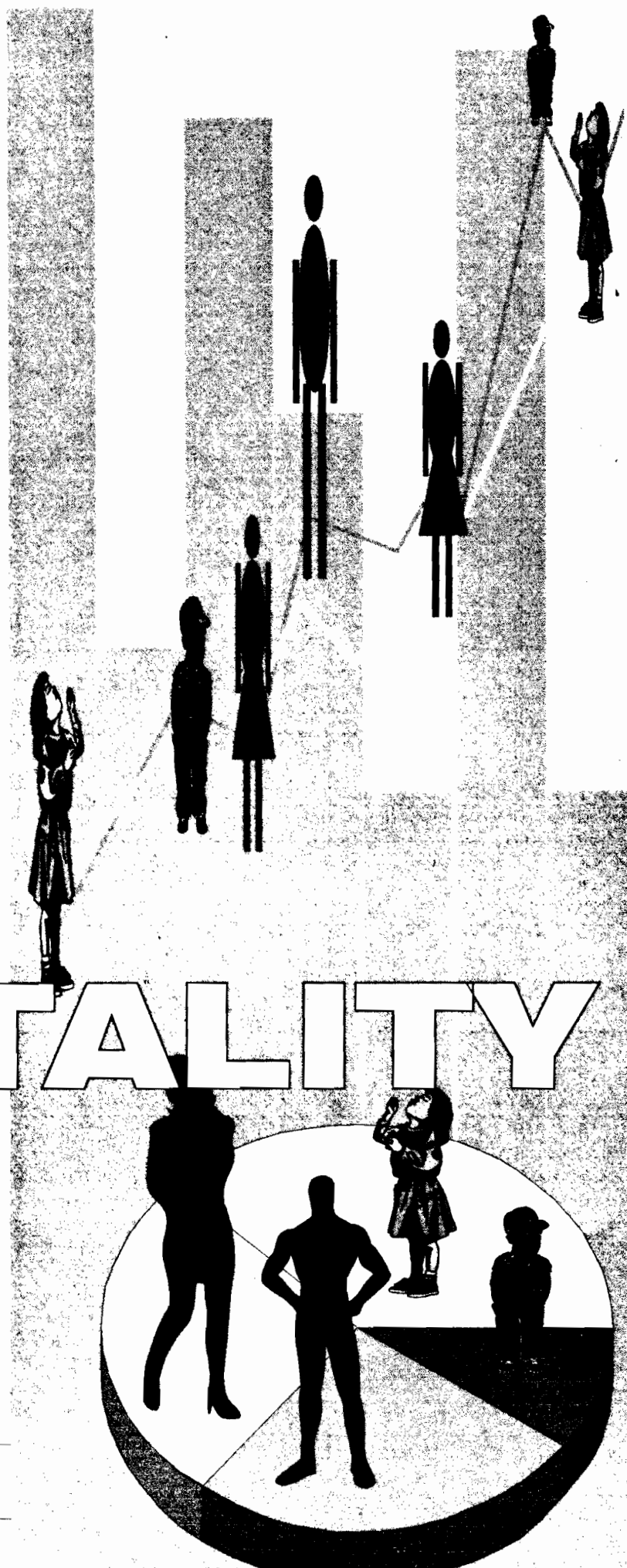
KENYA POPULATION CENSUS 1989

ANALYTICAL REPORT VOLUME V

MORTALITY

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National Development
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KENYA POPULATION CENSUS
1989

ANALYTICAL REPORT:
VOLUME V

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Foreword

The 1989 Population and Housing Census was carried out on a de facto basis with the midnight of 24/25 August as the reference date under the provisions of the Statistical Act (Cap. 112) of the Laws of Kenya and as per Legal Notice No. 466 of 4 November, 1988.

The census was taken to determine: the size, composition and distribution of the population; the levels and trends of fertility, mortality, migration and urbanisation; and to obtain information on housing, education, and employment.

The analytical work involved collaborative efforts of both local and external experts, a number of institutions and the Central Bureau of Statistics (CBS). The recruitment of the professional experts was done on a competitive basis, ensuring that in addition, such experts had adequate knowledge and involvement in the Kenyan demographic scene.

The production of the tabulations for the analyses was preceded by a rigorous programme of validation and editing to ensure internal consistency and to minimise errors. The analysis was therefore carried out on cleaned data files, and the population projections, in particular, are based on the census figures adjusted for errors of coverage. Should there be any discrepancies between the basic data in Volumes I and II and the cleaned data in the new volumes, the latter are preferred.

This volume contains results of the analysis pertaining to child and adult mortality and generation of Kenyan life tables. The picture that emerges from this analysis is that mortality has been on the decline as exemplified by a drop in the infant mortality coupled with a rise in the expectation of life at birth. In spite of this, distinct pockets of high mortality still persist in parts of Western Kenya and along the Coast. However, despite the improvement, the advent of AIDS which is on an increase, the scenario is likely to reverse the positive gains so far achieved.

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Acknowledgement

The 1989 Population and Housing Census was the fifth census after those of 1948, 1962, 1969, and 1979. The census collected more information that was comprehensively analysed than any previous censuses.

The 1989 census was a strenuous and costly exercise which was accomplished through concerted efforts of many organisations, institutions, government ministries and individuals who assisted in a variety of ways in preparing, collecting, compiling, processing, analysing and publishing the census results. The Office of the Vice President and Ministry of Planning and National Development and in particular, the Central Bureau of Statistics (CBS), wish to thank all of them and pay special tribute to the late Director of Statistics, Mr. P.P. Kallaa.

Further, the Ministry wishes to thank UNFPA, UNDP, CIDA, ODA, UNDTCD, UNECA and the Government of Netherlands for their material, financial and technical support at all stages of preparing and conducting the census. Special commendation go to UNFPA and ODA for providing further support for the detailed analysis of the 1989 census. In particular, the Ministry wishes to acknowledge contributions from the authors, technical support staff and professionals who individually and collectively gave comments and advice in the process of writing the various volumes.

EXECUTIVE SUMMARY

While the lack of reliable data on vital events from the registration system has been apparent in the recent past decades in Kenya, the demand for estimates of fertility and mortality has grown over the same period for a number of uses. In attempting to meet this demand, major efforts have been directed at conducting population censuses and demographic surveys. The difficulty of collecting data directly in surveys means that indirect methods of estimation represent an important source of mortality estimates. These indirect methods, which have been developed mainly by Brass, were applied to the 1989 census data and a number of mortality indices derived.

With the natural population growth rate at 3.8 per cent in 1979, the Government was faced with diverse challenges in its provision of basic human needs. To address this issue, the Government formulated population policy guidelines in 1984 whose main focus was, and still is, the reduction of the population growth rate. While reduction in fertility was given utmost priority, one of the population policy goals was to reduce mortality, because such reductions would ultimately lead to lowering the fertility and hence the growth rate.

On mortality, the population policy guidelines stated that despite the past declines, mortality levels were still high relative to targeted levels. With improvement in health and the rise in the standards of living, mortality was expected to decline further.

In line with the expectation of the population policy, census data indicate that mortality has been on the decline from 1962 through 1989 though in varying degrees. Not only did child mortality continue to decline, but the rate of this decline kept rising with time. Regionally, similar declines in child mortality prevailed in all provinces during the two intercensal periods; i.e. 1969-79 and 1979-89. While this declining trend in child mortality was evident in most of the districts, Turkana district was the only exception by having a rise in the proportions of children dead during both intercensal periods.

Gender disparities were such that the proportions of male children dying were consistently higher than those of female children for all age groups of mothers both in 1979 and 1989.

Results related to differentials of child mortality by education of mother reaffirmed the general notion that child mortality decreases with increase in the level of education of mother for all age groups. Nationally, educating a female up to primary level reduced child mortality by about 36 per cent and by a further 39 per cent if she proceeded to secondary and beyond.

Findings with regard to all areas of analysis of child mortality asserted that a declining trend was maintained. While these positive changes in Kenya's child mortality profile constituted the returns in the investments which the country made in basic education and health care, pockets of high child mortality still remained in Nyanza (except Kisii district), Western (especially Busia district) and Coast (particularly Kilifi, Kwale and Tana River districts) provinces.

Although it is more difficult to reduce adult mortality as compared to child mortality, analysis of the 1989 census showed a decline in adult mortality since 1969 for all age groups of both male and female respondents.

The expectation of life at birth signifies the general standard of living of a population. With each successive census, there was an overall gain in the expectation of life for both sexes. It increased from 49 years in 1969 to 54 years during the 1969-79 intercensal period and to 60 years during the intercensal period 1979-89.

Considering the major influence infant mortality has on the general mortality of a population, the findings reflected a positive picture, whereby the infant mortality rate decreased from a high 119 in 1969 to 88 during the intercensal period 1969-79 and to 66 during the intercensal period 1979-89.

CHAPTER 1: BACKGROUND

1.1. Introduction

Under the provisions of the Statistics Act (CAP 112) of the Laws of Kenya and as per Legal Notice Number 466 of 4th November of 1988, the 1989 Population and Housing Census was undertaken with the midnight of 24th/25th August 1989 being the reference date. Being the fifth census to be carried out since 1948, this census was undertaken on a de facto basis just like the previous censuses.

In response to increased data needs, the 1989 Population and Housing Census was more ambitious in terms of operations, data collected and coverage than any of the previous censuses.

The objectives of this census were:

1. To provide information on the size, composition and distribution of the population.
2. To collect information on levels, trends and differentials of fertility, mortality and migration;
3. To ascertain the rate and pattern of urbanisation.
4. To determine the size and composition of the labour force
5. To provide information on availability of social amenities

So as to achieve these objectives, an elaborate questionnaire (see Appendix 1) was used to collect details both at individual and household levels. This volume focuses on the analysis of data collected on mortality.

1.2. Data on Mortality

While the lack of reliable data on vital events from the registration system has been apparent in the recent past decades in Kenya, the demand for estimates of fertility and mortality has grown over the same period for a number of uses. In attempting to meet this demand, major efforts have been directed at conducting population censuses and demographic surveys.

Kenya has a vast amount of data on mortality from censuses of 1962, 1969, 1979 and 1989 and also from various demographic sample surveys.

Census data indicate that mortality has been on the decline since 1962. While a similar trend is apparent from the data of various surveys, the levels of mortality are different between those derived from censuses and those from surveys. Mortality levels from survey data are lower than those from censuses.

However, the Kenya Demographic and Health Survey, 1993, states that "child survival in Kenya has not improved during the last decade. ... most of the rates show either no change or a small increase during the most recent period, 1983-1987 to 1988-1993". If this assertion is

true, then this U-turn is quite disturbing with serious implications on health policies and programmes.

1.3. Objectives

This volume will highlight three areas of analysis:

Mortality levels:

these assist in understanding the current demographic picture and in projecting it into the future.

Mortality trends:

these help in evaluating the impact of population programmes; in understanding the population dynamics of a society; and in assessing the factors that mortality and fertility respond to.

Mortality differentials:

these are valuable for identifying target groups for population programmes and for understanding the socio-economic and cultural underpinnings of vital processes.

In highlighting these areas, the volume will also illuminate the general welfare of the population at all levels and point at groups and areas in need of attention.

1.4. General Methodology

Analysis of mortality involves various stages since each of the three aspects of mortality, i.e. child mortality, adult mortality and life tables, requires its own different method of analysis. While specifics of each method will be dealt with under its respective topic, the general approach of analysis is given here below.

To estimate child mortality, data on children ever born and children dead were used to generate proportions of children dead. Using indirect methods of estimation, these proportions were converted into probabilities of dying by age x .

For adult mortality, proportions with surviving parents were derived from data on orphanhood. Once more, indirect estimation methods proposed by Brass and others were employed to convert these proportions into life table survivorship probabilities, i.e. probabilities of surviving from a base age n to various older ages.

The third aspect of the analysis involved linking child mortality to adult mortality in order to construct a complete life table for the population. The Brass two-parameter logit life table system was used which basically entails taking a standard life table and modifying it mathematically until it fits the observed data set.

1.5 Outline of the Volume

The volume addresses mortality analysis in five chapters. Chapter 1 covers the general background and the mortality data available in Kenya. Apart from looking at the mortality situation from past censuses and surveys, it also gives the objectives of the volume, the general methodology and the volume's general outline.

Chapter 2 delves into the critical area of child mortality through an examination of the questions in the census questionnaire and quality of data from the same. Results of the analysis are presented in terms of: proportions of children dead from the past censuses, regional differentials in proportions of children dead; estimates of childhood mortality from different models; probabilities of dying by age 5; differentials in child mortality by sex, education of mother, residence of mother, source of water, means of sewage disposal and marital status of mother.

Chapter 3 deals with adult mortality by examining the questions asked in the questionnaire. It then presents results through proportions of respondents with surviving parents and probabilities of survivorship.

Chapter 4 creates the link between child and adult mortality as it explores the construction of model life tables. Various outputs of these life tables such as life table survivors, expectation of life, infant mortality rates, crude death rates and age-specific mortality rates are presented.

Lastly, Chapter 5 gives concluding remarks of the major findings, their possible implications and wraps up by giving some recommendations.

CHAPTER 2: CHILD MORTALITY

2.1. Data on Childhood Mortality

Within columns P40 through P45 of the 1989 census questionnaire, all women aged 12 years and over were required to provide information on the number of children who were born alive and were living in the household of enumeration, those living elsewhere and those who had died. The sum of the entries in the six columns yielded the number of children ever born (CEB) while the sum of the last two columns gave the number of children dead (CD). These two data sets were used in the estimation of child mortality.

2.2. Quality of Data

It should be noted that in spite of the concerted efforts to generate complete and accurate data on mortality, problems of under-reporting of infant deaths, age misreporting and wrong dating of deaths still persist.

Analysis of the information on CEB indicated that there was a high rate of non-response which amounted to 19.2 per cent as shown in Table 2.1. These cases were from all the provinces with North Eastern having the lowest (13.8 per cent) and Western the highest (22.6 per cent). Further breakdown revealed that two age groups, i.e. 12-14 and 15-19 were the major culprits for this omission as they accounted for at least 56 per cent of the non-stated cases in all the provinces (see Table 2.1).

While information on CEB incorporated aspects of CD, there were some cases where females aged 12 and over stated their parity yet for some reason failed to give information on CD. This group of parity stated but child mortality not stated constituted 0.7 per cent of the total number of females 12 years and over as indicated in Table 2.1

Parity and Mortality Not Stated by Province: 1989

Table 2.1

KENYA					
Age Group	No. of women	Parity not stated		Mortality not stated	
		Number	Per cent	Number	Per cent
12-14	855,581	380,001	35.4	967	2.4
15-19	1,192,066	401,241	37.4	4,107	10.2
20-24	1,002,355	145,815	13.6	9,898	24.6
25-29	840,709	61,600	5.7	9,459	23.5
30-34	572,060	31,779	3.0	5,756	14.3
35-39	455,371	21,452	2.0	4,363	10.8
40-44	362,407	16,997	1.6	3,209	8.0
45-49	292,008	13,161	1.2	2,489	6.2
Total	5,572,557	1,072,046	19.2	40,248	0.7
NAIROBI Province					
12-14	33,289	13,353	22.7	45	1.2
15-19	70,685	19,942	33.9	280	7.5
20-24	90,886	14,273	24.3	819	21.9
25-29	73,437	5,981	10.2	985	26.4
30-34	40,736	2,400	4.1	673	18.0
35-39	27,748	1,363	2.3	476	12.7
40-44	16,747	907	1.5	318	8.5
45-49	10,084	539	0.9	140	3.7
Total	363,612	58,758	16.2	3,736	1.0
CENTRAL Province					
12-14	132,487	56,909	35.7	136	1.1
15-19	181,748	62,684	39.3	767	6.0
20-24	152,106	22,798	14.3	3,222	25.3
25-29	119,325	7,777	4.9	3,214	25.3
30-34	73,873	3,307	2.1	1,849	14.5
35-39	64,340	2,388	1.5	1,447	11.4
40-44	54,239	1,926	1.2	1,142	9.0
45-49	46,599	1,670	1.0	943	7.4
Total	824,717	159,459	19.3	12,720	1.5
COAST Province					
12-14	65,140	28,015	29.5	26	2.6
15-19	98,165	32,354	34.0	128	12.6
20-24	84,449	14,390	15.1	227	22.4
25-29	77,572	8,161	8.6	212	20.9
30-34	57,019	4,594	4.8	160	15.8
35-39	43,884	3,170	3.3	105	10.4
40-44	34,441	2,535	2.7	82	8.1
45-49	26,627	1,858	2.0	74	7.3
Total	487,297	95,077	19.5	1,014	0.2
EASTERN Province					
12-14	155,566	72,554	34.8	159	3.4
15-19	211,980	81,821	39.2	459	9.8
20-24	161,750	28,278	13.6	1,130	24.0
25-29	137,699	11,017	5.3	1,137	24.2
30-34	96,711	5,539	2.7	741	15.7
35-39	82,005	3,912	1.9	649	13.8
40-44	68,367	3,111	1.5	432	9.2
45-49	53,880	2,410	1.2	391	8.3
Total	967,958	208,642	21.6	4,707	0.5

Parity and Mortality Not Stated by Province: 1989

Table 2.1(cont.)

Age Group	No. of women	Parity not stated		Mortality not stated	
		Number	Per cent	Number	Per cent
NORTH EASTERN Province					
12-14.	13,729	4,517	35.4	10	4.9
15-19.	20,235	4,970	38.9	18	8.8
20-24.	15,256	1,558	12.2	42	20.5
25-29.	13,897	722	5.7	52	25.4
30-34.	11,558	431	3.4	32	15.6
35-39.	6,667	209	1.6	18	8.8
40-44.	8,078	262	2.1	33	16.1
45-49.	3,397	108	0.8	11	5.4
Total	92,817	12,777	13.8	205	0.2
NYANZA Province					
12-14.	147,791	72,060	38.7	142	3.1
15-19.	193,101	67,007	36.0	677	14.7
20-24.	159,917	21,801	11.7	1,300	28.1
25-29.	135,734	10,105	5.4	1,149	24.9
30-34.	95,755	5,845	3.1	623	13.5
35-39.	76,961	3,927	2.1	432	9.3
40-44.	61,236	3,238	1.7	298	6.4
45-49.	51,547	2,406	1.3	219	4.7
Total	922,042	186,389	20.2	4,621	0.5
RIFT VALLEY Province					
12-14.	193,428	76,128	38.6	278	3.1
15-19.	264,538	74,493	37.8	1,277	14.2
20-24.	222,209	23,877	12.1	2,286	25.5
25-29.	189,247	9,692	4.9	2,087	23.2
30-34.	125,456	4,862	2.5	1,303	14.5
35-39.	99,340	3,266	1.7	983	10.9
40-44.	75,845	2,564	1.3	764	8.5
45-49.	62,510	2,220	1.1	574	6.4
Total	1,232,573	197,102	16.0	8,978	0.7
WESTERN Province					
12-14.	114,151	56,465	36.7	171	5.8
15-19.	151,614	57,970	37.7	501	17.1
20-24.	115,782	18,840	12.2	872	29.7
25-29.	93,798	8,145	5.3	623	21.2
30-34.	70,952	4,801	3.1	375	12.8
35-39.	54,426	3,217	2.1	253	8.6
40-44.	43,454	2,454	1.6	140	4.8
45-49.	37,364	1,950	1.3	137	4.7
Total	681,541	153,842	22.6	2,935	0.4

After running the editing programme on CEB, there were two cases where the number of CEB per woman exceeded 100. Since this did not appear practical, these cases were included in the category of 'not stated'.

There was also control on the maximum number of CEB permissible by age of mother since the level of fertility varies with age. This control affected women between ages 12 and 34 years as shown below:

Age	12-13	14	15	16-18	19-22	23-24	25-30	31-34
Max. CEB	1	2	3	4	5	6	7	8

For those cases whose CEB exceeded the maximum number permissible, some imputation had to be done. Table 2.2 shows the number of cases affected by the imputation.

Number of Imputed Cases by Province, 1989

Table 2.2

	Number of women	Imputed Cases	
		Number	Per cent
KENYA	5,572,557	112,664	2.0
Nairobi	363,612	-	0.0
Central	824,717	9,933	1.2
Coast	487,297	11,764	2.4
Eastern	967,958	14,243	1.5
N. Eastern	92,817	-	0.0
Nyanza	922,042	31,026	3.4
Rift Valley	1,232,573	28,021	2.3
Western	681,541	17,677	2.6

By examining the behaviour of the average parities reported by women in each age group, one is able to assess generally the quality of the data on CEB. Unless fertility rose at some time in the past, average parities should increase with age up to age group 45-49. It is of interest to examine the parities because any omission of CEB might be made up disproportionately of dead children (United Nations, 1983, 81). Using this rough test, data from the 1989 census in Table 2.3 appear to be satisfactory.

Average Parities, KENYA 1989

Table 2.3

Age Group	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Av. Parity	0.240	1.559	3.252	4.891	6.052	6.870	7.205

The parity data above show no clear evidence of omission on CEB.

2.3 Proportions of Children Dead

Proportions of children who had died, by age of mother, were obtained from the CEB and CD of the 1989 census. Table 2.4 shows these proportions in comparison with similar figures from the 1962, 1969 and 1979 censuses.

Proportions of Children Dead: 1962, 1969, 1979 & 1989

Table 2.4

Age Group of Mother	Proportion of Children Dead				Percent Change		
	1962	1969	1979	1989	62-69	69-79	79-89
15-19	0.146	0.128	0.116	0.111	-12.3	-9.4	-4.3
20-24	0.170	0.147	0.125	0.104	-13.5	-15.0	-16.8
25-29	0.205	0.174	0.141	0.108	-15.1	-19.0	-23.4
30-34	0.238	0.202	0.166	0.126	-15.1	-17.8	-24.1
35-39	0.269	0.231	0.185	0.139	-14.1	-19.9	-24.9
40-44	0.308	0.263	0.217	0.165	-14.6	-17.5	-24.0
45-49	0.338	0.304	0.253	0.186	-10.1	-16.8	-26.5
Average					-13.6	-16.5	-20.6

The continued decline of the proportions of children dead since 1962 is quite apparent. An attempt to quantify these declines yielded an average of 14 per cent between 1962 and 1969, 17 per cent between 1969 and 1979 and 21 per cent between 1979 and 1989. These figures show that not only has there been a continued decline in child mortality, but also that the rate of this decline has been rising with time.

2.4 Regional Differentials in Proportions of Children Dead

Similar proportions of children dead were obtained for districts and provinces and then compared with those from the 1969 and 1979 censuses as shown in Table 2.5.

During the two intercensal periods, i.e. 1969-79 and 1979-89, the proportions of children dead declined in all the provinces though with differing magnitudes. While this declining trend in child mortality was experienced in most of the districts, some had notable differences:

- Seven districts of Lamu, Tana River, Mandera, Baringo, Elgeyo Marakwet, Uasin Gishu and West Pokot had a rise between 1969 and 1979 followed by a decline in the proportions between 1979 and 1989.
- Turkana district stood out by itself by having a rise in the proportions of children dead during both intercensal periods.

The percentage declines in the proportions varied with districts. While Kirinyaga, Murang'a and Nyandarua districts experienced the highest average drop of about 38 per cent between 1979 and 1989, Garissa and Wajir had the lowest of about 8 per cent.

During the 1989 census, there was a wide range in the average proportions of children dead. Nyeri district had the lowest proportion of 0.053 as compared to South Nyanza's 0.244 - a difference of 0.191; i.e. 191 per 1000 more children dying in South Nyanza than in Nyeri.

Proportions of Children Dead by District and Province: 1969, 1979 & 1989

Table 2.5

District and Province	Year	Age Group of Mother								Percent Change
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	Average	
KENYA	1969	0.128	0.147	0.174	0.202	0.231	0.263	0.304	0.207	
	1979	0.116	0.125	0.141	0.166	0.185	0.217	0.253	0.172	-16.9
	1989	0.111	0.104	0.108	0.126	0.139	0.165	0.186	0.134	-21.9
NAIROBI	1969	0.078	0.096	0.112	0.127	0.146	0.164	0.175	0.128	
	1979	0.099	0.093	0.093	0.100	0.116	0.146	0.161	0.115	-10.0
	1989	0.097	0.088	0.081	0.081	0.084	0.097	0.116	0.092	-20.3
Kiambu	1969	0.068	0.092	0.100	0.133	0.161	0.187	0.215	0.137	
	1979	0.065	0.067	0.074	0.088	0.105	0.129	0.159	0.098	-28.1
	1989	0.073	0.062	0.059	0.067	0.067	0.085	0.098	0.073	-25.6
Kirinyaga	1969	0.085	0.107	0.142	0.192	0.225	0.289	0.322	0.195	
	1979	0.065	0.077	0.106	0.133	0.154	0.192	0.231	0.137	-29.7
	1989	0.067	0.054	0.058	0.075	0.088	0.114	0.137	0.085	-38.1
Murang'a	1969	0.071	0.109	0.127	0.151	0.185	0.217	0.274	0.162	
	1979	0.068	0.065	0.080	0.101	0.125	0.157	0.190	0.112	-30.7
	1989	0.057	0.044	0.051	0.058	0.069	0.091	0.115	0.069	-38.3
Nyandarua	1969	0.064	0.062	0.101	0.120	0.169	0.213	0.246	0.139	
	1979	0.057	0.064	0.074	0.095	0.108	0.131	0.173	0.100	-28.0
	1989	0.052	0.044	0.045	0.052	0.063	0.082	0.097	0.062	-38.0
Nyeri	1969	0.053	0.053	0.085	0.103	0.130	0.172	0.214	0.116	
	1979	0.044	0.046	0.056	0.071	0.086	0.113	0.148	0.081	-30.4
	1989	0.063	0.037	0.035	0.043	0.050	0.066	0.080	0.053	-33.7
CENTRAL	1969	0.069	0.086	0.109	0.139	0.170	0.201	0.245	0.146	
	1979	0.066	0.063	0.076	0.094	0.112	0.142	0.175	0.104	-28.5
	1989	0.064	0.050	0.050	0.059	0.067	0.086	0.104	0.069	-34.1
Kilifi	1969	0.212	0.216	0.224	0.271	0.264	0.304	0.322	0.259	
	1979	0.195	0.211	0.226	0.261	0.274	0.306	0.324	0.257	-0.9
	1989	0.118	0.134	0.157	0.188	0.208	0.243	0.258	0.187	-27.3
Kwale	1969	0.161	0.192	0.220	0.243	0.284	0.287	0.303	0.241	
	1979	0.175	0.190	0.212	0.232	0.247	0.280	0.299	0.234	-3.3
	1989	0.143	0.141	0.158	0.180	0.201	0.230	0.250	0.186	-20.3
Lamu	1969	0.185	0.157	0.190	0.167	0.207	0.240	0.228	0.196	
	1979	0.164	0.196	0.185	0.211	0.230	0.248	0.255	0.213	-8.4
	1989	0.140	0.106	0.143	0.154	0.177	0.200	0.228	0.164	-22.9

Proportions of Children Dead by District and Province: 1969, 1979 & 1989

Table 2.5 (cont.)

District and Province	Year	Age Group of Mother								Percent Change
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	Average	
Mombasa	1969	0.124	0.145	0.164	0.185	0.188	0.204	0.203	0.173	
	1979	0.118	0.120	0.131	0.151	0.166	0.188	0.204	0.154	-11.1
	1989	0.114	0.110	0.105	0.121	0.127	0.150	0.167	0.128	-17.1
T/Taveta	1969	0.161	0.181	0.185	0.247	0.266	0.322	0.352	0.245	
	1979	0.118	0.112	0.130	0.152	0.175	0.219	0.261	0.167	-31.9
	1989	0.075	0.086	0.088	0.105	0.124	0.153	0.182	0.116	-30.3
Tana river	1969	0.026	0.209	0.176	0.206	0.174	0.220	0.167	0.168	
	1979	0.186	0.176	0.177	0.208	0.222	0.247	0.281	0.214	27.2
	1989	0.117	0.130	0.144	0.163	0.184	0.203	0.229	0.167	-21.8
COAST	1969	0.164	0.187	0.201	0.238	0.250	0.280	0.295	0.231	
	1979	0.165	0.175	0.188	0.217	0.232	0.263	0.286	0.218	-5.5
	1989	0.121	0.125	0.136	0.162	0.178	0.209	0.230	0.166	-23.9
Embu	1969	0.092	0.121	0.144	0.170	0.203	0.271	0.293	0.185	
	1979	0.067	0.078	0.098	0.125	0.147	0.178	0.204	0.128	-30.7
	1989	0.056	0.056	0.060	0.074	0.092	0.120	0.144	0.086	-32.9
Isiolo	1969	0.173	0.223	0.207	0.241	0.229	0.261	0.293	0.232	
	1979	0.116	0.123	0.143	0.177	0.197	0.225	0.246	0.175	-24.5
	1989	0.113	0.100	0.108	0.144	0.155	0.191	0.222	0.148	-15.8
Kitui	1969	0.113	0.164	0.191	0.230	0.256	0.296	0.332	0.226	
	1979	0.136	0.143	0.164	0.193	0.214	0.249	0.279	0.197	-12.9
	1989	0.084	0.087	0.107	0.127	0.150	0.188	0.211	0.136	-30.8
Machakos	1969	0.105	0.132	0.166	0.171	0.195	0.228	0.267	0.180	
	1979	0.083	0.092	0.108	0.135	0.154	0.177	0.201	0.136	-24.8
	1989	0.066	0.062	0.069	0.080	0.097	0.124	0.145	0.092	-32.3
Marsabit	1969	0.061	0.190	0.172	0.160	0.154	0.221	0.152	0.159	
	1979	0.102	0.125	0.134	0.146	0.164	0.179	0.197	0.150	-5.8
	1989	0.084	0.077	0.072	0.092	0.107	0.122	0.136	0.099	-34.1
Meru	1969	0.099	0.116	0.121	0.155	0.170	0.195	0.230	0.155	
	1979	0.068	0.073	0.095	0.123	0.140	0.166	0.192	0.122	-21.2
	1989	0.054	0.047	0.053	0.070	0.086	0.115	0.135	0.080	-34.7
EASTERN	1969	0.104	0.135	0.156	0.179	0.201	0.237	0.269	0.183	
	1979	0.088	0.095	0.114	0.143	0.162	0.189	0.231	0.146	-20.1
	1989	0.067	0.063	0.071	0.086	0.104	0.136	0.156	0.098	-33.2

Proportions of Children Dead by District and Province: 1969, 1979 & 1989

Table 2.5 (cont.)

District and Province	Year	Age Group of Mother								Percent Change
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	Average	
Garissa	1969	0.111	0.156	0.146	0.188	0.210	0.215	0.228	0.179	
	1979	0.111	0.124	0.136	0.168	0.171	0.210	0.207	0.161	-10.1
	1989	0.130	0.128	0.131	0.137	0.149	0.172	0.187	0.148	-8.3
Mandera	1969	0.138	0.129	0.136	0.165	0.171	0.168	0.177	0.155	
	1979	0.121	0.137	0.142	0.166	0.164	0.193	0.212	0.162	4.7
	1989	0.105	0.118	0.125	0.141	0.143	0.174	0.179	0.141	-13.2
Wajir	1969	0.274	0.166	0.175	0.226	0.231	0.258	0.254	0.226	
	1979	0.109	0.122	0.137	0.167	0.178	0.203	0.207	0.160	-29.1
	1989	0.134	0.114	0.121	0.141	0.139	0.180	0.210	0.148	-7.5
N/EASTERN	1969	0.165	0.151	0.154	0.193	0.203	0.212	0.217	0.185	
	1979	0.113	0.127	0.138	0.167	0.172	0.202	0.208	0.161	-12.9
	1989	0.122	0.120	0.126	0.140	0.144	0.175	0.192	0.146	-9.6
Kisii	1969	0.088	0.127	0.167	0.186	0.204	0.241	0.291	0.186	
	1979	0.077	0.098	0.122	0.149	0.164	0.194	0.226	0.147	-21.1
	1989	0.086	0.089	0.097	0.116	0.130	0.157	0.174	0.121	-17.6
Kisumu	1969	0.208	0.234	0.266	0.297	0.340	0.376	0.417	0.305	
	1979	0.181	0.198	0.230	0.264	0.291	0.339	0.375	0.268	-12.2
	1989	0.195	0.195	0.202	0.216	0.242	0.272	0.312	0.233	-13.0
Siaya	1969	0.190	0.254	0.275	0.323	0.355	0.405	0.438	0.320	
	1979	0.172	0.207	0.239	0.280	0.309	0.340	0.380	0.275	-14.0
	1989	0.200	0.206	0.210	0.227	0.253	0.287	0.316	0.243	-11.8
Nyanza	1969	0.231	0.244	0.286	0.330	0.368	0.415	0.455	0.333	
	1979	0.195	0.216	0.248	0.282	0.301	0.336	0.373	0.279	-16.2
	1989	0.197	0.205	0.210	0.233	0.259	0.291	0.314	0.244	-12.4
NYANZA	1969	0.185	0.210	0.246	0.281	0.316	0.360	0.404	0.286	
	1979	0.151	0.172	0.203	0.238	0.259	0.296	0.337	0.237	-17.3
	1989	0.169	0.169	0.170	0.192	0.215	0.248	0.275	0.205	-13.2
Baringo	1969	0.105	0.143	0.177	0.209	0.190	0.245	0.245	0.188	
	1979	0.158	0.166	0.176	0.202	0.211	0.244	0.268	0.204	8.5
	1989	0.108	0.091	0.103	0.141	0.163	0.187	0.213	0.144	-29.4
E/Marakwet	1969	0.110	0.102	0.102	0.142	0.121	0.108	0.137	0.117	
	1979	0.112	0.121	0.138	0.157	0.177	0.193	0.204	0.157	34.0
	1989	0.090	0.071	0.087	0.114	0.137	0.168	0.188	0.122	-22.4

Proportions of Children Dead by District and Province: 1969, 1979 & 1989

Table 2.5 (cont.)

District and Province	Year	Age Group of Mother								Percent Change
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	Average	
Kajiado	1969	0.069	0.089	0.087	0.121	0.156	0.140	0.194	0.122	
	1979	0.063	0.075	0.083	0.096	0.112	0.134	0.140	0.100	-18.0
	1989	0.061	0.063	0.075	0.079	0.087	0.103	0.112	0.083	-17.5
Kericho	1969	0.091	0.081	0.120	0.122	0.125	0.198	0.200	0.134	
	1979	0.078	0.090	0.106	0.122	0.134	0.157	0.174	0.123	-8.1
	1989	0.074	0.074	0.079	0.093	0.100	0.119	0.131	0.096	-22.2
Laikipia	1969	0.043	0.105	0.114	0.132	0.191	0.221	0.189	0.142	
	1979	0.068	0.075	0.090	0.102	0.124	0.144	0.184	0.112	-20.8
	1989	0.040	0.051	0.049	0.067	0.078	0.097	0.118	0.071	-36.5
Nakuru	1969	0.100	0.127	0.165	0.182	0.201	0.225	0.246	0.178	
	1979	0.086	0.094	0.111	0.129	0.146	0.175	0.205	0.135	-24.1
	1989	0.077	0.068	0.074	0.085	0.098	0.117	0.138	0.094	-30.5
Nandi	1969	0.098	0.103	0.119	0.160	0.177	0.235	0.247	0.163	
	1979	0.095	0.108	0.122	0.144	0.160	0.193	0.215	0.148	-8.9
	1989	0.080	0.079	0.084	0.104	0.121	0.144	0.166	0.111	-25.0
Narok	1969	0.081	0.105	0.122	0.126	0.168	0.190	0.260	0.150	
	1979	0.080	0.096	0.113	0.134	0.149	0.164	0.186	0.132	-12.4
	1989	0.064	0.074	0.084	0.100	0.113	0.133	0.149	0.102	-22.2
Samburu	1969	0.115	0.086	0.090	0.099	0.102	0.100	0.122	0.102	
	1979	0.067	0.074	0.090	0.101	0.109	0.129	0.143	0.102	-0.1
	1989	0.051	0.049	0.060	0.073	0.084	0.111	0.125	0.079	-22.4
Trans nzoia	1969	0.182	0.125	0.163	0.209	0.245	0.259	0.363	0.221	
	1979	0.091	0.111	0.129	0.147	0.168	0.197	0.230	0.153	-30.6
	1989	0.093	0.091	0.096	0.114	0.133	0.151	0.169	0.121	-21.1
Turkana	1969	0.078	0.093	0.166	0.147	0.167	0.201	0.122	0.139	
	1979	0.121	0.129	0.147	0.181	0.192	0.210	0.225	0.172	23.8
	1989	0.114	0.131	0.149	0.186	0.203	0.229	0.235	0.178	3.5
Uasin Gishu	1969	0.071	0.085	0.093	0.126	0.140	0.187	0.180	0.126	
	1979	0.075	0.089	0.106	0.126	0.150	0.169	0.193	0.130	2.8
	1989	0.074	0.071	0.075	0.091	0.102	0.128	0.146	0.098	-24.3
West pokot	1969	0.121	0.156	0.183	0.219	0.246	0.308	0.332	0.224	
	1979	0.177	0.122	0.217	0.248	0.270	0.303	0.335	0.239	6.8
	1989	0.166	0.140	0.166	0.196	0.226	0.255	0.295	0.206	-13.6

Proportions of Children Dead by District and Province: 1969, 1979 & 1989

Table 2.5 (cont.)

District and Province	Year	Age Group of Mother								Percent Change
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	Average	
Rift valley	1969	0.098	0.106	0.134	0.153	0.170	0.207	0.218	0.155	
	1979	0.092	0.106	0.123	0.143	0.158	0.183	0.207	0.145	-6.7
	1989	0.081	0.079	0.087	0.107	0.121	0.142	0.161	0.111	-23.1
Bungoma	1969	0.136	0.146	0.167	0.197	0.233	0.266	0.317	0.209	
	1979	0.115	0.136	0.157	0.174	0.193	0.226	0.261	0.180	-13.6
	1989	0.128	0.130	0.132	0.148	0.164	0.186	0.211	0.157	-12.9
Busia	1969	0.184	0.226	0.268	0.296	0.322	0.392	0.443	0.304	
	1979	0.168	0.193	0.223	0.269	0.296	0.339	0.377	0.266	-12.4
	1989	0.158	0.167	0.179	0.197	0.222	0.265	0.296	0.212	-20.4
Kakamega	1969	0.114	0.161	0.200	0.212	0.246	0.296	0.337	0.224	
	1979	0.129	0.138	0.164	0.186	0.212	0.239	0.280	0.193	-13.9
	1989	0.136	0.140	0.148	0.161	0.176	0.200	0.225	0.169	-12.0
WESTERN	1969	0.128	0.167	0.204	0.223	0.256	0.304	0.351	0.233	
	1979	0.133	0.148	0.172	0.198	0.221	0.254	0.294	0.203	-13.0
	1989	0.138	0.142	0.149	0.163	0.180	0.208	0.234	0.173	-14.5

2.5 Estimates of Childhood Mortality

The census data provide information on the proportions of children dying, tabulated by the age group of the mothers, but not on the ages at which the children died. However, it is intuitively obvious that the older the mothers, the older, on average, will be the children. Thus, it should be possible roughly to equate the proportion of children who have died among those born by a given age group of mothers with the proportion dying by a specified age. The basic nature of this relationship was determined by Brass in the 1960s as is shown in Table 2.6.

Age Groups of Mothers with the Related Proportion of Children Dying by Age

Table 2.6

Age group of mothers	Proportion of children dying by age
15-19	1
20-24	2
25-29	3
30-34	5
35-39	10
40-44	15
45-49	20

The proportions of children dying by ages 1, 2, 3, ... etc, are usually denoted by $q(1)$, $q(2)$, $q(3)$, ... etc.

However, this relationship needs to be refined in the light of information on the shape of the age-specific fertility distribution. If the mothers had started their childbearing at relatively young ages, their children would, on average, be older by the time the mothers reached a given age group, and vice versa. Thus, in his pioneering technique, Brass developed a series of adjustment factors using the information on age-specific fertility from births reported as occurring in the 12 months before the census or survey. More recently, various modifications of the adjustment procedure have been evolved, mostly using regression methods based on a wide variety of fertility and mortality models, and utilising data on children ever born as well as on current births. However, the results rarely differ appreciably from those given by the original Brass method.

It is also obvious that the older the mothers, the further back in time will the child deaths have occurred. Thus, if the general level of mortality is changing, the estimates of $q(1)$, $q(2)$, $q(3)$, etc., cannot be strung together to form a life table, since they refer to different time periods. A method of determining an average time location for the mortality estimates derived from each age group of mothers was first devised by Feneey in the 1970s. Again his procedure has been subject to subsequent modifications.

