INFANT AND CHILD MORTALITY DIFFERENTIALS IN KAKAMEGA DISTRICT BY DIVISION.

BY

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This project is submitted in partial fulfiment of the requirement for the degree of Post-graduate diploma in Population Studies of the University of Nairobi.

Septemebr 1988

DECLARATION.

This project is my origianl work and to the best of my knowledge has not been presented for a decree in any other Universitv.

Signature ....
Joseph Atichi Munala

This project has been submitted for examination with my approval as a Supervisor.

Signature 21/9/88
J.A.M Ottieno PhD.

ACKNOWLEDGEMENT.

My most sincere thanks go firstly to the Ford Foundation for the financial assistance that has enabled me to undertake this course and secondly to the University of Nairobi for granting me study leave.

I am greatly indebted to my supervisor Dr. J.A.M ottieno whose willingness to help gave me the thrust that saw my work ready in good time. I must also thank all the Population Studies and Research Institute staff for the co-operation they gave me throughout the course. Mention should be made of Abgael whose typing services made this work a reality.

Lastly but not least I wish to thank my wife Fatuma and sons Steve and Dan for their understanding during the course of the study for the little time I spared for them. To my mother Phanice who has always been a source of strength and inspiration, your prayers are rewarded.

To my late father Stephen, may the Lord rest his soul in peace.

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GENERAL INTRODUCTION

1.1. INTRODUCTION.

Infant and child mortality occupies a central part in both mortality and fertility studies. It is infant and child mortality that contributes significantly to the overall mortality rate since most deaths occur within 0-5 years. The high fertility rate experienced in many regions has a strong link with the fact that the infant mortality rate (IMR) is high and parents therefore create a "buffer stock" to cater for eventual loss. Among the factors that are considered as contributing to the decline of infant and child mortality in Kenya are the control of diseases, improved medical technology and improved availability of medical facilities (Kibet M.K 1981) and better standard of living from what the situation was prior to independence. Although the infant and child mortality level is high, the general trend indicates gradual decline but with marked regional differentials. A casual look at the national figures (Table I.) and data from all districts in Kenya (Table II) makes this point clear.

TABLE I: MORTALITY INDICATORS FOR KENYA BY YEAR.

YEAR	CDR	IMR	e(o)
1948	25	184	35
1962	18-23	174	45
1969	17	119	49
1979	14	105	55
1984	13	84	58

SOURCE: CBS (1984) & MOTT (1979).

TABLE II

CLASSIFICATION OF MORTALITY LEVELS IN 1979 USING q(2) PER 1000

REGION	LOW 40-59	MEDIUM 60-79	80-109	HIGH 110-139	140-169	VERY HIGH 170-199	200+
KENYA				KENYA			
NAIROBI			NAIROBI				
CENTRAL	NYERI	NYANDARUA KIAMBU KIRINYAGA MURANG'A					
COAST				T-TAVETA MOMBASA		KWALE KILIFI T. RIVER	LAMU
EASTERN		MERU	EMBU MACHAKOS	ISIOLO MARSABET	KITUI		
N. EASTERN				GARISSA WAJIR		MANDERA	
NYANZA			KISII			SIAYA KISUMU	S. NYANZA
WESTERN				BUNGOMA KAKAMEGA		BUSIA	
R. VALLEY		SAMBURU LAKIPIA	U.GISHU KERICHO NANDI NAROK NAKURU NAKURU KAJIADO	TURKANA T. NZOIA MARAKWET	BARINGO	W. POKOT	

SOURCE: KICHAMU (1986).

Infant mortality resulting form persistingly high levels of diarrheal (and parasitic) diseases has declined not because of provision of modern medical services but to the provision of better nutritional and living conditions that depend for the most part on increases in the levels of private income and their nearly equal distributions among persons with further declines being attributed to improved levels of living and increased maternal education (Hauser 1979).

Western Province is one of the Kenyan provinces with the highest infant and child mortality and a national classification places it in the second highest level (with IMR of between 110-139 deaths per 1000 live births)surpassed only by Nyanza and Coast provinces which both experience from 170 - over 200%. . The lowest infant and child mortality is in Central Province and other highland areas with below 100 deaths per 1,000 live births. Nyeri district experiences the lowest IMR at 38%. The reasons advanced for the variability in infant and child mortality by district are that the low mortality districts are geographically located in the highland areas that are less malarious (although account should be noted of the incidence of other respiratory diseases).Secondly the low mortality districts tend to have higher mean percentage of women literate, higher mean per capita, high potential agricultural land, high mean number of kilo meters of road per 1,000 square kilometers, lower mean percentage of urban population and lower mean number of persons per health facility than higher mortality districts (Kibet M.K 1981).