Thus, to estimate trends in childhood mortality, the estimates of $q(1)$, $q(2)$, etc., need to be matched against a model life table system in order to determine equivalent values of a common index of mortality, usually either the infant mortality rate, $q(1)$, or the mortality in the first 5 years of life, $q(5)$. The results will of course vary slightly according to which model life table system is used.

When censuses are held at intervals of 10 years or less, the estimates of $q(1)$ or $q(5)$ with their appropriate time locations will overlap. The extent to which they agree from one census to another provides a test of the validity of the estimates, and this can be readily assessed when they are plotted on a graph. It should be noted that the estimates derived from the 15-19 age group of mothers, and to a lesser extent from those aged 20-24, are nearly always out of line since the children borne by younger mothers are generally subject to unusually high mortality risks. These points should, therefore, be discounted when assessing the overall trend in childhood mortality.

The task of converting the proportions of children dead by age group of mother into values of $q(x)$, matching them against model life table systems to determine equivalent values of $q(1)$ or $q(5)$, and the calculation of the time locations, has been greatly facilitated by the software package QFIVE, developed by the Population Division of the United Nations. This package produces estimates of $q(x)$ given by Trussell's regression equations based on the four families of the Coale-Demeny life tables, and those from the Palloni-Heligman equations using the five families of the new United Nations models, together with the equivalent values of $q(1)$ and $q(5)$ and the time locations of these estimates.

After using the QFIVE application package, the resultant probabilities of dying by age x for the 1989 census together with the corresponding ones for the 1962, 1969 and 1979 censuses are presented in Table 2.7 below for 'North', 'South' and 'West' models. Results of the 'East' model were not tabulated since they were thought to be inappropriate to the Kenyan situation.

Estimates of Childhood Mortality by Trussell's Method

Table 2.7

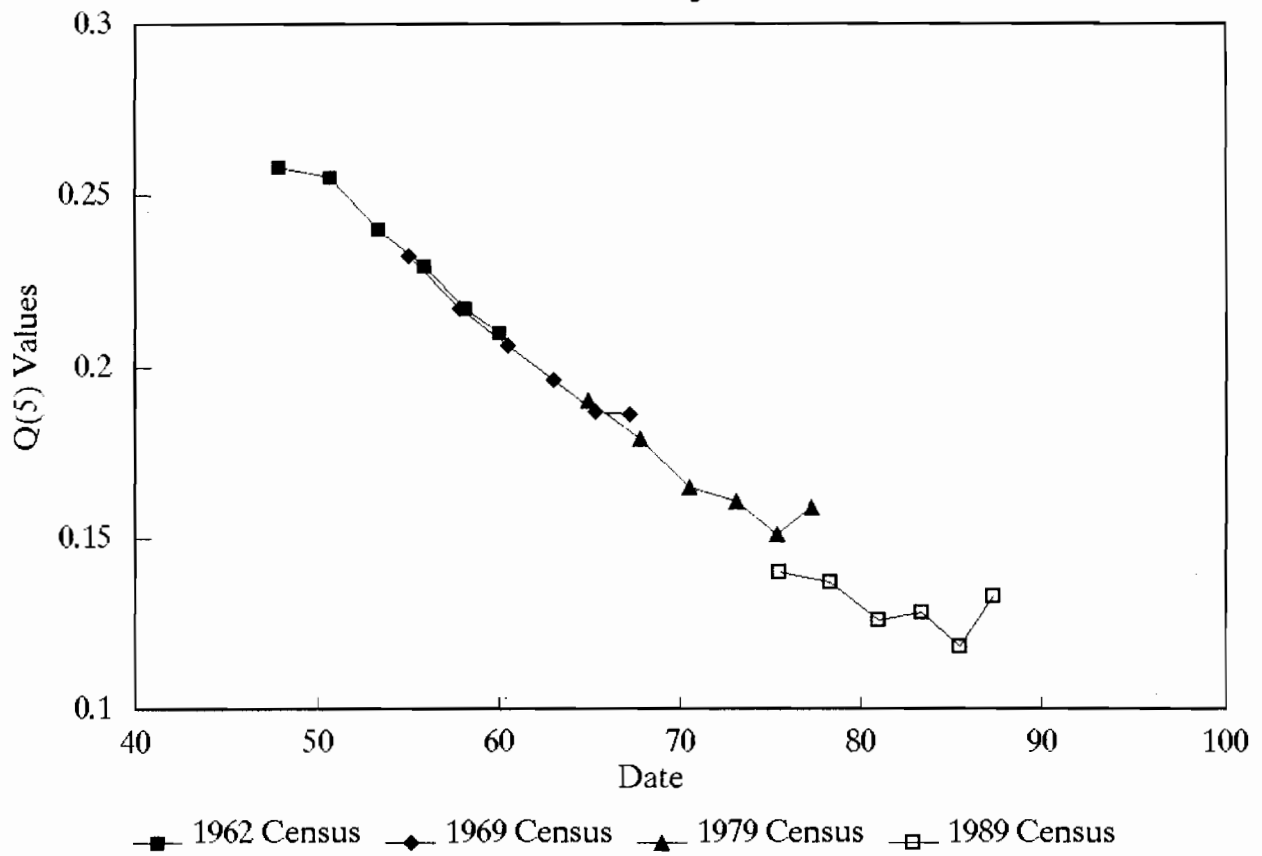
Age (x)	Probability of Dying By Age x											
	North				South				West			
	1962	1969	1979	1989	1962	1969	1979	1989	1962	1969	1979	1989
1	0.137	0.129	0.120	0.113	0.132	0.124	0.117	0.110	0.142	0.132	0.123	0.116
2	0.160	0.143	0.122	0.103	0.167	0.149	0.128	0.108	0.169	0.150	0.129	0.108
3	0.188	0.162	0.132	0.102	0.202	0.173	0.141	0.109	0.199	0.171	0.139	0.107
5	0.229	0.196	0.161	0.124	0.238	0.204	0.167	0.128	0.235	0.201	0.165	0.126
10	0.276	0.239	0.191	0.145	0.276	0.238	0.190	0.144	0.272	0.234	0.187	0.142
15	0.313	0.269	0.222	0.170	0.310	0.265	0.219	0.168	0.307	0.264	0.218	0.167
20	0.338	0.305	0.254	0.189	0.336	0.303	0.252	0.187	0.335	0.302	0.252	0.187

Although there are variations in the estimates from the different models, they all show a downward trend in child mortality.

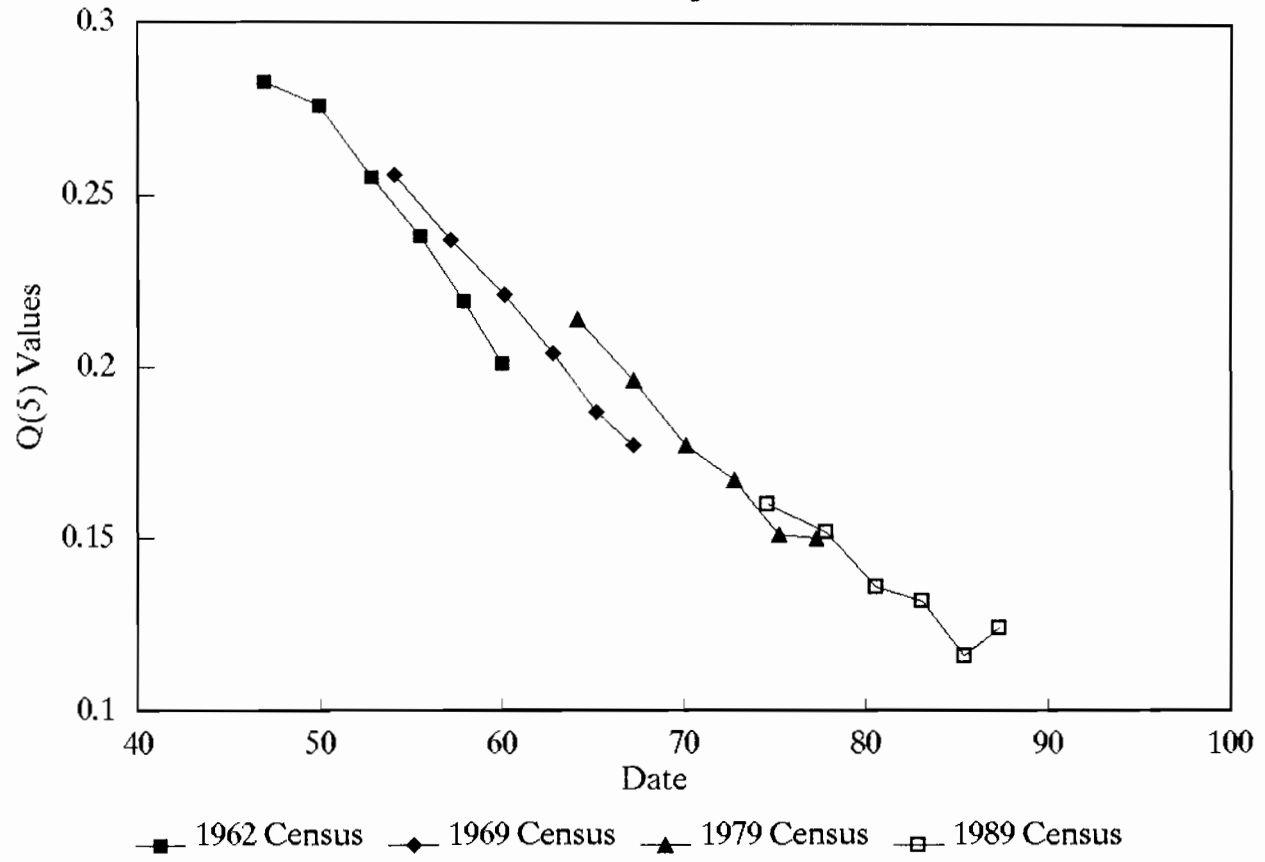
To arrive at the model with the most consistent trend, these probabilities were graphed and a regression line fitted for each model as presented in Figures 1.1 - 1.3. As pointed out earlier, estimates derived from younger mothers, particularly those aged 15-19, suggest heavier child mortality than estimates derived from older women hence the shootouts in the graphs. These estimates, therefore, should be disregarded, in part for this reason, and in part because the numbers of children ever born and children dead are usually small for this age group. It is apparent that the 'North' model produced the most consistent trend for the Kenyan data from different censuses.

However, due to regional variations, the 'North' model did not produce consistent trends in childhood mortality for any province as can be seen in Appendix 2. While data for Eastern and Nyanza provinces was more consistent with the 'West' model, the 'South' model produced the most fitting trend for North Eastern province. No single model produced a consistent trend for the rest of the provinces. A combination of 'North' and 'West' models for Central, Rift Valley and Western provinces and another combination of 'North' and 'South' models for Nairobi and Coast provinces showed the best consistent trends.

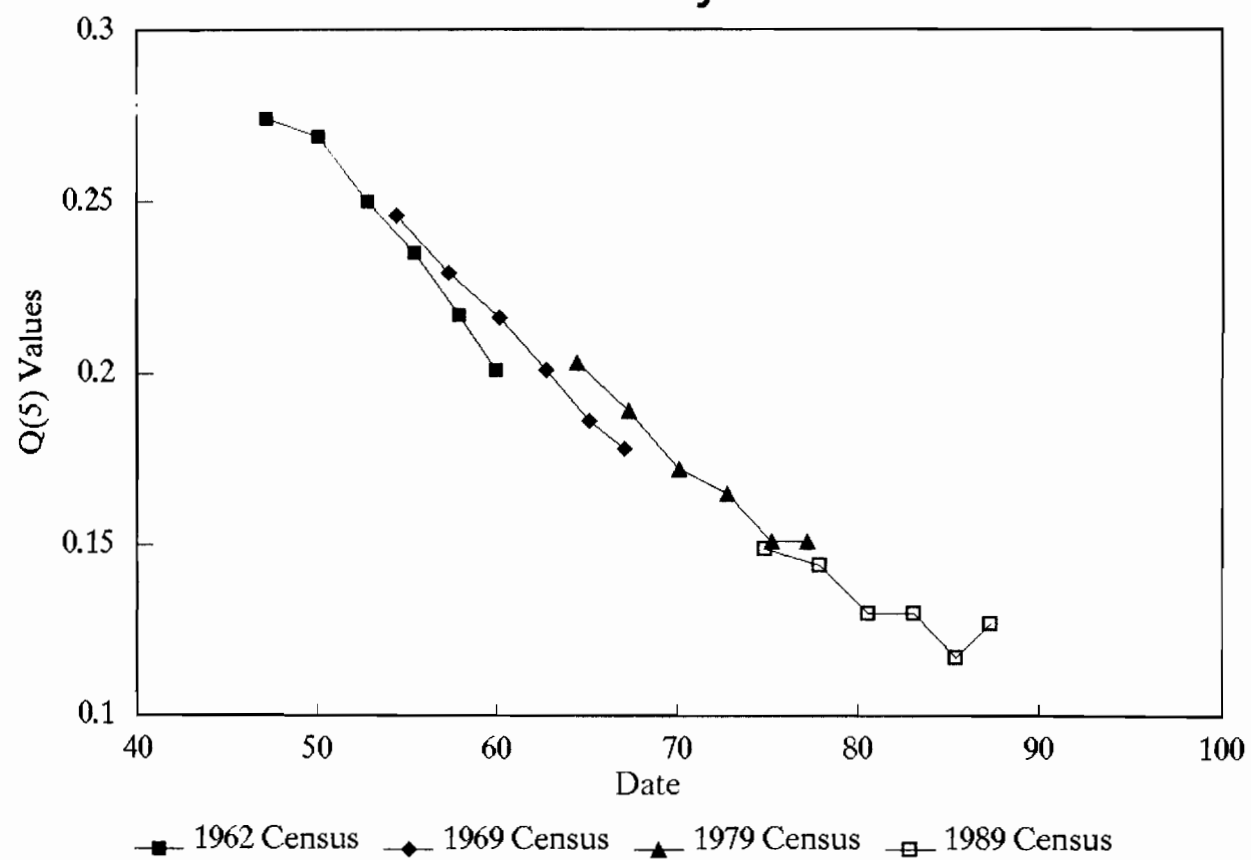
Under-5 Mortality – North Model



Under-5 Mortality – South Model



Under-5 Mortality – West Model



The indirect method of estimation is based on the assumption that fertility and childhood mortality have remained constant in the recent past. The problems caused by declining fertility can be avoided when data for true cohorts are available. However, unless fertility has been falling unprecedentedly fast, the error introduced by not using hypothetical cohorts constructed from two true cohorts is very small (United Nations, 1983, 87).

A solution to the problem of declining mortality is to use data on children ever born and children dead from two censuses taken 10 years apart. It is based on the use of a hypothetical cohort representing the intercensal experience and provides mortality estimates that refer to the intercensal period.

2.5.1 Hypothetical Cohorts

The problem of time location can be overcome by constructing a "hypothetical cohort" for the period between the 1979 and 1989 censuses. Since there were exactly 10 years between the censuses, the women who were, say, 20-24 in 1979 will be the same women (mortality and migration apart) as those aged 30-34 in 1989. Since we know the number of children born by these women both in 1979 and in 1989, the numbers borne by them during the intercensal period will be the difference between the two. By adding these differences together for the different cohorts, it is possible to construct a series of average parities for a "hypothetical" cohort of women who would go through life having children at the rate that pertained to the intercensal period.

Since we also know the number of children who had died at the time of the two censuses, the mean numbers of dead children per women for the hypothetical cohort can be constructed in the same way. Thus, by dividing the mean numbers of dead children by the numbers ever born, the proportions of children dead for the hypothetical cohort may be obtained. These proportions dead can then be converted into estimates of $q(x)$, with equivalent values of $q(5)$, in the usual way; but since they all refer to the same time period (i.e. the mid-point of the intercensal decade), the consistency of the estimates provides a test of their validity. Proportions of children dead and mortality in the first five years for such hypothetical cohorts for 1969-79 and 1979-89 intercensal periods are shown in Table 2.8 below.

**Proportions of Children Dead and Under-5 Mortality for Hypothetical Cohorts,
1969 - 79 and 1979 - 89**

Table 2.8

Age Group	Proportions Dead		Percent change	Under-5 Mortality		Percent change
	1969-79	1979-89		1969-79	1979-89	
15-19	0.116	0.111	-4.3	0.203	0.191	-5.9
20-24	0.125	0.104	-16.5	0.159	0.133	-16.4
25-29	0.140	0.107	-23.4	0.150	0.116	-22.7
30-34	0.158	0.119	-25.1	0.153	0.116	-24.2
35-39	0.166	0.120	-28.0	0.148	0.108	-27.0
40-44	0.184	0.129	-30.1	0.151	0.107	-29.1
45-49	0.197	0.129	-34.5	0.146	0.095	-34.9
Average			-23.1			-22.9

A consistent and equal decline in both the proportions of children dead and the under-5 mortality was experienced from the youngest to the oldest in two intercensal periods.

After the exclusion of outliers, estimates for women aged 25-44 were averaged. The result for the 1979-89 intercensal period, which showed an under-five mortality of 113 per thousand, was the best and most up-to-date estimate obtainable from the 1989 census. (For details of the computational procedures, see U.N. Manual X, pp.86-90).

2.5.2 Probability of Dying by Age 5

Estimates of childhood mortality were converted into the equivalent probabilities of dying by age 5. Because the 'North' model was the most consistent, its resultant probabilities of dying in the first 5 years of life are the only ones presented in Table 2.9.

Indirect Estimates of Under- Five Mortality (North Model) from Census Data, 1962 - 89

Table 2.9

Age Group	1962 q(5)	Census Date	1969 q(5)	Census Date	1979 q(5)	Census Date	1989 q(5)	Census Date
15-19	0.232	61.4	0.217	68.5	0.202	78.6	0.189	88.5
20-24	0.210	60.0	0.186	67.2	0.159	77.3	0.133	87.3
25-29	0.217	58.1	0.187	65.3	0.151	75.4	0.117	85.5
30-34	0.229	55.8	0.196	63.0	0.161	73.1	0.124	83.3
35-39	0.240	53.3	0.206	60.5	0.165	70.5	0.126	80.9
40-44	0.255	50.6	0.217	57.8	0.179	67.8	0.137	78.3
45-49	0.258	47.8	0.232	55.0	0.190	64.9	0.140	75.4

Comparisons of these probabilities over the census years depict a declining trend in child mortality as was the case with proportions of children dead.

When probabilities for the most reliable age groups 20-24, 25-29 and 30-34 were averaged, consistent values were obtained. These values were interpreted as the number of deaths of children in the first 5 years per 1000 live births - see Table 2.10.

Proportions of Children Dying in the First 5 Years of Life

Table 2.10

Age Group	No. Dying Per 1000 Live Births				Percent Change		
	1962	1969	1979	1989	62-69	69-79	79-89
20-24	210	186	159	133	-11.4	-14.5	-16.4
25-29	217	187	151	117	-13.8	-19.3	-22.5
30-34	229	196	161	124	-14.4	-17.9	-23
Average	219	190	157	125	-13.2	-17.2	-20.6

About 125 deaths in the first 5 years of life per 1000 live births occurred in the mid-1980s as compared to about 157 in the mid-1970s. This represents about 20 per cent drop in child mortality.

2.6 Regional Differentials in Under-Five Mortality

Under-five mortality estimates for hypothetical cohorts were calculated for districts and provinces for the 1979-89 intercensal period and the average values of $q(5)$ so obtained are as shown in Table 2.11.

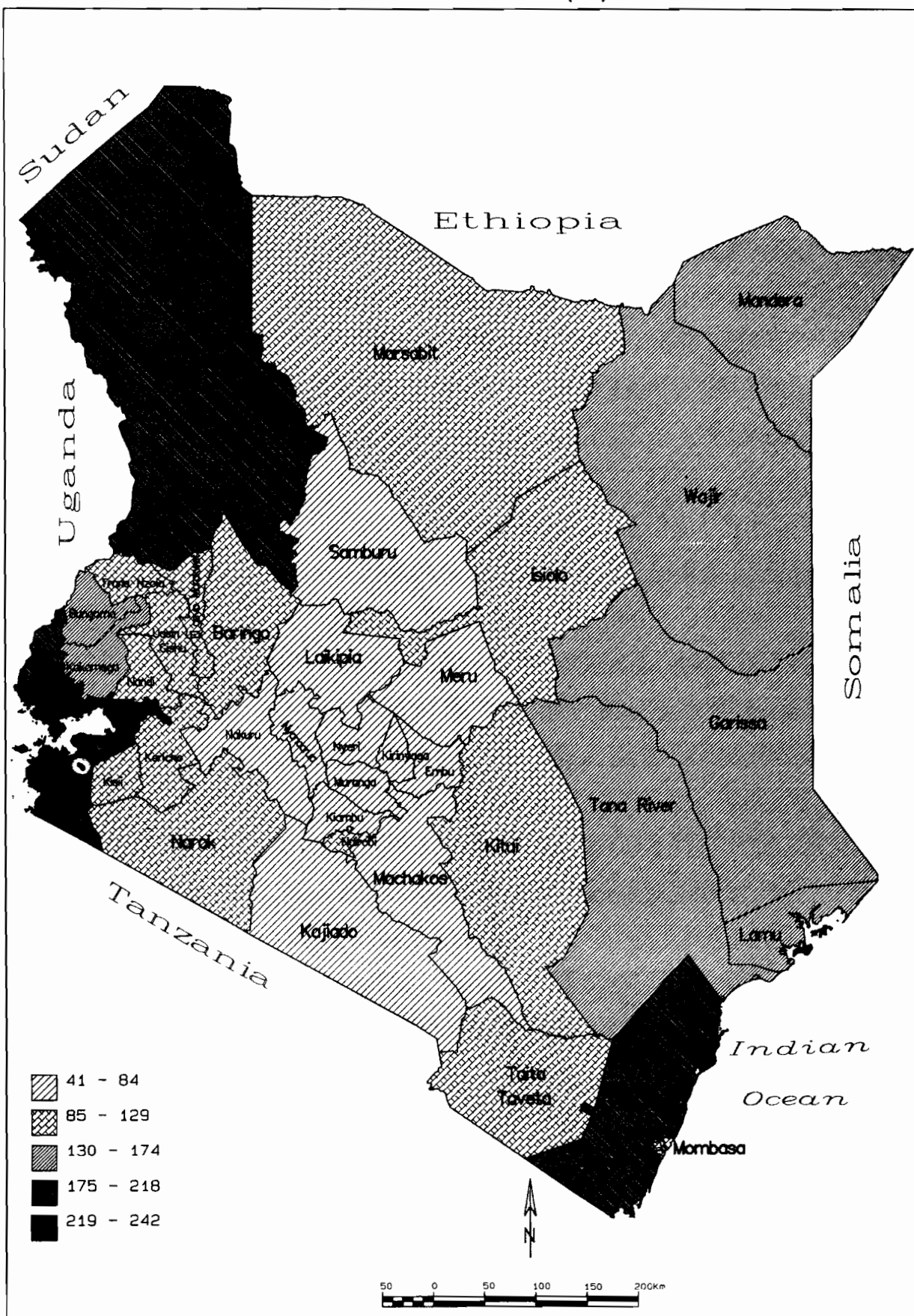
There were wide differences in the average number of deaths from one district to the other in the 1989 census. Siaya and South Nyanza districts had 213 deaths in the first 5 years per 1000 live births in 1989 while Nyeri had only 37 deaths yielding a ratio of one death in Nyeri to about six deaths in Siaya and South Nyanza. Regional variations in child mortality during the first 5 years of life is further depicted in Map 1.

**Q (5) Values for Hypothetical Cohorts by District and
Province, 1979 - 89**

Table 2.11

District and Province	Q(5) VALUES		
	Males	Females	Both
KENYA	0.117	0.108	0.113
NAIROBI	0.078	0.072	0.075
Kiambu	0.062	0.057	0.060
Kirinyaga	0.060	0.055	0.058
Murang'a	0.051	0.047	0.049
Nyandarua	0.043	0.040	0.042
Nyeri	0.038	0.035	0.037
CENTRAL	0.052	0.048	0.050
Kilifi	0.146	0.135	0.141
Kwale	0.156	0.144	0.150
Lamu	0.128	0.118	0.123
Mombasa	0.111	0.102	0.107
Taita Taveta	0.096	0.089	0.093
Tana River	0.145	0.134	0.140
COAST	0.136	0.125	0.131
Embu	0.068	0.063	0.066
Isiolo	0.129	0.119	0.124
Kitui	0.110	0.102	0.106
Machakos	0.070	0.065	0.068
Marsabit	0.070	0.065	0.068
Meru	0.058	0.053	0.056
EASTERN	0.075	0.069	0.072
Garissa	0.140	0.129	0.135
Mandera	0.133	0.123	0.128
Wajir	0.133	0.123	0.128
NORTH EASTERN	0.136	0.125	0.131
Kisii	0.113	0.104	0.109
Kisumu	0.213	0.196	0.205
Siaya	0.221	0.204	0.213
South nyanza	0.221	0.204	0.213
NYANZA	0.186	0.172	0.179
Baringo	0.113	0.105	0.109
E/Marakwet	0.101	0.093	0.097
Kajiado	0.077	0.071	0.074
Kericho	0.085	0.078	0.082
Laikipia	0.054	0.049	0.052
Nakuru	0.074	0.068	0.071
Nandi	0.092	0.084	0.088
Narok	0.089	0.082	0.086
Samburu	0.066	0.060	0.063
Trans Nzoia	0.108	0.099	0.104
Turkana	0.186	0.172	0.179
Uasin Gishu	0.084	0.078	0.081
West Pokot	0.189	0.174	0.182
RIFT VALLEY	0.095	0.088	0.092
Bungoma	0.145	0.134	0.140
Busia	0.183	0.169	0.176
Kakamega	0.162	0.149	0.156
WESTERN	0.161	0.149	0.155

KENYA: CHILD MORTALITY; Q(5) VALUES - 1989



Map Production: DRSRS/CBS

1989 Population Census

2.7 Differentials in Child Mortality by Sex

The proportions of children dead by sex are shown in Table 2.12.

Proportions of Children Dead by Sex: 1979 and 1989

Table 2.12

Sex	Year	Age Group of Mother							Average	Percent Change
		15-19	20-24	25-29	30-34	35-39	40-44	45-49		
Male	1979	0.123	0.129	0.148	0.173	0.192	0.225	0.263	0.179	
	1989	0.113	0.107	0.112	0.135	0.144	0.171	0.194	0.139	-22.0
Female	1979	0.109	0.120	0.134	0.159	0.177	0.210	0.243	0.165	
	1989	0.109	0.100	0.104	0.123	0.133	0.158	0.178	0.129	-21.5
Both	1979	0.116	0.125	0.141	0.166	0.185	0.217	0.253	0.172	
	1989	0.111	0.103	0.108	0.129	0.139	0.164	0.186	0.134	-21.9

Between 1979 and 1989, the average rate of child mortality decline was about 22 per cent for both sexes. The proportions of male children dying were consistently higher than those of female children for all age groups of mothers both in 1979 and 1989.

2.8 Regional Differentials in Child Mortality by Sex

In Table 2.13 proportions of children dead by sex in each district and province are shown. All the provinces recorded higher male child mortality as expected. All the districts except Kirinyaga, Garissa and Turkana also showed higher male child mortality. The range by which male child mortality was higher than that of females spanned from the lowest of about 0.0 per cent in Tana River district to the highest of about 13 percent in Samburu.

Proportions of Children Dead by Sex, District and Province: 1989

Table 2.13

District/ Province	Sex	Age group of Mother							Average	Percent difference
		15-19	20-24	25-29	30-34	35-39	40-44	45-49		
KENYA	Male	0.113	0.107	0.112	0.135	0.144	0.171	0.194	0.139	7.3
	Female	0.109	0.100	0.104	0.123	0.133	0.158	0.178	0.129	
	Both	0.111	0.104	0.108	0.126	0.139	0.165	0.186	0.134	
NAIROBI	Male	0.100	0.093	0.085	0.086	0.089	0.104	0.126	0.098	11.7
	Female	0.093	0.083	0.077	0.076	0.079	0.090	0.105	0.086	
	Both	0.097	0.088	0.081	0.081	0.084	0.097	0.116	0.092	
Kiambu	Male	0.070	0.063	0.061	0.068	0.071	0.091	0.103	0.075	7.0
	Female	0.076	0.060	0.057	0.065	0.062	0.078	0.092	0.070	
	Both	0.073	0.062	0.059	0.067	0.067	0.085	0.098	0.073	
Kirinyaga	Male	0.063	0.057	0.058	0.076	0.093	0.120	0.141	0.087	-1.6
	Female	0.070	0.051	0.059	0.077	0.096	0.122	0.143	0.088	
	Both	0.067	0.054	0.058	0.075	0.088	0.114	0.137	0.085	
Murang'a	Male	0.060	0.044	0.050	0.060	0.072	0.095	0.122	0.072	7.6
	Female	0.054	0.044	0.051	0.055	0.066	0.086	0.109	0.066	
	Both	0.057	0.044	0.051	0.058	0.069	0.091	0.115	0.069	
Nyandarua	Male	0.052	0.044	0.044	0.054	0.068	0.087	0.105	0.065	8.1
	Female	0.052	0.044	0.045	0.050	0.059	0.078	0.089	0.060	
	Both	0.052	0.044	0.045	0.052	0.063	0.082	0.097	0.062	
Nyeri	Male	0.056	0.037	0.036	0.047	0.055	0.072	0.086	0.056	8.2
	Female	0.068	0.037	0.033	0.039	0.046	0.061	0.073	0.051	
	Both	0.063	0.037	0.035	0.043	0.050	0.066	0.080	0.053	
CENTRAL	Male	0.062	0.051	0.051	0.062	0.071	0.092	0.110	0.071	7.2
	Female	0.066	0.049	0.050	0.057	0.063	0.081	0.097	0.066	
	Both	0.064	0.050	0.050	0.059	0.067	0.086	0.104	0.069	
Kilifi	Male	0.123	0.131	0.159	0.195	0.212	0.252	0.267	0.191	5.1
	Female	0.112	0.138	0.155	0.182	0.203	0.233	0.248	0.182	
	Both	0.118	0.134	0.157	0.188	0.208	0.243	0.258	0.187	
Kwale	Male	0.148	0.147	0.161	0.184	0.205	0.237	0.253	0.191	4.7
	Female	0.139	0.135	0.154	0.177	0.197	0.223	0.247	0.182	
	Both	0.143	0.141	0.158	0.180	0.201	0.230	0.250	0.186	
Lamu	Male	0.147	0.106	0.154	0.167	0.193	0.215	0.227	0.173	10.2
	Female	0.132	0.106	0.133	0.140	0.160	0.185	0.230	0.155	
	Both	0.140	0.106	0.143	0.154	0.177	0.200	0.228	0.164	

Proportions of Children Dead by Sex, District and Province: 1989

Table 2.13 (cont.)

District/ Province	Sex	Age group of Mother							Average	Percent difference
		15-19	20-24	25-29	30-34	35-39	40-44	45-49		
Mombasa	Male	0.120	0.115	0.111	0.127	0.134	0.158	0.180	0.135	11.1
	Female	0.108	0.105	0.099	0.114	0.119	0.141	0.154	0.120	
	Both	0.114	0.110	0.105	0.121	0.127	0.150	0.167	0.128	
T/Taveta	Male	0.074	0.086	0.091	0.108	0.127	0.156	0.190	0.119	4.9
	Female	0.076	0.085	0.085	0.102	0.121	0.149	0.173	0.113	
	Both	0.075	0.086	0.088	0.105	0.124	0.153	0.182	0.116	
Tana River	Male	0.111	0.129	0.145	0.164	0.184	0.205	0.233	0.167	0.0
	Female	0.123	0.131	0.142	0.162	0.185	0.202	0.226	0.167	
	Both	0.117	0.130	0.144	0.163	0.184	0.203	0.229	0.167	
COAST	Male	0.124	0.126	0.140	0.167	0.183	0.216	0.237	0.170	10.1
	Female	0.116	0.123	0.133	0.157	0.121	0.201	0.222	0.153	
	Both	0.121	0.125	0.136	0.162	0.178	0.209	0.230	0.166	
Embu	Male	0.055	0.053	0.062	0.077	0.095	0.124	0.152	0.088	4.9
	Female	0.057	0.060	0.057	0.071	0.090	0.117	0.136	0.084	
	Both	0.056	0.056	0.060	0.074	0.092	0.120	0.144	0.086	
Isiolo	Male	0.131	0.107	0.114	0.150	0.154	0.191	0.224	0.153	7.6
	Female	0.092	0.093	0.102	0.137	0.156	0.190	0.220	0.141	
	Both	0.113	0.100	0.108	0.144	0.155	0.191	0.222	0.148	
Kitui	Male	0.077	0.089	0.109	0.133	0.157	0.194	0.220	0.140	5.2
	Female	0.091	0.085	0.104	0.121	0.143	0.182	0.202	0.133	
	Both	0.084	0.087	0.107	0.127	0.150	0.188	0.211	0.136	
Machakos	Male	0.067	0.065	0.070	0.083	0.102	0.131	0.152	0.096	8.1
	Female	0.066	0.060	0.067	0.077	0.091	0.118	0.137	0.088	
	Both	0.066	0.062	0.069	0.080	0.097	0.124	0.145	0.092	
Marsabit	Male	0.086	0.081	0.073	0.097	0.110	0.126	0.141	0.102	7.4
	Female	0.082	0.072	0.070	0.087	0.103	0.117	0.130	0.094	
	Both	0.084	0.077	0.072	0.092	0.107	0.122	0.136	0.099	
Meru	Male	0.053	0.049	0.057	0.073	0.088	0.118	0.142	0.083	7.2
	Female	0.054	0.045	0.049	0.066	0.083	0.112	0.129	0.077	
	Both	0.054	0.047	0.053	0.070	0.086	0.115	0.135	0.080	
EASTERN	Male	0.066	0.065	0.073	0.090	0.108	0.141	0.163	0.101	6.8
	Female	0.068	0.061	0.068	0.083	0.099	0.131	0.148	0.094	
	Both	0.067	0.063	0.071	0.086	0.104	0.136	0.156	0.098	

Proportions of Children Dead by Sex, District and Province: 1989

Table 2.13 (cont.)

District/ Province	Sex	Age group of Mother							Average	Percent difference
		15-19	20-24	25-29	30-34	35-39	40-44	45-49		
Garissa	Male	0.127	0.133	0.132	0.141	0.147	0.169	0.177	0.147	-1.6
	Female	0.134	0.123	0.131	0.132	0.151	0.174	0.197	0.149	
	Both	0.130	0.128	0.131	0.137	0.149	0.172	0.187	0.148	
Mandera	Male	0.108	0.125	0.131	0.146	0.141	0.175	0.177	0.143	3.8
	Female	0.102	0.110	0.118	0.136	0.145	0.173	0.181	0.138	
	Both	0.105	0.118	0.125	0.141	0.143	0.174	0.179	0.141	
Wajir	Male	0.146	0.115	0.127	0.144	0.139	0.179	0.207	0.151	3.8
	Female	0.120	0.112	0.114	0.137	0.139	0.181	0.214	0.145	
	Both	0.134	0.114	0.121	0.141	0.139	0.180	0.210	0.148	
N. EASTERN	Male	0.126	0.124	0.130	0.144	0.142	0.175	0.187	0.147	2.0
	Female	0.117	0.115	0.121	0.135	0.145	0.176	0.198	0.144	
	Both	0.122	0.120	0.126	0.140	0.144	0.175	0.192	0.146	
Kisii	Male	0.084	0.088	0.099	0.119	0.135	0.162	0.183	0.124	4.9
	Female	0.089	0.089	0.094	0.113	0.126	0.151	0.165	0.118	
	Both	0.086	0.089	0.097	0.116	0.130	0.157	0.174	0.121	
Kisumu	Male	0.194	0.197	0.208	0.226	0.252	0.282	0.322	0.240	5.7
	Female	0.195	0.194	0.196	0.206	0.231	0.262	0.301	0.226	
	Both	0.195	0.195	0.202	0.216	0.242	0.272	0.312	0.233	
Siaya	Male	0.195	0.209	0.211	0.235	0.263	0.300	0.330	0.249	5.2
	Female	0.205	0.203	0.208	0.219	0.242	0.274	0.301	0.236	
	Both	0.200	0.206	0.210	0.227	0.253	0.287	0.316	0.243	
S. Nyanza	Male	0.190	0.207	0.214	0.236	0.268	0.298	0.321	0.248	2.9
	Female	0.204	0.202	0.207	0.230	0.250	0.284	0.307	0.241	
	Both	0.197	0.205	0.210	0.233	0.259	0.291	0.314	0.244	
NYANZA	Male	0.165	0.170	0.174	0.197	0.224	0.257	0.285	0.210	4.4
	Female	0.174	0.168	0.167	0.187	0.207	0.239	0.265	0.201	
	Both	0.169	0.169	0.170	0.192	0.215	0.248	0.275	0.205	
Baringo	Male	0.115	0.097	0.110	0.149	0.172	0.198	0.230	0.153	12.4
	Female	0.101	0.085	0.095	0.133	0.153	0.175	0.196	0.134	
	Both	0.108	0.091	0.103	0.141	0.163	0.187	0.213	0.144	
E/Marakwet	Male	0.094	0.070	0.091	0.117	0.146	0.176	0.200	0.128	8.8
	Female	0.085	0.071	0.084	0.111	0.128	0.160	0.176	0.116	
	Both	0.090	0.071	0.087	0.114	0.137	0.168	0.188	0.122	

Proportions of Children Dead by Sex, District and Province: 1989

Table 2.13 (cont.)

District/ Province	Sex	Age group of Mother							Average	Percent difference
		15-19	20-24	25-29	30-34	35-39	40-44	45-49		
Kajiado	Male	0.057	0.066	0.081	0.084	0.092	0.107	0.120	0.087	9.2
	Female	0.064	0.059	0.070	0.073	0.083	0.099	0.103	0.079	
	Both	0.061	0.063	0.075	0.079	0.087	0.103	0.112	0.083	
Kericho	Male	0.075	0.071	0.080	0.096	0.103	0.125	0.138	0.098	5.4
	Female	0.073	0.076	0.078	0.090	0.097	0.113	0.124	0.093	
	Both	0.074	0.074	0.079	0.093	0.100	0.119	0.131	0.096	
Laikipia	Male	0.042	0.053	0.051	0.075	0.083	0.099	0.126	0.076	11.0
	Female	0.038	0.048	0.048	0.058	0.073	0.096	0.110	0.067	
	Both	0.040	0.051	0.049	0.067	0.078	0.097	0.118	0.071	
Nakuru	Male	0.073	0.071	0.078	0.088	0.103	0.124	0.148	0.098	9.1
	Female	0.080	0.064	0.070	0.081	0.092	0.110	0.126	0.089	
	Both	0.077	0.068	0.074	0.085	0.098	0.117	0.138	0.094	
Nandi	Male	0.079	0.080	0.087	0.106	0.125	0.150	0.173	0.114	5.5
	Female	0.081	0.078	0.081	0.101	0.117	0.138	0.160	0.108	
	Both	0.080	0.079	0.084	0.104	0.121	0.144	0.166	0.111	
Narok	Male	0.070	0.076	0.087	0.107	0.117	0.138	0.157	0.107	9.7
	Female	0.058	0.071	0.080	0.094	0.108	0.128	0.140	0.097	
	Both	0.064	0.074	0.084	0.100	0.113	0.133	0.149	0.102	
Samburu	Male	0.052	0.055	0.069	0.073	0.094	0.121	0.125	0.084	12.9
	Female	0.049	0.041	0.050	0.072	0.074	0.101	0.126	0.073	
	Both	0.051	0.049	0.060	0.073	0.084	0.111	0.125	0.079	
Trans Nzoia	Male	0.096	0.095	0.099	0.121	0.135	0.158	0.177	0.126	7.4
	Female	0.091	0.088	0.094	0.108	0.130	0.144	0.161	0.117	
	Both	0.093	0.091	0.096	0.114	0.133	0.151	0.169	0.121	
Turkana	Male	0.109	0.134	0.147	0.186	0.205	0.233	0.231	0.178	-0.6
	Female	0.120	0.128	0.151	0.186	0.202	0.225	0.240	0.179	
	Both	0.114	0.131	0.149	0.186	0.203	0.229	0.235	0.178	
Uasin Gishu	Male	0.074	0.074	0.080	0.097	0.108	0.136	0.157	0.104	10.9
	Female	0.074	0.068	0.070	0.084	0.096	0.121	0.134	0.092	
	Both	0.074	0.071	0.075	0.091	0.102	0.128	0.146	0.098	
West Pokot	Male	0.164	0.143	0.173	0.202	0.235	0.270	0.310	0.214	7.1
	Female	0.169	0.137	0.159	0.190	0.217	0.239	0.280	0.199	
	Both	0.166	0.140	0.166	0.196	0.226	0.255	0.295	0.206	

Proportions of Children Dead by Sex, District and Province: 1989

Table 2.13 (cont.)

District/ Province	Sex	Age group of Mother							Average	Percent difference
		15-19	20-24	25-29	30-34	35-39	40-44	45-49		
RIFT VALLE	Male	0.081	0.081	0.091	0.111	0.126	0.149	0.170	0.116	7.9
	Female	0.080	0.077	0.084	0.102	0.115	0.135	0.152	0.106	
	Both	0.081	0.079	0.087	0.107	0.121	0.142	0.161	0.111	
Bungoma	Male	0.119	0.128	0.139	0.154	0.174	0.194	0.221	0.161	5.2
	Female	0.138	0.131	0.125	0.141	0.155	0.179	0.201	0.153	
	Both	0.128	0.130	0.132	0.148	0.164	0.186	0.211	0.157	
Busia	Male	0.148	0.169	0.184	0.203	0.234	0.277	0.306	0.217	4.9
	Female	0.168	0.164	0.174	0.191	0.210	0.253	0.286	0.207	
	Both	0.158	0.167	0.179	0.197	0.222	0.265	0.296	0.212	
Kakamega	Male	0.139	0.144	0.152	0.165	0.183	0.209	0.234	0.175	6.6
	Female	0.133	0.136	0.144	0.156	0.169	0.191	0.216	0.164	
	Both	0.136	0.140	0.148	0.161	0.176	0.200	0.225	0.169	
WESTERN	Male	0.135	0.144	0.154	0.168	0.189	0.217	0.243	0.179	5.8
	Female	0.141	0.140	0.144	0.158	0.172	0.199	0.224	0.168	
	Both	0.138	0.142	0.149	0.163	0.180	0.208	0.234	0.173	

2.9 Differentials in Child Mortality by Education of Mother

Table 2.14 shows proportions of children dead by level of education of mother.

There was a consistent decline in the mortality of children for all age groups with the increase in the level of education of the mother. The successive declines are such that lower primary education of a mother caused an average reduction of 26 per cent in child mortality from the level of the children whose mothers never attended school. Similarly, mothers who attained upper primary, lower secondary, and form 5 and above level of education had child mortality of their children reduced by about 19 per cent, 31 per cent, and 30 per cent respectively.

Proportions of Children Dead by Level of Education of Mother, 1989

Table 2.14

Level of Education	Age group of Mother							Average	Percent Change
	15-19	20-24	25-29	30-34	35-39	40-44	45-49		
None	0.159	0.151	0.155	0.174	0.172	0.193	0.208	0.173	
Std. 1-4	0.134	0.128	0.120	0.127	0.122	0.131	0.135	0.128	-26.0
Std. 5-8	0.109	0.100	0.096	0.102	0.100	0.104	0.115	0.104	-19.1
Form 1-4	0.089	0.072	0.062	0.066	0.065	0.068	0.076	0.071	-31.4
Form 5+	0.078	0.062	0.042	0.041	0.035	0.046	0.047	0.050	-29.5

2.10. Regional Differentials in Child Mortality by Education of Mother

Due to the small numbers of mothers, especially those who had attained form 5 and above, in some districts like those of the whole of northern Kenya, it became necessary to analyse at three broad levels of education attained, i.e. none, primary and secondary and above. On average, successive decline in child mortality with increase in the level of education of the

mother was consistent for all the provinces. However, there were variations amongst the provinces such that children to women in age groups 20-24, 25-29, 30-34 and 35-39 with no education at all in Central province had lower mortality than those children to mothers of the same age groups but who had attained secondary and above level of education in Western and Nyanza (except for the age group 35-39) provinces.

At district level, Appendix 3 shows that the general trend of reduction in child mortality with increase in level of education of mothers prevailed in almost all the districts except for a few like Mandera and Samburu which show some exceptions. However, these exceptions were a result of the very few cases of children ever born and children dead for mothers with secondary and above level of education.

While the average proportion of children dead by level of education of mother indicated that by educating a Kenyan female up to primary level reduced child mortality by about 36 per cent and by a further 39 per cent if she proceeded to secondary and over, the respective reductions in child mortality with increase in level of education of mother by district were varied. Although direct comparisons were not possible due to the problem of small numbers in some districts, it is worth noting that child mortality to mothers in age groups 20-24, 25-29, 30-34, 35-39, 40-44 and 45-49 who had attained secondary and above level of education in Siaya, South Nyanza, Bungoma, Busia and Kakamega districts was higher than that of children to mothers in respective age groups who never went to school in Nyeri district.

2.11. Differentials in Child Mortality by Marital Status of Mother

Table 2.15 gives the proportions of children dead by the marital status of the mother for the 1969, 1979 and 1989 censuses.

Proportions of Children Dead by Marital Status of Mother

Table 2.15

Marital Status	Year	Age Group of Mother							Average	Percent Change
		15-19	20-24	25-29	30-34	35-39	40-44	45-49		
Single	1969	0.091	0.097	0.159	0.211	0.230	0.256	0.310	0.193	
	1979	0.074	0.073	0.107	0.132	0.164	0.184	0.229	0.138	-28.8
	1989	0.087	0.074	0.081	0.101	0.113	0.140	0.163	0.108	-21.2
Married	1969	0.134	0.148	0.172	0.198	0.227	0.258	0.293	0.204	
	1979	0.125	0.129	0.141	0.164	0.181	0.212	0.244	0.171	-16.3
	1989	0.120	0.107	0.109	0.129	0.138	0.162	0.183	0.135	-20.7
Widowed	1969	-	-	-	-	-	-	-	-	
	1979	0.205	0.193	0.189	0.217	0.233	0.270	0.309	0.231	-
	1989	0.301	0.167	0.152	0.174	0.183	0.210	0.232	0.203	-12.2
Divorced	1969	-	-	-	-	-	-	-	-	
	1979	0.127	0.139	0.153	0.175	0.192	0.226	0.261	0.182	-
	1989	0.135	0.123	0.132	0.144	0.154	0.182	0.203	0.153	-15.7

The pattern from these figures was one of declining child mortality for all groups of women which is consistent with trends already established in earlier sections of this chapter. Separate figures for widowed and divorced women from the 1969 census were not available for comparison. Although single mothers showed the largest percentage drop in child mortality in

both intercensal periods 1969-79 and 1979-89, the results may have been influenced by problems of reporting, especially from age groups 15-19 and 20-24.

As shown in Table 2.16, the proportions of children dead by the marital status of the mother are higher for widows.

Proportions of Children Dead by Marital Status of Mother, 1989

Table 2.16

Marital Status	Age group of Mother							Average
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Single	0.087	0.074	0.081	0.101	0.113	0.140	0.163	0.108
Married Mono.	0.116	0.101	0.102	0.120	0.129	0.153	0.173	0.128
Married Poly.	0.158	0.160	0.164	0.184	0.188	0.208	0.228	0.184
Widowed	0.301	0.167	0.152	0.174	0.183	0.210	0.232	0.203
Divorced	0.135	0.123	0.132	0.144	0.154	0.182	0.203	0.153

After separating mothers of monogamous from those of polygamous marriages, proportions of children dead from polygamous mothers are higher than those of divorced women for all age groups.

2.12. Differentials in Child Mortality by Rural-Urban Residence of Mother

There was a drop in child mortality between 1979 and 1989 of about 21 per cent for both urban and rural residents (Table 2.17).

Proportions of Children Dead by Place of Residence, 1979 and 1989

Table 2.17

Place of Residence	Year	Age Group of Mother							Average	Percent Change
		15-19	20-24	25-29	30-34	35-39	40-44	45-49		
Rural	1979	0.117	0.128	0.146	0.170	0.188	0.220	0.256	0.175	-21.8
	1989	0.112	0.105	0.111	0.133	0.142	0.167	0.188	0.137	
Urban	1979	0.109	0.109	0.117	0.135	0.155	0.188	0.216	0.147	-20.5
	1989	0.106	0.098	0.096	0.107	0.113	0.138	0.160	0.117	
Total	1979	0.116	0.125	0.141	0.166	0.185	0.217	0.253	0.172	-21.9
	1989	0.111	0.103	0.108	0.129	0.139	0.164	0.186	0.134	

It was also apparent that mortality was higher in rural than in urban areas for all age groups of mothers both in 1979 and 1989.

2.13 Regional Differentials in Child Mortality by Rural-Urban Residence of Mother

The place of residence of mother was a very crucial factor as it produced a very wide range of regional variations in child mortality both by province and district. Table 2.18 shows that while the overall child mortality was about 15 per cent higher in rural than urban areas, Central and North Eastern provinces experienced a lower child mortality of about 18 per cent and 20 per cent respectively in rural than urban areas.

Proportions of Children Dead by Place of Residence, District and Province, 1989

Table 2.18

District and Province	Place of Residence	Age of Mother								Percent Difference
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	Average	
KENYA	Rural	0.112	0.105	0.111	0.133	0.142	0.167	0.188	0.137	14.6
	Urban	0.106	0.098	0.096	0.107	0.113	0.138	0.160	0.117	
	Total	0.111	0.104	0.108	0.126	0.139	0.165	0.186	0.134	
NAIROBI	Rural	-	-	-	-	-	-	-	-	-
	Urban	0.097	0.088	0.081	0.081	0.084	0.097	0.116	0.092	-
	Total	0.097	0.088	0.081	0.081	0.084	0.097	0.116	0.092	
Kiambu	Rural	0.067	0.056	0.055	0.064	0.065	0.084	0.097	0.070	-23.6
	Urban	0.084	0.072	0.077	0.077	0.079	0.097	0.117	0.086	
	Total	0.073	0.062	0.059	0.067	0.067	0.085	0.098	0.073	
Kirinyaga	Rural	0.059	0.052	0.056	0.074	0.087	0.114	0.136	0.083	-9.0
	Urban	0.096	0.047	0.053	0.072	0.096	0.093	0.173	0.090	
	Total	0.067	0.054	0.058	0.075	0.088	0.114	0.137	0.085	
Murang'a	Rural	0.054	0.044	0.050	0.058	0.069	0.091	0.115	0.069	-13.5
	Urban	0.079	0.057	0.052	0.071	0.074	0.092	0.121	0.078	
	Total	0.057	0.044	0.051	0.058	0.069	0.091	0.115	0.069	
Nyandarua	Rural	0.052	0.041	0.043	0.053	0.064	0.081	0.097	0.062	-13.0
	Urban	0.055	0.049	0.052	0.047	0.060	0.117	0.107	0.070	
	Total	0.052	0.044	0.045	0.052	0.063	0.082	0.097	0.062	
Nyeri	Rural	0.052	0.033	0.033	0.043	0.050	0.066	0.080	0.051	-16.5
	Urban	0.071	0.041	0.038	0.046	0.050	0.078	0.092	0.059	
	Total	0.063	0.037	0.035	0.043	0.050	0.066	0.080	0.053	
CENTRAL	Rural	0.058	0.046	0.048	0.058	0.066	0.086	0.103	0.066	-18.1
	Urban	0.079	0.060	0.062	0.066	0.072	0.095	0.115	0.078	
	Total	0.064	0.050	0.050	0.059	0.067	0.086	0.104	0.069	
Kilifi	Rural	0.124	0.139	0.163	0.203	0.214	0.247	0.262	0.193	24.8
	Urban	0.107	0.106	0.127	0.145	0.145	0.186	0.201	0.145	
	Total	0.118	0.134	0.157	0.188	0.208	0.243	0.258	0.187	
Kwale	Rural	0.144	0.143	0.161	0.191	0.201	0.230	0.251	0.189	29.9
	Urban	0.100	0.104	0.155	0.114	0.138	0.150	0.165	0.132	
	Total	0.143	0.141	0.158	0.180	0.201	0.230	0.250	0.186	
Lamu	Rural	0.135	0.113	0.149	0.161	0.178	0.200	0.221	0.165	-3.6
	Urban	0.149	0.102	0.144	0.165	0.174	0.203	0.262	0.171	
	Total	0.140	0.106	0.143	0.154	0.177	0.200	0.228	0.164	

Proportions of Children Dead by Place of Residence, District and Province, 1989
Table 2.18 (cont.)

District and Province	Place of Residence	Age of Mother								Percent Difference
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	Average	
Mombasa	Rural	-	-	-	-	-	-	-	-	-
	Urban	0.112	0.108	0.106	0.125	0.127	0.150	0.167	0.128	-
	Total	0.114	0.110	0.105	0.121	0.127	0.150	0.167	0.128	-
T/Taveta	Rural	0.077	0.084	0.092	0.109	0.122	0.153	0.183	0.117	2.4
	Urban	0.082	0.086	0.077	0.102	0.139	0.153	0.161	0.114	
	Total	0.075	0.086	0.088	0.105	0.124	0.153	0.182	0.116	
Tana River	Rural	0.127	0.133	0.152	0.173	0.186	0.205	0.229	0.172	6.4
	Urban	0.107	0.132	0.125	0.162	0.177	0.195	0.230	0.161	
	Total	0.117	0.130	0.144	0.163	0.184	0.203	0.229	0.167	
COAST	Rural	0.128	0.133	0.153	0.184	0.193	0.223	0.242	0.179	26.5
	Urban	0.111	0.107	0.109	0.128	0.133	0.158	0.177	0.132	
	Total	0.121	0.125	0.136	0.162	0.178	0.209	0.230	0.166	
Embu	Rural	0.061	0.055	0.060	0.077	0.094	0.122	0.145	0.088	13.4
	Urban	0.078	0.062	0.055	0.056	0.069	0.089	0.123	0.076	
	Total	0.056	0.056	0.060	0.074	0.092	0.120	0.144	0.086	
Isiolo	Rural	0.095	0.104	0.115	0.156	0.166	0.187	0.229	0.150	6.5
	Urban	0.138	0.090	0.099	0.121	0.129	0.201	0.206	0.141	
	Total	0.113	0.100	0.108	0.144	0.155	0.191	0.222	0.148	
Kitui	Rural	0.081	0.085	0.107	0.132	0.151	0.189	0.212	0.137	12.1
	Urban	0.099	0.091	0.092	0.091	0.128	0.161	0.179	0.120	
	Total	0.084	0.087	0.107	0.127	0.150	0.188	0.211	0.136	
Machakos	Rural	0.063	0.060	0.069	0.082	0.097	0.125	0.145	0.092	0.5
	Urban	0.091	0.078	0.063	0.077	0.089	0.119	0.121	0.091	
	Total	0.066	0.062	0.069	0.080	0.097	0.124	0.145	0.092	
Marsabit	Rural	0.072	0.068	0.066	0.090	0.098	0.114	0.129	0.091	-35.2
	Urban	0.081	0.077	0.087	0.114	0.139	0.181	0.182	0.123	
	Total	0.084	0.077	0.072	0.092	0.107	0.122	0.136	0.099	
Meru	Rural	0.051	0.046	0.053	0.071	0.086	0.115	0.136	0.080	21.5
	Urban	0.051	0.037	0.043	0.046	0.059	0.099	0.103	0.063	
	Total	0.054	0.047	0.053	0.070	0.086	0.115	0.135	0.080	
EASTERN	Rural	0.063	0.061	0.071	0.089	0.104	0.136	0.156	0.097	1.2
	Urban	0.088	0.071	0.067	0.079	0.095	0.131	0.141	0.096	
	Total	0.067	0.063	0.071	0.086	0.104	0.136	0.156	0.098	

Proportions of Children Dead by Place of Residence, District and Province, 1989

Table 2.18 (cont.)

District and Province	Place of Residence	Age of Mother								Percent Difference
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	Average	
Garissa	Rural	0.127	0.130	0.131	0.131	0.141	0.162	0.182	0.143	-13.3
	Urban	0.135	0.126	0.132	0.155	0.173	0.213	0.204	0.163	
	Total	0.130	0.128	0.131	0.137	0.149	0.172	0.187	0.148	
Mandera	Rural	0.105	0.108	0.115	0.133	0.431	0.159	0.167	0.131	-28.1
	Urban	0.104	0.145	0.146	0.164	0.171	0.229	0.217	0.168	
	Total	0.105	0.118	0.125	0.141	0.143	0.174	0.179	0.141	
Wajir	Rural	0.141	0.117	0.120	0.133	0.128	0.169	0.196	0.143	-16.3
	Urban	0.103	0.101	0.127	0.171	0.180	0.223	0.263	0.167	
	Total	0.134	0.114	0.121	0.141	0.139	0.180	0.210	0.148	
N. EASTERN	Rural	0.124	0.118	0.122	0.132	0.134	0.164	0.182	0.139	-19.5
	Urban	0.116	0.127	0.136	0.163	0.174	0.222	0.228	0.167	
	Total	0.122	0.120	0.126	0.140	0.144	0.175	0.192	0.146	
Kisii	Rural	0.087	0.086	0.098	0.124	0.131	0.157	0.174	0.122	14.1
	Urban	0.069	0.081	0.092	0.096	0.104	0.144	0.150	0.105	
	Total	0.086	0.089	0.097	0.116	0.130	0.157	0.174	0.121	
Kisumu	Rural	0.219	0.216	0.228	0.249	0.258	0.284	0.319	0.253	23.4
	Urban	0.158	0.165	0.166	0.184	0.191	0.224	0.271	0.194	
	Total	0.195	0.195	0.202	0.216	0.242	0.272	0.312	0.233	
Siaya	Rural	0.209	0.211	0.216	0.242	0.254	0.288	0.317	0.248	22.2
	Urban	0.115	0.168	0.167	0.186	0.190	0.243	0.283	0.193	
	Total	0.200	0.206	0.210	0.227	0.253	0.287	0.316	0.243	
S. Nyanza	Rural	0.206	0.211	0.219	0.250	0.261	0.292	0.314	0.250	18.3
	Urban	0.178	0.164	0.162	0.186	0.210	0.235	0.297	0.205	
	Total	0.197	0.205	0.210	0.233	0.259	0.291	0.314	0.244	
NYANZA	Rural	0.177	0.173	0.176	0.206	0.218	0.249	0.275	0.211	13.1
	Urban	0.151	0.154	0.155	0.171	0.180	0.214	0.256	0.183	
	Total	0.169	0.169	0.170	0.192	0.215	0.248	0.275	0.205	
Baringo	Rural	0.113	0.096	0.108	0.151	0.166	0.190	0.216	0.149	27.1
	Urban	0.098	0.066	0.073	0.099	0.109	0.136	0.177	0.108	
	Total	0.108	0.091	0.103	0.141	0.163	0.187	0.213	0.144	
E/Marakwet	Rural	0.091	0.069	0.087	0.117	0.137	0.169	0.188	0.123	32.8
	Urban	0.045	0.054	0.063	0.069	0.111	0.067	0.168	0.082	
	Total	0.090	0.071	0.087	0.114	0.137	0.168	0.188	0.122	

Proportions of Children Dead by Place of Residence, District and Province, 1989
Table 2.18 (cont.)

District and Province	Place of Residence	Age of Mother								Percent Difference
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	Average	
Kajiado	Rural	0.057	0.060	0.074	0.081	0.086	0.104	0.107	0.081	-5.1
	Urban	0.054	0.064	0.066	0.074	0.096	0.100	0.144	0.085	
	Total	0.061	0.063	0.075	0.079	0.087	0.103	0.112	0.083	
Kericho	Rural	0.070	0.071	0.078	0.094	0.099	0.118	0.130	0.094	-32.6
	Urban	0.097	0.104	0.105	0.115	0.126	0.154	0.174	0.125	
	Total	0.074	0.074	0.079	0.093	0.100	0.119	0.131	0.096	
Laikipia	Rural	0.039	0.046	0.047	0.063	0.078	0.095	0.118	0.069	-24.9
	Urban	0.062	0.064	0.064	0.086	0.078	0.130	0.123	0.087	
	Total	0.040	0.051	0.049	0.067	0.078	0.097	0.118	0.071	
Nakuru	Rural	0.069	0.062	0.069	0.085	0.095	0.116	0.137	0.090	-14.4
	Urban	0.091	0.083	0.086	0.094	0.108	0.121	0.141	0.103	
	Total	0.077	0.068	0.074	0.085	0.098	0.117	0.138	0.094	
Nandi	Rural	0.082	0.078	0.085	0.106	0.120	0.145	0.167	0.112	1.3
	Urban	0.079	0.093	0.082	0.112	0.136	0.111	0.160	0.110	
	Total	0.080	0.079	0.084	0.104	0.121	0.144	0.166	0.111	
Narok	Rural	0.064	0.074	0.086	0.104	0.113	0.134	0.149	0.103	11.3
	Urban	0.081	0.071	0.064	0.083	0.088	0.102	0.153	0.092	
	Total	0.064	0.074	0.084	0.100	0.113	0.133	0.149	0.102	
Samburu	Rural	0.049	0.047	0.056	0.070	0.082	0.107	0.124	0.076	-24.7
	Urban	0.063	0.061	0.069	0.094	0.100	0.141	0.139	0.095	
	Total	0.051	0.049	0.060	0.073	0.084	0.111	0.125	0.079	
Trans Nzoia	Rural	0.087	0.088	0.096	0.120	0.133	0.152	0.169	0.121	-0.6
	Urban	0.103	0.096	0.100	0.114	0.132	0.138	0.167	0.121	
	Total	0.093	0.091	0.096	0.114	0.133	0.151	0.169	0.121	
Turkana	Rural	0.123	0.131	0.155	0.191	0.204	0.226	0.228	0.180	-11.0
	Urban	0.126	0.149	0.141	0.198	0.199	0.263	0.320	0.199	
	Total	0.114	0.131	0.149	0.186	0.203	0.229	0.235	0.178	
Uasin Gishu	Rural	0.060	0.059	0.069	0.089	0.100	0.128	0.146	0.093	-17.7
	Urban	0.091	0.092	0.092	0.110	0.111	0.129	0.141	0.109	
	Total	0.074	0.071	0.075	0.091	0.102	0.128	0.146	0.098	
West Pokot	Rural	0.147	0.145	0.175	0.210	0.231	0.259	0.297	0.209	42.6
	Urban	0.128	0.078	0.079	0.098	0.096	0.149	0.212	0.120	
	Total	0.166	0.140	0.166	0.196	0.226	0.255	0.295	0.206	

Proportions of Children Dead by Place of Residence, District and Province, 1989

Table 2.18 (cont.)

District and Province	Place of Residence	Age of Mother								Percent Difference
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	Average	
RIFT VALLEY	Rural	0.077	0.077	0.088	0.111	0.121	0.143	0.161	0.111	1.0
	Urban	0.090	0.085	0.087	0.104	0.114	0.133	0.157	0.110	
	Total	0.081	0.079	0.087	0.107	0.121	0.142	0.161	0.111	
Bungoma	Rural	0.130	0.130	0.133	0.155	0.166	0.187	0.212	0.159	10.2
	Urban	0.112	0.115	0.122	0.126	0.142	0.178	0.205	0.143	
	Total	0.128	0.130	0.132	0.148	0.164	0.186	0.211	0.157	
Busia	Rural	0.156	0.169	0.184	0.208	0.224	0.267	0.298	0.215	12.4
	Urban	0.152	0.165	0.170	0.184	0.187	0.224	0.238	0.189	
	Total	0.158	0.167	0.179	0.197	0.222	0.265	0.296	0.212	
Kakamega	Rural	0.139	0.142	0.151	0.170	0.177	0.201	0.226	0.172	22.5
	Urban	0.097	0.122	0.124	0.128	0.126	0.155	0.183	0.134	
	Total	0.136	0.140	0.148	0.161	0.176	0.200	0.225	0.169	
WESTERN	Rural	0.140	0.144	0.152	0.172	0.182	0.209	0.234	0.176	15.3
	Urban	0.116	0.129	0.134	0.138	0.145	0.178	0.204	0.149	
	Total	0.138	0.142	0.149	0.163	0.180	0.208	0.234	0.173	

District variations were even wider with a total of eighteen districts with lower child mortality in rural areas versus twenty one districts whose child mortality was higher in rural areas. Marsabit district with a lower child mortality of about 35 per cent in rural areas led the group of eighteen while West Pokot district with a higher child mortality of about 43 per cent in rural areas led the other group of twenty one districts. Note that the whole of Nairobi and Mombasa were taken as urban hence no rural component. These wide regional variations are a pointer to the prevailing environmental conditions which greatly influence the level of child mortality both in the urban and rural areas. In order to assess the impact environmental factors can have on child mortality, two of the most important of these factors were selected for analysis.

2.14 Differentials in Child Mortality by Source of Water

Due to the various types of water-borne diseases which afflict children, the source of water for domestic use has a direct influence on the level of child mortality. As is evident from Table 2.19, proportions of children dead increased with various sources of water whose degree of clean and safe water progressively decreased for all age groups of mother. Jabias (rain water harvested from any catchment into a hole/tank and used for domestic purposes) accounted for the least proportions of children dead yet lake water was responsible for the highest child mortality. The level of child mortality for mothers who used jabias as a source of water was about 62 per cent less than that for mothers who depended on lake water.

However, these figures by themselves do not provide conclusive evidence to prove that there is a causal link with child mortality since other factors like level of education of mother, accessibility to health services, etc, have their own influence on child mortality.

Proportions of Children Dead by Source of Water, 1989

Table 2.19

Source of Water	Age group of Mother							Average
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
All	0.122	0.109	0.112	0.133	0.139	0.165	0.186	0.138
Jabias	0.089	0.063	0.075	0.081	0.084	0.105	0.117	0.088
Piped	0.105	0.093	0.091	0.105	0.108	0.128	0.143	0.110
Stream/River	0.122	0.108	0.113	0.136	0.142	0.168	0.190	0.140
Dam	0.119	0.109	0.115	0.139	0.145	0.170	0.188	0.141
Well	0.124	0.115	0.120	0.140	0.148	0.176	0.198	0.146
Borehole	0.138	0.135	0.136	0.160	0.162	0.192	0.217	0.163
Pond	0.144	0.153	0.150	0.175	0.183	0.208	0.237	0.179
Lake	0.215	0.205	0.208	0.227	0.233	0.261	0.284	0.233

2.15 Differentials in Child Mortality by Means of Sewage Disposal

The means by which sewage is disposed impinges directly on the level of child mortality. Table 2.20 indicates that use of main sewer yielded the lowest proportions of child mortality whereas disposal of sewage in the bush resulted in the highest child mortality for all age groups of mother. On average, use of bush increased child mortality by about 53 per cent as compared to use of main sewer.

Proportions of Children Dead by Sewage Disposal, 1989

Table 2.20

Means of Sewage Disposal	Age group of Mother							Average
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
All	0.122	0.109	0.112	0.133	0.139	0.165	0.186	0.138
Main Sewer	0.084	0.077	0.070	0.072	0.076	0.091	0.111	0.083
Septic Tank	0.110	0.091	0.079	0.086	0.085	0.107	0.129	0.098
Pit Latrine	0.118	0.104	0.105	0.124	0.129	0.153	0.174	0.130
Bucket Latrine	0.117	0.106	0.109	0.120	0.132	0.159	0.179	0.132
Cess Pool	0.122	0.124	0.109	0.115	0.141	0.152	0.186	0.136
Bush	0.135	0.133	0.145	0.176	0.186	0.214	0.240	0.176

CHAPTER 3: ADULT MORTALITY

3.1 Data on Orphanhood

The inadequacy of vital registration statistics and the difficulty of collecting accurate data directly in surveys mean that indirect methods of analysis, particularly those based on orphanhood, represent an important source of adult mortality estimates.

However, orphanhood data can give rise to possible biases leading to over-reporting or under-reporting of adult mortality. If questions on orphanhood are asked of the entire population, parents with several surviving children will tend to be over-represented. On the other hand, under-reporting of orphanhood will occur among those children whose parents die when they are still young and are adopted by relatives who report them as their own. Another possible angle of under-reporting is due to the fact that orphanhood data does not refer to the entire population since it reflects only the mortality experience of parents with surviving children.

The 1989 census questionnaire had columns P17 and P18 which solicited information from all persons as to whether their fathers and mothers were still alive. The enumerators were to ensure that only biological fathers and mothers were to be considered so that the "adoption effect" could be minimised if not eliminated altogether.

3.2 Proportions with Surviving Parents

Responses from columns P17 and P18 of the census questionnaire yielded proportions of persons with father and mother alive. In Table 3.1, the proportions with father alive increased from the censuses of 1969, 1979 and 1989 for all age groups of both male and female respondents.

Proportions of Persons with Father Alive by Sex and Age Group of Respondent

Table 3.1

Age Group of Resipendent	Proportion With Father Alive						Percent Change			
	1969		1979		1989		1969-1979		1979-1989	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Total	0.713	0.709	0.741	0.735	0.765	0.756	4.0	3.7	3.2	2.8
0-4	0.955	0.954	0.956	0.956	0.969	0.969	0.1	0.2	1.3	1.3
5-9	0.933	0.935	0.935	0.936	0.946	0.947	0.2	0.1	1.2	1.1
10-14	0.869	0.901	0.904	0.905	0.914	0.916	4.0	0.4	1.1	1.2
15-19	0.833	0.837	0.857	0.853	0.867	0.866	2.9	1.9	1.2	1.5
20-24	0.744	0.739	0.784	0.778	0.806	0.798	5.3	5.2	2.9	2.5
25-29	0.634	0.633	0.687	0.681	0.729	0.715	8.3	7.6	6.1	4.9
30-34	0.524	0.500	0.568	0.547	0.629	0.609	8.5	9.4	10.8	11.3
35-39	0.415	0.404	0.461	0.442	0.519	0.503	11.1	9.3	12.6	13.7
40-44	0.305	0.285	0.348	0.319	0.398	0.372	14.0	12.1	14.4	16.7
45-49	0.214	0.200	0.256	0.230	0.298	0.280	19.7	14.8	16.4	21.7
50-54	0.126	0.120	0.155	0.138	0.201	0.186	22.6	15.0	29.5	34.7
55-59	0.089	0.086	0.098	0.090	0.139	0.131	10.4	4.3	41.1	45.7
60-64	0.064	0.065	0.060	0.061	0.087	0.089	-6.1	-6.3	46.1	46.2
65-69	0.050	0.057	0.041	0.049	0.065	0.068	-19.1	-14.8	60.1	40.8
70+	0.036	0.057	0.040	0.057	0.053	0.068	12.2	0.2	32.2	18.8
Average Percent Change							6.3	4.0	18.5	17.5

This drop in adult mortality for males was about 6 per cent and 19 per cent for the intercensal periods 1969-79 and 1979-89 respectively. The percentage drop for females was about 4 and 18 during 1969-79 and 1979-89 periods respectively.

A similar drop in adult mortality is also evident in Table 3.2 for those who reported their mothers' survival.

Proportions of Persons With Mother Alive by Sex and Age Group of Respondent

Table 3.2

Age Group of Respondent	Proportion With Mother Alive						Percent Change			
	1969		1979		1989		1969-1979		1979-1989	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Total	0.813	0.805	0.848	0.838	0.871	0.860	4.3	4.2	2.7	2.6
0-4	0.992	0.992	0.993	0.992	0.995	0.994	0.1	0.0	0.1	0.2
5-9	0.981	0.981	0.985	0.985	0.986	0.986	0.4	0.4	0.1	0.1
10-14	0.962	0.967	0.973	0.974	0.976	0.976	1.2	0.7	0.3	0.2
15-19	0.929	0.932	0.953	0.950	0.959	0.957	2.6	1.9	0.6	0.7
20-24	0.882	0.874	0.917	0.904	0.934	0.925	4.0	3.5	1.9	2.3
25-29	0.819	0.797	0.866	0.852	0.899	0.885	5.8	7.0	3.8	3.9
30-34	0.734	0.694	0.790	0.759	0.846	0.824	7.6	9.4	7.1	8.5
35-39	0.648	0.608	0.710	0.678	0.774	0.752	9.6	11.5	9.0	10.9
40-44	0.537	0.482	0.606	0.555	0.673	0.633	12.8	15.1	11.0	14.1
45-49	0.419	0.372	0.499	0.445	0.572	0.534	19.1	19.6	14.5	19.9
50-54	0.282	0.248	0.353	0.305	0.439	0.396	25.1	23.1	24.3	29.7
55-59	0.223	0.179	0.251	0.212	0.330	0.297	12.6	18.5	31.5	40.1
60-64	0.131	0.121	0.147	0.130	0.217	0.197	12.4	7.5	47.9	51.7
65-69	0.104	0.094	0.098	0.095	0.147	0.138	-5.7	0.7	50.3	45.6
70+	0.060	0.077	0.063	0.073	0.078	0.089	4.6	-5.1	22.9	22.2
Average Percent Change							7.5	7.6	15.0	16.7

All proportions of males with parents alive are higher than those of females in the same age groups presumably due to differences in the misreporting of ages between the sexes. Apparently, males have a greater tendency to exaggerate their ages than females - see Appendix 4 and 5. Due to this, further analysis of adult mortality concentrated on proportions of females with father or mother alive omitting proportions of males since those of the latter seemed to be less reliable.

3.3 Regional Differentials in Proportions with Surviving Parents

Proportions of female respondents with surviving parents are tabulated in Table 3.3 and Table 3.4 for districts and provinces. There was an overall drop in adult mortality for all provinces and districts between 1979 and 1989 for both parents.

Proportions of Females with Father Alive, 1979 and 1989

Table 3.3

District and Province	15-19		20-24		25-29		30-34		35-39		40-44		45-49	
	1979	1989	1979	1989	1979	1989	1979	1989	1979	1989	1979	1989	1979	1989
KENYA	0.853	0.866	0.778	0.798	0.681	0.715	0.547	0.609	0.442	0.503	0.319	0.372	0.230	0.280
NAIROBI	0.842	0.859	0.799	0.815	0.724	0.746	0.626	0.653	0.513	0.559	0.380	0.446	0.288	0.351
Kiambu	0.858	0.866	0.806	0.812	0.725	0.750	0.616	0.664	0.514	0.560	0.405	0.452	0.299	0.346
Kirinyaga	0.866	0.880	0.804	0.828	0.717	0.755	0.587	0.657	0.482	0.557	0.351	0.426	0.260	0.327
Muranga	0.870	0.885	0.801	0.823	0.707	0.748	0.596	0.651	0.472	0.542	0.343	0.415	0.244	0.306
Nyandarua	0.873	0.879	0.801	0.836	0.709	0.769	0.625	0.674	0.510	0.573	0.385	0.446	0.287	0.347
Nyeri	0.867	0.884	0.798	0.828	0.711	0.757	0.610	0.654	0.506	0.551	0.373	0.434	0.279	0.328
CENTRAL	0.866	0.878	0.802	0.822	0.715	0.753	0.606	0.658	0.496	0.554	0.371	0.434	0.272	0.329
Kilifi	0.860	0.849	0.762	0.780	0.664	0.694	0.510	0.578	0.412	0.461	0.308	0.329	0.235	0.251
Kwale	0.864	0.855	0.784	0.781	0.681	0.699	0.526	0.582	0.434	0.479	0.316	0.347	0.247	0.254
Lamu	0.866	0.876	0.760	0.799	0.669	0.718	0.523	0.587	0.411	0.470	0.251	0.326	0.201	0.267
Mombasa	0.848	0.856	0.774	0.794	0.669	0.708	0.529	0.596	0.413	0.480	0.300	0.349	0.203	0.236
T/Taveta	0.861	0.865	0.775	0.805	0.672	0.718	0.523	0.596	0.416	0.481	0.288	0.334	0.208	0.243
Tana River	0.817	0.841	0.715	0.764	0.597	0.654	0.431	0.533	0.342	0.440	0.213	0.271	0.161	0.217
COAST	0.855	0.854	0.768	0.787	0.666	0.699	0.514	0.583	0.414	0.471	0.297	0.334	0.223	0.246
Embu	0.876	0.903	0.800	0.852	0.691	0.779	0.554	0.671	0.450	0.557	0.334	0.417	0.254	0.310
Isiolo	0.700	0.799	0.551	0.685	0.474	0.572	0.330	0.418	0.247	0.323	0.143	0.208	0.087	0.136
Kitui	0.850	0.864	0.760	0.804	0.656	0.725	0.488	0.622	0.393	0.512	0.293	0.356	0.217	0.272
Machakos	0.875	0.886	0.803	0.828	0.707	0.759	0.575	0.673	0.469	0.563	0.357	0.430	0.279	0.329
Marsabit	0.680	0.743	0.566	0.648	0.474	0.535	0.329	0.405	0.263	0.306	0.172	0.197	0.103	0.148
Meru	0.885	0.910	0.810	0.854	0.712	0.777	0.565	0.666	0.454	0.559	0.316	0.420	0.219	0.315
EASTERN	0.865	0.885	0.784	0.826	0.687	0.750	0.539	0.646	0.438	0.539	0.318	0.397	0.237	0.303
Garissa	0.786	0.846	0.694	0.752	0.608	0.648	0.458	0.524	0.381	0.427	0.258	0.283	0.212	0.207
Mandera	0.774	0.836	0.673	0.740	0.583	0.622	0.447	0.490	0.378	0.424	0.270	0.291	0.222	0.242
Wajir	0.779	0.837	0.666	0.725	0.581	0.610	0.451	0.476	0.384	0.389	0.242	0.240	0.197	0.183
N. EASTERN	0.780	0.840	0.677	0.739	0.591	0.627	0.452	0.497	0.382	0.414	0.255	0.271	0.209	0.210

Proportions of Females with Father Alive, 1979 and 1989

Table 3.3 (cont.)