Kakamega district is one of the most densely populated area in the country and therefore has one of the highest population growth rate and the central Bureau of Statistics (CBS) estimates the annual population growth rate between 1980-1990 at 3.46% . (MFP: kakamega district development plan 1984-88). The district's infant mortality rate is estimate at between 110-139%, almost 3 times that of Nyeri district.

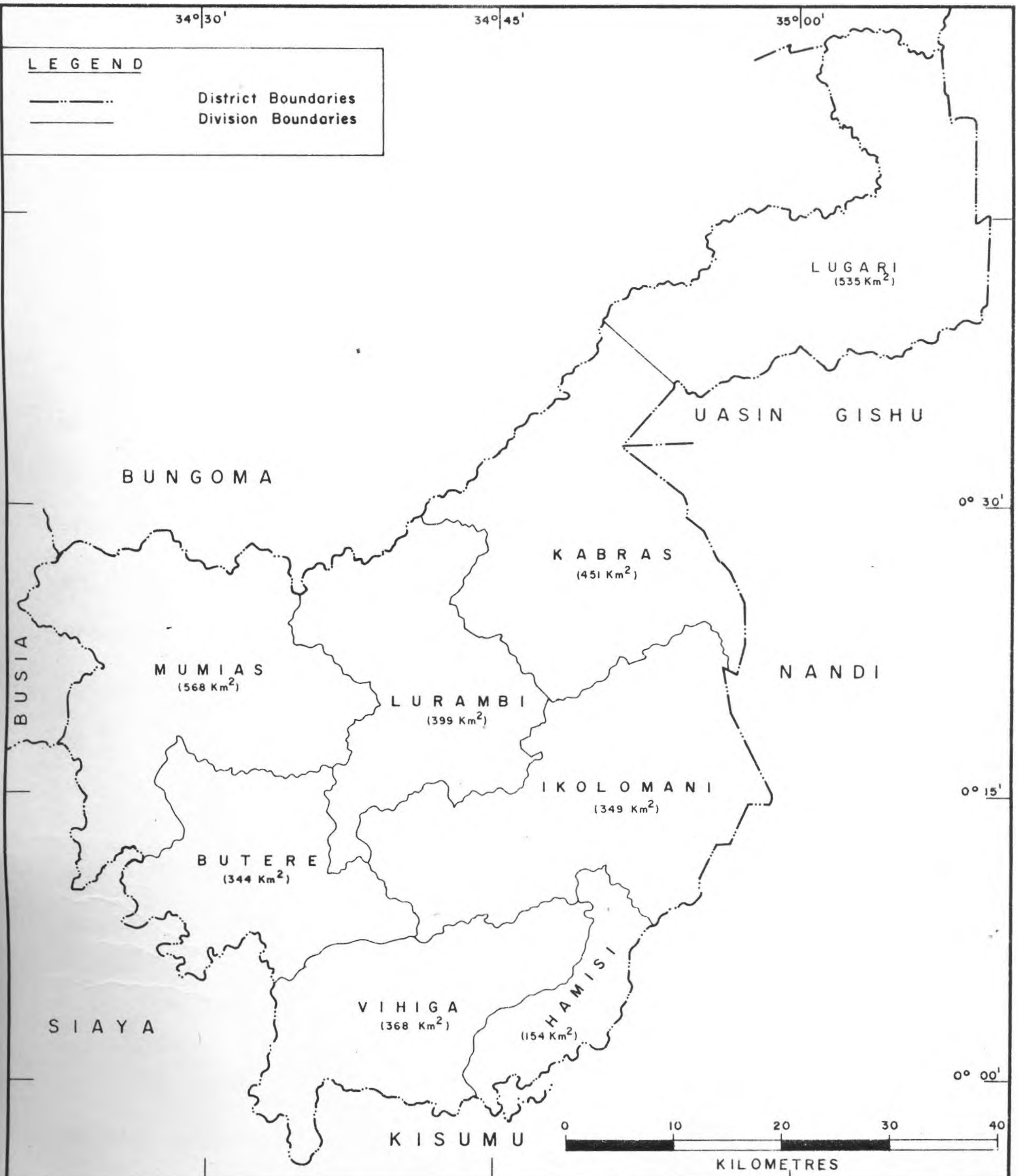
1.2. BACKGROUND TO STUDY AREA.