District and Province	15-19		20-24		25-29		30-34		35-39		40-44		45-49	
	1979	1989	1979	1989	1979	1989	1979	1989	1979	1989	1979	1989	1979	1989
Kisii	0.828	0.840	0.753	0.754	0.649	0.663	0.515	0.556	0.404	0.448	0.292	0.326	0.214	0.245
Kisumu	0.817	0.825	0.729	0.730	0.627	0.633	0.478	0.516	0.351	0.401	0.230	0.284	0.140	0.196
Siaya	0.822	0.829	0.707	0.722	0.575	0.613	0.421	0.491	0.321	0.372	0.201	0.248	0.130	0.163
S. Nyanza	0.820	0.823	0.734	0.733	0.633	0.635	0.473	0.530	0.370	0.408	0.244	0.287	0.160	0.203
NYANZA	0.823	0.830	0.735	0.738	0.626	0.641	0.475	0.528	0.365	0.410	0.243	0.288	0.161	0.202
Baringo	0.837	0.862	0.739	0.787	0.642	0.687	0.500	0.553	0.410	0.459	0.297	0.325	0.169	0.246
E/Marakwet	0.895	0.892	0.823	0.842	0.736	0.761	0.613	0.659	0.515	0.541	0.372	0.431	0.229	0.310
Kajiado	0.830	0.844	0.753	0.790	0.648	0.694	0.504	0.574	0.394	0.465	0.307	0.326	0.214	0.262
Kericho	0.852	0.867	0.783	0.804	0.703	0.719	0.585	0.634	0.476	0.538	0.369	0.409	0.272	0.307
Laikipia	0.868	0.882	0.793	0.824	0.712	0.751	0.586	0.644	0.484	0.549	0.362	0.438	0.270	0.329
Nakuru	0.858	0.872	0.802	0.820	0.710	0.743	0.600	0.650	0.503	0.552	0.389	0.429	0.295	0.342
Nandi	0.870	0.881	0.799	0.816	0.718	0.741	0.589	0.645	0.486	0.537	0.352	0.402	0.256	0.309
Narok	0.850	0.854	0.793	0.789	0.692	0.713	0.568	0.596	0.445	0.502	0.316	0.366	0.242	0.271
Samburu	0.778	0.767	0.694	0.695	0.566	0.580	0.434	0.466	0.351	0.373	0.225	0.238	0.168	0.165
Trans Nzoia	0.894	0.891	0.816	0.832	0.724	0.749	0.603	0.658	0.487	0.550	0.386	0.410	0.291	0.318
Turkana	0.773	0.786	0.630	0.630	0.516	0.487	0.408	0.354	0.348	0.270	0.258	0.185	0.204	0.137
Uasin Gishu	0.884	0.891	0.822	0.832	0.736	0.763	0.623	0.673	0.516	0.571	0.387	0.447	0.291	0.359
West Pokot	0.841	0.842	0.721	0.743	0.600	0.624	0.470	0.517	0.380	0.388	0.265	0.284	0.193	0.202
RIFT VALLEY	0.856	0.866	0.779	0.800	0.684	0.712	0.561	0.608	0.461	0.506	0.346	0.380	0.250	0.293
Bungoma	0.889	0.891	0.824	0.828	0.750	0.759	0.639	0.681	0.528	0.572	0.420	0.459	0.309	0.338
Busia	0.837	0.853	0.733	0.761	0.624	0.664	0.459	0.543	0.353	0.423	0.238	0.284	0.170	0.206
Kakamega	0.883	0.889	0.814	0.813	0.726	0.731	0.597	0.633	0.473	0.525	0.355	0.386	0.259	0.285
WESTERN	0.877	0.884	0.803	0.808	0.714	0.727	0.582	0.631	0.465	0.520	0.347	0.385	0.252	0.283

Proportions of Females With Mother Alive: 1979 and 1989

District/ Province	15-19		20-24		25-29		30-34		35-39		40-44		45-49	
	1979	1989	1979	1989	1979	1989	1979	1989	1979	1989	1979	1989	1979	1989
KENYA	0.950	0.957	0.904	0.925	0.852	0.885	0.759	0.824	0.678	0.752	0.555	0.633	0.445	0.534
NAIROBI	0.948	0.953	0.925	0.934	0.887	0.905	0.828	0.858	0.752	0.794	0.634	0.714	0.515	0.609
Kiambu	0.968	0.967	0.937	0.945	0.897	0.917	0.837	0.875	0.778	0.818	0.676	0.721	0.579	0.641
Kirinyaga	0.964	0.968	0.924	0.941	0.867	0.911	0.776	0.862	0.704	0.780	0.565	0.673	0.461	0.574
Muranga	0.969	0.970	0.932	0.947	0.884	0.918	0.811	0.873	0.731	0.803	0.624	0.694	0.528	0.593
Nyandarua	0.968	0.973	0.930	0.950	0.889	0.922	0.880	0.869	0.774	0.817	0.658	0.726	0.562	0.629
Nyeri	0.966	0.969	0.935	0.949	0.884	0.922	0.820	0.862	0.749	0.799	0.627	0.694	0.522	0.609
CENTRAL	0.967	0.969	0.933	0.946	0.886	0.918	0.818	0.870	0.750	0.805	0.634	0.702	0.535	0.611
Kilifi	0.947	0.953	0.893	0.921	0.837	0.877	0.727	0.811	0.644	0.726	0.525	0.591	0.448	0.477
Kwale	0.934	0.941	0.877	0.898	0.813	0.858	0.694	0.766	0.618	0.671	0.495	0.534	0.415	0.432
Lamu	0.924	0.933	0.876	0.902	0.807	0.850	0.712	0.765	0.623	0.676	0.455	0.542	0.403	0.472
Mombasa	0.940	0.946	0.905	0.920	0.852	0.878	0.746	0.813	0.653	0.727	0.526	0.602	0.417	0.488
T/Taveta	0.956	0.953	0.918	0.929	0.848	0.880	0.758	0.812	0.632	0.734	0.514	0.582	0.406	0.465
Tana River	0.902	0.915	0.825	0.859	0.744	0.802	0.620	0.707	0.530	0.639	0.427	0.505	0.356	0.408
COAST	0.940	0.945	0.891	0.913	0.830	0.868	0.719	0.794	0.631	0.708	0.508	0.572	0.423	0.463
Embu	0.965	0.971	0.915	0.947	0.853	0.914	0.749	0.850	0.653	0.782	0.558	0.658	0.464	0.562
Isiolo	0.858	0.914	0.783	0.845	0.726	0.803	0.602	0.707	0.533	0.595	0.406	0.501	0.356	0.406
Kitui	0.947	0.959	0.895	0.929	0.838	0.890	0.728	0.831	0.642	0.761	0.552	0.620	0.448	0.523
Machakos	0.963	0.967	0.924	0.939	0.876	0.911	0.792	0.866	0.721	0.802	0.625	0.696	0.532	0.600
Marsabit	0.902	0.928	0.836	0.868	0.776	0.807	0.677	0.721	0.597	0.655	0.525	0.536	0.424	0.415
Meru	0.957	0.969	0.905	0.939	0.836	0.897	0.733	0.830	0.632	0.758	0.490	0.632	0.359	0.521
EASTERN	0.955	0.965	0.907	0.934	0.849	0.898	0.750	0.838	0.666	0.771	0.556	0.649	0.450	0.549
Garissa	0.880	0.914	0.797	0.857	0.723	0.790	0.599	0.679	0.563	0.592	0.425	0.464	0.345	0.398
Mandera	0.896	0.916	0.814	0.859	0.765	0.789	0.669	0.700	0.609	0.631	0.509	0.500	0.430	0.447
Wajir	0.880	0.910	0.795	0.837	0.712	0.762	0.614	0.667	0.529	0.577	0.424	0.437	0.346	0.364
N. EASTERN	0.885	0.913	0.801	0.851	0.730	0.781	0.625	0.682	0.563	0.599	0.450	0.466	0.371	0.402

Proportions of Females With Mother Alive: 1979 and 1989

Table 3.4 (cont.)

District/ Province	15-19		20-24		25-29		30-34		35-39		40-44		45-49	
	1979	1989	1979	1989	1979	1989	1979	1989	1979	1989	1979	1989	1979	1989
Kisii	0.954	0.957	0.913	0.922	0.860	0.883	0.763	0.824	0.675	0.747	0.555	0.627	0.461	0.531
Kisumu	0.938	0.948	0.888	0.905	0.837	0.851	0.719	0.780	0.601	0.694	0.454	0.555	0.321	0.425
Siaya	0.943	0.944	0.886	0.899	0.821	0.850	0.690	0.778	0.587	0.683	0.455	0.541	0.318	0.429
S. Nyanza	0.934	0.942	0.882	0.902	0.825	0.852	0.701	0.781	0.610	0.683	0.464	0.551	0.341	0.450
NYANZA	0.943	0.948	0.894	0.909	0.837	0.862	0.719	0.793	0.621	0.703	0.483	0.569	0.359	0.461
Baringo	0.933	0.948	0.866	0.910	0.815	0.849	0.717	0.771	0.632	0.699	0.499	0.591	0.357	0.472
E/Marakwet	0.951	0.955	0.903	0.923	0.863	0.887	0.782	0.823	0.701	0.750	0.578	0.650	0.422	0.558
Kajiado	0.959	0.957	0.915	0.935	0.873	0.900	0.784	0.834	0.713	0.769	0.615	0.649	0.495	0.565
Kericho	0.956	0.962	0.919	0.933	0.887	0.898	0.825	0.857	0.754	0.802	0.656	0.715	0.549	0.632
Laikipia	0.955	0.966	0.918	0.939	0.871	0.910	0.804	0.857	0.734	0.791	0.628	0.698	0.504	0.591
Nakuru	0.962	0.964	0.924	0.937	0.882	0.905	0.811	0.859	0.750	0.799	0.643	0.699	0.547	0.616
Nandi	0.955	0.962	0.913	0.933	0.874	0.897	0.799	0.842	0.743	0.780	0.626	0.693	0.537	0.609
Narok	0.965	0.964	0.928	0.935	0.889	0.905	0.815	0.848	0.729	0.784	0.598	0.676	0.487	0.577
Samburu	0.949	0.947	0.902	0.916	0.848	0.871	0.768	0.820	0.714	0.730	0.579	0.584	0.486	0.469
Trans	0.954	0.961	0.908	0.930	0.859	0.881	0.778	0.830	0.694	0.768	0.607	0.645	0.497	0.561
Turkana	0.900	0.936	0.795	0.838	0.693	0.726	0.573	0.599	0.496	0.497	0.380	0.381	0.288	0.284
Uasin Gishu	0.952	0.962	0.917	0.935	0.874	0.898	0.810	0.849	0.740	0.796	0.630	0.693	0.489	0.605
West Pokot	0.929	0.933	0.860	0.886	0.784	0.814	0.685	0.734	0.611	0.638	0.474	0.513	0.363	0.405
RIFT VALLEY	0.952	0.958	0.905	0.926	0.856	0.883	0.778	0.823	0.708	0.757	0.599	0.651	0.486	0.561
Bungoma	0.952	0.958	0.913	0.922	0.869	0.895	0.805	0.848	0.722	0.788	0.632	0.693	0.529	0.574
Busia	0.922	0.938	0.868	0.892	0.800	0.840	0.672	0.765	0.573	0.677	0.439	0.512	0.350	0.414
Kakamega	0.954	0.958	0.909	0.924	0.862	0.884	0.771	0.832	0.667	0.758	0.549	0.639	0.440	0.514
WESTERN	0.948	0.955	0.903	0.918	0.853	0.880	0.762	0.825	0.664	0.752	0.547	0.629	0.442	0.510

3.4. Estimates of Adult Mortality

Data on the proportions of respondents whose mother (or father) is still alive can yield plausible estimates of adult mortality. The method of estimation based on this type of data was proposed by Brass, who established an equation relating the female probability of surviving from a base age B (35 in the case of fathers and 25 in that of mothers) to an age $B+n$ (where n is the age forming the lower bound of the respondent's 5-year age-group) to the proportions of respondents in two contiguous five-year age groups whose mother (or father) was still alive at the time of the interview. These probabilities of survival are denoted as $l(B-n)$ $l(B)$ in life table notation.

Survivorship estimates based on reports by young respondents tend to be affected by misreporting of orphanhood status. This phenomenon artificially inflates the proportion of young respondents having a surviving parent and biases upward the estimated survivorship probabilities of younger adults. Because of this, data from young respondents was not used in estimating adult mortality.

Procedures to estimate adult mortality from orphanhood data have undergone various stages with the subsequent derivation of simple, robust methods largely associated with Brass.

While investigations of the Brass and Hill weighting factors reveal that they are very robust for female mortality and acceptably so for male mortality, indications are that some increases in accuracy would accrue from the use of a regression-based method to estimate adult mortality. Regression equations developed by Timaeus (1990) were used in the estimation.

This required estimates of the mean ages of fathers and mothers at the birth of their children (M). For mothers, this value was obtained by calculating the average age of women bearing children during the 12 months before the census. For fathers, M had to be estimated indirectly by adding to the female M the average of: (a) the difference between the singulate mean age at marriage (SMAM) of males and females, and, (b) the difference between the median ages of married men and married women.

The time locations (T) of the estimates were calculated using the method devised by Brass and Bangboye (1981).

Proportions of females with parents alive were converted into life table survivorship probabilities. These probabilities thus provide the basis for the construction of life tables for the population. Table 3.5 shows a comparison of these probabilities for the 1969, 1979 and 1989 censuses.

**Probability of Surviving from Base Age B to Age B+n [$I(B+n)/I(B)$] With Time
Location (T)**

Table 3.5

MALES (B=35)						
35+n	1969 Census		1979 Census		1989 Census	
	$I(35+n)/I(35)$	T	$I(35+n)/I(35)$	T	$I(35+n)/I(35)$	T
45	0.9182	63.7	0.9131	73.6	0.9290	83.6
50	0.9048	61.7	0.8992	71.7	0.9048	81.6
55	0.8264	59.9	0.8389	69.9	0.8442	79.9
60	0.7200	58.2	0.7483	68.4	0.7628	78.4
65	0.5876	56.6	0.6177	66.8	0.6561	77.1
70	0.4578	55.6	0.4822	65.7	0.5311	76.1
75	0.3153	53.0	0.3331	63.9	0.3779	75.1

FEMALES (B=25)						
25+n	1969 Census		1979 Census		1989 Census	
	$I(25+n)/I(25)$	T	$I(25+n)/I(25)$	T	$I(25+n)/I(25)$	T
35	0.9581	64.0	0.9666	74.0	0.9702	84.0
40	0.9247	61.9	0.9443	71.9	0.9522	81.9
45	0.8676	60.0	0.9000	70.1	0.9221	80.2
50	0.7938	58.4	0.8508	68.5	0.8854	78.7
55	0.6943	56.9	0.7611	67.1	0.8277	77.6
60	0.6106	55.8	0.6828	66.2	0.7604	76.8
65	0.4791	54.7	0.5580	65.3	0.6428	76.2
70	0.3562	54.1	0.4396	64.9	0.5398	76.3

In line with the pattern portrayed by the proportions with parents alive, these probabilities also confirmed a general decline in adult mortality with each successive census. Females experienced a higher drop in mortality relative to that of males.

An alternative approach is again to use the intercensal "hypothetical cohort" procedure: the changes in the proportions with parent alive for the same cohorts of respondents in successive censuses (e.g those aged 10-14 in 1979 and 20-24 in 1989) may be strung together in such a way as to produce a series of proportions with father/mother alive by age for a cohort of persons going through life experiencing the mortality current during the intercensal decade. These proportions are then converted into values of $I(B+n)/I(B)$ in the same way as before, but this time all referring to the same time period. Indeed they constitute a set of mortality estimates which are closer to the time of the census than any based on the 1989 census data only. The results are shown in Tables 3.6 and 3.7, for both the 1969-79 and 1979-89 intercensal periods.

Proportions of Persons With Father and Mother Alive For Intercensal Hypothetical Cohorts

Table 3.6

	Father Alive		Percent Change	Mother Alive		Percent Change
	1969-79	1979-89		1969-79	1979-89	
0-4	0.9562	0.9685	1.3	0.9929	0.9942	0.1
5-9	0.9354	0.9467	1.2	0.9853	0.9861	0.1
10-14	0.9070	0.9274	2.3	0.9742	0.9777	0.4
15-19	0.8532	0.8763	2.7	0.9545	0.9577	0.3
20-24	0.7808	0.8179	4.8	0.9111	0.9291	2.0
25-29	0.6941	0.7344	5.8	0.8721	0.8927	2.4
30-34	0.5772	0.6419	11.2	0.7915	0.8464	6.9
35-39	0.4854	0.5426	11.8	0.7417	0.7879	6.2
40-44	0.3675	0.4377	19.1	0.6331	0.7062	11.5
45-49				0.5432	0.6205	14.2
50-54				0.4006	0.5034	25.7
Average			6.7			6.3

Proportions with surviving parents from both the 1969-79 and 1979-89 hypothetical cohorts also confirmed the decline in adult mortality that had been observed from the actual census data.

Survival Probabilities for Adult Males and Females for Intercensal Hypothetical Cohorts

Table 3.7

Males				Females			
35+n	I(35+n)/I(35)		Percent Change	25+n	I(25+n)/I(25)		Percent Change
	1969-79	1979-89			1969-79	1979-89	
				35	0.9674	0.9718	0.5
				40	0.9494	0.9530	0.4
45	0.9082	0.9183	1.1	45	0.9072	0.9262	2.1
50	0.8960	0.9187	2.5	50	0.8717	0.8929	2.4
55	0.8301	0.8582	3.4	55	0.7946	0.8509	7.1
60	0.7432	0.7826	5.3	60	0.7499	0.7980	6.4
65	0.6246	0.6883	10.2	65	0.6427	0.7218	12.3
70	0.5024	0.5758	14.6	70	0.5507	0.6386	16.0
75	0.3640	0.4441	22.0	75	0.3881	0.5091	31.2
Average			8.4				8.7

Survivorship probabilities for both males and females of the hypothetical cohorts showed a similar drop in adult mortality.

CHAPTER 4: MODEL LIFE TABLE

4.1 Construction of Model Life Tables

Model life tables perform the dual function of linking the estimates of child mortality with those of adult mortality and at the same time smoothing irregularities of adult mortality. In this case, the estimates of child mortality, $q(5)$ values, derived from the proportions of children dead for the 1979-89 hypothetical cohort of mothers, and estimates of adult mortality from the orphanhood data, also computed for the intercensal cohort, were linked by model life tables, constructed separately for males and females. For this purpose, Brass two-parameter logit life table system was used.

In essence, the logit life table system consists of taking a standard life table and modifying it mathematically until it fits the empirical data. The method used for the construction is described in Appendix 6. Of the two parameters used for the modification process, the first, alpha, determines the overall level of mortality, while the second parameter, beta, determines the steepness with which the mortality increases with age or in other words, the relationship between child and adult mortality; i.e. a high value of beta signifies lower child mortality relative to adult mortality and vice-versa. The alpha and beta values used are shown in Appendix 7.

Although any standard life table may be used in the modification process, two standards, "general" and "African" as proposed by Brass, were used. The difference between the two only affects mortality for those under 10 years whereby the "African" standard is characterised by lower infant mortality and higher child mortality, while the reverse is true for the "general" standard.

The "African" standard was used in the construction of life tables for 23 districts whereas the "general" standard was applied in constructing life tables for the remaining 18 districts which included all the districts in Central province, all the districts in Eastern province except Isiolo and Kitui, and all the districts in Rift Valley with the exception of Baringo, Elgeyo Marakwet, Trans Nzoia, Turkana and West Pokot.

The "general" standard was applied in these 18 districts since the use of the "African" standard gave implausibly low infant mortality rates.

The method of constructing life tables that was used here differed from those used for the life tables published in the 1969 and 1979 Analytical Reports. For the 1969 and 1979 data, methods of time location, of either child or adult mortality, had not been invented. In addition, the 1969 life tables were calculated on the assumption that mortality levels had remained unchanged for an indefinite period in the past - an assumption which is now manifestly untrue. Due to this difference, comparisons with the latter cannot therefore be made.

4.2 National Life Table Estimates

Employing the above methods, national model life tables were constructed for hypothetical cohorts for 1969-79 and 1979-89. The number of survivors and the resultant expectation of life are presented in Table 4.1 for males and Table 4.2 for females.

Model Life Tables for Males: 1969-79 and 1979- 89

Table 4.1

Age	Life Table Survivors		Percent Change	Expectation of life		Percent Change
	1969-79	1979-89		1969-79	1979-89	
0	1,000	1,000		52.0	57.5	10.6
1	910	933	2.6	56.2	60.7	8.0
5	844	883	4.6	56.5	60.0	6.2
10	818	863	5.5	53.2	56.4	6.0
15	808	855	5.8	48.8	51.8	6.1
20	792	842	6.3	44.8	47.6	6.2
25	769	824	7.2	41.0	43.6	6.3
30	747	806	7.9	37.2	39.5	6.2
35	724	787	8.7	33.3	35.4	6.3
40	699	766	9.6	29.4	31.3	6.5
45	670	741	10.6	25.5	27.3	7.1
50	635	711	12.0	21.8	23.3	6.9
55	591	672	13.7	18.3	19.6	7.1
60	534	620	16.0	14.9	16.0	7.4
65	461	550	19.3	11.9	12.7	6.7
70	369	457	23.8	9.2	9.8	6.5
75	262	339	29.4	7.0	7.3	4.3
80	152	207	36.2	5.2	5.4	3.8
85	64	92	43.8	3.9	4.0	2.6
Average			13.8			6.4

Model Life Tables for Females: 1969 - 79 and 1979 - 89

Table 4.2

Age	Life Table Survivors		Per cent Change	Expectation of life		Per cent Change
	1969-79	1979-89		1969-79	1979-89	
0	1,000	1,000		55.1	61.4	11.4
1	914	935	2.3	59.3	64.7	9.1
5	856	892	4.2	59.2	63.7	7.6
10	834	876	5.0	55.7	59.8	7.4
15	825	869	5.3	51.3	55.3	7.8
20	811	858	5.8	47.1	50.9	8.1
25	791	844	6.7	43.2	46.8	8.3
30	772	829	7.4	39.3	42.5	8.1
35	752	814	8.2	35.2	38.3	8.8
40	730	797	9.2	31.2	34.0	9.0
45	705	778	10.4	27.2	29.8	9.6
50	674	753	11.7	23.4	25.7	9.8
55	635	722	13.7	19.6	21.7	10.7
60	584	679	16.3	16.1	17.9	11.2
65	517	621	20.1	12.9	14.4	11.6
70	430	541	25.8	10.0	11.2	12.0
75	322	432	34.2	7.6	8.3	9.2
80	201	295	46.5	5.6	6.1	8.9
85	93	152	63.4	4.2	4.4	4.8
Average			15.6			9.1

The number of life table survivors increased between the two intercensal periods for both males and females although the average percentage increase was a little higher for females than for males.

However, the percentage increase was generally higher at older ages than at younger age groups for both sexes.

Although there was an overall gain in the expectation of life over the intercensal period for both sexes, this gain was quite modest relative to that of survivors. For both males and females, this gain was experienced by all age groups.

4.3. Regional Life Table Estimates

Similar life tables were constructed for districts and provinces whose output is presented in Appendix 8. Comparisons between the estimates of 1979-89 and those of 1969-79 intercensal periods could not be undertaken since regional analysis for 1969-79 was not done.

4.4. Expectation of Life by Sex

Kenyan males increased their expectation of life from 46.9 years in 1969 to 52.0 years during the period 1969-79 and to 57.5 years during the intercensal period 1979-89. Expectation of life for females moved from 51.2 years in 1969 to 55.1 years during the period 1969-79 and to 61.4 years during the intercensal period 1979-89.

4.5. Expectation of Life by Sex and District

Table 4.3 shows varied estimates of expectation of life by district.

**Expectation of Life, Infant Mortality and Crude Death Rates by District and Province:
1979 - 89**

Table 4.3

District and Province	Expectation of life			IMR (Per 1000 Live Births)	CDR (Per 1000 Pop.)
	Males	Females	Both		
KENYA	57.5	61.4	59.5	66.0	10.6
NAIROBI	65.3	66.8	66.1	49.0	5.4
Kiambu	66.7	69.0	67.9	38.0	6.6
Kirinyaga	66.7	68.6	67.7	36.0	7.2
Murang'a	67.6	68.9	68.3	29.0	7.1
Nyandarua	70.1	69.5	69.8	25.0	5.6
Nyeri	69.3	69.6	69.5	21.0	6.9
CENTRAL	67.7	69.1	68.4	30.0	7.0
Kilifi	54.3	57.6	56.0	85.0	12.6
Kwale	53.4	54.1	53.8	89.0	13.1
Lamu	57.6	56.8	57.2	72.0	11.4
Mombasa	57.4	59.8	58.6	60.0	8.6
Taita Taveta	60.2	59.8	60.0	50.0	9.5
Tana River	55.9	55.1	55.5	83.0	11.7
COAST	55.8	57.2	56.5	77.0	11.2
Embu	69.7	69.4	69.6	44.0	6.4
Isiolo	57.5	57.7	57.6	73.0	11.7
Kitui	61.6	63.6	62.6	66.0	10.2
Machakos	67.5	69.3	68.4	45.0	7.0
Marsabit	60.3	60.8	60.6	37.0	11.0
Meru	69.2	69.1	69.2	35.0	6.3
EASTERN	66.7	67.7	67.2	47.0	7.3
Garissa	56.1	53.8	55.0	78.0	10.3
Mandera	56.6	54.0	55.3	72.0	11.1
Wajir	54.9	51.9	53.4	69.0	11.7
NORTH EASTERN	55.3	54.1	54.7	77.0	10.8
Kisii	56.5	60.8	58.7	62.0	10.0
Kisumu	47.2	50.7	49.0	129.0	16.9
Siaya	46.3	50.1	48.2	135.0	17.9
South Nyanza	46.9	51.1	49.0	137.0	16.9
NYANZA	49.5	53.5	51.5	111.0	15.1
Baringo	58.8	59.1	59.0	63.0	10.6
E/Marakwet	61.6	61.4	61.5	57.0	10.1
Kajiado	61.9	64.6	63.3	45.0	8.0
Kericho	63.9	67.2	65.6	54.0	7.4
Laikipia	67.5	68.6	68.1	34.0	6.4
Nakuru	65.6	67.9	66.8	46.0	6.7
Nandi	63.1	66.2	64.7	59.0	8.8
Narok	61.0	65.0	63.0	55.0	8.8
Samburu	56.9	60.9	58.9	34.0	10.5
Trans Nzoia	61.0	62.5	61.8	62.0	8.9
Turkana	44.1	45.3	44.7	91.0	16.5
Uasin Gishu	65.1	66.6	65.9	54.0	7.0
West Pokot	49.2	50.0	49.6	108.0	15.9
RIFT VALLEY	60.9	62.8	61.9	53.0	9.0
Bungoma	58.9	60.7	59.8	92.0	11.3
Busia	52.8	52.7	52.8	111.0	14.9
Kakamega	55.4	57.7	56.6	101.0	12.8
WESTERN	55.6	57.7	56.7	101.0	12.7

Note

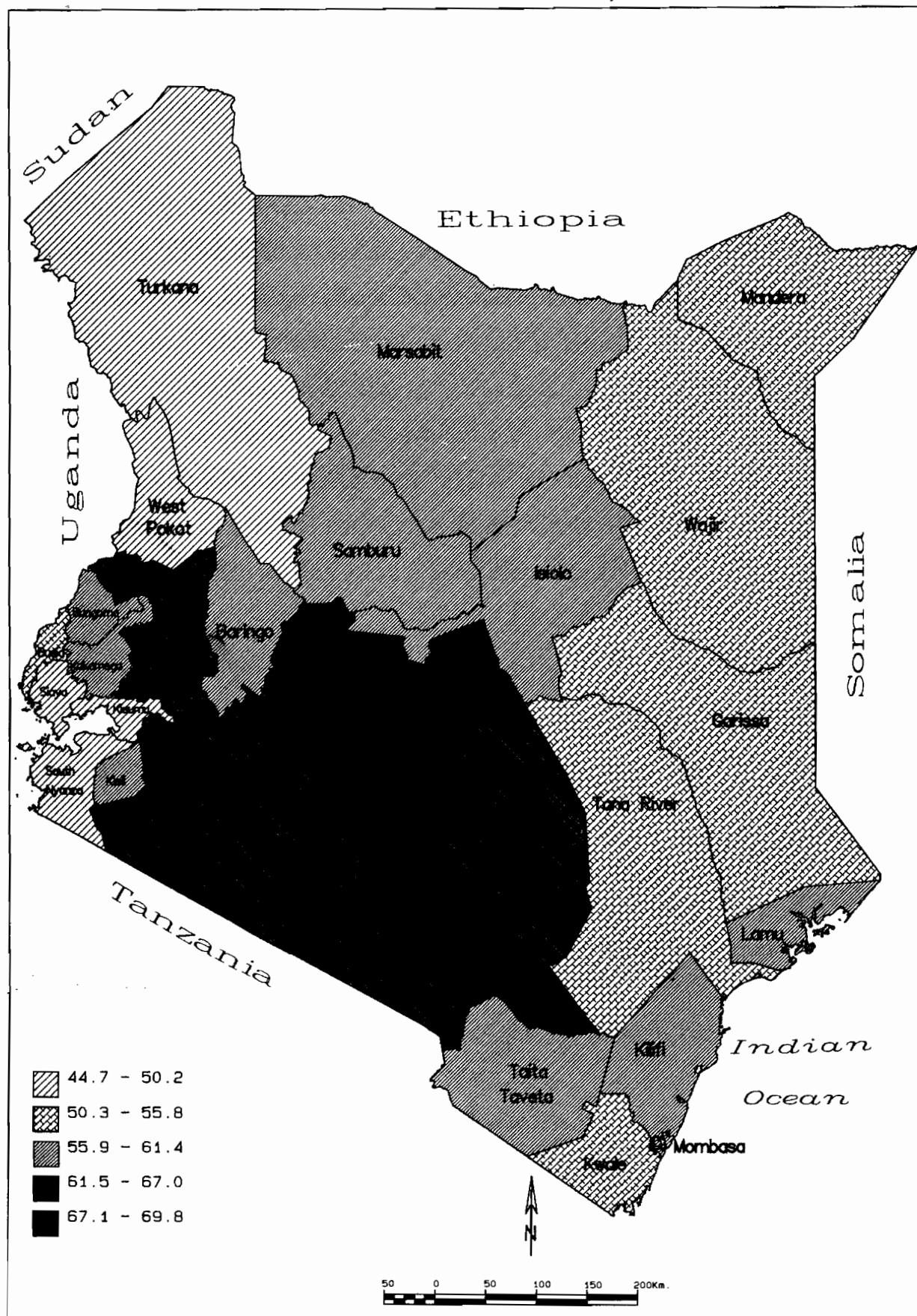
CDR - Crude death rate

IMR - Infant mortality rate

Nineteen districts had an expectation of life lower than the national (59.5) while life expectancy in twenty two districts was higher. All the districts in Coast (except Taita Taveta),

North Eastern, Nyanza and Western (except Bungoma) provinces had an expectation of life below the national figure. The highest life expectancy was 69.8 years for Nyandarua district while Turkana had the lowest of 44.7 years hence a difference of 25 years. Map 2 shows the expectation of life by district.

KENYA: LIFE EXPECTANCY; 1979 - 1989



In most of the districts, life expectancy for females was higher than that of males. While a few districts like Nyandarua, Lamu, Taita Taveta, Tana River, Embu and Meru had a slightly lower expectation of life for females than for males, this edge was more pronounced for all districts in North Eastern province.

4.6. Infant Mortality Rates

Given the errors which undermine the quality of data on mortality, particularly under-reporting of infant deaths, direct estimates of infant mortality are generally low hence the necessity of resorting to indirect methods of estimation. Attempts to obtain the infant mortality rate by direct methods yielded an unacceptably low figure; i.e. 46 per 1000 live births. The alternative was to extract it from the constructed life tables. The national estimates decreased from 119 in 1969 to 88 during the 1969-79 inter-censal period and to 66 during the intercensal period 1979-89.

Regional estimates in Table 4.3 show that twenty four districts had lower infant mortality rates than the national rate of 66 yet sixteen others had higher rates. All districts in Coast (except Mombasa and Taita Taveta), North Eastern, Nyanza (except Kisii) and Western provinces were in the former group. South Nyanza recorded the highest infant mortality rate of 137 as compared to Nyeri which had the least rate of 21 per 1000 live births - giving a huge difference of 116. These regional disparities are illustrated in Map 3.

However, estimates of some districts like Samburu and Marsabit should be treated with caution. In the case of Samburu, a low infant mortality rate of 34 was rather unexpected yet the expectation of life is at 58.9 years. From Appendix 7, Samburu had extremely high beta values (1.3499 for males and 1.1944 for females) suggesting that adult mortality was very high relative to child mortality. All these factors imply under-reporting of deaths of children.

A comparison of the expectation of life and infant mortality rates in various districts indicated that in a few districts, the expectation of life was about the same yet the infant mortality rates were wide apart as illustrated by the following two examples.

Example 1:

While the expectation of life for Nyeri and Embu districts were the same (69.5 and 69.6 respectively), the IMR for Embu (44) was more than double that of Nyeri (21). Whereas Nyeri had very low infant and child mortality (evidenced by beta values of over 1 -see Appendix 7) as compared to Embu, adult mortality in Embu was evidently lower than that in Nyeri (see Tables 3.3 and 3.4) thus compensating for the higher IMR so as to give the same expectation of life.

Example 2:

Kisii and Samburu districts had expectation of life of 58.7 and 58.9 years respectively yet the IMR for Kisii was 62 and 34 for Samburu. The high beta values coupled with the relatively low proportions with father/mother alive for Samburu implied high levels of adult mortality. This high level of adult mortality did not seem to agree with the relatively low IMR hence suggesting that infant and child deaths were seriously under-reported.

The data on expectation of life and IMRs illustrate the basic fact that two populations can have the same expectation of life with very different combinations of child and adult mortality.

4.7. Age-Specific Mortality Rates

Apart from the fact that mortality is gender-specific, it is also age-specific with wide variations over the age pattern. As another by-product of the life table, national age-specific mortality rates by sex were extracted and compared to those of 1974 as tabulated in Table 4.4.

Age-Specific Mortality Rates: KENYA

Table 4.4

Age Group	Males		Females	
	1969-79	1979-89	1969-79	1979-89
Under 1	101.2	73.4	88.0	66.7
1-4	18.9	13.9	16.6	11.8
5-9	6.2	4.6	5.3	3.7
10-14	2.5	1.8	2.1	1.5
15-19	4.2	3.1	3.5	2.5
20-24	5.7	4.3	4.8	3.4
25-29	5.9	4.5	5.0	3.5
30-34	6.2	4.7	5.2	3.7
35-39	7.1	5.4	5.9	4.2
40-44	8.5	6.5	7.0	5.0
45-49	10.8	8.4	8.9	6.4
50-54	14.4	11.4	11.9	8.6
55-59	20.2	16.1	16.7	12.1
60-64	29.3	23.9	24.3	17.9
65-69	44.1	37.0	36.9	27.7
70-74	67.9	59.1	57.7	44.8
75-79	106.1	96.5	92.4	75.5
80+	191.7	185.8	178.9	164.8

Overall, there was a decline in mortality between 1969-79 and 1979-89 intercensal periods in all age groups for both males and females.

While the variation in the level of mortality by age can be seen from table 4.4 above, a clear picture emerges when the data is presented graphically. The graphs assume the general "U" shape with a much steeper slope in the early ages and a relatively gentle slope in old age for both males and females for each set of data hence in conformity with the expected results.

In order to illustrate both the changes over time and differentials by age, a natural logarithm scale was used to plot these age-specific mortality rates as depicted in Figure 4.1 for males and Figure 4.2 for females.

Figure 4.1

AGE-SPECIFIC MORTALITY RATES FOR MALES:

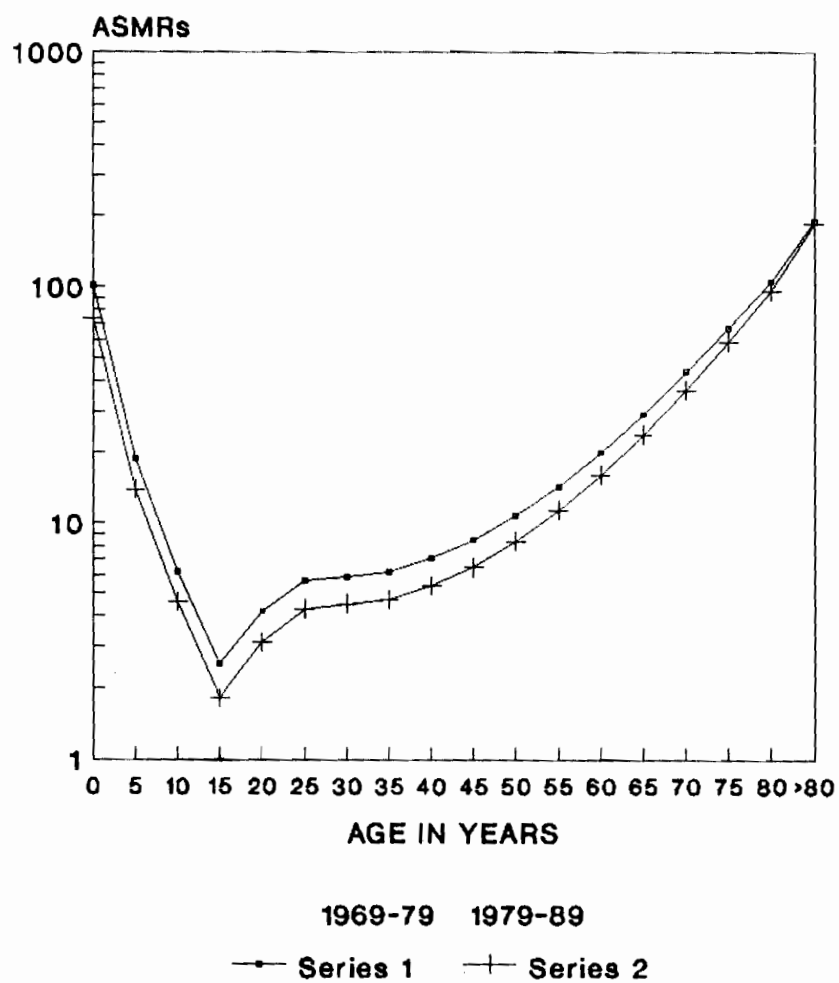
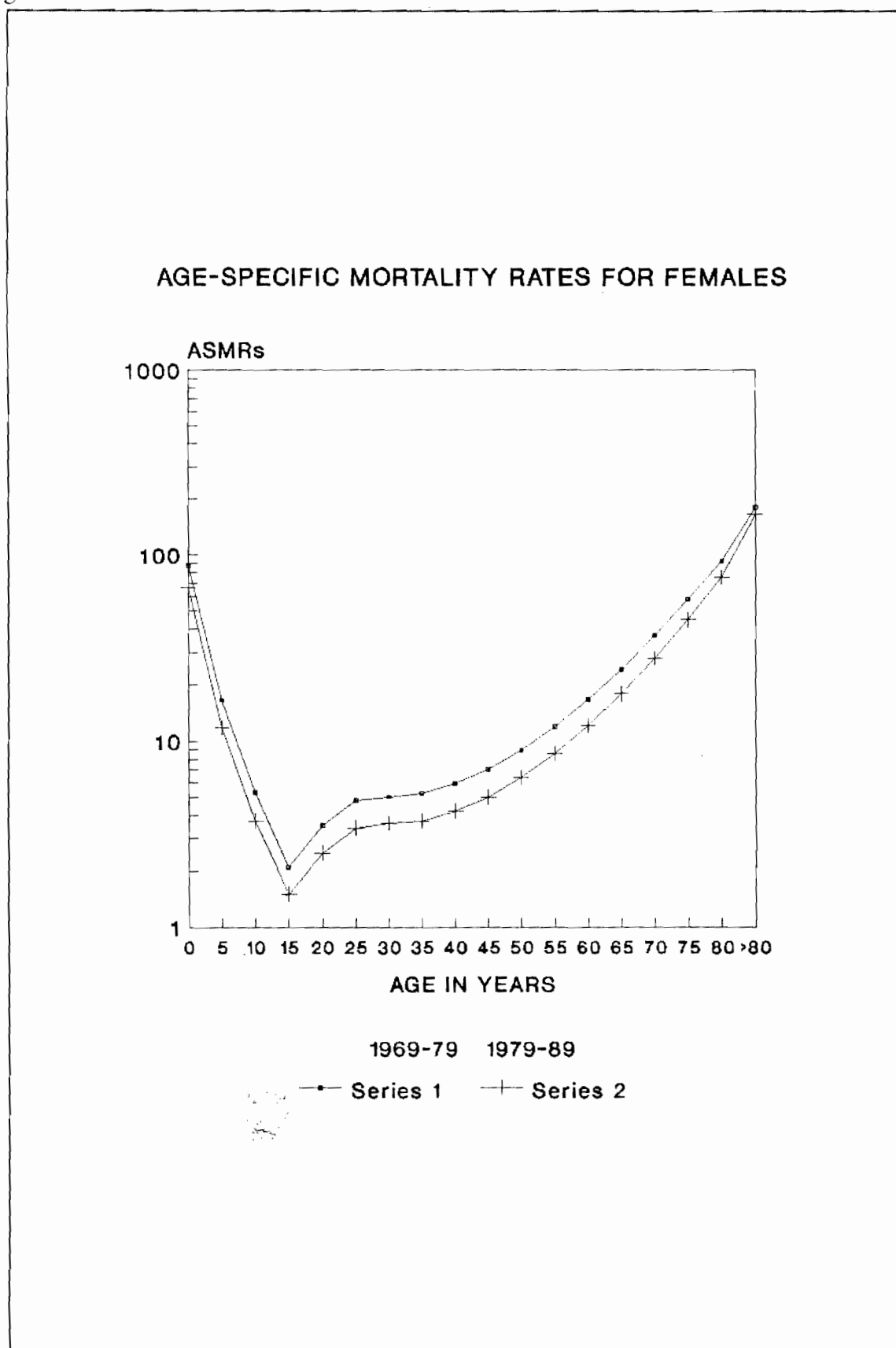


Figure 4.2



While the use of the logarithm scale tends to produce V-shaped rather than U-shaped curves, both graphs emphasise the point that mortality was so low between ages 10 and 40 in comparison with infancy and old age. It is also clear from both graphs that mortality declined between 1969-79 and 1979-89 intercensal periods for all age groups.

The significant share that infant mortality contributes to the general mortality was further emphasised by having 31160 male infant deaths out of a total of 114627 male deaths hence accounting for 27 per cent. The corresponding figures for females were 26591 infant deaths out of 105635 deaths and therefore responsible for 25 per cent of the total female deaths.

4.8. Crude Death Rates

From the life tables, age-specific mortality rates were multiplied by the corresponding mid-period population for the intercensal period 1979-89 by sex and age group in order to obtain the annual number of deaths from which crude death rates were computed. As in the case of infant mortality rates, there was a decline in the national estimates of the crude death rate in each census. While the crude death rate stood at 17 in 1969, it dropped to 14 during the 1969-79 intercensal period and to 10 during the intercensal period 1979-89.

Estimates of crude death rates for districts are shown in Table 4.3. A total of twenty one districts had a lower crude death rate than the national rate of 10.6. As was the case with infant mortality rate, all districts of Coast (except Mombasa and Taita Taveta), North Eastern, Nyanza (except Kisii) and Western provinces fell in the other group whose crude death rates were higher than the national rate. With a crude death rate of 19 per 1000 population, Siaya district had the highest rate while Nyandarua recorded the least rate of 6 - a difference of 13 deaths per 1000 population.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1. - Introduction

With the natural population growth rate rising from 3 percent in 1962 to 3.3 percent in 1969 and 3.8 percent by 1979, the adverse consequences on the socio-economic scene due to this rapid population growth rate posed diverse challenges to the Government in its provision of basic human needs.

To address this concern, the Government formulated population policy guidelines (NCPD, 1984) whose main focus was, and still is, the reduction of the population growth rate. While reduction in fertility was given utmost priority, one of the population policy goals was to reduce mortality, because such reductions would ultimately lead to lowering the fertility and hence the growth rate.

On mortality, the population policy guidelines stated that despite the past declines, mortality levels were still high relative to targeted levels. With improvement in health and the rise in the standards of living, mortality was expected to decline further. This chapter looks at the major findings of the mortality situation from the 1989 census data within the framework of the above population policy guidelines; their implications in the near future and provides some recommendations on how to address mortality issues.

5.2. Major Findings

In line with the expectation of the population policy, census data indicate that mortality has been on the decline from 1962 through 1989, though in varying degrees.

5.2.1. Quality of Data

There was a large number of females who did not state their children ever born. Accounting for 19.2 per cent of the total female population aged 12 years and over, the youngest females aged 12-19 were responsible for at least 56 per cent of this omission.

5.2.2. Child Mortality

Not only has there been a continued decline in child mortality, but also that the rate of this decline has been rising with time.

Regionally, similar declines prevailed in all provinces during the two intercensal periods; i.e. 1969-79 and 1979-89. While this declining trend in child mortality was evident in most of the districts, Turkana district was the only exception by having a rise in the proportions of children dead during both intercensal periods. The reasons for this rise in Turkana were not clear from this analysis - under-reporting in earlier censuses?

On average, the number of children dying in the first 5 years of life dropped from 219 in 1962 to 190 in 1969 to 157 in 1979 and 113 during the intercensal period 1979-89.

The proportions of male children dying were consistently higher than those of female children for all age groups of mothers both in 1979 and 1989. As expected, this was also true in all the provinces and in all districts except Kirinyaga, Garissa and Turkana.

Results related to differentials of child mortality by education of mother reaffirmed the general notion that child mortality decreases with increase in the level of education of mother for all age groups. Nationally, educating a female up to primary level reduced child mortality by about 36 per cent and by a further 39 per cent if she proceeded to secondary and above.

Regional differentials were so varied that mortality of children to mothers with secondary and above level of education within the Lake Basin region was higher than the mortality of children to mothers who never attended school in Central province.

Nationally, both rural and urban areas experienced a drop in child mortality of about 21 per cent between 1979 and 1989 although the child mortality level remained higher in rural than in urban areas for all age groups of mothers. At district level, there was a wide range of variation whereby eighteen districts had a lower child mortality in rural areas as compared with twenty one whose child mortality was higher in the rural areas.

Lake water was the most unsafe for drinking as it accounted for the highest child mortality just like the use of bush as a means of sewage disposal exposed children to the highest risk of dying.

Findings with regard to all areas of analysis of child mortality asserted that a declining trend was maintained contrary to what was stated by the Kenya Demographic and Health Survey in 1993. While these positive changes in Kenya's child mortality profile constituted the returns in the investments which the country made in basic education and health care, pockets of high child mortality still remained in Nyanza (except Kisii district), Western (especially Busia district) and Coast (particularly Kilifi, Kwale and Tana River district) provinces.

5.2.3. Adult Mortality

Although it is more difficult to reduce adult mortality as compared to child mortality, the findings showed a decline in adult mortality since 1969 for all age groups of both male and female respondents.

Regionally, there was an overall drop in adult mortality in all districts and provinces for both parents in each successive census. In addition, females experienced a higher drop in mortality relative to that of males.

5.2.4. Expectation of Life

The expectation of life at birth signifies the general standard of living of a population. There was an overall gain in the expectation of life with each successive census for both sexes. While males improved from 46.9 years in 1969 to 52.0 years during the 1969-79 intercensal period and to 57.5 years during the intercensal period 1979-89, the corresponding figures for females were 51.2 years in 1969, 55.1 years during 1969-79 and 61.4 years during 1979-89. Males gained more than females during the two intercensal periods.

All the districts in Coast (except Taita Taveta), North Eastern, Nyanza and Western (except Bungoma) provinces had an expectation of life below the national figure (59.5 years). Nyandarua district enjoyed the highest expectation of life of 69.8 years while Turkana had the lowest of 44.7 years.

As was expected, expectation of life for females was higher than that of males in most districts except for those in North Eastern province where the expectation life for males was higher by at least 2.3 years than that for females.

5.2.5 Infant Mortality Rates

Considering the major influence infant mortality has on the general mortality of a population, the findings reflected a positive picture whereby the infant mortality rate decreased from a high 119 in 1969 to 88 during the intercensal period 1969-79 and to 66 during the 1979-89 intercensal period.

Nyanza and Western provinces had infant mortality rates in excess of 100 with Nyanza's rate of 111 being just over three and one half times that of Central province of 30 per 1000 live births. All districts in Coast (except Mombasa and Taita Taveta), North Eastern, Nyanza (except Kisii) and Western provinces had infant mortality rates in excess of the national average of 66. South Nyanza district had the highest rate of 137 as compared to the lowest of 21 for Nyeri district.

5.2.6. Age-Specific Mortality Rates

While further confirming the occurrence of a decline in mortality, the graphs from the age-specific mortality rates were in perfect agreement with the general shape accepted internationally. Infant mortality accounted for 27 per cent of the male deaths and 25 per cent of the female deaths.

5.2.7. Crude Death Rates

As a rough estimate of mortality for the whole population, the crude death rate has similarly been on the decline from 17 in 1969 to 14 and to 10 during the intercensal periods 1969-79 and 1979-89 respectively.

As was the case with infant mortality, corridors of high crude death rates prevailed in Coast, North Eastern, Nyanza and Western provinces such that Siaya district recorded the highest crude death rate of 19 relative to the lowest rate of 6 for Nyandarua district.

5.3. Implications

One of the policies in meeting the long-term objective of achievement of Health for All by the Year 2000 is consolidating maternal child health and family planning services in order to reduce morbidity, mortality and fertility (GOK, 1994, 229).

A primary goal for Kenya in the 1990s is to consolidate gains already achieved, remove regional disparities and attempt further reduction in mortality. In such an attempt, consideration must be given to the major causes of infant and child mortality; i.e. malaria, acute respiratory

infections, diarrhoeal diseases and immunisable diseases especially measles, polio, tuberculosis and neonatal tetanus.

Despite the significant declines in infant and child mortality over the decades, Kenya still has to reduce these further. Since Kenya's official policy has been an emphasis and promotion of preventive health services, primary health care has to be made to succeed. For example, in the area of immunisation, immunisation levels have not yet achieved the Universal Child Immunisation target of full immunisation for 75 per cent of all children, despite the increase in delivery points. According to a national immunisation survey completed in 1990, coverage in Kenya was 71.2 per cent (GOK/UNICEF, 1992, 61).

A number of factors were identified as playing a key role in influencing the reduction in child mortality. Access to health facilities, provision of clean water, poverty level, female education are some of the key factors.

Lack of water (including safe drinking water) and adequate sanitation contribute in several ways to the incidence of disease and malnutrition (GOK/UNICEF, 1992, 90). While provision of education especially to females has a tremendous impact in reducing child mortality, this education has to be propped up by provision of other basic services. This point was well illustrated by the high mortality of children to mothers who were educated in the Lake Basin region. Lack of safe drinking water and adequate sanitation for these mothers implied high child mortality their education notwithstanding.

The 1989 census data suggested that the impact of AIDS was insignificant, at least in the mid-1980s. However, this has drastically changed because of the ever increasing number of deaths due to AIDS. While reductions in mortality since 1948 are quite significant, the AIDS pandemic, which is now the country's biggest challenge, threatens by itself to wipe out these gains.

Projections for the effect of AIDS on the under-5 mortality rate in Kenya are that this rate will rise again during the decade to numbers close to the 1960 estimates; i.e. 189 per 1000 (GOK/UNICEF, 1992, 15). However, projections from the 1989 data (see Volume 7 section 2.2 pg 11) do not show the big rise in $q(5)$ as forecast by the GOK/UNICEF publication although each projection depends on what assumptions are made about the trend in mortality from causes other than AIDS.

Other aspects that are bound to have implications on mortality are the Structural Adjustment Programmes since most of them involve reducing government expenditure on basic services resulting in negative consequences; e.g. cost-sharing in health and education. Although the exact degree of impact has not been determined, the structural adjustment policies will adversely affect child survival particularly as they determine household income vis-a-vis access to health, basic education and other basic services.

5.4. Recommendations

To be able to improve both the quality of data on mortality and the general mortality situation in future, the following recommendations are offered:

1. the next census questionnaire should include a question on the total number of children ever born. This will provide some kind of check on the different entries related to this question;
2. in future censuses, mechanisms should be put in place to reduce non-stated cases on children-ever-born to less than 5 per cent;
3. education for females be enhanced in all districts since this factor is closely linked to reduced child mortality;
4. to effect any further reduction in mortality, it will be necessary to improve access to safe drinking water and adequate sanitation;
5. although the HIV/AIDS public awareness programme has raised awareness, it is imperative that new programmes move beyond awareness to behavioural changes;
6. for a number of areas with data gaps, it is necessary to carry out studies and surveys to fill these gaps. Some of these areas include:
 - studies to determine the causal factors of high mortality in some regions;
 - studies on AIDS, not only to find a cure, but also the prevalence rates and its general impact;
 - studies to determine the impact of SAPs on child mortality especially those from vulnerable groups.

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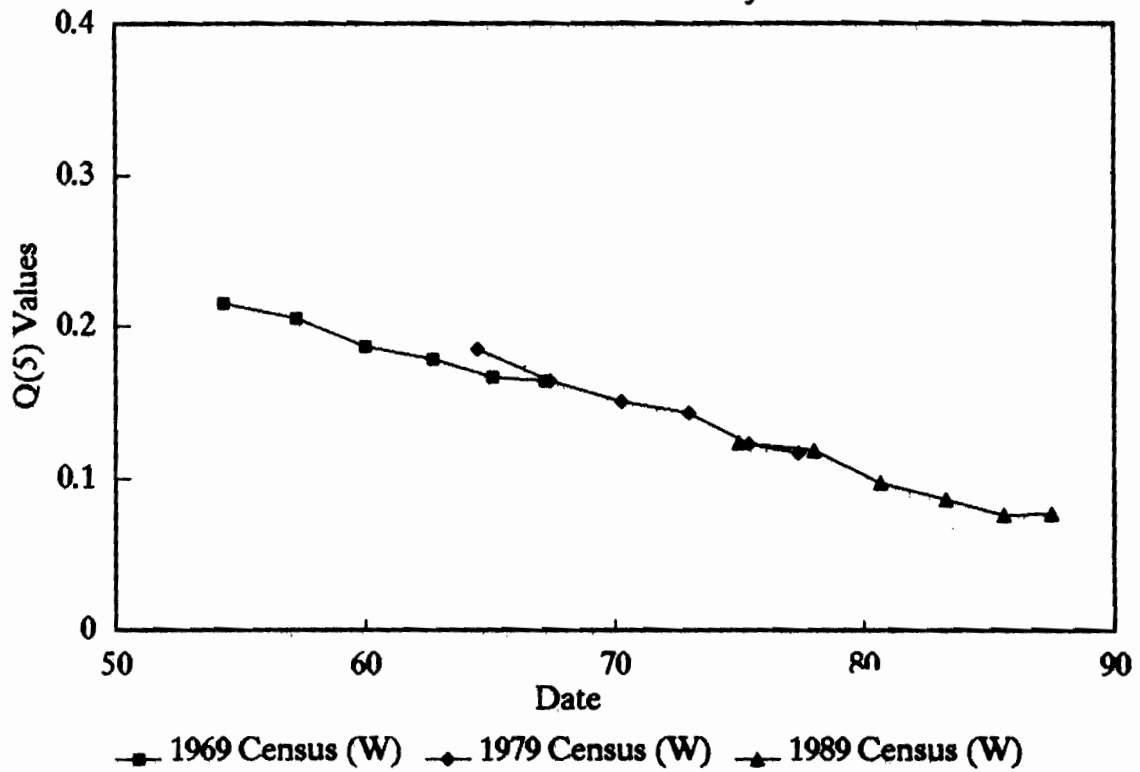
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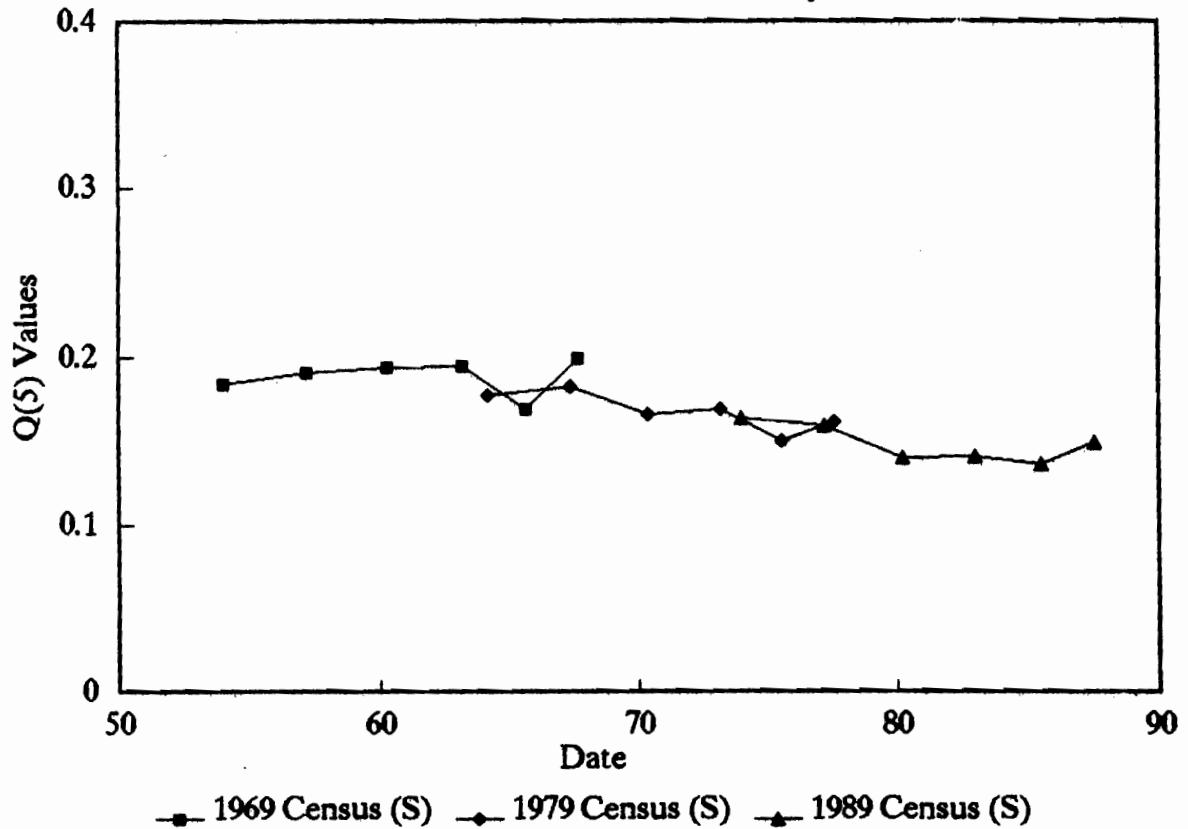
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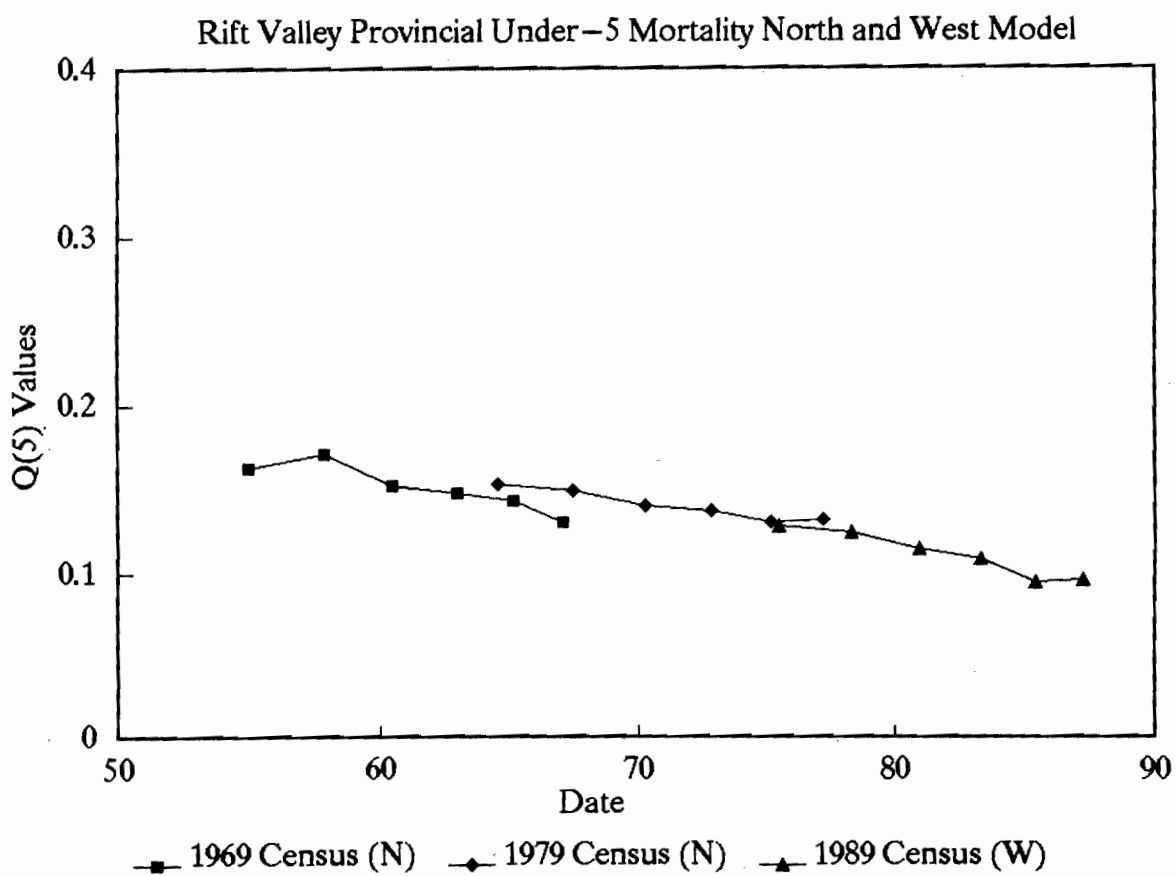
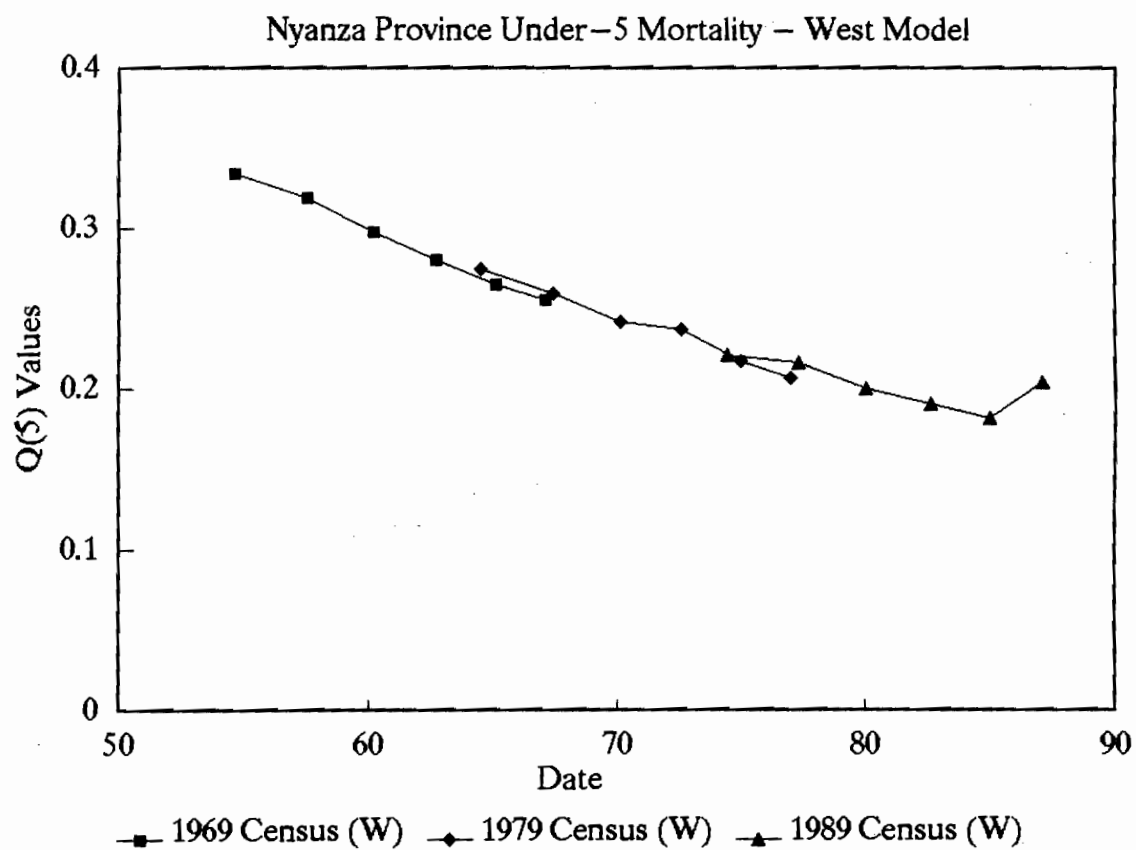
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APPENDIX 2: Under-5 Mortality by province: 1969-89
 Eastern Province Under-5 Mortality - West Model

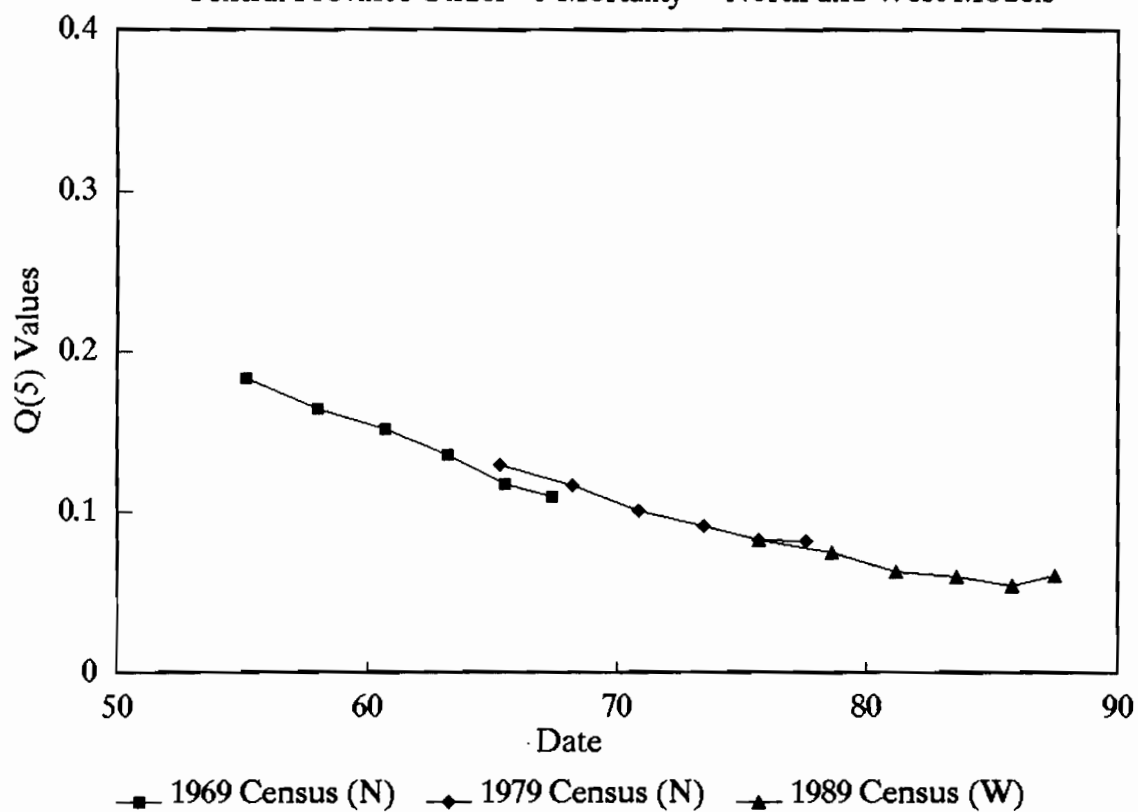


North Eastern Province Under-5 Mortality - South Model

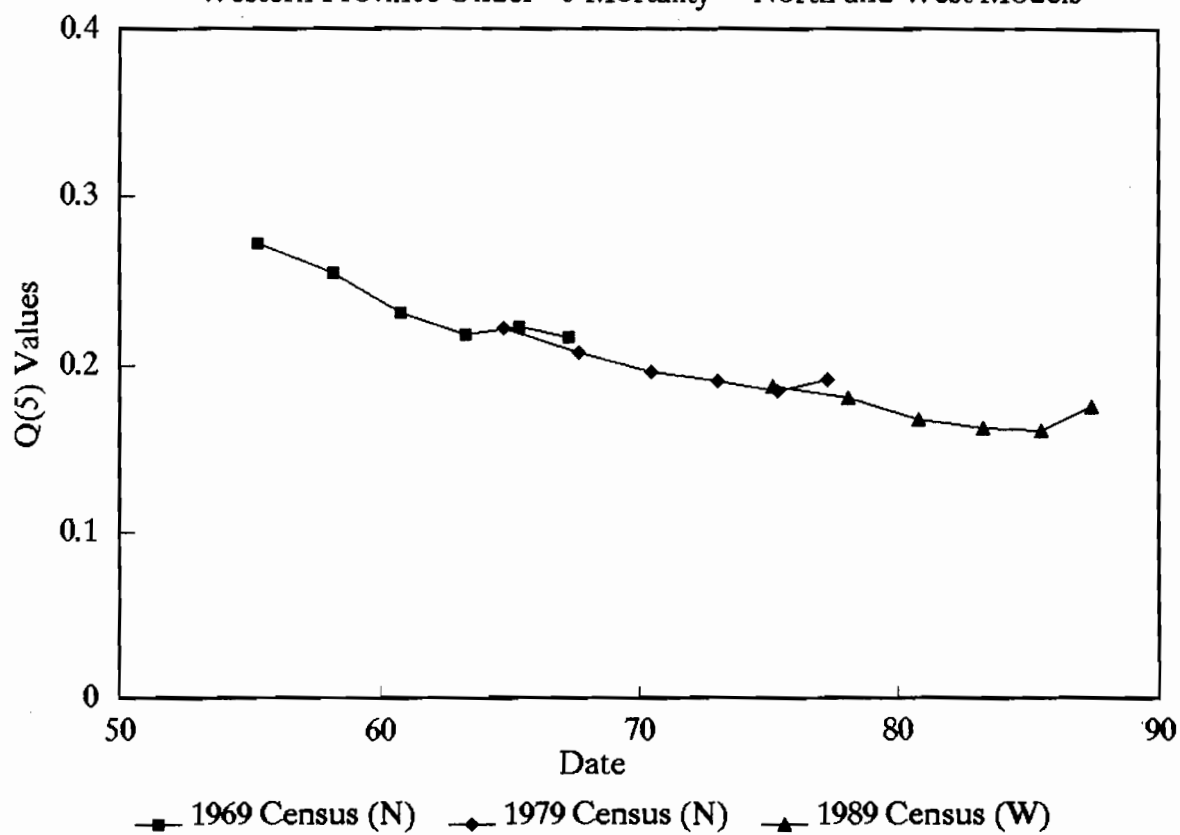


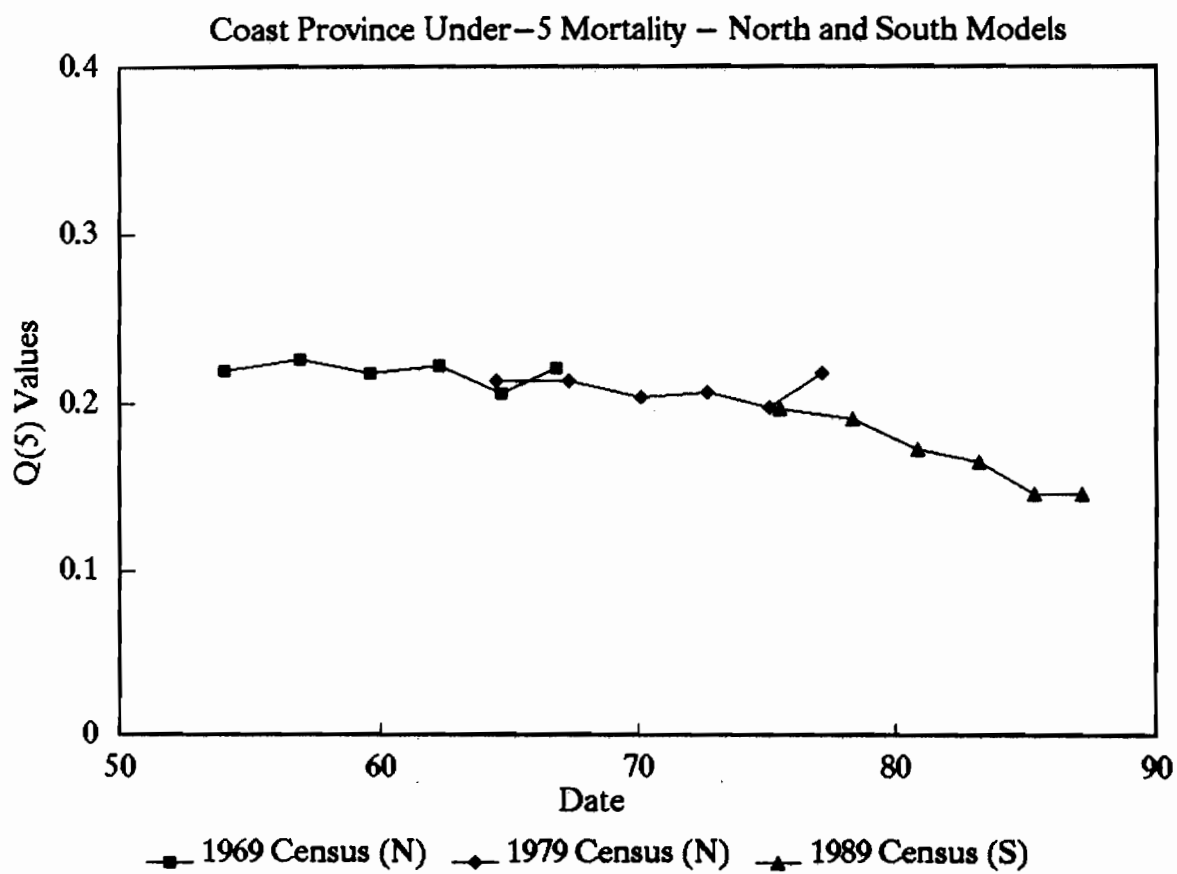
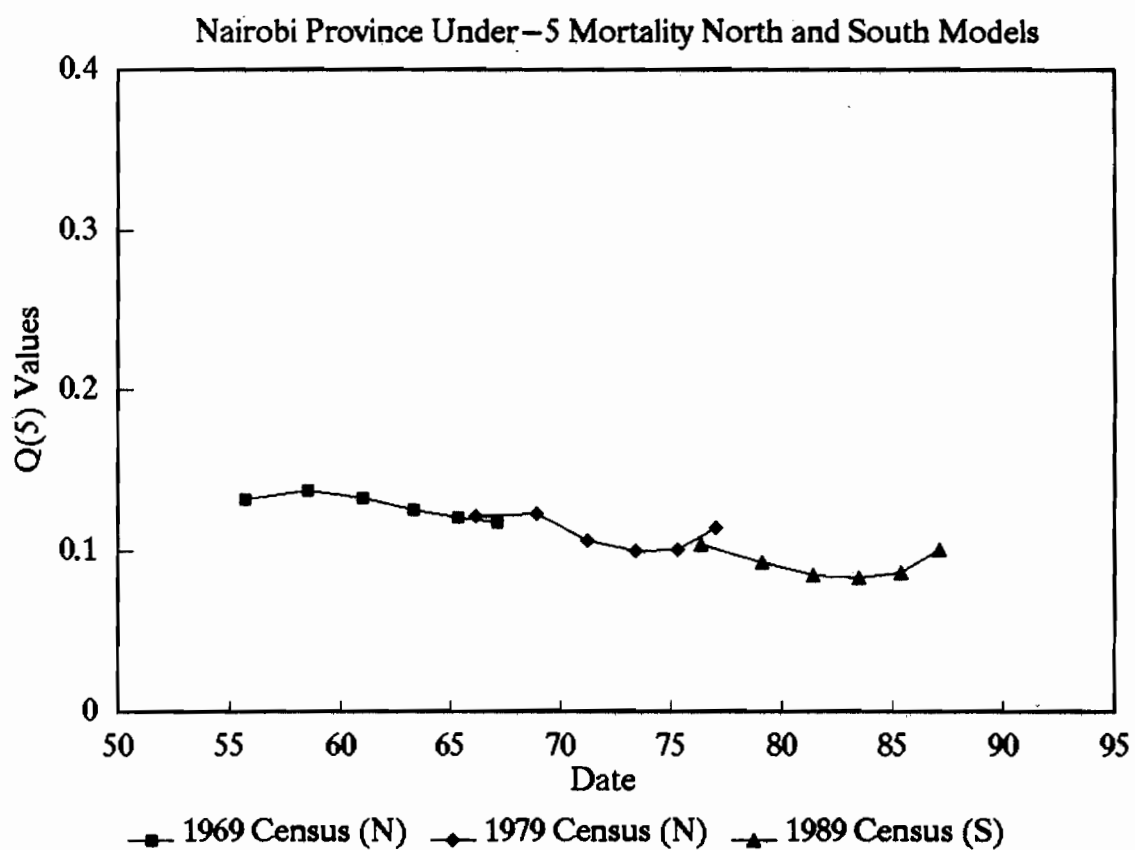


Central Province Under-5 Mortality – North and West Models



Western Province Under-5 Mortality – North and West Models





APPENDIX III:
Proportions of Children Dead by Level of Education of Mother, 1989

Level of Education	Age Group of Mother							Average	Percent Change
	15-19	20-24	25-29	30-34	35-39	40-44	45-49		
KENYA									
None	0.159	0.151	0.155	0.174	0.172	0.193	0.208	0.173	-36.0
Primary	0.112	0.104	0.101	0.109	0.107	0.116	0.127	0.111	-39.4
Secondary+	0.082	0.069	0.062	0.063	0.059	0.063	0.072	0.067	
NAIROBI									
None	0.128	0.139	0.136	0.142	0.138	0.148	0.159	0.141	-29.8
Primary	0.100	0.102	0.100	0.097	0.094	0.097	0.105	0.099	-47.6
Secondary+	0.067	0.058	0.052	0.044	0.044	0.046	0.053	0.052	
Kiambu									
None	0.164	0.131	0.102	0.106	0.090	0.105	0.111	0.116	-39.7
Primary	0.078	0.064	0.063	0.067	0.061	0.073	0.082	0.070	-25.4
Secondary+	0.060	0.051	0.048	0.051	0.042	0.049	0.063	0.052	
Kirinyaga									
None	0.178	0.088	0.086	0.100	0.107	0.134	0.156	0.121	-42.2
Primary	0.064	0.054	0.057	0.069	0.072	0.081	0.094	0.070	-21.0
Secondary+	0.053	0.055	0.047	0.053	0.041	0.048	0.091	0.055	
Muranga									
None	0.142	0.097	0.085	0.091	0.090	0.113	0.132	0.107	-40.9
Primary	0.064	0.045	0.053	0.054	0.060	0.073	0.094	0.063	-30.9
Secondary+	0.025	0.034	0.036	0.042	0.044	0.052	0.073	0.044	
Nyandarua									
None	0.173	0.073	0.084	0.075	0.079	0.094	0.108	0.098	-43.6
Primary	0.044	0.044	0.044	0.050	0.055	0.071	0.079	0.055	-21.4
Secondary+	0.062	0.046	0.033	0.040	0.036	0.050	0.037	0.043	
Nyeri									
None	0.173	0.083	0.067	0.071	0.069	0.084	0.093	0.091	-44.7
Primary	0.064	0.033	0.039	0.044	0.047	0.059	0.068	0.051	-18.1
Secondary+	0.067	0.043	0.025	0.033	0.034	0.034	0.054	0.041	
CENTRAL									
None	0.163	0.103	0.088	0.093	0.090	0.108	0.119	0.109	-42.9
Primary	0.066	0.050	0.053	0.056	0.058	0.070	0.083	0.062	-23.6
Secondary+	0.054	0.046	0.038	0.044	0.040	0.047	0.064	0.048	
Kilifi									
None	0.139	0.162	0.182	0.217	0.219	0.252	0.266	0.205	-42.7
Primary	0.102	0.097	0.106	0.126	0.125	0.129	0.138	0.118	-29.0
Secondary+	0.138	0.089	0.087	0.072	0.068	0.063	0.067	0.083	
Kwale									
None	0.171	0.162	0.175	0.205	0.209	0.237	0.256	0.202	-28.9
Primary	0.119	0.124	0.141	0.146	0.155	0.146	0.175	0.144	-33.5
Secondary+	0.094	0.110	0.086	0.082	0.090	0.075	0.132	0.096	
Lamu									
None	0.181	0.182	0.195	0.205	0.198	0.216	0.242	0.203	-42.9
Primary	0.145	0.083	0.105	0.097	0.104	0.130	0.146	0.116	-43.7
Secondary+	0.056	0.046	0.053	0.062	0.065	0.087	0.087	0.065	

APPENDIX III: (cont.)

Proportions of Children Dead by Level of Education of Mother, 1989

Level of Education	Age Group of Mother							Average	Percent Change
	15-19	20-24	25-29	30-34	35-39	40-44	45-49		
Mombasa									
None	0.176	0.156	0.143	0.167	0.161	0.183	0.192	0.168	-31.2
Primary	0.102	0.116	0.112	0.129	0.109	0.117	0.126	0.116	-35.4
Secondary+	0.118	0.078	0.072	0.059	0.066	0.065	0.066	0.075	
Taita Taveta									
None	0.128	0.131	0.127	0.143	0.155	0.181	0.206	0.153	-36.4
Primary	0.069	0.083	0.084	0.095	0.100	0.114	0.136	0.097	-37.4
Secondary+	0.042	0.074	0.050	0.059	0.061	0.063	0.077	0.061	
Tana River									
None	0.133	0.146	0.161	0.180	0.191	0.210	0.236	0.180	-23.2
Primary	0.114	0.121	0.117	0.155	0.149	0.134	0.175	0.138	-46.8
Secondary+	0.025	0.067	0.056	0.068	0.080	0.085	0.132	0.073	
COAST									
None	0.153	0.159	0.172	0.201	0.202	0.229	0.246	0.195	-39.7
Primary	0.104	0.107	0.110	0.122	0.116	0.122	0.140	0.117	-35.4
Secondary+	0.107	0.081	0.072	0.064	0.068	0.065	0.073	0.076	
Embu									
None	0.127	0.098	0.093	0.103	0.112	0.136	0.159	0.118	-40.1
Primary	0.048	0.053	0.057	0.069	0.078	0.092	0.099	0.071	-13.1
Secondary+	0.152	0.050	0.040	0.033	0.039	0.054	0.063	0.062	
Isiolo									
None	0.137	0.111	0.127	0.162	0.163	0.193	0.227	0.160	-42.2
Primary	0.117	0.108	0.072	0.101	0.088	0.100	0.061	0.092	-70.5
Secondary+	0.000	0.030	0.034	0.047	0.048	0.032	0.000	0.027	
Kitui									
None	0.138	0.135	0.140	0.155	0.165	0.198	0.218	0.164	-38.8
Primary	0.082	0.080	0.094	0.106	0.108	0.116	0.117	0.100	-31.2
Secondary+	0.061	0.046	0.057	0.073	0.083	0.058	0.106	0.069	
Machakos									
None	0.188	0.116	0.112	0.125	0.124	0.151	0.164	0.140	-42.6
Primary	0.068	0.065	0.071	0.077	0.084	0.096	0.102	0.080	-32.5
Secondary+	0.050	0.052	0.048	0.051	0.054	0.061	0.064	0.054	
Marsabit									
None	0.103	0.084	0.073	0.095	0.106	0.122	0.136	0.103	-0.8
Primary	0.074	0.055	0.072	0.106	0.150	0.185	0.071	0.102	-50.5
Secondary+	0.091	0.029	0.108	0.000	0.020	0.000	0.105	0.050	
Meru									
None	0.085	0.071	0.081	0.100	0.108	0.134	0.150	0.104	-46.4
Primary	0.052	0.044	0.044	0.053	0.058	0.063	0.077	0.056	-48.6
Secondary+	0.020	0.031	0.030	0.029	0.027	0.033	0.031	0.029	
EASTERN									
None	0.117	0.098	0.103	0.122	0.128	0.157	0.172	0.128	-41.2
Primary	0.064	0.061	0.065	0.073	0.079	0.089	0.096	0.075	-35.7
Secondary+	0.051	0.045	0.043	0.045	0.046	0.052	0.057	0.048	

APPENDIX III: (cont.)