Kakamega district extends over an approximate area of 3,520 square kilometers. By 1979 it was divided into eight (8) administrative divisions namely Vihiga, Hamisi, Luranmbi, Ikolomani, Butere, Kabras, Lugari and Mumias (fig. 1) which by further sub-division yielded twenty nine (29) locations and one hundred and seventy four (174) sub-locations.

In 1979 total population for the district was quoted as 1,030,887 out of which 94.6% were Luhya's, 2.3% were Luos, 1% were Kalenjins and 2.1% others. The same data also indicates that about 51.5% of the districts' population was made up of people in ages 0-14 and 38.6% was accounted for by age 15-49 while those beyond 50 years made about 9.9% This shows that about 60% of the population was dependent on only 40% with women doing most of reproductive work as most men have migrated to urban centers.

Climatically, Kakamega district experiences temperatures of between a mean maximum of 26 ^{o}C - 32 ^{o}C and a mean minimum of 14 ^{o}C and 18 ^{o}C. Rainfall varies from 1250 mm to 2000 mm and increases with altitude. *Generally the district is wettest between March and* October. The district is part of the Lake Victoria basin. Altitude varies from a high of about 1500 meters above sea level in the east to 1250 meters in the west. The equator cuts through the southern tip of the district.

FIG. I KAKAMEGA DISTRICT : DIVISIONS



1.3 PROBLEM STATEMENT.

Kakamega district experiences very high infant and child mortality; a pointer to the fact that its level of socio-economic development is still generally very low. Data from the 1979 Kenya population census indicates that the district is among the eleven districts classified as being in the lowest bracket of the high infant mortality group of between 110-139%. . Among the socio-economic factors that have contributed to this situation include few medical facilities coupled with scarce curative and preventive medicines, high malarial prevalence, low nutritional level, high population density, low agricultural productivity, low education of mothers and the large goegraphical expense of the district all combine in one form or another to produce a high rate of infant and child mortality.

1.4 OBJECTIVES OF THE STUDY.

The general objective of the study is to show that infant and child mortality differs by division and by differentials of education, marital status and residence for each division.

Specific objectives will be:-

i) to determine the q(1), q(2), q(3), q(5) q(10), q(15) and q(20) values by using the differentials above to show the level of infant and child mortality. Our interest will however be focused on the q(2), q(3) and q(5) values from which we intend:-

ii) to construct life tables for each division (all cases), each differentials (and its catagories) and the district. From the life tables constructed we specifically want to obtain the infant mortality rate (IMR) lqo and the life expectancy at birth (eo).

1.5 STUDY JUSTIFICATION

Like most demographic studies, this study will endeavour to make important conclusions relevant to social and economic planning in Kakamega district. Since mortality policy is mainly explained through health requirements and programmes knowledge of the infant and child mortality differentials and life expectancy at birth will help to determine what is needed by the population in terms of health facilities, health personnel, nutrition, disease prevalence and possible ways of control, importance of roads towards health as they combine with the level of education of mothers, marital status and place of residence to produce mortality differentials. The study also aims to contribute to the understanding of the infant and child mortality decline so as to be able to convince parents and all others of the survival of their children and an eventual contribution to fertility decline in the district. Lastly, with socio-economic planning now taking place at the district level, this study hopes to contribute a lot in the District focus for rural development strategy as far as the alleviation of mortality (generally) is concerned. It is therefore necessary to study and understand the mortality situations within districts at divisional and lower levels.

1.6 SCOPE AND LIMITATION

The study will cover all the divisions in Kakamega district as given by the 1979 Kenya population census survey. The study only covers three differentials/variables as obtained from the avaialble data and therefore it cannot be claimed to be exhaustive. It is common knowledge that many other socio-economic, biological, environmental and cultural factors also play a vital role in determining the level of infant and child mortality. A study encompasing all these would have required much more time, funds, personnel and to some extend primary data. But due to the limitation of all these factors the study will limit itself to the three variables of level of education, residence and marital status, using secondary data.