Proportions of Children Dead by Level of Education of Mother, 1989

Level of Education	Age Group of Mother							Average	Percent Change
	15-19	20-24	25-29	30-34	35-39	40-44	45-49		
Garissa									
None	0.134	0.134	0.137	0.139	0.150	0.172	0.188	0.151	-35.8
Primary	0.115	0.105	0.090	0.094	0.130	0.080	0.063	0.097	-20.1
Secondary+	0.000	0.055	0.058	0.092	0.039	0.154	0.143	0.077	
Mandera									
None	0.103	0.118	0.126	0.143	0.143	0.174	0.179	0.141	-0.8
Primary	0.146	0.126	0.094	0.066	0.083	0.125	0.364	0.143	-62.4
Secondary+	0.000	0.075	0.061	0.031	0.211	-	-	0.054	
Wajir									
None	0.136	0.116	0.123	0.142	0.139	0.180	0.210	0.149	-26.2
Primary	0.078	0.077	0.074	0.112	0.086	0.145	0.200	0.110	-40.2
Secondary+	0.000	0.020	0.058	0.051	0.000	0.333	-	0.066	
NORTH EASTERN									
None	0.123	0.122	0.129	0.141	0.144	0.176	0.192	0.147	-28.4
Primary	0.113	0.104	0.087	0.089	0.114	0.109	0.119	0.105	-20.0
Secondary+	0.000	0.051	0.058	0.073	0.063	0.200	0.143	0.084	
Kisii									
None	0.166	0.144	0.152	0.167	0.161	0.180	0.190	0.166	-41.6
Primary	0.088	0.092	0.092	0.099	0.096	0.101	0.109	0.097	-36.9
Secondary+	0.082	0.063	0.053	0.056	0.047	0.050	0.076	0.061	
Kisumu									
None	0.321	0.276	0.281	0.307	0.296	0.317	0.345	0.306	-31.8
Primary	0.208	0.211	0.210	0.212	0.202	0.201	0.218	0.209	-49.9
Secondary+	0.121	0.130	0.116	0.101	0.094	0.083	0.088	0.105	
Siaya									
None	0.328	0.283	0.266	0.285	0.286	0.318	0.337	0.300	-27.4
Primary	0.202	0.216	0.210	0.218	0.213	0.224	0.244	0.218	-35.3
Secondary+	0.138	0.130	0.136	0.150	0.143	0.143	0.148	0.141	
South Nyanza									
None	0.287	0.273	0.263	0.303	0.294	0.317	0.334	0.296	-27.0
Primary	0.207	0.212	0.210	0.219	0.211	0.222	0.230	0.216	-43.3
Secondary+	0.122	0.137	0.134	0.127	0.103	0.101	0.132	0.122	
NYANZA									
None	0.272	0.239	0.232	0.258	0.253	0.277	0.295	0.261	-30.3
Primary	0.179	0.181	0.173	0.182	0.174	0.184	0.199	0.182	-46.1
Secondary+	0.108	0.105	0.095	0.097	0.088	0.088	0.105	0.098	
Baringo									
None	0.169	0.138	0.149	0.190	0.189	0.205	0.230	0.181	-48.3
Primary	0.090	0.074	0.077	0.091	0.097	0.111	0.117	0.094	-38.2
Secondary+	0.067	0.046	0.038	0.073	0.054	0.050	0.078	0.058	
Elgeyo Marakwet									
None	0.190	0.114	0.128	0.158	0.161	0.183	0.198	0.162	-43.8
Primary	0.091	0.065	0.075	0.089	0.092	0.108	0.116	0.091	-29.2
Secondary+	0.044	0.050	0.052	0.036	0.065	0.114	0.089	0.064	

APPENDIX III: (cont.)

Proportions of Children Dead by Level of Education of Mother, 1989

Level of Education	Age Group of Mother							Average	Percent Change
	15-19	20-24	25-29	30-34	35-39	40-44	45-49		
Kajiado									
None	0.068	0.069	0.090	0.096	0.097	0.110	0.118	0.093	-18.8
Primary	0.058	0.071	0.079	0.076	0.075	0.082	0.085	0.075	-44.1
Secondary+	0.065	0.029	0.038	0.028	0.040	0.046	0.048	0.042	
Kericho									
None	0.139	0.105	0.104	0.112	0.112	0.127	0.136	0.119	-30.1
Primary	0.074	0.073	0.073	0.089	0.081	0.094	0.100	0.083	-37.0
Secondary+	0.060	0.062	0.055	0.057	0.043	0.056	0.035	0.053	
Laikipia									
None	0.047	0.067	0.070	0.091	0.102	0.113	0.131	0.089	-30.8
Primary	0.043	0.050	0.048	0.058	0.062	0.078	0.091	0.061	-30.0
Secondary+	0.022	0.045	0.032	0.055	0.039	0.042	0.066	0.043	
Nakuru									
None	0.121	0.101	0.112	0.118	0.118	0.135	0.149	0.122	-30.7
Primary	0.075	0.070	0.073	0.081	0.086	0.096	0.111	0.085	-27.5
Secondary+	0.072	0.053	0.049	0.055	0.062	0.064	0.074	0.061	
Nandi									
None	0.143	0.119	0.116	0.139	0.143	0.163	0.183	0.144	-33.7
Primary	0.078	0.077	0.079	0.093	0.100	0.118	0.122	0.095	-30.6
Secondary+	0.056	0.066	0.052	0.055	0.067	0.077	0.090	0.066	
Narok									
None	0.065	0.080	0.094	0.114	0.118	0.137	0.150	0.108	-14.9
Primary	0.075	0.076	0.079	0.086	0.091	0.104	0.134	0.092	-29.0
Secondary+	0.050	0.041	0.047	0.061	0.068	0.117	0.074	0.065	
Samburu									
None	0.046	0.053	0.060	0.076	0.084	0.112	0.125	0.079	-4.1
Primary	0.058	0.043	0.061	0.059	0.080	0.096	0.136	0.076	-9.1
Secondary+	0.379	0.028	0.095	0.074	0.027	0.032	0.053	0.098	
Trans Nzoia									
None	0.154	0.134	0.136	0.147	0.158	0.170	0.182	0.154	-31.5
Primary	0.091	0.090	0.092	0.111	0.111	0.116	0.130	0.106	-37.1
Secondary+	0.049	0.074	0.061	0.078	0.063	0.078	0.063	0.067	
Turkana									
None	0.153	0.149	0.162	0.199	0.205	0.230	0.235	0.190	-37.0
Primary	0.066	0.083	0.109	0.158	0.109	0.148	0.167	0.120	-46.3
Secondary+	0.034	0.070	0.056	0.068	0.126	0.038	0.059	0.064	
Uasin Gishu									
None	0.123	0.116	0.114	0.129	0.122	0.144	0.157	0.129	-33.8
Primary	0.076	0.071	0.073	0.083	0.090	0.101	0.105	0.086	-28.7
Secondary+	0.068	0.056	0.055	0.057	0.051	0.065	0.075	0.061	

APPENDIX III: (cont.)

Proportions of Children Dead by Level of Education of Mother, 1989

Level of Education	Age Group of Mother							Average	Percent Change
	15-19	20-24	25-29	30-34	35-39	40-44	45-49		
West Pokot									
None	0.235	0.173	0.192	0.231	0.237	0.263	0.300	0.233	-52.9
Primary	0.108	0.098	0.094	0.090	0.117	0.134	0.128	0.110	-36.8
Secondary+	0.168	0.071	0.070	0.063	0.064	0.050	0.000	0.069	
RIFT VALLEY									
None	0.115	0.110	0.120	0.140	0.141	0.157	0.171	0.136	-35.4
Primary	0.077	0.074	0.075	0.087	0.090	0.102	0.111	0.088	-32.6
Secondary+	0.064	0.056	0.051	0.057	0.056	0.065	0.066	0.059	
Bungoma									
None	0.198	0.181	0.168	0.189	0.190	0.213	0.235	0.196	-24.6
Primary	0.132	0.137	0.139	0.152	0.150	0.158	0.168	0.148	-28.9
Secondary+	0.118	0.104	0.105	0.102	0.107	0.107	0.094	0.105	
Busia									
None	0.184	0.209	0.216	0.236	0.246	0.288	0.313	0.242	-26.2
Primary	0.168	0.159	0.168	0.188	0.174	0.192	0.200	0.178	-36.0
Secondary+	0.079	0.128	0.127	0.120	0.109	0.100	0.136	0.114	
Kakamega									
None	0.218	0.203	0.204	0.213	0.210	0.238	0.256	0.220	-30.8
Primary	0.133	0.144	0.148	0.155	0.154	0.162	0.171	0.152	-32.0
Secondary+	0.132	0.098	0.096	0.103	0.092	0.096	0.109	0.104	
WESTERN									
None	0.203	0.200	0.199	0.212	0.213	0.243	0.263	0.219	-29.5
Primary	0.139	0.144	0.148	0.158	0.155	0.164	0.173	0.154	-31.8
Secondary+	0.121	0.104	0.103	0.104	0.099	0.100	0.106	0.105	

Proportions of Males with Father Alive by Age Group of Respondent: 1979 and 1989

Note: - Data not available

Proportions of Males with Father Alive by Age Group of Respondent: 1979 and 1989

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APPENDIX V:

Proportions of Males with Mother Alive by Age Group of Respondent, 1979 and 1989

District and Province	Age Group													
	15-19		20-24		25-29		30-34		35-39		40-44		45-49	
	1979	1989	1979	1989	1979	1989	1979	1989	1979	1989	1979	1989	1979	1989
KENYA	0.95	0.96	0.92	0.93	0.87	0.90	0.79	0.85	0.71	0.77	0.61	0.67	0.50	0.57
NAIROBI	-	0.96	-	0.94	-	0.92	-	0.87	-	0.80	-	0.71	-	0.61
Kiambu	0.98	0.97	0.94	0.95	0.90	0.92	0.84	0.88	0.77	0.82	0.68	0.74	0.58	0.65
Kirinyaga	0.97	0.97	0.85	0.95	0.88	0.92	0.79	0.87	0.72	0.80	0.62	0.70	0.49	0.61
Muranga	0.97	0.97	0.94	0.95	0.89	0.92	0.82	0.88	0.74	0.80	0.65	0.71	0.52	0.61
Nyandarua	0.97	0.97	0.94	0.96	0.90	0.93	0.84	0.89	0.77	0.81	0.70	0.74	0.58	0.65
Nyeri	0.97	0.97	0.94	0.95	0.89	0.92	0.82	0.87	0.75	0.80	0.65	0.72	0.54	0.61
CENTRAL	0.97	0.97	0.60	0.95	0.89	0.92	0.82	0.88	0.75	0.81	0.66	0.72	0.54	0.63
Kilifi	0.96	0.93	0.92	0.90	0.87	0.84	0.77	0.77	0.70	0.64	0.59	0.53	0.51	0.41
Kwale	0.94	0.95	0.90	0.91	0.83	0.87	0.74	0.80	0.68	0.70	0.56	0.59	0.47	0.49
Lamu	0.93	0.94	0.89	0.91	0.83	0.88	0.76	0.80	0.64	0.71	0.48	0.60	0.42	0.47
Mombasa	0.94	0.95	0.91	0.93	0.86	0.89	0.78	0.84	0.69	0.76	0.57	0.65	0.46	0.55
T/Taveta	0.96	0.96	0.92	0.93	0.86	0.89	0.77	0.84	0.67	0.75	0.55	0.66	0.46	0.50
Tana River	0.90	0.93	0.86	0.88	0.79	0.84	0.67	0.76	0.59	0.70	0.45	0.55	0.40	0.43
COAST	0.94	0.95	0.90	0.92	0.85	0.89	0.76	0.83	0.68	0.75	0.56	0.63	0.47	0.52
Embu	0.96	0.97	0.93	0.95	0.86	0.92	0.78	0.87	0.69	0.79	0.60	0.68	0.50	0.58
Isiolo	0.86	0.91	0.82	0.86	0.78	0.81	0.71	0.76	0.60	0.69	0.47	0.56	0.44	0.49
Kitui	0.95	0.96	0.91	0.94	0.85	0.90	0.76	0.85	0.68	0.77	0.59	0.67	0.51	0.57
Machakos	0.97	0.97	0.93	0.95	0.88	0.92	0.81	0.88	0.74	0.81	0.66	0.71	0.58	0.63
Marsabit	0.91	0.92	0.88	0.88	0.81	0.84	0.73	0.78	0.64	0.69	0.57	0.59	0.50	0.47
Meru	0.96	0.97	0.92	0.95	0.86	0.91	0.77	0.85	0.67	0.78	0.56	0.68	0.44	0.56
EASTERN	0.96	0.97	0.92	0.94	0.86	0.91	0.78	0.86	0.70	0.79	0.60	0.68	0.51	0.58
Garissa	0.89	0.92	0.83	0.88	0.76	0.84	0.65	0.74	0.57	0.66	0.48	0.55	0.40	0.45
Mandera	0.89	0.92	0.85	0.88	0.79	0.83	0.71	0.75	0.63	0.67	0.54	0.58	0.47	0.48
Wajir	0.88	0.92	0.83	0.77	0.76	0.81	0.65	0.73	0.56	0.64	0.49	0.52	0.41	0.43
N. EASTERN	0.89	0.92	0.84	0.88	0.77	0.83	0.67	0.74	0.58	0.66	0.50	0.55	0.42	0.45
Kisii	0.97	0.96	0.92	0.93	0.87	0.89	0.80	0.85	0.71	0.77	0.63	0.68	0.53	0.57
Kisumu	0.95	0.95	0.91	0.92	0.85	0.88	0.76	0.81	0.68	0.72	0.54	0.62	0.42	0.49
Siaya	0.95	0.95	0.91	0.91	0.85	0.87	0.75	0.81	0.64	0.72	0.52	0.60	0.40	0.48
S. Nyanza	0.94	0.95	0.91	0.92	0.85	0.87	0.76	0.81	0.67	0.72	0.54	0.60	0.42	0.50
NYANZA	0.95	0.95	0.91	0.92	0.86	0.88	0.77	0.82	0.68	0.74	0.56	0.63	0.45	0.51
Baringo	0.93	0.95	0.89	0.91	0.84	0.87	0.76	0.80	0.68	0.73	0.58	0.64	0.47	0.55
E/Marakwet	0.95	0.96	0.91	0.93	0.86	0.89	0.80	0.84	0.73	0.77	0.65	0.68	0.53	0.60
Kajiado	0.96	0.96	0.94	0.94	0.89	0.91	0.81	0.87	0.75	0.80	0.65	0.69	0.57	0.60
Kericho	0.96	0.96	0.93	0.94	0.88	0.90	0.82	0.86	0.75	0.80	0.66	0.72	0.56	0.62
Laikipia	0.96	0.97	0.93	0.95	0.87	0.93	0.81	0.87	0.74	0.80	0.65	0.72	0.52	0.61
Nakuru	0.96	0.97	0.93	0.94	0.88	0.91	0.82	0.87	0.74	0.80	0.64	0.70	0.54	0.62
Nandi	0.96	0.96	0.92	0.93	0.87	0.90	0.81	0.86	0.75	0.78	0.65	0.69	0.57	0.62
Narok	0.97	0.97	0.94	0.95	0.91	0.91	0.84	0.88	0.77	0.82	0.68	0.72	0.57	0.63
Samburu	0.96	0.95	0.93	0.94	0.89	0.91	0.80	0.84	0.75	0.75	0.65	0.64	0.52	0.56
Trans Nzoia	0.96	0.96	0.92	0.94	0.86	0.90	0.78	0.84	0.72	0.77	0.60	0.68	0.52	0.58
Turkana	0.91	0.94	0.84	0.89	0.74	0.81	0.63	0.69	0.55	0.57	0.43	0.45	0.35	0.36
Uasin Gishu	0.96	0.96	0.93	0.94	0.88	0.91	0.82	0.86	0.76	0.80	0.66	0.72	0.57	0.63
West Pokot		0.94	0.93	0.89	0.90	0.83	0.85	0.72	0.78	0.67	0.69	0.56	0.58	0.48
RIFT VALLEY	0.96	0.96	0.92	0.94	0.87	0.90	0.80	0.85	0.73	0.78	0.63	0.68	0.53	0.59
Bungoma	0.95	0.96	0.92	0.94	0.87	0.90	0.81	0.86	0.74	0.79	0.66	0.70	0.54	0.60
Busia	0.93	0.95	0.87	0.91	0.82	0.86	0.70	0.78	0.62	0.70	0.50	0.54	0.39	0.45
Kakamega	0.96	0.96	0.92	0.94	0.87	0.89	0.80	0.84	0.71	0.77	0.60	0.67	0.49	0.56
WESTERN	0.95	0.96	0.92	0.93	0.86	0.89	0.79	0.84	0.70	0.77	0.60	0.66	0.48	0.55

Note: - Data not available

APPENDIX VI: Construction of Model Life Tables

In the two-parameter logit life table system, the basic equation is:

$$Y(x) = a + bY_s(x)$$

where $Y(x)$ is the logit transformation of the life table survivors, $l(x)$, defined as $0.5\log(e)[(1-l(x)/l(x))]$, and $Y_s(x)$ is the corresponding logit of the standard life table.

The procedure used for fitting the model to the Kenyan data is as follows:

First, a Lotus spreadsheet was constructed such that various life tables could readily be generated by simply changing the values of alpha and beta inserted in two cells of the spreadsheet.

Second, alpha was determined in such a way that it was locked onto the estimate of $q(5)$:

$$\begin{aligned} \text{since } Y(5) &= a + bY_s(5), \\ \text{then } a &= Y(5) - bY_s(5) \end{aligned}$$

Thus the actual value of alpha varied with that of beta. What remained, therefore, was to determine which value of beta would give the best fit to the orphanhood estimates.

Third, the spreadsheet calculated the series of values of the survival ratios, $l(25+n)/l(25)$ for females and $l(35+n)/l(35)$ for males, from the life table. These were compared with the observed values derived from the orphanhood data, and the differences between them were squared and summed. Thus, by trial and error, values of beta were found which gave minimum sums of squares of the differences between the observed adult survival ratios and those from the fitted life tables.

APPENDIX VII

Alpha and Beta Values by Sex and District, 1989

Province and District	Alpha Values		Beta Values	
	Males	Females	Males	Females
KENYA	-0.43085	-0.54108	0.8900	0.7900
NAIROBI	-0.66489	-0.71949	0.8751	0.8577
Kiambu	-0.74151	-0.82197	0.9469	0.8920
Kirinyaga	-0.74855	-0.81731	0.9629	0.9282
Murang'a	-0.80161	-0.85589	1.0135	0.9961
Nyandarua	-0.91027	-0.90416	0.9841	1.0514
Nyeri	-0.91098	-0.93418	1.0819	1.1118
CENTRAL	-0.80251	-0.85851	0.9964	0.9751
Kilifi	-0.32297	-0.41668	0.8600	0.7861
Kwale	-0.29366	-0.31763	0.8451	0.8806
Lamu	-0.42454	-0.41006	0.8211	0.9145
Mombasa	-0.43215	-0.50728	0.9336	0.8909
Taita Taveta	-0.52587	-0.52454	0.9140	0.9801
Tana River	-0.36705	-0.35172	0.7985	0.8924
COAST	-0.37084	-0.41537	0.8499	0.8560
Embu	-0.80669	-0.81485	0.7710	0.8212
Isiolo	-0.41915	-0.43341	0.8225	0.8713
Kitui	-0.54471	-0.60303	0.7686	0.7439
Machakos	-0.74325	-0.80475	0.8445	0.8111
Marsabit	-0.52178	-0.54562	1.1845	1.2089
Meru	-0.82597	-0.83845	0.8717	0.9258
EASTERN	-0.70899	-0.75261	0.8400	0.8420
Garissa	-0.37473	-0.31623	0.8181	0.9805
Mandera	-0.39441	-0.32582	0.8335	1.0076
Wajir	-0.34790	-0.25847	0.9049	1.1110
NORTH EASTERN	-0.61490	-0.51691	1.0900	1.3050
Kisii	-0.40659	-0.53072	0.9574	0.8383
Kisumu	-0.10995	-0.20736	0.8344	0.7651
Siaya	-0.08575	-0.18973	0.8354	0.7538
South Nyanza	-0.10145	-0.21560	0.8113	0.7141
NYANZA	-0.17713	-0.28934	0.8612	0.7621
Baringo	-0.46879	-0.48525	0.8619	0.8999
E/Marakwet	-0.55699	-0.56373	0.8230	0.8828
Kajiado	-0.70800	-0.79787	1.1415	1.0682
Kericho	-0.61257	-0.71609	0.8836	0.7965
Laikipia	-0.78002	-0.82746	0.9564	0.9581
Nakuru	-0.68217	-0.75849	0.8923	0.8450
Nandi	-0.58037	-0.67753	0.8664	0.7938
Narok	-0.52362	-0.64787	0.9815	0.8595
Samburu	-0.43837	-0.58967	1.3610	1.2068
Trans Nzoia	-0.53293	-0.58100	0.8025	0.8032
Turkana	-0.00862	-0.04383	1.1199	1.1390
Uasin Gishu	-0.64750	-0.69876	0.8399	0.8231
West Pokot	-0.16930	-0.19174	0.8581	0.9012
RIFT VALLEY	-0.54606	-0.60772	0.8919	0.8619
Bungoma	-0.43936	-0.49112	0.6875	0.6784
Busia	-0.26605	-0.26802	0.7400	0.8111
Kakamega	-0.34131	-0.40699	0.7375	0.7127
WESTERN	-0.34911	-0.40640	0.7312	0.7136

APPENDIX VIII:

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

NAIROBI								
AGE	MALES				FEMALES			
	$l(x)$	nqx	$e(x)$	$m(x)$	$l(x)$	nqx	$e(x)$	$m(x)$
0	1.0000	0.0505	65.3	0.0539	1.0000	0.0469	66.8	0.0474
1	0.9495	0.0290	67.8	0.0074	0.9531	0.0264	69.1	0.0067
5	0.9220	0.0073	65.7	0.0015	0.9280	0.0066	66.9	0.0013
10	0.9152	0.0056	61.2	0.0011	0.9218	0.0051	62.3	0.0010
15	0.9101	0.0095	56.5	0.0019	0.9172	0.0086	57.6	0.0017
20	0.9014	0.0131	52.1	0.0026	0.9093	0.0118	53.1	0.0024
25	0.8896	0.0137	47.7	0.0028	0.8985	0.0124	48.7	0.0025
30	0.8774	0.0146	43.3	0.0029	0.8874	0.0132	44.3	0.0027
35	0.8646	0.0169	39.0	0.0034	0.8757	0.0152	39.9	0.0031
40	0.8500	0.0204	34.6	0.0041	0.8625	0.0184	35.4	0.0037
45	0.8326	0.0265	30.2	0.0054	0.8466	0.0238	31.1	0.0048
50	0.8106	0.0362	26.0	0.0074	0.8265	0.0326	26.7	0.0066
55	0.7813	0.0520	21.9	0.0107	0.7995	0.0469	22.6	0.0096
60	0.7406	0.0784	17.9	0.0163	0.7621	0.0708	18.6	0.0147
65	0.6826	0.1234	14.3	0.0263	0.7081	0.1122	14.8	0.0238
70	0.5983	0.2006	10.9	0.0446	0.6286	0.1845	11.3	0.0406
75	0.4783	0.3290	8.0	0.0788	0.5127	0.3083	8.3	0.0729
80	0.3210	0.5122	5.7	0.1743	0.3546	0.4918	5.9	0.1690
85	0.1566	0.7125	4.1		0.1802	0.6990	4.2	
90	0.0450	0.8619	3.2		0.0542	0.8551	3.2	
95	0.0062	1.0000	2.5		0.0079	1.0000	2.5	
CENTRAL								
0	1.0000	0.0313	67.7	0.0328	1.0000	0.0292	69.1	0.0293
1	0.9687	0.0214	68.9	0.0054	0.9708	0.0194	70.2	0.0049
5	0.9480	0.0056	66.4	0.0011	0.9520	0.0051	67.5	0.0010
10	0.9427	0.0043	61.7	0.0009	0.9472	0.0039	62.8	0.0008
15	0.9386	0.0075	57.0	0.0015	0.9435	0.0067	58.1	0.0014
20	0.9316	0.0105	52.4	0.0021	0.9371	0.0094	53.5	0.0019
25	0.9218	0.0112	47.9	0.0023	0.9283	0.0100	48.9	0.0020
30	0.9115	0.0122	43.5	0.0024	0.9190	0.0109	44.4	0.0022
35	0.9004	0.0143	39.0	0.0029	0.9090	0.0128	39.9	0.0026
40	0.8876	0.0176	34.5	0.0036	0.8974	0.0158	35.4	0.0032
45	0.8719	0.0234	30.1	0.0047	0.8832	0.0209	30.9	0.0042
50	0.8515	0.0329	25.7	0.0067	0.8648	0.0293	26.5	0.0060
55	0.8235	0.0487	21.5	0.0100	0.8394	0.0435	22.2	0.0089
60	0.7834	0.0763	17.5	0.0159	0.8029	0.0683	18.1	0.0141
65	0.7237	0.1254	13.7	0.0268	0.7481	0.1129	14.3	0.0239
70	0.6329	0.2131	10.3	0.0477	0.6636	0.1944	10.8	0.0431
75	0.4980	0.3612	7.4	0.0882	0.5346	0.3371	7.8	0.0811
80	0.3181	0.5642	5.2	0.1906	0.3544	0.5420	5.4	0.1845
85	0.1387	0.7642	3.8		0.1623	0.7513	3.9	
90	0.0327	0.8967	3.0		0.0404	0.8907	3.0	
95	0.0034	1.0000	2.5		0.0044	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

KIAMBU								
AGE	MALES				FEMALES			
	l(x)	nxq	e(x)	m(x)	l(x)	nxq	e(x)	m(x)
0	1.0000	0.0385	66.7	0.0406	1.0000	0.0363	69.0	0.0366
1	0.9615	0.0245	68.4	0.0062	0.9637	0.0215	70.5	0.0055
5	0.9380	0.0063	66.0	0.0013	0.9430	0.0055	68.1	0.0011
10	0.9320	0.0049	61.4	0.0010	0.9378	0.0042	63.4	0.0008
15	0.9275	0.0084	56.7	0.0017	0.9339	0.0072	58.7	0.0014
20	0.9197	0.0116	52.2	0.0023	0.9272	0.0099	54.1	0.0020
25	0.9091	0.0123	47.8	0.0025	0.9180	0.0104	49.6	0.0021
30	0.8979	0.0133	43.3	0.0027	0.9084	0.0112	45.1	0.0023
35	0.8860	0.0155	38.9	0.0031	0.8983	0.0130	40.6	0.0026
40	0.8723	0.0190	34.4	0.0038	0.8866	0.0158	36.1	0.0032
45	0.8557	0.0249	30.1	0.0050	0.8726	0.0207	31.6	0.0042
50	0.8344	0.0346	25.8	0.0070	0.8545	0.0286	27.2	0.0058
55	0.8056	0.0506	21.6	0.0104	0.8301	0.0417	23.0	0.0085
60	0.7649	0.0779	17.6	0.0162	0.7954	0.0642	18.9	0.0133
65	0.7053	0.1257	13.9	0.0268	0.7444	0.1040	15.0	0.0219
70	0.6167	0.2093	10.5	0.0468	0.6670	0.1757	11.4	0.0385
75	0.4876	0.3494	7.7	0.0847	0.5499	0.3028	8.3	0.0714
80	0.3172	0.5443	5.4	0.1842	0.3834	0.4955	5.9	0.1709
85	0.1445	0.7446	3.9		0.1934	0.7106	4.1	
90	0.0369	0.8838	3.1		0.0560	0.8658	3.2	
95	0.0043	1.0000	2.5		0.0075	1.0000	2.5	
KIRINYAGA								
0	1.0000	0.0369	66.7	0.0389	1.0000	0.0343	68.6	0.0346
1	0.9631	0.0240	68.3	0.0061	0.9657	0.0214	70.0	0.0054
5	0.9400	0.0063	65.9	0.0013	0.9450	0.0055	67.5	0.0011
10	0.9341	0.0048	61.3	0.0010	0.9398	0.0042	62.8	0.0008
15	0.9296	0.0083	56.6	0.0017	0.9358	0.0073	58.1	0.0015
20	0.9220	0.0115	52.1	0.0023	0.9290	0.0101	53.5	0.0020
25	0.9114	0.0122	47.6	0.0025	0.9197	0.0107	49.0	0.0021
30	0.9002	0.0132	43.2	0.0027	0.9099	0.0115	44.5	0.0023
35	0.8883	0.0154	38.7	0.0031	0.8994	0.0134	40.0	0.0027
40	0.8746	0.0189	34.3	0.0038	0.8874	0.0164	35.5	0.0033
45	0.8581	0.0249	29.9	0.0050	0.8728	0.0215	31.1	0.0044
50	0.8367	0.0347	25.6	0.0071	0.8540	0.0300	26.7	0.0061
55	0.8076	0.0510	21.5	0.0105	0.8284	0.0439	22.5	0.0090
60	0.7665	0.0788	17.5	0.0164	0.7920	0.0680	18.4	0.0141
65	0.7061	0.1276	13.8	0.0273	0.7381	0.1109	14.5	0.0235
70	0.6160	0.2132	10.4	0.0477	0.6563	0.1879	11.0	0.0415
75	0.4846	0.3561	7.6	0.0867	0.5330	0.3225	8.0	0.0769
80	0.3120	0.5528	5.4	0.1868	0.3611	0.5199	5.6	0.1777
85	0.1395	0.7518	3.9		0.1734	0.7306	4.0	
90	0.0346	0.8882	3.1		0.0467	0.8776	3.1	
95	0.0039	1.0000	2.5		0.0057	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

MURANGA								
AGE	MALES				FEMALES			
	$l(x)$	nqx	$e(x)$	$m(x)$	$l(x)$	nqx	$e(x)$	$m(x)$
0	1.0000	0.0304	67.6	0.0318	1.0000	0.0283	68.9	0.0284
1	0.9696	0.0212	68.7	0.0054	0.9717	0.0193	69.9	0.0049
5	0.9490	0.0056	66.2	0.0011	0.9530	0.0051	67.2	0.0010
10	0.9437	0.0043	61.5	0.0009	0.9482	0.0039	62.5	0.0008
15	0.9396	0.0075	56.8	0.0015	0.9444	0.0068	57.8	0.0014
20	0.9325	0.0105	52.2	0.0021	0.9380	0.0095	53.2	0.0019
25	0.9227	0.0113	47.7	0.0023	0.9291	0.0102	48.6	0.0020
30	0.9123	0.0123	43.2	0.0025	0.9197	0.0110	44.1	0.0022
35	0.9012	0.0144	38.7	0.0029	0.9096	0.0130	39.6	0.0026
40	0.8882	0.0179	34.3	0.0036	0.8978	0.0161	35.1	0.0032
45	0.8723	0.0237	29.8	0.0048	0.8833	0.0213	30.6	0.0043
50	0.8516	0.0334	25.5	0.0068	0.8645	0.0301	26.2	0.0061
55	0.8231	0.0497	21.3	0.0102	0.8385	0.0447	21.9	0.0092
60	0.7822	0.0781	17.3	0.0163	0.8010	0.0705	17.9	0.0146
65	0.7211	0.1288	13.5	0.0275	0.7445	0.1170	14.0	0.0249
70	0.6283	0.2190	10.2	0.0492	0.6574	0.2017	10.6	0.0449
75	0.4907	0.3702	7.3	0.0909	0.5248	0.3485	7.6	0.0844
80	0.3090	0.5743	5.2	0.1937	0.3419	0.5553	5.3	0.1884
85	0.1316	0.7717	3.8		0.1520	0.7613	3.8	
90	0.0300	0.9009	3.0		0.0363	0.8963	3.0	
95	0.0030	1.0000	2.5		0.0038	1.0000	2.5	
NYANDARUA								
0	1.0000	0.0260	70.1	0.0270	1.0000	0.0233	69.5	0.0234
1	0.9740	0.0175	71.0	0.0044	0.9767	0.0171	70.1	0.0043
5	0.9570	0.0046	68.2	0.0009	0.9600	0.0046	67.3	0.0009
10	0.9526	0.0035	63.5	0.0007	0.9556	0.0035	62.6	0.0007
15	0.9492	0.0061	58.7	0.0012	0.9522	0.0062	57.8	0.0012
20	0.9434	0.0086	54.1	0.0017	0.9463	0.0087	53.2	0.0018
25	0.9354	0.0092	49.5	0.0018	0.9381	0.0094	48.6	0.0019
30	0.9268	0.0099	44.9	0.0020	0.9293	0.0103	44.0	0.0021
35	0.9176	0.0117	40.4	0.0024	0.9197	0.0122	39.5	0.0025
40	0.9069	0.0145	35.8	0.0029	0.9084	0.0153	34.9	0.0031
45	0.8937	0.0192	31.3	0.0039	0.8946	0.0205	30.4	0.0041
50	0.8766	0.0271	26.9	0.0055	0.8763	0.0292	26.0	0.0059
55	0.8528	0.0404	22.5	0.0082	0.8507	0.0440	21.7	0.0090
60	0.8183	0.0639	18.4	0.0132	0.8133	0.0705	17.6	0.0146
65	0.7661	0.1068	14.5	0.0226	0.7559	0.1192	13.7	0.0253
70	0.6842	0.1865	10.9	0.0411	0.6659	0.2092	10.3	0.0467
75	0.5567	0.3292	7.8	0.0788	0.5266	0.3655	7.3	0.0895
80	0.3734	0.5383	5.4	0.1838	0.3341	0.5800	5.1	0.1962
85	0.1724	0.7524	3.9		0.1403	0.7828	3.7	
90	0.0427	0.8927	3.0		0.0305	0.9091	3.0	
95	0.0046	1.0000	2.5		0.0028	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

AGE	NYERI							
	MALES				FEMALES			
	$l(x)$	nqx	$e(x)$	$m(x)$	$l(x)$	nqx	$e(x)$	$m(x)$
0	1.0000	0.0218	69.3	0.0225	1.0000	0.0197	69.6	0.0198
1	0.9782	0.0166	69.9	0.0042	0.9803	0.0156	70.0	0.0039
5	0.9620	0.0045	67.1	0.0009	0.9650	0.0043	67.1	0.0009
10	0.9577	0.0035	62.3	0.0007	0.9609	0.0033	62.3	0.0007
15	0.9543	0.0061	57.6	0.0012	0.9577	0.0058	57.5	0.0012
20	0.9485	0.0086	52.9	0.0017	0.9522	0.0083	52.9	0.0017
25	0.9404	0.0093	48.3	0.0019	0.9443	0.0090	48.3	0.0018
30	0.9316	0.0103	43.8	0.0021	0.9358	0.0099	43.7	0.0020
35	0.9220	0.0122	39.2	0.0025	0.9265	0.0119	39.1	0.0024
40	0.9107	0.0153	34.6	0.0031	0.9155	0.0150	34.6	0.0030
45	0.8968	0.0207	30.1	0.0042	0.9018	0.0203	30.0	0.0041
50	0.8782	0.0296	25.7	0.0060	0.8835	0.0292	25.6	0.0059
55	0.8522	0.0450	21.4	0.0092	0.8577	0.0447	21.3	0.0091
60	0.8138	0.0725	17.3	0.0150	0.8194	0.0727	17.2	0.0151
65	0.7548	0.1234	13.5	0.0263	0.7598	0.1249	13.3	0.0266
70	0.6617	0.2176	10.0	0.0488	0.6649	0.2222	9.9	0.0500
75	0.5177	0.3796	7.1	0.0937	0.5172	0.3894	7.0	0.0967
80	0.3211	0.5963	5.0	0.2013	0.3158	0.6092	4.9	0.2056
85	0.1297	0.7946	3.6		0.1234	0.8049	3.6	
90	0.0266	0.9156	2.9		0.0241	0.9214	2.9	
95	0.0022	1.0000	2.5		0.0019	1.0000	2.5	
COAST								
0	1.0000	0.0804	55.8	0.0892	1.0000	0.0732	57.2	0.0746
1	0.9196	0.0604	59.7	0.0157	0.9268	0.0558	60.7	0.0146
5	0.8640	0.0250	59.5	0.0051	0.8750	0.0232	60.2	0.0047
10	0.8424	0.0100	55.9	0.0020	0.8547	0.0093	56.6	0.0019
15	0.8340	0.0170	51.5	0.0034	0.8467	0.0158	52.1	0.0032
20	0.8198	0.0230	47.3	0.0046	0.8334	0.0214	47.9	0.0043
25	0.8010	0.0237	43.4	0.0048	0.8155	0.0222	43.9	0.0045
30	0.7820	0.0250	39.4	0.0051	0.7974	0.0234	39.8	0.0047
35	0.7624	0.0283	35.3	0.0057	0.7787	0.0266	35.7	0.0054
40	0.7408	0.0337	31.3	0.0069	0.7580	0.0318	31.7	0.0065
45	0.7158	0.0428	27.3	0.0088	0.7339	0.0405	27.6	0.0083
50	0.6852	0.0570	23.4	0.0117	0.7041	0.0542	23.7	0.0111
55	0.6461	0.0791	19.7	0.0165	0.6660	0.0756	19.9	0.0157
60	0.5950	0.1138	16.1	0.0241	0.6157	0.1094	16.3	0.0232
65	0.5273	0.1684	12.9	0.0368	0.5483	0.1633	13.0	0.0356
70	0.4385	0.2527	10.0	0.0578	0.4588	0.2475	10.1	0.0565
75	0.3277	0.3778	7.5	0.0932	0.3452	0.3739	7.5	0.0920
80	0.2039	0.5407	5.5	0.1805	0.2162	0.5396	5.5	0.1804
85	0.0936	0.7163	4.1		0.0995	0.7176	4.1	
90	0.0266	0.8561	3.2		0.0281	0.8579	3.2	
95	0.0038	1.0000	2.5		0.0040	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