1.7 LITERATURE REVIEW.

Numerous studies have been done about infant and child mortality both by differential and by cause of death. Interest in the study of mortality has been activated by the fact that while in the Western world it took many years for mortality to decline to their present level, in the third world mortality has declined within a period of between 30-50 years particulary for infant and child mortality. Theoretically, this does not conform to the long held theory underlying the demographic transition especially when considered vis-a-vis fertility. The mortality decline has been so much that the long held view that socio-economic development must preceed mortality decline does not apply (in all cases).What seems to be mainly acceptable is the arguement that the decline is largely due to government health policy that puts emphasis on operationable programs such as improved medical technology, disease monitoring and control and increased availability and distribution of medical facilities and personnel (Anker and Knowles 1978).

Studies done in developing countries show that infant and child mortality differentials depend on factors like mothers level of education, residence, marital status, parity and sex of the child, geographic region (environment), type of marriage and culture.

In Kenya, Mott (1979) using the Kenya Fertility Survey data confirmed the existence of these differentials. He found out that mortality was ~~the~~ most pronounced among first births and at higher parities not only for the infants and children but also for the mothers since first and old age pregnancies are associated with childbirth complication leading to maternal deaths. It is also by general concensus that increasing educational attainment is associated with declines in infant mortality (Caldwell 1979; Anker and Knowles 1977, Brass 1979, Kichamu 1986). This is so because education has been linked to the factors outlined below:-

a) Breaks with traiditional family raising practices.

b) Less fatalism about illness

c) More effective child care and medical alternatives

d) Better utilization of availble food from a nutritional perspective

e) More personal and intensive attention by the mother with more of the family resources spent on the children.

Mott observed further that the place of residence (Urban/Rural) association with low infant and child mortality to urban residents has some ambiquity. Other scholars (Caldwel 1979; Anker and Knowles 1977) have suggested that the 'true' explanatory factors may be educational, marital status and family size since the urban centers tend to contain more positive attributes of those factors and are concentrated in small geographical areas with more facilities. Anker (1978) argues further that just like place of residence, the association of income with infant and child mortality does not necessarily refer to income per se but rather to the things that good income can buy some of which affect mortality while others do not.

Kibet (1981) looked at the differential mortality in Kenya using the 1979 census data and any available ecological demographic, health, disease and economic data. He also did a special study on the role of female education in determining mortality differentials. He did these by specifically investigating whether or not differences in mortality among the Kenyan districts are related to the mortality determinants in a consistent and logical manner and also to test the significance of the relationship between mortality on one hand and socio-economic, demographic, ecological, medical and disease conditions on the other. He used the Brass technique for estimating childhood mortality and also did regression for the other variables and a statistical significance test.

He found out that:-

(1) the general level of child mortality in Kenya was very high (125/1000) but differed regionally with the highland areas of Kenya experiencing lower mortality than the lowlands around the Coast and Lake Victoria basin.

(2) the socio-economic factors such as womens' education, urbanisation, agriculture, available hospital beds and kilometers of road were found to be invesely related to child mortality.

(3) population density, total fertility rate and malaria all showed a positive relationship with the child mortality levels.

(4) the most effective factors influencing child mortality levels are education of mother and malaria

(5) education accounts for a small fractor for the mortality differentials within the districts.

(6) the level of mothers education and knowledge about practises of personal hygiene, sanitation, preventive meansures, nutrition and the willingness to utilize health services are positively related.

Koyugi (1982) helps to confirm that mortality differentials for education, residence, and marital status conform to certain patterns. Looking at mortality and morbidity situation in Siaya district he found that for Siaya district, infant and child mortality is higher in the rural than in the urban areas. Also infant and child mortality decreases as the level of education of the mothers increase. He (Koyugi) argues that "the lower mortality in urban centres should be due to better sanitation, housing, shorter distances to health centres and higher income levels existing in the urban areas on the average". On the other hand "educated women especially those who attained secondary plus level could be said to have better knowledge of child care. Many such mothers are also likely to be in wage employment and are therefore supplementing the family's income. This enables them to provide better meals, good health care, better housing and sanitary facilities to their children".

For the widowed mothers child mortality was highest while single mothers have the lowest. Children of widowed women are more likely to be liable to disease attack particularly of nutritional origin since most of them live under poorer conditions after the death of the father.