KILIFI								
AGE	MALES				FEMALES			
	$l(x)$	nxq	$e(x)$	$m(x)$	$l(x)$	nxq	$e(x)$	$m(x)$
0	1.0000	0.0862	54.3	0.0962	1.0000	0.0831	57.6	0.0850
1	0.9138	0.0655	58.4	0.0170	0.9169	0.0566	61.8	0.0148
5	0.8540	0.0271	58.4	0.0055	0.8650	0.0228	61.4	0.0046
10	0.8309	0.0109	55.0	0.0022	0.8452	0.0091	57.8	0.0018
15	0.8218	0.0184	50.5	0.0037	0.8376	0.0153	53.3	0.0031
20	0.8067	0.0249	46.4	0.0050	0.8247	0.0206	49.1	0.0042
25	0.7866	0.0257	42.6	0.0052	0.8077	0.0212	45.1	0.0043
30	0.7663	0.0270	38.6	0.0055	0.7906	0.0222	41.0	0.0045
35	0.7456	0.0306	34.6	0.0062	0.7731	0.0250	36.9	0.0051
40	0.7228	0.0364	30.6	0.0074	0.7538	0.0296	32.8	0.0060
45	0.6964	0.0462	26.7	0.0095	0.7314	0.0374	28.7	0.0076
50	0.6643	0.0613	22.9	0.0127	0.7041	0.0496	24.7	0.0102
55	0.6235	0.0847	19.2	0.0177	0.6691	0.0686	20.9	0.0142
60	0.5707	0.1213	15.7	0.0258	0.6232	0.0985	17.2	0.0207
65	0.5015	0.1780	12.6	0.0391	0.5618	0.1462	13.8	0.0315
70	0.4122	0.2643	9.7	0.0609	0.4797	0.2214	10.8	0.0498
75	0.3033	0.3900	7.4	0.0969	0.3735	0.3376	8.1	0.0812
80	0.1850	0.5510	5.5	0.1833	0.2474	0.4975	6.0	0.1680
85	0.0831	0.7230	4.1		0.1243	0.6799	4.4	
90	0.0230	0.8598	3.2		0.0398	0.8314	3.3	
95	0.0032	1.0000	2.5		0.0067	1.0000	2.5	
KWALE								
0	1.0000	0.0934	53.4	0.1047	1.0000	0.0838	54.1	0.0855
1	0.9066	0.0690	57.9	0.0180	0.9162	0.0657	58.0	0.0173
5	0.8440	0.0284	58.1	0.0058	0.8560	0.0274	58.0	0.0056
10	0.8200	0.0114	54.7	0.0023	0.8325	0.0111	54.5	0.0022
15	0.8107	0.0192	50.3	0.0039	0.8233	0.0187	50.1	0.0038
20	0.7952	0.0259	46.2	0.0052	0.8079	0.0254	46.0	0.0051
25	0.7746	0.0267	42.4	0.0054	0.7874	0.0263	42.2	0.0053
30	0.7539	0.0279	38.5	0.0057	0.7668	0.0277	38.2	0.0056
35	0.7329	0.0316	34.5	0.0064	0.7455	0.0314	34.2	0.0064
40	0.7098	0.0374	30.5	0.0076	0.7221	0.0374	30.3	0.0076
45	0.6832	0.0472	26.6	0.0097	0.6951	0.0475	26.4	0.0097
50	0.6509	0.0625	22.8	0.0129	0.6621	0.0632	22.5	0.0131
55	0.6103	0.0859	19.2	0.0180	0.6202	0.0875	18.9	0.0183
60	0.5578	0.1223	15.8	0.0260	0.5660	0.1254	15.5	0.0268
65	0.4896	0.1784	12.6	0.0392	0.4950	0.1841	12.3	0.0406
70	0.4023	0.2633	9.8	0.0606	0.4039	0.2729	9.6	0.0632
75	0.2963	0.3868	7.4	0.0959	0.2936	0.4010	7.2	0.1003
80	0.1817	0.5454	5.5	0.1815	0.1759	0.5627	5.3	0.1870
85	0.0826	0.7167	4.1		0.0769	0.7329	4.0	
90	0.0234	0.8549	3.2		0.0205	0.8666	3.2	
95	0.0034	1.0000	2.5		0.0027	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

AGE	KILIFI							
	MALES				FEMALES			
	l(x)	nxq	e(x)	m(x)	l(x)	nxq	e(x)	m(x)
0	1.0000	0.0768	57.6	0.0848	1.0000	0.0664	56.8	0.0673
1	0.9232	0.0555	61.5	0.0143	0.9336	0.0553	59.8	0.0144
5	0.8720	0.0227	61.0	0.0046	0.8820	0.0235	59.3	0.0048
10	0.8522	0.0091	57.3	0.0018	0.8613	0.0095	55.6	0.0019
15	0.8445	0.0153	52.8	0.0031	0.8530	0.0162	51.1	0.0033
20	0.8315	0.0207	48.6	0.0042	0.8392	0.0222	46.9	0.0045
25	0.8142	0.0214	44.6	0.0043	0.8206	0.0232	43.0	0.0047
30	0.7968	0.0225	40.5	0.0046	0.8016	0.0246	38.9	0.0050
35	0.7789	0.0255	36.4	0.0052	0.7819	0.0281	34.8	0.0057
40	0.7590	0.0304	32.3	0.0062	0.7599	0.0338	30.8	0.0069
45	0.7360	0.0385	28.2	0.0079	0.7342	0.0433	26.8	0.0089
50	0.7076	0.0513	24.2	0.0105	0.7024	0.0583	22.9	0.0120
55	0.6713	0.0713	20.4	0.0148	0.6615	0.0819	19.1	0.0171
60	0.6234	0.1030	16.8	0.0217	0.6073	0.1193	15.6	0.0254
65	0.5592	0.1534	13.4	0.0332	0.5348	0.1787	12.4	0.0392
70	0.4734	0.2329	10.4	0.0527	0.4393	0.2703	9.5	0.0625
75	0.3632	0.3544	7.8	0.0862	0.3206	0.4042	7.1	0.1013
80	0.2344	0.5180	5.7	0.1740	0.1910	0.5726	5.2	0.1905
85	0.1130	0.6991	4.2		0.0816	0.7455	3.9	
90	0.0340	0.8452	3.3		0.0208	0.8766	3.1	
95	0.0053	1.0000	2.5		0.0026	1.0000	2.5	
MOMBASA								
0	1.0000	0.0614	57.4	0.0673	1.0000	0.0578	59.8	0.0586
1	0.9386	0.0528	60.2	0.0136	0.9422	0.0469	62.4	0.0122
5	0.8890	0.0226	59.4	0.0046	0.8980	0.0198	61.4	0.0040
10	0.8689	0.0092	55.7	0.0019	0.8802	0.0080	57.6	0.0016
15	0.8609	0.0157	51.2	0.0032	0.8731	0.0137	53.1	0.0028
20	0.8473	0.0215	47.0	0.0044	0.8612	0.0187	48.8	0.0038
25	0.8291	0.0226	43.0	0.0046	0.8451	0.0195	44.7	0.0039
30	0.8104	0.0240	38.9	0.0049	0.8286	0.0207	40.5	0.0042
35	0.7909	0.0276	34.8	0.0056	0.8114	0.0237	36.3	0.0048
40	0.7691	0.0332	30.7	0.0068	0.7922	0.0286	32.1	0.0058
45	0.7435	0.0428	26.7	0.0087	0.7695	0.0368	28.0	0.0075
50	0.7117	0.0578	22.8	0.0119	0.7412	0.0497	24.0	0.0102
55	0.6706	0.0816	19.0	0.0170	0.7044	0.0703	20.1	0.0146
60	0.6159	0.1195	15.5	0.0254	0.6548	0.1036	16.4	0.0218
65	0.5423	0.1800	12.3	0.0396	0.5870	0.1577	13.0	0.0342
70	0.4447	0.2736	9.4	0.0634	0.4945	0.2441	10.0	0.0556
75	0.3230	0.4103	7.0	0.1032	0.3737	0.3763	7.5	0.0927
80	0.1905	0.5807	5.2	0.1932	0.2331	0.5494	5.4	0.1839
85	0.0799	0.7532	3.9		0.1051	0.7311	4.0	
90	0.0197	0.8820	3.1		0.0283	0.8688	3.2	
95	0.0023	1.0000	2.5		0.0037	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

TAITA TAVETA								
AGE	MALES				FEMALES			
	$l(x)$	nq_x	$e(x)$	$m(x)$	$l(x)$	nq_x	$e(x)$	$m(x)$
0	1.0000	0.0534	60.2	0.0579	1.0000	0.0473	59.8	0.0477
1	0.9466	0.0450	62.6	0.0115	0.9527	0.0438	61.8	0.0113
5	0.9040	0.0192	61.5	0.0039	0.9110	0.0192	60.5	0.0039
10	0.8866	0.0078	57.6	0.0016	0.8935	0.0079	56.7	0.0016
15	0.8797	0.0133	53.0	0.0027	0.8864	0.0135	52.1	0.0027
20	0.8680	0.0183	48.7	0.0037	0.8745	0.0187	47.8	0.0038
25	0.8522	0.0191	44.6	0.0039	0.8581	0.0198	43.7	0.0040
30	0.8358	0.0204	40.4	0.0041	0.8411	0.0213	39.5	0.0043
35	0.8188	0.0235	36.2	0.0047	0.8232	0.0246	35.3	0.0050
40	0.7996	0.0284	32.0	0.0058	0.8030	0.0300	31.1	0.0061
45	0.7769	0.0366	27.9	0.0075	0.7789	0.0390	27.0	0.0080
50	0.7485	0.0497	23.8	0.0102	0.7485	0.0535	23.0	0.0110
55	0.7113	0.0706	20.0	0.0146	0.7085	0.0767	19.2	0.0159
60	0.6610	0.1046	16.3	0.0221	0.6542	0.1145	15.5	0.0243
65	0.5918	0.1602	12.9	0.0348	0.5793	0.1763	12.2	0.0387
70	0.4970	0.2492	9.9	0.0569	0.4772	0.2740	9.3	0.0635
75	0.3732	0.3848	7.3	0.0953	0.3464	0.4183	6.9	0.1058
80	0.2296	0.5604	5.3	0.1874	0.2015	0.5961	5.0	0.1987
85	0.1009	0.7412	4.0		0.0814	0.7699	3.8	
90	0.0261	0.8759	3.1		0.0187	0.8941	3.0	
95	0.0032	1.0000	2.5		0.0020	1.0000	2.5	
TANA RIVER								
0	1.0000	0.0889	55.9	0.0990	1.0000	0.0770	55.1	0.0784
1	0.9111	0.0615	60.4	0.0160	0.9230	0.0617	58.7	0.0162
5	0.8550	0.0249	60.3	0.0050	0.8660	0.0259	58.5	0.0053
10	0.8337	0.0099	56.7	0.0020	0.8435	0.0105	55.0	0.0021
15	0.8254	0.0167	52.3	0.0034	0.8347	0.0178	50.5	0.0036
20	0.8116	0.0225	48.1	0.0045	0.8199	0.0241	46.4	0.0049
25	0.7934	0.0231	44.2	0.0047	0.8001	0.0251	42.5	0.0051
30	0.7751	0.0241	40.2	0.0049	0.7800	0.0265	38.5	0.0054
35	0.7564	0.0272	36.1	0.0055	0.7593	0.0302	34.5	0.0061
40	0.7358	0.0322	32.0	0.0066	0.7364	0.0361	30.5	0.0073
45	0.7120	0.0407	28.0	0.0083	0.7099	0.0459	26.5	0.0094
50	0.6831	0.0538	24.1	0.0111	0.6773	0.0614	22.7	0.0127
55	0.6463	0.0742	20.3	0.0154	0.6357	0.0854	19.0	0.0178
60	0.5984	0.1060	16.7	0.0224	0.5814	0.1231	15.5	0.0262
65	0.5349	0.1562	13.4	0.0339	0.5098	0.1821	12.4	0.0401
70	0.4514	0.2341	10.5	0.0530	0.4170	0.2718	9.5	0.0629
75	0.3457	0.3521	7.9	0.0855	0.3037	0.4020	7.2	0.1006
80	0.2240	0.5109	5.8	0.1716	0.1816	0.5661	5.3	0.1882
85	0.1095	0.6895	4.3		0.0788	0.7373	4.0	
90	0.0340	0.8370	3.3		0.0207	0.8702	3.1	
95	0.0055	1.0000	2.5		0.0027	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

EASTERN								
AGE	MALES				FEMALES			
	l(x)	nxq	e(x)	m(x)	l(x)	nxq	e(x)	m(x)
0	1.0000	0.0494	66.7	0.0526	1.0000	0.0453	67.7	0.0457
1	0.9506	0.0270	69.1	0.0068	0.9547	0.0249	69.9	0.0063
5	0.9250	0.0068	67.0	0.0014	0.9310	0.0062	67.7	0.0013
10	0.9187	0.0051	62.4	0.0010	0.9252	0.0047	63.1	0.0010
15	0.9140	0.0087	57.7	0.0018	0.9208	0.0081	58.4	0.0016
20	0.9060	0.0120	53.2	0.0024	0.9134	0.0111	53.8	0.0022
25	0.8952	0.0125	48.8	0.0025	0.9032	0.0116	49.4	0.0023
30	0.8840	0.0133	44.4	0.0027	0.8928	0.0123	45.0	0.0025
35	0.8723	0.0152	40.0	0.0031	0.8818	0.0142	40.5	0.0029
40	0.8590	0.0184	35.6	0.0037	0.8693	0.0171	36.0	0.0035
45	0.8431	0.0238	31.2	0.0048	0.8544	0.0222	31.6	0.0045
50	0.8231	0.0325	26.9	0.0066	0.8354	0.0303	27.3	0.0062
55	0.7963	0.0465	22.7	0.0095	0.8101	0.0436	23.1	0.0089
60	0.7593	0.0700	18.7	0.0145	0.7747	0.0660	19.0	0.0137
65	0.7061	0.1105	14.9	0.0234	0.7236	0.1048	15.2	0.0221
70	0.6281	0.1808	11.5	0.0397	0.6478	0.1733	11.6	0.0379
75	0.5146	0.3015	8.4	0.0710	0.5355	0.2929	8.6	0.0686
80	0.3594	0.4820	6.0	0.1662	0.3787	0.4753	6.1	0.1648
85	0.1862	0.6894	4.3		0.1987	0.6870	4.3	
90	0.0578	0.8486	3.3		0.0622	0.8487	3.3	
95	0.0088	1.0000	2.5		0.0094	1.0000	2.5	
EMBU								
0	1.0000	0.0462	69.7	0.0490	1.0000	0.0417	69.4	0.0421
1	0.9538	0.0228	72.1	0.0058	0.9583	0.0223	71.4	0.0057
5	0.9320	0.0056	69.7	0.0011	0.9370	0.0056	69.0	0.0011
10	0.9268	0.0042	65.1	0.0009	0.9318	0.0042	64.4	0.0008
15	0.9228	0.0072	60.3	0.0014	0.9279	0.0072	59.6	0.0014
20	0.9162	0.0098	55.8	0.0020	0.9212	0.0098	55.1	0.0020
25	0.9073	0.0101	51.3	0.0020	0.9122	0.0102	50.6	0.0021
30	0.8981	0.0107	46.8	0.0022	0.9028	0.0109	46.1	0.0022
35	0.8885	0.0122	42.3	0.0025	0.8930	0.0125	41.5	0.0025
40	0.8776	0.0147	37.8	0.0030	0.8818	0.0151	37.0	0.0030
45	0.8648	0.0188	33.3	0.0038	0.8685	0.0196	32.6	0.0040
50	0.8485	0.0255	28.9	0.0052	0.8515	0.0268	28.2	0.0054
55	0.8268	0.0364	24.6	0.0074	0.8287	0.0385	23.9	0.0078
60	0.7968	0.0545	20.4	0.0112	0.7968	0.0583	19.7	0.0120
65	0.7533	0.0861	16.4	0.0180	0.7503	0.0931	15.8	0.0195
70	0.6885	0.1425	12.7	0.0307	0.6804	0.1556	12.2	0.0338
75	0.5903	0.2452	9.4	0.0559	0.5746	0.2684	9.0	0.0620
80	0.4456	0.4148	6.7	0.1494	0.4203	0.4487	6.3	0.1583
85	0.2608	0.6343	4.7		0.2317	0.6681	4.4	
90	0.0954	0.8167	3.4		0.0769	0.8392	3.3	
95	0.0175	1.0000	2.5		0.0124	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

AGE	ISIOLO							
	MALES				FEMALES			
	$l(x)$	q_x	$e(x)$	$m(x)$	$l(x)$	q_x	$e(x)$	$m(x)$
0	1.0000	0.0774	57.5	0.0855	1.0000	0.0688	57.7	0.0700
1	0.9226	0.0560	61.3	0.0145	0.9312	0.0539	60.9	0.0140
5	0.8710	0.0229	60.8	0.0046	0.8810	0.0225	60.3	0.0046
10	0.8510	0.0092	57.2	0.0018	0.8612	0.0091	56.7	0.0018
15	0.8432	0.0155	52.7	0.0031	0.8533	0.0154	52.2	0.0031
20	0.8302	0.0209	48.5	0.0042	0.8402	0.0210	48.0	0.0042
25	0.8128	0.0216	44.5	0.0044	0.8226	0.0218	43.9	0.0044
30	0.7952	0.0227	40.4	0.0046	0.8047	0.0230	39.8	0.0047
35	0.7771	0.0257	36.3	0.0052	0.7862	0.0262	35.7	0.0053
40	0.7571	0.0306	32.2	0.0062	0.7655	0.0314	31.6	0.0064
45	0.7339	0.0389	28.1	0.0079	0.7415	0.0401	27.6	0.0082
50	0.7054	0.0518	24.2	0.0106	0.7117	0.0538	23.6	0.0111
55	0.6689	0.0719	20.4	0.0149	0.6734	0.0754	19.8	0.0157
60	0.6208	0.1038	16.7	0.0219	0.6227	0.1096	16.2	0.0232
65	0.5563	0.1546	13.4	0.0335	0.5544	0.1643	12.9	0.0358
70	0.4703	0.2344	10.4	0.0531	0.4633	0.2500	10.0	0.0572
75	0.3601	0.3561	7.8	0.0866	0.3475	0.3788	7.5	0.0934
80	0.2319	0.5194	5.7	0.1744	0.2159	0.5464	5.5	0.1825
85	0.1114	0.7001	4.2		0.0979	0.7245	4.1	
90	0.0334	0.8458	3.3		0.0270	0.8629	3.2	
95	0.0052	1.0000	2.5		0.0037	1.0000	2.5	
KITUI								
0	1.0000	0.0677	61.6	0.0739	1.0000	0.0636	63.6	0.0648
1	0.9323	0.0454	65.1	0.0116	0.9364	0.0410	66.8	0.0106
5	0.8900	0.0182	64.1	0.0037	0.8980	0.0164	65.7	0.0033
10	0.8738	0.0073	60.3	0.0015	0.8833	0.0065	61.7	0.0013
15	0.8674	0.0122	55.7	0.0025	0.8776	0.0109	57.1	0.0022
20	0.8568	0.0165	51.4	0.0033	0.8680	0.0147	52.7	0.0030
25	0.8426	0.0170	47.2	0.0034	0.8552	0.0152	48.5	0.0031
30	0.8283	0.0178	43.0	0.0036	0.8422	0.0159	44.2	0.0032
35	0.8135	0.0202	38.7	0.0041	0.8289	0.0179	39.8	0.0036
40	0.7971	0.0240	34.4	0.0049	0.8140	0.0213	35.5	0.0043
45	0.7780	0.0304	30.2	0.0062	0.7967	0.0270	31.2	0.0055
50	0.7544	0.0406	26.1	0.0083	0.7751	0.0360	27.0	0.0073
55	0.7237	0.0566	22.1	0.0116	0.7472	0.0503	22.9	0.0103
60	0.6828	0.0823	18.3	0.0172	0.7096	0.0734	19.0	0.0152
65	0.6266	0.1244	14.7	0.0265	0.6576	0.1114	15.3	0.0236
70	0.5486	0.1935	11.4	0.0428	0.5843	0.1751	11.9	0.0384
75	0.4425	0.3057	8.6	0.0722	0.4820	0.2815	9.0	0.0655
80	0.3072	0.4685	6.2	0.1608	0.3463	0.4423	6.5	0.1543
85	0.1633	0.6613	4.5		0.1931	0.6404	4.6	
90	0.0553	0.8222	3.4		0.0694	0.8095	3.5	
95	0.0098	1.0000	2.5		0.0132	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

MACHAKOS								
AGE	MALES				FEMALES			
	l(x)	nxq	e(x)	m(x)	l(x)	nxq	e(x)	m(x)
0	1.0000	0.0459	67.5	0.0487	1.0000	0.0433	69.3	0.0437
1	0.9541	0.0253	69.7	0.0064	0.9567	0.0227	71.4	0.0058
5	0.9300	0.0064	67.5	0.0013	0.9350	0.0057	69.0	0.0011
10	0.9241	0.0048	62.9	0.0010	0.9297	0.0043	64.4	0.0009
15	0.9196	0.0082	58.2	0.0017	0.9257	0.0073	59.6	0.0015
20	0.9121	0.0113	53.7	0.0023	0.9190	0.0100	55.1	0.0020
25	0.9018	0.0118	49.2	0.0024	0.9098	0.0104	50.6	0.0021
30	0.8912	0.0125	44.8	0.0025	0.9004	0.0110	46.1	0.0022
35	0.8800	0.0144	40.3	0.0029	0.8904	0.0126	41.6	0.0025
40	0.8673	0.0174	35.9	0.0035	0.8792	0.0153	37.1	0.0031
45	0.8522	0.0226	31.5	0.0046	0.8658	0.0197	32.6	0.0040
50	0.8329	0.0309	27.2	0.0063	0.8487	0.0269	28.2	0.0054
55	0.8072	0.0444	22.9	0.0091	0.8259	0.0386	23.9	0.0079
60	0.7713	0.0672	18.9	0.0139	0.7941	0.0583	19.8	0.0120
65	0.7195	0.1065	15.1	0.0225	0.7478	0.0928	15.9	0.0195
70	0.6429	0.1758	11.6	0.0386	0.6784	0.1545	12.2	0.0335
75	0.5298	0.2963	8.5	0.0696	0.5736	0.2656	9.0	0.0612
80	0.3729	0.4787	6.0	0.1656	0.4213	0.4437	6.4	0.1569
85	0.1944	0.6893	4.3		0.2344	0.6624	4.5	
90	0.0604	0.8498	3.3		0.0791	0.8351	3.3	
95	0.0091	1.0000	2.5		0.0130	1.0000	2.5	
MARSABIT								
0	1.0000	0.0386	60.3	0.0410	1.0000	0.0353	60.8	0.0355
1	0.9614	0.0327	61.7	0.0083	0.9647	0.0308	62.0	0.0079
5	0.9300	0.0091	59.8	0.0018	0.9350	0.0086	60.0	0.0017
10	0.9216	0.0071	55.3	0.0014	0.9270	0.0067	55.5	0.0014
15	0.9151	0.0124	50.7	0.0025	0.9207	0.0118	50.8	0.0024
20	0.9037	0.0176	46.3	0.0036	0.9098	0.0169	46.4	0.0034
25	0.8878	0.0192	42.1	0.0039	0.8945	0.0185	42.1	0.0037
30	0.8708	0.0212	37.8	0.0043	0.8780	0.0205	37.9	0.0041
35	0.8523	0.0252	33.6	0.0051	0.8600	0.0244	33.6	0.0049
40	0.8308	0.0316	29.4	0.0064	0.8390	0.0307	29.4	0.0062
45	0.8046	0.0423	25.3	0.0086	0.8132	0.0414	25.3	0.0085
50	0.7706	0.0599	21.3	0.0123	0.7795	0.0589	21.3	0.0121
55	0.7245	0.0888	17.5	0.0186	0.7336	0.0880	17.4	0.0184
60	0.6601	0.1372	13.9	0.0295	0.6690	0.1370	13.9	0.0294
65	0.5696	0.2170	10.7	0.0487	0.5774	0.2183	10.7	0.0490
70	0.4460	0.3397	8.0	0.0818	0.4514	0.3438	8.0	0.0830
75	0.2945	0.5060	5.9	0.1355	0.2962	0.5132	5.8	0.1381
80	0.1455	0.6849	4.3	0.2300	0.1442	0.6930	4.3	0.2331
85	0.0458	0.8373	3.4		0.0443	0.8436	3.3	
90	0.0075	0.9346	2.8		0.0069	0.9382	2.8	
95	0.0005	1.0000	2.5		0.0004	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

AGE	MERU							
	MALES				FEMALES			
	$l(x)$	nqx	$e(x)$	$m(x)$	$l(x)$	nqx	$e(x)$	$m(x)$
0	1.0000	0.0373	69.2	0.0393	1.0000	0.0331	69.1	0.0333
1	0.9627	0.0215	70.9	0.0054	0.9669	0.0206	70.4	0.0052
5	0.9420	0.0054	68.4	0.0011	0.9470	0.0053	67.8	0.0011
10	0.9369	0.0042	63.8	0.0008	0.9420	0.0041	63.2	0.0008
15	0.9330	0.0071	59.0	0.0014	0.9382	0.0070	58.4	0.0014
20	0.9264	0.0098	54.4	0.0020	0.9316	0.0097	53.8	0.0019
25	0.9173	0.0103	49.9	0.0021	0.9226	0.0103	49.3	0.0021
30	0.9079	0.0110	45.4	0.0022	0.9131	0.0111	44.8	0.0022
35	0.8979	0.0127	40.9	0.0026	0.9030	0.0129	40.3	0.0026
40	0.8865	0.0155	36.4	0.0031	0.8914	0.0158	35.8	0.0032
45	0.8728	0.0202	31.9	0.0041	0.8773	0.0207	31.3	0.0042
50	0.8552	0.0278	27.6	0.0056	0.8592	0.0289	26.9	0.0059
55	0.8314	0.0404	23.3	0.0082	0.8344	0.0424	22.7	0.0087
60	0.7978	0.0619	19.1	0.0128	0.7990	0.0657	18.6	0.0136
65	0.7484	0.1000	15.2	0.0210	0.7465	0.1074	14.7	0.0227
70	0.6736	0.1687	11.7	0.0368	0.6663	0.1829	11.1	0.0403
75	0.5599	0.2915	8.5	0.0682	0.5445	0.3163	8.1	0.0752
80	0.3967	0.4811	6.0	0.1670	0.3722	0.5145	5.7	0.1764
85	0.2058	0.6985	4.2		0.1807	0.7278	4.0	
90	0.0621	0.8587	3.2		0.0492	0.8766	3.1	
95	0.0088	1.0000	2.5		0.0061	1.0000	2.5	
NORTH EASTERN								
0	1.0000	0.0794	55.3	0.0881	1.0000	0.0752	54.1	0.0760
1	0.9206	0.0615	59.1	0.0160	0.9248	0.0539	57.4	0.0140
5	0.8640	0.0256	58.9	0.0052	0.8750	0.0143	56.6	0.0029
10	0.8419	0.0103	55.4	0.0021	0.8625	0.0110	52.4	0.0022
15	0.8332	0.0175	50.9	0.0035	0.8530	0.0190	48.0	0.0038
20	0.8186	0.0237	46.8	0.0048	0.8368	0.0263	43.8	0.0053
25	0.7992	0.0246	42.9	0.0050	0.8147	0.0279	40.0	0.0057
30	0.7796	0.0259	38.9	0.0052	0.7920	0.0301	36.0	0.0061
35	0.7594	0.0294	34.8	0.0060	0.7682	0.0348	32.1	0.0071
40	0.7371	0.0351	30.8	0.0071	0.7414	0.0424	28.1	0.0087
45	0.7112	0.0446	26.9	0.0091	0.7100	0.0549	24.3	0.0113
50	0.6795	0.0595	23.0	0.0123	0.6710	0.0748	20.5	0.0155
55	0.6391	0.0826	19.3	0.0172	0.6208	0.1058	17.0	0.0223
60	0.5863	0.1188	15.8	0.0253	0.5551	0.1546	13.7	0.0335
65	0.5167	0.1757	12.6	0.0385	0.4693	0.2296	10.8	0.0519
70	0.4259	0.2627	9.7	0.0605	0.3616	0.3387	8.2	0.0816
75	0.3140	0.3904	7.3	0.0970	0.2391	0.4845	6.2	0.1279
80	0.1914	0.5537	5.4	0.1844	0.1233	0.6491	4.6	0.2160
85	0.0854	0.7270	4.1		0.0433	0.8038	3.6	
90	0.0233	0.8632	3.2		0.0085	0.9132	2.9	
95	0.0032	1.0000	2.5		0.0007	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

GARISSA								
AGE	MALES				FEMALES			
	$l(x)$	nqx	$e(x)$	$m(x)$	$l(x)$	nqx	$e(x)$	$m(x)$
0	1.0000	0.0846	56.1	0.0940	1.0000	0.0699	53.8	0.0709
1	0.9154	0.0605	60.3	0.0157	0.9301	0.0635	56.8	0.0167
5	0.8600	0.0247	60.1	0.0050	0.8710	0.0276	56.6	0.0056
10	0.8388	0.0099	56.5	0.0020	0.8469	0.0113	53.1	0.0023
15	0.8305	0.0166	52.1	0.0034	0.8374	0.0193	48.7	0.0039
20	0.8167	0.0224	47.9	0.0045	0.8212	0.0264	44.6	0.0054
25	0.7983	0.0231	43.9	0.0047	0.7995	0.0277	40.7	0.0056
30	0.7799	0.0242	39.9	0.0049	0.7773	0.0295	36.8	0.0060
35	0.7610	0.0274	35.9	0.0056	0.7544	0.0339	32.9	0.0069
40	0.7401	0.0325	31.8	0.0066	0.7288	0.0408	28.9	0.0083
45	0.7160	0.0411	27.8	0.0084	0.6990	0.0524	25.1	0.0108
50	0.6866	0.0546	23.9	0.0112	0.6624	0.0705	21.3	0.0146
55	0.6491	0.0755	20.1	0.0157	0.6157	0.0987	17.7	0.0208
60	0.6001	0.1083	16.5	0.0229	0.5549	0.1427	14.4	0.0307
65	0.5351	0.1599	13.2	0.0348	0.4757	0.2106	11.4	0.0471
70	0.4495	0.2401	10.3	0.0546	0.3755	0.3109	8.8	0.0736
75	0.3416	0.3610	7.8	0.0881	0.2588	0.4494	6.6	0.1159
80	0.2183	0.5218	5.7	0.1748	0.1425	0.6133	4.9	0.2035
85	0.1044	0.6998	4.2		0.0551	0.7750	3.7	
90	0.0313	0.8445	3.3		0.0124	0.8948	3.0	
95	0.0049	1.0000	2.5		0.0013	1.0000	2.5	
MANDERA								
0	1.0000	0.0794	56.6	0.0879	1.0000	0.0653	54.0	0.0661
1	0.9206	0.0583	60.5	0.0151	0.9347	0.0617	56.8	0.0162
5	0.8670	0.0239	60.2	0.0048	0.8770	0.0272	56.4	0.0055
10	0.8462	0.0096	56.6	0.0019	0.8532	0.0111	52.9	0.0022
15	0.8381	0.0162	52.1	0.0033	0.8437	0.0191	48.5	0.0039
20	0.8245	0.0219	48.0	0.0044	0.8276	0.0263	44.4	0.0053
25	0.8064	0.0227	44.0	0.0046	0.8058	0.0277	40.5	0.0056
30	0.7882	0.0238	39.9	0.0048	0.7836	0.0296	36.6	0.0060
35	0.7694	0.0270	35.8	0.0055	0.7604	0.0340	32.6	0.0069
40	0.7487	0.0321	31.8	0.0065	0.7345	0.0412	28.7	0.0084
45	0.7246	0.0407	27.7	0.0083	0.7043	0.0530	24.8	0.0109
50	0.6951	0.0542	23.8	0.0111	0.6669	0.0716	21.1	0.0149
55	0.6574	0.0753	20.0	0.0156	0.6192	0.1007	17.5	0.0212
60	0.6080	0.1084	16.5	0.0229	0.5569	0.1461	14.2	0.0315
65	0.5420	0.1609	13.2	0.0350	0.4755	0.2163	11.2	0.0485
70	0.4549	0.2426	10.2	0.0552	0.3727	0.3195	8.6	0.0761
75	0.3445	0.3657	7.7	0.0895	0.2536	0.4607	6.4	0.1197
80	0.2185	0.5287	5.7	0.1770	0.1367	0.6253	4.8	0.2076
85	0.1030	0.7070	4.2		0.0512	0.7850	3.7	
90	0.0302	0.8501	3.2		0.0110	0.9013	3.0	
95	0.0045	1.0000	2.5		0.0011	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

GARISSA								
AGE	MALES				FEMALES			
	l(x)	nxq	e(x)	m(x)	l(x)	nxq	e(x)	m(x)
0	1.0000	0.0758	54.9	0.0841	1.0000	0.0611	51.9	0.0617
1	0.9242	0.0619	58.5	0.0161	0.9389	0.0660	54.2	0.0173
5	0.8670	0.0261	58.2	0.0053	0.8770	0.0302	54.0	0.0061
10	0.8443	0.0106	54.7	0.0021	0.8505	0.0125	50.6	0.0025
15	0.8354	0.0179	50.3	0.0036	0.8399	0.0216	46.2	0.0044
20	0.8204	0.0244	46.1	0.0049	0.8217	0.0301	42.1	0.0061
25	0.8004	0.0254	42.2	0.0051	0.7970	0.0320	38.4	0.0065
30	0.7800	0.0269	38.3	0.0054	0.7715	0.0345	34.5	0.0070
35	0.7591	0.0306	34.2	0.0062	0.7449	0.0400	30.7	0.0082
40	0.7358	0.0367	30.3	0.0075	0.7151	0.0487	26.9	0.0100
45	0.7089	0.0467	26.3	0.0096	0.6803	0.0631	23.1	0.0130
50	0.6757	0.0625	22.5	0.0129	0.6374	0.0856	19.5	0.0179
55	0.6335	0.0871	18.8	0.0182	0.5828	0.1205	16.1	0.0257
60	0.5783	0.1257	15.4	0.0268	0.5126	0.1744	13.0	0.0382
65	0.5056	0.1859	12.2	0.0410	0.4232	0.2551	10.2	0.0585
70	0.4116	0.2772	9.4	0.0644	0.3152	0.3684	7.8	0.0903
75	0.2975	0.4087	7.1	0.1027	0.1991	0.5138	5.9	0.1383
80	0.1759	0.5730	5.3	0.1904	0.0968	0.6727	4.5	0.2245
85	0.0751	0.7431	3.9		0.0317	0.8198	3.5	
90	0.0193	0.8740	3.1		0.0057	0.9226	2.9	
95	0.0024	1.0000	2.5		0.0004	1.0000	2.5	
NYANZA								
0	1.0000	0.1119	49.5	0.1269	1.0000	0.1092	53.5	0.1127
1	0.8881	0.0835	54.7	0.0220	0.8908	0.0705	59.0	0.0186
5	0.8140	0.0343	55.5	0.0070	0.8280	0.0280	59.4	0.0057
10	0.7861	0.0138	52.4	0.0028	0.8048	0.0111	56.1	0.0022
15	0.7752	0.0231	48.1	0.0047	0.7959	0.0186	51.7	0.0037
20	0.7573	0.0311	44.2	0.0063	0.7811	0.0248	47.6	0.0050
25	0.7338	0.0320	40.5	0.0065	0.7617	0.0253	43.7	0.0051
30	0.7103	0.0334	36.8	0.0068	0.7425	0.0263	39.8	0.0053
35	0.6866	0.0375	33.0	0.0077	0.7230	0.0294	35.8	0.0060
40	0.6608	0.0443	29.2	0.0091	0.7017	0.0346	31.8	0.0070
45	0.6316	0.0556	25.4	0.0114	0.6775	0.0432	27.9	0.0088
50	0.5965	0.0729	21.7	0.0151	0.6482	0.0566	24.0	0.0117
55	0.5530	0.0992	18.3	0.0209	0.6115	0.0771	20.3	0.0160
60	0.4981	0.1391	15.0	0.0299	0.5643	0.1088	16.8	0.0230
65	0.4288	0.1991	12.0	0.0442	0.5029	0.1577	13.5	0.0343
70	0.3435	0.2867	9.4	0.0669	0.4236	0.2326	10.6	0.0527
75	0.2450	0.4098	7.1	0.1031	0.3250	0.3451	8.1	0.0834
80	0.1446	0.5634	5.4	0.1866	0.2129	0.4973	6.0	0.1672
85	0.0631	0.7278	4.1		0.1070	0.6725	4.4	
90	0.0172	0.8609	3.2		0.0350	0.8226	3.4	
95	0.0024	1.0000	2.5		0.0062	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

KISII								
AGE	MALES				FEMALES			
	$l(x)$	nqx	$e(x)$	$m(x)$	$l(x)$	nqx	$e(x)$	$m(x)$
0	1.0000	0.0617	56.5	0.0676	1.0000	0.0610	60.8	0.0620
1	0.9383	0.0547	59.3	0.0141	0.9390	0.0458	63.7	0.0118
5	0.8870	0.0237	58.6	0.0048	0.8960	0.0189	62.7	0.0038
10	0.8660	0.0097	55.0	0.0019	0.8790	0.0076	58.9	0.0015
15	0.8576	0.0165	50.5	0.0033	0.8723	0.0129	54.3	0.0026
20	0.8435	0.0227	46.3	0.0046	0.8611	0.0175	50.0	0.0035
25	0.8244	0.0238	42.3	0.0048	0.8460	0.0182	45.8	0.0037
30	0.8048	0.0254	38.3	0.0051	0.8306	0.0192	41.6	0.0039
35	0.7844	0.0292	34.2	0.0059	0.8146	0.0219	37.4	0.0044
40	0.7615	0.0352	30.2	0.0072	0.7967	0.0263	33.2	0.0053
45	0.7347	0.0453	26.2	0.0093	0.7758	0.0336	29.0	0.0068
50	0.7014	0.0614	22.3	0.0127	0.7497	0.0452	24.9	0.0093
55	0.6583	0.0866	18.6	0.0181	0.7158	0.0636	21.0	0.0131
60	0.6013	0.1267	15.1	0.0270	0.6702	0.0933	17.2	0.0196
65	0.5252	0.1901	11.9	0.0420	0.6077	0.1419	13.7	0.0305
70	0.4253	0.2870	9.2	0.0670	0.5215	0.2207	10.6	0.0496
75	0.3033	0.4259	6.8	0.1082	0.4064	0.3448	7.9	0.0833
80	0.1741	0.5952	5.1	0.1978	0.2663	0.5152	5.8	0.1739
85	0.0705	0.7639	3.8		0.1291	0.7030	4.2	
90	0.0166	0.8886	3.1		0.0383	0.8506	3.2	
95	0.0019	1.0000	2.5		0.0057	1.0000	2.5	
KISUMU								
0	1.0000	0.1319	47.2	0.1505	1.0000	0.1256	50.7	0.1301
1	0.8681	0.0934	53.3	0.0248	0.8744	0.0805	56.9	0.0214
5	0.7870	0.0378	54.7	0.0077	0.8040	0.0319	57.8	0.0065
10	0.7572	0.0151	51.7	0.0030	0.7784	0.0126	54.6	0.0025
15	0.7458	0.0253	47.5	0.0051	0.7685	0.0211	50.3	0.0043
20	0.7270	0.0337	43.6	0.0069	0.7523	0.0281	46.3	0.0057
25	0.7024	0.0344	40.1	0.0070	0.7312	0.0286	42.6	0.0058
30	0.6782	0.0358	36.4	0.0073	0.7103	0.0296	38.7	0.0060
35	0.6540	0.0400	32.7	0.0082	0.6893	0.0330	34.8	0.0067
40	0.6278	0.0469	28.9	0.0096	0.6665	0.0386	30.9	0.0079
45	0.5984	0.0584	25.2	0.0120	0.6408	0.0481	27.1	0.0099
50	0.5635	0.0760	21.6	0.0158	0.6100	0.0627	23.3	0.0129
55	0.5207	0.1023	18.2	0.0216	0.5717	0.0847	19.7	0.0177
60	0.4674	0.1419	15.0	0.0305	0.5233	0.1183	16.3	0.0251
65	0.4011	0.2007	12.1	0.0446	0.4614	0.1693	13.2	0.0370
70	0.3206	0.2856	9.5	0.0666	0.3833	0.2458	10.3	0.0561
75	0.2290	0.4045	7.2	0.1014	0.2891	0.3581	7.9	0.0873
80	0.1364	0.5540	5.5	0.1833	0.1855	0.5073	5.9	0.1696
85	0.0608	0.7168	4.1		0.0914	0.6778	4.4	
90	0.0172	0.8521	3.2		0.0295	0.8247	3.4	
95	0.0025	1.0000	2.5		0.0052	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

SIAYA								
AGE	MALES				FEMALES			
	$l(x)$	nqx	$e(x)$	$m(x)$	$l(x)$	nqx	$e(x)$	$m(x)$
0	1.0000	0.1373	46.3	0.1568	1.0000	0.1321	50.1	0.1371
1	0.8627	0.0970	52.7	0.0258	0.8679	0.0829	56.6	0.0221
5	0.7790	0.0393	54.2	0.0080	0.7960	0.0326	57.6	0.0066
10	0.7484	0.0157	51.3	0.0032	0.7700	0.0129	54.5	0.0026
15	0.7367	0.0262	47.1	0.0053	0.7601	0.0215	50.2	0.0043
20	0.7174	0.0349	43.3	0.0071	0.7437	0.0286	46.2	0.0058
25	0.6924	0.0356	39.7	0.0073	0.7225	0.0290	42.5	0.0059
30	0.6677	0.0369	36.1	0.0075	0.7015	0.0300	38.7	0.0061
35	0.6431	0.0412	32.4	0.0084	0.6805	0.0334	34.8	0.0068
40	0.6165	0.0483	28.7	0.0099	0.6577	0.0390	31.0	0.0080
45	0.5868	0.0600	25.0	0.0124	0.6321	0.0485	27.1	0.0099
50	0.5516	0.0780	21.5	0.0162	0.6014	0.0630	23.4	0.0130
55	0.5086	0.1048	18.1	0.0221	0.5635	0.0849	19.8	0.0177
60	0.4553	0.1448	14.9	0.0312	0.5157	0.1182	16.4	0.0251
65	0.3893	0.2040	12.0	0.0454	0.4548	0.1686	13.2	0.0368
70	0.3099	0.2891	9.4	0.0676	0.3781	0.2440	10.4	0.0556
75	0.2203	0.4076	7.2	0.1024	0.2858	0.3547	8.0	0.0862
80	0.1305	0.5561	5.4	0.1839	0.1845	0.5022	6.0	0.1680
85	0.0579	0.7179	4.1		0.0918	0.6721	4.4	
90	0.0163	0.8525	3.2		0.0301	0.8200	3.4	
95	0.0024	1.0000	2.5		0.0054	1.0000	2.5	
SOUTH NYANZA								
0	1.0000	0.1393	46.9	0.1589	1.0000	0.1353	51.1	0.1410
1	0.8607	0.0949	53.4	0.0253	0.8647	0.0795	58.0	0.0211
5	0.7790	0.0381	54.9	0.0078	0.7960	0.0309	58.9	0.0063
10	0.7493	0.0151	52.0	0.0031	0.7714	0.0121	55.7	0.0024
15	0.7380	0.0253	47.7	0.0051	0.7621	0.0202	51.4	0.0041
20	0.7193	0.0337	43.9	0.0068	0.7467	0.0267	47.4	0.0054
25	0.6951	0.0343	40.3	0.0070	0.7267	0.0271	43.6	0.0055
30	0.6713	0.0355	36.7	0.0072	0.7071	0.0279	39.8	0.0057
35	0.6475	0.0396	32.9	0.0081	0.6873	0.0309	35.8	0.0063
40	0.6219	0.0462	29.2	0.0095	0.6661	0.0361	31.9	0.0073
45	0.5931	0.0574	25.5	0.0118	0.6421	0.0447	28.0	0.0091
50	0.5591	0.0745	21.9	0.0155	0.6134	0.0580	24.2	0.0119
55	0.5174	0.1001	18.4	0.0211	0.5778	0.0780	20.5	0.0162
60	0.4656	0.1385	15.2	0.0298	0.5328	0.1085	17.1	0.0229
65	0.4011	0.1954	12.3	0.0433	0.4750	0.1550	13.8	0.0336
70	0.3227	0.2779	9.6	0.0645	0.4014	0.2253	10.9	0.0508
75	0.2331	0.3942	7.4	0.0982	0.3109	0.3307	8.3	0.0793
80	0.1412	0.5421	5.6	0.1796	0.2081	0.4753	6.2	0.1605
85	0.0647	0.7057	4.2		0.1092	0.6473	4.6	
90	0.0190	0.8437	3.3		0.0385	0.8014	3.5	
95	0.0030	1.0000	2.5		0.0076	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

RIFT VALLEY								
AGE	MALES				FEMALES			
	$l(x)$	nqx	$e(x)$	$m(x)$	$l(x)$	nqx	$e(x)$	$m(x)$
0	1.0000	0.0536	60.9	0.0580	1.0000	0.0505	62.8	0.0511
1	0.9464	0.0437	63.3	0.0112	0.9495	0.0395	65.1	0.0102
5	0.9050	0.0185	62.2	0.0037	0.9120	0.0166	63.7	0.0033
10	0.8882	0.0075	58.3	0.0015	0.8969	0.0067	59.8	0.0013
15	0.8816	0.0128	53.7	0.0026	0.8909	0.0114	55.2	0.0023
20	0.8703	0.0175	49.4	0.0035	0.8808	0.0155	50.8	0.0031
25	0.8551	0.0183	45.2	0.0037	0.8671	0.0162	46.5	0.0033
30	0.8394	0.0195	41.0	0.0039	0.8530	0.0172	42.2	0.0035
35	0.8231	0.0223	36.8	0.0045	0.8383	0.0197	37.9	0.0040
40	0.8047	0.0270	32.5	0.0055	0.8218	0.0238	33.7	0.0048
45	0.7830	0.0347	28.4	0.0071	0.8022	0.0306	29.4	0.0062
50	0.7558	0.0471	24.3	0.0097	0.7776	0.0416	25.3	0.0085
55	0.7202	0.0669	20.4	0.0138	0.7453	0.0591	21.3	0.0122
60	0.6720	0.0990	16.7	0.0208	0.7013	0.0878	17.4	0.0184
65	0.6055	0.1518	13.2	0.0329	0.6397	0.1357	13.9	0.0291
70	0.5136	0.2374	10.1	0.0539	0.5529	0.2150	10.7	0.0482
75	0.3917	0.3698	7.5	0.0907	0.4340	0.3425	7.9	0.0827
80	0.2468	0.5453	5.5	0.1829	0.2853	0.5191	5.7	0.1756
85	0.1122	0.7299	4.0		0.1372	0.7115	4.1	
90	0.0303	0.8689	3.2		0.0396	0.8584	3.2	
95	0.0040	1.0000	2.5		0.0056	1.0000	2.5	
BARINGO								
0	1.0000	0.0656	58.8	0.0718	1.0000	0.0592	59.1	0.0600
1	0.9344	0.0507	61.9	0.0131	0.9408	0.0486	61.8	0.0126
5	0.8870	0.0212	61.2	0.0043	0.8950	0.0206	60.9	0.0042
10	0.8682	0.0085	57.4	0.0017	0.8765	0.0084	57.1	0.0017
15	0.8608	0.0145	52.9	0.0029	0.8692	0.0142	52.6	0.0029
20	0.8484	0.0197	48.6	0.0040	0.8569	0.0195	48.3	0.0039
25	0.8317	0.0205	44.6	0.0041	0.8402	0.0203	44.2	0.0041
30	0.8147	0.0216	40.4	0.0044	0.8231	0.0216	40.1	0.0044
35	0.7971	0.0247	36.3	0.0050	0.8053	0.0248	35.9	0.0050
40	0.7774	0.0295	32.1	0.0060	0.7854	0.0298	31.8	0.0061
45	0.7544	0.0378	28.0	0.0077	0.7620	0.0383	27.7	0.0078
50	0.7259	0.0508	24.0	0.0104	0.7328	0.0518	23.7	0.0106
55	0.6891	0.0712	20.2	0.0148	0.6948	0.0732	19.8	0.0152
60	0.6400	0.1039	16.6	0.0219	0.6439	0.1076	16.2	0.0227
65	0.5735	0.1567	13.2	0.0340	0.5747	0.1633	12.9	0.0356
70	0.4837	0.2404	10.2	0.0546	0.4808	0.2515	9.9	0.0575
75	0.3674	0.3680	7.6	0.0902	0.3599	0.3847	7.3	0.0953
80	0.2322	0.5370	5.6	0.1799	0.2215	0.5570	5.4	0.1861
85	0.1075	0.7184	4.1		0.0981	0.7362	4.0	
90	0.0303	0.8595	3.2		0.0259	0.8718	3.1	
95	0.0043	1.0000	2.5		0.0033	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

ELGEYO MARAKWET								
AGE	MALES				FEMALES			
	$l(x)$	nqx	$e(x)$	$m(x)$	$l(x)$	nqx	$e(x)$	$m(x)$
0	1.0000	0.0598	61.6	0.0649	1.0000	0.0527	61.4	0.0534
1	0.9402	0.0438	64.5	0.0112	0.9473	0.0425	63.8	0.0110
5	0.8990	0.0180	63.4	0.0036	0.9070	0.0179	62.6	0.0036
10	0.8828	0.0072	59.5	0.0015	0.8907	0.0073	58.7	0.0015
15	0.8764	0.0123	55.0	0.0025	0.8843	0.0124	54.1	0.0025
20	0.8656	0.0167	50.6	0.0034	0.8733	0.0169	49.8	0.0034
25	0.8512	0.0173	46.4	0.0035	0.8586	0.0177	45.6	0.0036
30	0.8365	0.0182	42.2	0.0037	0.8434	0.0188	41.4	0.0038
35	0.8213	0.0208	37.9	0.0042	0.8275	0.0216	37.1	0.0044
40	0.8042	0.0249	33.7	0.0050	0.8097	0.0260	32.9	0.0053
45	0.7842	0.0318	29.5	0.0065	0.7886	0.0335	28.7	0.0068
50	0.7593	0.0427	25.4	0.0087	0.7622	0.0455	24.6	0.0093
55	0.7269	0.0601	21.4	0.0124	0.7276	0.0645	20.6	0.0133
60	0.6832	0.0883	17.6	0.0185	0.6806	0.0957	16.9	0.0201
65	0.6228	0.1346	14.1	0.0289	0.6155	0.1470	13.4	0.0317
70	0.5390	0.2105	10.9	0.0471	0.5250	0.2308	10.3	0.0522
75	0.4255	0.3319	8.1	0.0796	0.4039	0.3618	7.6	0.0884
80	0.2843	0.5020	5.9	0.1703	0.2577	0.5378	5.5	0.1807
85	0.1416	0.6930	4.3		0.1191	0.7246	4.1	
90	0.0435	0.8446	3.3		0.0328	0.8658	3.2	
95	0.0068	1.0000	2.5		0.0044	1.0000	2.5	
KAJIADO								
0	1.0000	0.0458	61.9	0.0490	1.0000	0.0439	64.6	0.0442
1	0.9542	0.0327	63.8	0.0083	0.9561	0.0284	66.5	0.0073
5	0.9230	0.0087	61.9	0.0017	0.9290	0.0074	64.5	0.0015
10	0.9150	0.0067	57.5	0.0013	0.9221	0.0057	59.9	0.0011
15	0.9089	0.0116	52.8	0.0023	0.9169	0.0097	55.2	0.0020
20	0.8983	0.0162	48.4	0.0033	0.9080	0.0135	50.8	0.0027
25	0.8838	0.0173	44.2	0.0035	0.8957	0.0143	46.4	0.0029
30	0.8685	0.0188	39.9	0.0038	0.8829	0.0155	42.1	0.0031
35	0.8522	0.0220	35.6	0.0044	0.8692	0.0180	37.7	0.0036
40	0.8334	0.0271	31.4	0.0055	0.8536	0.0220	33.3	0.0045
45	0.8108	0.0357	27.2	0.0073	0.8348	0.0289	29.0	0.0059
50	0.7819	0.0497	23.1	0.0102	0.8106	0.0400	24.8	0.0082
55	0.7430	0.0726	19.2	0.0151	0.7782	0.0583	20.7	0.0120
60	0.6890	0.1108	15.5	0.0235	0.7328	0.0891	16.9	0.0186
65	0.6127	0.1748	12.1	0.0383	0.6675	0.1419	13.3	0.0306
70	0.5056	0.2784	9.1	0.0647	0.5728	0.2315	10.1	0.0524
75	0.3648	0.4321	6.7	0.1102	0.4402	0.3752	7.3	0.0924
80	0.2072	0.6176	4.8	0.2062	0.2750	0.5655	5.3	0.1901
85	0.0792	0.7906	3.6		0.1195	0.7559	3.9	
90	0.0166	0.9079	3.0		0.0292	0.8887	3.1	
95	0.0015	1.0000	2.5		0.0032	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

KERICHO								
AGE	MALES				FEMALES			
	l(x)	nxq	e(x)	m(x)	l(x)	nxq	e(x)	m(x)
0	1.0000	0.0549	63.9	0.0589	1.0000	0.0525	67.2	0.0532
1	0.9451	0.0318	66.6	0.0081	0.9475	0.0269	69.9	0.0069
5	0.9150	0.0081	64.7	0.0016	0.9220	0.0067	67.8	0.0013
10	0.9076	0.0062	60.2	0.0012	0.9159	0.0050	63.2	0.0010
15	0.9020	0.0105	55.6	0.0021	0.9112	0.0085	58.5	0.0017
20	0.8926	0.0144	51.2	0.0029	0.9035	0.0116	54.0	0.0023
25	0.8797	0.0151	46.9	0.0030	0.8930	0.0121	49.6	0.0024
30	0.8664	0.0161	42.5	0.0032	0.8822	0.0128	45.2	0.0026
35	0.8525	0.0185	38.2	0.0037	0.8709	0.0146	40.8	0.0029
40	0.8367	0.0224	33.9	0.0045	0.8582	0.0175	36.3	0.0035
45	0.8180	0.0290	29.6	0.0059	0.8432	0.0225	31.9	0.0046
50	0.7942	0.0396	25.4	0.0081	0.8242	0.0305	27.6	0.0062
55	0.7628	0.0567	21.4	0.0117	0.7991	0.0434	23.4	0.0089
60	0.7195	0.0851	17.5	0.0178	0.7644	0.0649	19.3	0.0134
65	0.6583	0.1330	13.9	0.0285	0.7148	0.1017	15.5	0.0214
70	0.5707	0.2135	10.6	0.0478	0.6421	0.1658	12.0	0.0362
75	0.4489	0.3442	7.8	0.0832	0.5357	0.2776	8.9	0.0645
80	0.2944	0.5255	5.6	0.1778	0.3869	0.4512	6.3	0.1580
85	0.1397	0.7202	4.1		0.2123	0.6616	4.5	
90	0.0391	0.8653	3.2		0.0718	0.8307	3.3	
95	0.0053	1.0000	2.5		0.0122	1.0000	2.5	
LAIKIPIA								
0	1.0000	0.0351	67.5	0.0369	1.0000	0.0319	68.6	0.0321
1	0.9649	0.0227	69.0	0.0057	0.9681	0.0207	69.8	0.0053
5	0.9430	0.0059	66.5	0.0012	0.9480	0.0054	67.3	0.0011
10	0.9374	0.0045	61.9	0.0009	0.9429	0.0041	62.6	0.0008
15	0.9332	0.0078	57.2	0.0016	0.9390	0.0071	57.9	0.0014
20	0.9259	0.0108	52.6	0.0022	0.9323	0.0099	53.3	0.0020
25	0.9159	0.0115	48.2	0.0023	0.9230	0.0106	48.8	0.0021
30	0.9053	0.0125	43.7	0.0025	0.9132	0.0114	44.3	0.0023
35	0.8940	0.0145	39.2	0.0029	0.9028	0.0134	39.7	0.0027
40	0.8811	0.0179	34.7	0.0036	0.8907	0.0165	35.2	0.0033
45	0.8653	0.0235	30.3	0.0048	0.8761	0.0217	30.8	0.0044
50	0.8450	0.0328	26.0	0.0067	0.8570	0.0304	26.4	0.0062
55	0.8173	0.0482	21.8	0.0099	0.8310	0.0448	22.2	0.0092
60	0.7779	0.0747	17.8	0.0155	0.7938	0.0698	18.1	0.0145
65	0.7198	0.1215	14.0	0.0259	0.7383	0.1146	14.3	0.0243
70	0.6323	0.2046	10.6	0.0456	0.6537	0.1954	10.8	0.0433
75	0.5030	0.3457	7.7	0.0836	0.5260	0.3356	7.8	0.0807
80	0.3291	0.5439	5.4	0.1844	0.3495	0.5369	5.5	0.1827
85	0.1501	0.7470	3.9		0.1618	0.7450	3.9	
90	0.0380	0.8862	3.1		0.0413	0.8863	3.1	
95	0.0043	1.0000	2.5		0.0047	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

NAKURU								
AGE	MALES				FEMALES			
	$l(x)$	q_x	$e(x)$	$m(x)$	$l(x)$	q_x	$e(x)$	$m(x)$
0	1.0000	0.0474	65.6	0.0505	1.0000	0.0445	67.9	0.0450
1	0.9526	0.0279	67.9	0.0071	0.9555	0.0246	70.0	0.0063
5	0.9260	0.0071	65.8	0.0014	0.9320	0.0062	67.7	0.0012
10	0.9194	0.0054	61.2	0.0011	0.9262	0.0047	63.1	0.0009
15	0.9144	0.0093	56.6	0.0019	0.9219	0.0080	58.4	0.0016
20	0.9059	0.0128	52.1	0.0026	0.9145	0.0110	53.9	0.0022
25	0.8944	0.0134	47.7	0.0027	0.9045	0.0115	49.4	0.0023
30	0.8824	0.0143	43.3	0.0029	0.8941	0.0122	45.0	0.0025
35	0.8697	0.0166	38.9	0.0033	0.8832	0.0140	40.5	0.0028
40	0.8553	0.0201	34.5	0.0041	0.8708	0.0170	36.1	0.0034
45	0.8381	0.0261	30.2	0.0053	0.8560	0.0220	31.6	0.0045
50	0.8162	0.0359	25.9	0.0073	0.8371	0.0302	27.3	0.0061
55	0.7869	0.0518	21.8	0.0106	0.8119	0.0434	23.1	0.0089
60	0.7462	0.0784	17.9	0.0163	0.7766	0.0657	19.0	0.0136
65	0.6877	0.1242	14.2	0.0265	0.7256	0.1046	15.2	0.0221
70	0.6022	0.2030	10.8	0.0452	0.6497	0.1731	11.6	0.0379
75	0.4800	0.3342	7.9	0.0802	0.5372	0.2931	8.5	0.0687
80	0.3196	0.5202	5.7	0.1767	0.3797	0.4762	6.1	0.1651
85	0.1533	0.7206	4.1		0.1989	0.6884	4.3	
90	0.0428	0.8675	3.2		0.0620	0.8498	3.3	
95	0.0057	1.0000	2.5		0.0093	1.0000	2.5	
NANDI								
0	1.0000	0.0601	63.1	0.0648	1.0000	0.0568	66.2	0.0576
1	0.9399	0.0339	66.2	0.0086	0.9432	0.0289	69.2	0.0074
5	0.9080	0.0086	64.4	0.0017	0.9160	0.0071	67.2	0.0014
10	0.9002	0.0065	60.0	0.0013	0.9095	0.0054	62.7	0.0011
15	0.8944	0.0111	55.3	0.0022	0.9045	0.0091	58.0	0.0018
20	0.8845	0.0151	50.9	0.0031	0.8963	0.0124	53.5	0.0025
25	0.8711	0.0158	46.7	0.0032	0.8851	0.0129	49.2	0.0026
30	0.8573	0.0168	42.4	0.0034	0.8737	0.0136	44.8	0.0027
35	0.8428	0.0193	38.1	0.0039	0.8618	0.0155	40.3	0.0031
40	0.8266	0.0233	33.8	0.0047	0.8484	0.0186	35.9	0.0038
45	0.8073	0.0300	29.5	0.0061	0.8326	0.0239	31.6	0.0048
50	0.7831	0.0408	25.3	0.0083	0.8127	0.0323	27.3	0.0066
55	0.7511	0.0581	21.3	0.0120	0.7864	0.0459	23.1	0.0094
60	0.7074	0.0866	17.5	0.0181	0.7504	0.0682	19.1	0.0141
65	0.6462	0.1343	13.9	0.0288	0.6992	0.1063	15.3	0.0224
70	0.5594	0.2137	10.7	0.0479	0.6249	0.1718	11.8	0.0376
75	0.4399	0.3418	7.9	0.0825	0.5175	0.2845	8.8	0.0663
80	0.2895	0.5197	5.7	0.1758	0.3703	0.4566	6.3	0.1591
85	0.1391	0.7130	4.1		0.2012	0.6634	4.5	
90	0.0399	0.8598	3.2		0.0677	0.8303	3.3	
95	0.0056	1.0000	2.5		0.0115	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

AGE	NAROK							
	MALES				FEMALES			
	$l(x)$	nqx	$e(x)$	$m(x)$	$l(x)$	nqx	$e(x)$	$m(x)$
0	1.0000	0.0549	61.0	0.0591	1.0000	0.0536	65.0	0.0542
1	0.9451	0.0361	63.6	0.0092	0.9464	0.0300	67.6	0.0077
5	0.9110	0.0094	61.9	0.0019	0.9180	0.0076	65.7	0.0015
10	0.9024	0.0072	57.5	0.0015	0.9110	0.0058	61.2	0.0012
15	0.8959	0.0124	52.9	0.0025	0.9058	0.0098	56.5	0.0020
20	0.8847	0.0172	48.5	0.0035	0.8969	0.0134	52.0	0.0027
25	0.8695	0.0183	44.3	0.0037	0.8849	0.0140	47.7	0.0028
30	0.8536	0.0196	40.1	0.0040	0.8725	0.0149	43.4	0.0030
35	0.8369	0.0228	35.8	0.0046	0.8594	0.0172	39.0	0.0035
40	0.8178	0.0278	31.6	0.0056	0.8447	0.0207	34.6	0.0042
45	0.7950	0.0363	27.5	0.0074	0.8272	0.0268	30.3	0.0054
50	0.7661	0.0500	23.4	0.0103	0.8050	0.0365	26.1	0.0074
55	0.7278	0.0721	19.5	0.0149	0.7756	0.0523	22.0	0.0107
60	0.6754	0.1084	15.8	0.0229	0.7350	0.0784	18.0	0.0163
65	0.6022	0.1685	12.4	0.0368	0.6774	0.1229	14.3	0.0262
70	0.5007	0.2653	9.4	0.0612	0.5941	0.1986	11.0	0.0441
75	0.3678	0.4107	7.0	0.1034	0.4761	0.3245	8.1	0.0775
80	0.2168	0.5920	5.1	0.1976	0.3216	0.5051	5.8	0.1721
85	0.0884	0.7691	3.8		0.1592	0.7051	4.2	
90	0.0204	0.8943	3.0		0.0469	0.8566	3.2	
95	0.0022	1.0000	2.5		0.0067	1.0000	2.5	
SAMBURU								
0	1.0000	0.0336	56.9	0.0356	1.0000	0.0331	60.9	0.0332
1	0.9664	0.0356	57.9	0.0091	0.9669	0.0299	61.9	0.0076
5	0.9320	0.0105	56.0	0.0021	0.9380	0.0084	59.8	0.0017
10	0.9222	0.0083	51.5	0.0017	0.9301	0.0066	55.3	0.0013
15	0.9145	0.0149	47.0	0.0030	0.9240	0.0116	50.6	0.0023
20	0.9009	0.0217	42.6	0.0044	0.9132	0.0167	46.2	0.0034
25	0.8814	0.0242	38.5	0.0049	0.8979	0.0183	41.9	0.0037
30	0.8600	0.0273	34.4	0.0055	0.8815	0.0204	37.7	0.0041
35	0.8365	0.0332	30.3	0.0068	0.8635	0.0245	33.4	0.0050
40	0.8087	0.0424	26.3	0.0087	0.8423	0.0309	29.2	0.0063
45	0.7744	0.0579	22.3	0.0119	0.8163	0.0418	25.0	0.0085
50	0.7296	0.0832	18.5	0.0174	0.7822	0.0598	21.0	0.0123
55	0.6689	0.1247	15.0	0.0266	0.7354	0.0898	17.2	0.0188
60	0.5855	0.1922	11.8	0.0425	0.6694	0.1404	13.7	0.0302
65	0.4730	0.2964	9.0	0.0696	0.5754	0.2245	10.5	0.0506
70	0.3328	0.4391	6.7	0.1125	0.4462	0.3536	7.8	0.0859
75	0.1866	0.6054	5.0	0.1736	0.2884	0.5253	5.7	0.1425
80	0.0737	0.7622	3.8	0.2612	0.1369	0.7040	4.2	0.2374
85	0.0175	0.8866	3.1		0.0405	0.8513	3.3	
90	0.0020	0.9604	2.7		0.0060	0.9424	2.8	
95	0.0001	1.0000	2.5		0.0003	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

TRANS NZOIA								
AGE	MALES				FEMALES			
	$l(x)$	nqx	$e(x)$	$m(x)$	$l(x)$	nqx	$e(x)$	$m(x)$
0	1.0000	0.0650	61.0	0.0709	1.0000	0.0593	62.5	0.0603
1	0.9350	0.0460	64.3	0.0118	0.9407	0.0422	65.4	0.0109
5	0.8920	0.0188	63.3	0.0038	0.9010	0.0172	64.2	0.0035
10	0.8753	0.0075	59.5	0.0015	0.8855	0.0069	60.3	0.0014
15	0.8687	0.0127	54.9	0.0026	0.8794	0.0117	55.7	0.0023
20	0.8577	0.0172	50.6	0.0035	0.8691	0.0158	51.3	0.0032
25	0.8430	0.0177	46.4	0.0036	0.8553	0.0164	47.1	0.0033
30	0.8280	0.0187	42.2	0.0038	0.8413	0.0173	42.8	0.0035
35	0.8125	0.0212	38.0	0.0043	0.8268	0.0196	38.5	0.0040
40	0.7953	0.0253	33.8	0.0051	0.8106	0.0235	34.3	0.0048
45	0.7752	0.0322	29.6	0.0065	0.7915	0.0300	30.0	0.0061
50	0.7502	0.0431	25.5	0.0088	0.7678	0.0403	25.9	0.0082
55	0.7179	0.0604	21.5	0.0125	0.7369	0.0566	21.9	0.0116
60	0.6745	0.0881	17.7	0.0184	0.6952	0.0831	18.0	0.0173
65	0.6151	0.1335	14.2	0.0286	0.6374	0.1268	14.4	0.0271
70	0.5330	0.2075	11.0	0.0463	0.5566	0.1992	11.2	0.0443
75	0.4224	0.3257	8.2	0.0778	0.4457	0.3169	8.3	0.0753
80	0.2848	0.4924	6.0	0.1674	0.3044	0.4858	6.0	0.1659
85	0.1446	0.6827	4.3		0.1566	0.6800	4.4	
90	0.0459	0.8368	3.3		0.0501	0.8364	3.3	
95	0.0075	1.0000	2.5		0.0082	1.0000	2.5	
TURKANA								
0	1.0000	0.0953	44.1	0.1092	1.0000	0.0863	45.3	0.0874
1	0.9047	0.1003	47.8	0.0267	0.9137	0.0938	48.5	0.0252
5	0.8140	0.0453	49.0	0.0093	0.8280	0.0428	49.5	0.0088
10	0.7771	0.0187	46.2	0.0038	0.7925	0.0178	46.6	0.0036
15	0.7625	0.0320	42.0	0.0065	0.7784	0.0304	42.4	0.0062
20	0.7381	0.0439	38.3	0.0090	0.7548	0.0420	38.6	0.0086
25	0.7057	0.0461	34.9	0.0094	0.7231	0.0442	35.2	0.0090
30	0.6732	0.0490	31.5	0.0100	0.6911	0.0473	31.7	0.0097
35	0.6402	0.0560	28.0	0.0115	0.6585	0.0542	28.2	0.0111
40	0.6044	0.0669	24.5	0.0138	0.6228	0.0651	24.6	0.0135
45	0.5640	0.0848	21.1	0.0177	0.5822	0.0829	21.2	0.0173
50	0.5162	0.1120	17.8	0.0237	0.5339	0.1101	17.9	0.0233
55	0.4584	0.1522	14.8	0.0330	0.4751	0.1507	14.8	0.0326
60	0.3886	0.2110	12.0	0.0472	0.4035	0.2103	11.9	0.0470
65	0.3066	0.2937	9.5	0.0689	0.3187	0.2945	9.4	0.0691
70	0.2165	0.4028	7.4	0.1009	0.2248	0.4057	7.3	0.1018
75	0.1293	0.5375	5.7	0.1470	0.1336	0.5425	5.6	0.1489
80	0.0598	0.6845	4.4	0.2285	0.0611	0.6904	4.3	0.2309
85	0.0189	0.8242	3.4		0.0189	0.8294	3.4	
90	0.0033	0.9244	2.9		0.0032	0.9276	2.9	
95	0.0003	1.0000	2.5		0.0002	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

UASIN GISHU								
AGE	MALES				FEMALES			
	$l(x)$	nqx	$e(x)$	$m(x)$	$l(x)$	nqx	$e(x)$	$m(x)$
0	1.0000	0.0555	65.1	0.0595	1.0000	0.0518	66.6	0.0525
1	0.9445	0.0302	67.9	0.0077	0.9482	0.0276	69.2	0.0070
5	0.9160	0.0076	66.0	0.0015	0.9220	0.0069	67.1	0.0014
10	0.9091	0.0057	61.5	0.0012	0.9156	0.0052	62.5	0.0010
15	0.9038	0.0098	56.8	0.0020	0.9109	0.0089	57.9	0.0018
20	0.8950	0.0133	52.3	0.0027	0.9028	0.0121	53.3	0.0024
25	0.8831	0.0139	48.0	0.0028	0.8918	0.0126	49.0	0.0025
30	0.8708	0.0148	43.6	0.0030	0.8806	0.0134	44.6	0.0027
35	0.8579	0.0169	39.3	0.0034	0.8688	0.0153	40.1	0.0031
40	0.8434	0.0204	34.9	0.0041	0.8555	0.0185	35.7	0.0037
45	0.8262	0.0263	30.6	0.0053	0.8397	0.0238	31.3	0.0048
50	0.8044	0.0358	26.3	0.0073	0.8197	0.0324	27.0	0.0066
55	0.7757	0.0510	22.2	0.0105	0.7932	0.0462	22.9	0.0095
60	0.7361	0.0763	18.3	0.0159	0.7565	0.0693	18.9	0.0144
65	0.6800	0.1191	14.6	0.0253	0.7041	0.1088	15.1	0.0230
70	0.5990	0.1922	11.2	0.0425	0.6275	0.1773	11.6	0.0389
75	0.4839	0.3145	8.3	0.0746	0.5163	0.2950	8.6	0.0692
80	0.3317	0.4926	5.9	0.1686	0.3640	0.4726	6.1	0.1636
85	0.1683	0.6940	4.3		0.1920	0.6801	4.4	
90	0.0515	0.8494	3.3		0.0614	0.8421	3.3	
95	0.0078	1.0000	2.5		0.0097	1.0000	2.5	
WEST POKOT								
0	1.0000	0.1141	49.2	0.1295	1.0000	0.1015	50.0	0.1038
1	0.8859	0.0846	54.5	0.0223	0.8985	0.0807	54.5	0.0215
5	0.8110	0.0347	55.4	0.0071	0.8260	0.0338	55.2	0.0069
10	0.7828	0.0139	52.3	0.0028	0.7981	0.0136	52.1	0.0027
15	0.7719	0.0234	48.0	0.0047	0.7872	0.0230	47.7	0.0046
20	0.7539	0.0314	44.1	0.0064	0.7692	0.0311	43.8	0.0063
25	0.7302	0.0322	40.5	0.0066	0.7453	0.0321	40.1	0.0065
30	0.7067	0.0336	36.7	0.0068	0.7214	0.0337	36.4	0.0068
35	0.6829	0.0378	32.9	0.0077	0.6971	0.0380	32.6	0.0078
40	0.6571	0.0446	29.1	0.0091	0.6706	0.0451	28.7	0.0092
45	0.6278	0.0559	25.4	0.0115	0.6403	0.0569	25.0	0.0117
50	0.5927	0.0733	21.7	0.0152	0.6039	0.0750	21.3	0.0156
55	0.5492	0.0996	18.2	0.0210	0.5586	0.1027	17.9	0.0216
60	0.4945	0.1395	15.0	0.0300	0.5012	0.1447	14.6	0.0312
65	0.4256	0.1993	12.0	0.0443	0.4287	0.2079	11.7	0.0464
70	0.3408	0.2866	9.4	0.0669	0.3396	0.2998	9.1	0.0705
75	0.2431	0.4092	7.1	0.1029	0.2378	0.4272	6.9	0.1087
80	0.1436	0.5624	5.4	0.1862	0.1362	0.5830	5.2	0.1929
85	0.0629	0.7265	4.1		0.0568	0.7453	3.9	
90	0.0172	0.8599	3.2		0.0145	0.8735	3.1	
95	0.0024	1.0000	2.5		0.0018	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

WESTERN								
AGE	MALES				FEMALES			
	l(x)	nxq	e(x)	m(x)	l(x)	nxq	e(x)	m(x)
0	1.0000	0.1037	55.6	0.1160	1.0000	0.0966	57.7	0.0996
1	0.8963	0.0639	61.1	0.0166	0.9034	0.0580	62.8	0.0152
5	0.8390	0.0251	61.2	0.0051	0.8510	0.0227	62.6	0.0046
10	0.8179	0.0099	57.7	0.0020	0.8317	0.0090	59.0	0.0018
15	0.8098	0.0166	53.2	0.0033	0.8242	0.0150	54.5	0.0030
20	0.7963	0.0222	49.1	0.0045	0.8119	0.0200	50.3	0.0040
25	0.7787	0.0226	45.1	0.0046	0.7956	0.0204	46.3	0.0041
30	0.7611	0.0234	41.1	0.0047	0.7794	0.0211	42.2	0.0043
35	0.7433	0.0262	37.0	0.0053	0.7630	0.0236	38.0	0.0048
40	0.7239	0.0307	33.0	0.0062	0.7450	0.0278	33.9	0.0056
45	0.7016	0.0385	28.9	0.0078	0.7243	0.0348	29.8	0.0071
50	0.6746	0.0504	25.0	0.0103	0.6991	0.0457	25.8	0.0093
55	0.6406	0.0688	21.2	0.0143	0.6672	0.0625	21.9	0.0129
60	0.5965	0.0974	17.6	0.0205	0.6255	0.0888	18.2	0.0186
65	0.5385	0.1422	14.2	0.0306	0.5700	0.1305	14.7	0.0279
70	0.4619	0.2120	11.1	0.0474	0.4956	0.1967	11.5	0.0436
75	0.3640	0.3199	8.4	0.0762	0.3981	0.3013	8.7	0.0710
80	0.2475	0.4711	6.2	0.1601	0.2782	0.4521	6.4	0.1553
85	0.1309	0.6507	4.6		0.1524	0.6356	4.7	
90	0.0457	0.8079	3.5		0.0555	0.7983	3.5	
95	0.0088	1.0000	2.5		0.0112	1.0000	2.5	
BUNGOMA								
0	1.0000	0.0954	58.9	0.1059	1.0000	0.0882	60.7	0.0910
1	0.9046	0.0549	64.1	0.0142	0.9118	0.0502	65.5	0.0130
5	0.8550	0.0213	63.8	0.0043	0.8660	0.0194	64.9	0.0039
10	0.8368	0.0084	60.1	0.0017	0.8492	0.0076	61.1	0.0015
15	0.8298	0.0140	55.6	0.0028	0.8427	0.0127	56.6	0.0026
20	0.8182	0.0186	51.3	0.0038	0.8320	0.0170	52.3	0.0034
25	0.8030	0.0189	47.2	0.0038	0.8178	0.0173	48.2	0.0035
30	0.7878	0.0196	43.1	0.0040	0.8037	0.0179	44.0	0.0036
35	0.7724	0.0218	38.9	0.0044	0.7893	0.0200	39.7	0.0040
40	0.7555	0.0256	34.7	0.0052	0.7736	0.0235	35.5	0.0048
45	0.7362	0.0321	30.6	0.0065	0.7554	0.0294	31.3	0.0060
50	0.7126	0.0421	26.5	0.0086	0.7332	0.0386	27.1	0.0079
55	0.6826	0.0575	22.6	0.0118	0.7049	0.0529	23.1	0.0109
60	0.6434	0.0817	18.8	0.0170	0.6676	0.0756	19.3	0.0157
65	0.5908	0.1204	15.2	0.0256	0.6171	0.1119	15.7	0.0237
70	0.5197	0.1823	12.0	0.0401	0.5481	0.1711	12.3	0.0374
75	0.4249	0.2820	9.1	0.0657	0.4543	0.2682	9.3	0.0619
80	0.3051	0.4296	6.7	0.1496	0.3325	0.4153	6.8	0.1462
85	0.1740	0.6152	4.8		0.1944	0.6041	4.9	
90	0.0670	0.7839	3.6		0.0770	0.7775	3.6	
95	0.0145	1.0000	2.5		0.0171	1.0000	2.5	

APPENDIX VIII: (cont.)

MODEL LIFE TABLES BY SEX, DISTRICT AND PROVINCE: 1979-89

BUSIA								
AGE	MALES				FEMALES			
	$l(x)$	nqx	$e(x)$	$m(x)$	$l(x)$	nqx	$e(x)$	$m(x)$
0	1.0000	0.1184	52.8	0.1334	1.0000	0.1040	52.7	0.1068
1	0.8816	0.0733	58.8	0.0192	0.8960	0.0726	57.7	0.0192
5	0.8170	0.0288	59.4	0.0058	0.8310	0.0294	58.1	0.0060
10	0.7935	0.0114	56.1	0.0023	0.8066	0.0117	54.8	0.0024
15	0.7844	0.0190	51.7	0.0038	0.7971	0.0197	50.4	0.0040
20	0.7695	0.0253	47.6	0.0051	0.7815	0.0264	46.4	0.0054
25	0.7500	0.0257	43.8	0.0052	0.7608	0.0271	42.6	0.0055
30	0.7307	0.0266	39.9	0.0054	0.7402	0.0282	38.7	0.0057
35	0.7113	0.0297	35.9	0.0060	0.7193	0.0317	34.7	0.0065
40	0.6902	0.0348	32.0	0.0071	0.6965	0.0375	30.8	0.0076
45	0.6661	0.0434	28.0	0.0089	0.6704	0.0470	26.9	0.0096
50	0.6373	0.0566	24.2	0.0116	0.6389	0.0619	23.1	0.0128
55	0.6012	0.0767	20.5	0.0160	0.5993	0.0845	19.5	0.0177
60	0.5551	0.1076	17.0	0.0227	0.5487	0.1195	16.0	0.0254
65	0.4954	0.1552	13.7	0.0337	0.4831	0.1732	12.9	0.0379
70	0.4185	0.2278	10.8	0.0514	0.3994	0.2544	10.0	0.0583
75	0.3231	0.3371	8.2	0.0811	0.2978	0.3732	7.6	0.0918
80	0.2142	0.4862	6.1	0.1638	0.1867	0.5285	5.7	0.1762
85	0.1101	0.6606	4.5		0.0880	0.7004	4.2	
90	0.0374	0.8130	3.4		0.0264	0.8427	3.3	
95	0.0070	1.0000	2.5		0.0041	1.0000	2.5	
KAKAMEGA								
0	1.0000	0.1040	55.4	0.1164	1.0000	0.0966	57.7	0.0996
1	0.8960	0.0647	60.8	0.0168	0.9034	0.0580	62.8	0.0152
5	0.8380	0.0255	60.9	0.0052	0.8510	0.0227	62.6	0.0046
10	0.8166	0.0101	57.4	0.0020	0.8317	0.0090	59.0	0.0018
15	0.8084	0.0169	53.0	0.0034	0.8243	0.0150	54.5	0.0030
20	0.7947	0.0225	48.8	0.0046	0.8119	0.0200	50.3	0.0040
25	0.7768	0.0229	44.9	0.0046	0.7957	0.0203	46.3	0.0041
30	0.7590	0.0238	40.9	0.0048	0.7795	0.0211	42.2	0.0043
35	0.7409	0.0266	36.8	0.0054	0.7631	0.0236	38.1	0.0048
40	0.7212	0.0313	32.8	0.0064	0.7451	0.0277	33.9	0.0056
45	0.6986	0.0392	28.8	0.0080	0.7245	0.0347	29.8	0.0071
50	0.6713	0.0514	24.8	0.0105	0.6994	0.0456	25.8	0.0093
55	0.6368	0.0701	21.0	0.0145	0.6675	0.0623	21.9	0.0129
60	0.5921	0.0992	17.4	0.0209	0.6259	0.0886	18.2	0.0185
65	0.5334	0.1447	14.1	0.0312	0.5704	0.1302	14.7	0.0279
70	0.4562	0.2155	11.0	0.0483	0.4962	0.1963	11.5	0.0435
75	0.3579	0.3244	8.4	0.0775	0.3988	0.3008	8.8	0.0708
80	0.2418	0.4761	6.2	0.1614	0.2788	0.4514	6.4	0.1551
85	0.1267	0.6551	4.6		0.1530	0.6350	4.7	
90	0.0437	0.8110	3.4		0.0558	0.7979	3.5	
95	0.0083	1.0000	2.5		0.0113	1.0000	2.5	

Appendix IX: Main Contributors to Census Analytical Reports

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Mr. Ben Obonyo: Vol. V - Analytical Report: Mortality

Dr. John Kekovole: Vol. VI - Analytical Report: Migration and Urbanisation

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Dr. Boniface K'Oyugi: Vol. VIII - Analytical Report: Education

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