Nyamwange (1982) studied infant mortality differentials in Nairobi by administrative wards and found that migration (place of origin) plays a role in determining the mortality level among the community at the place of destination. Those migrants from high infant mortality areas induce higher rates in the community where they settle than those from lower mortality areas.

Kichamu (1986) examined the levels and differentials of infant and child mortality in Kenya at the national, provincial and district levels and constructed life tables for each. For Western province he found that the three districts namely Kakamega, Bungoma and Busia had not shown any substatial decline in mortality between 1969 and 1979 and that they remained in their classe of high mortality (Busia-very high). He also confirmed the pattern that the differentials exert on infant and child mortality. Apart from afew districts whose data was treated with suspision,the pattern was that mothers with higher secondary plus education experience lowest mortality compared to those with primary and no education. For residence he found out that urban areas had low mortality than rural areas in general. For marital status he observed that naturally, child mortality for the widowed mothers is highest followed by divorced and separated women. Those for married and single women come third and fourth respectively. According to him cases that do not agree with this pattern have explanations vested in cultural norms,level of education and socio-economic status.

Mutai (1987) estimated the q(2) values for all the locations in Kericho district by differentials of education, place of residence and marital status using the 1979 Kenya population census data. He used the Trussell's technique to estimate the infant and child mortality. He found out that in all locations with both urban and rural populations (other than techoget location) infant mortality is higher in the urban center and suggests that this could be because these locations have high agricultural potential and on the whole have better developed infrastructure. Therefore the rural population is better nourished than the urban. He also found that the differential by education has highest infant and child mortality among mothers with no education and lowest among mothers with secondary education and over. For marital status he found out that the highest child mortality is found among the divorced, followed by the married, then the widowed and lastly the single women. He mentions that the widowed did not show higher proportion as is generally believed because this happens more to the highly monetised communities or where the family is totally dependent on the father's income. However in Kericho (rural communities) where the production (food crops and care of livestock) is womens' responsibility this would not be the case.

Ondimu (1988) looked at the socio-economic determinants of infant and child mortality in Kenya, using the 1984 KCPS data. He had three main objectives:-

1. To estimate the levels and differentials of infant and child mortality by various siocio-economic variables that were covered by the KCPS. The study relied on three main meansures i.e 1qo, 4q1, and eo.

2. To estimate the levels of infant and child mortality for the dfferent administrative regions covered by the KCPS (both districts and provinces).

3. To find the strength of the relationship between each of the selected independent variables and infant mortality.

He used three methods to obtain his results.

a) the Brass method of infant and child mortality estimation

b) Coale and Trussell's method

c) Multiple regression.

He found out that the level of mothers education has an influence on infant and child mortality to the extent that those children whose mothers have 9 years of education and above live 20 years more than those whose mothers have no education. He also found that there is a marked difference in mortality along ethnic groups a result that emphasises regional imbalances in socio-economic and cultural development. The Kikuyu have a life expectancy of 63 years while the Luo and the Mijikenda have life expentancies of 42 and 48 years respectively. The variables that show differentials include place of residence (rural-urban), religious identification, work status of parents,type of marital union and contraceptive use as summarised below:

High Survival	Low Survival
Educated mother (9+)	No/Little education
Working mother	Non-working mother
Working father (Business)	Non-working/farming father
Urban residents	Rural residents
Single & separated	Married and widowed
Protestants and Catholics	Muslims and others
Contracepting mothers	Non contracepting mothers
Monogamous mothers	Polygamous mothers

Adienge's (1988) study had the following objectives:
To estimate infant and child mortality at National, Provincial and District levels. Specifically he estimated infant mortality rate (IMR) - 1q0, childhood mortality rate - 4q1, the probability of a live born child dying before attaining 2, 3 and 5 years denoted by q(2), q(3) and q(5) respectively, life expectancy at birth (eo) and at 5 years e(5). He used the additive synthelic adjustment technique, Kraly-Norris technique and Palloni's technique for adjustment of changing mortality conditions. He used the 1969 and 1979 Kenya population census data. This work was mainly an analysis of alternative techniques of estimating infant and childhood mortality when mortality conditions are changing.

He found that the Brass infant and childhood mortality estimates under conditions of changing mortality particularly declining mortality tends to overestimate current mortality. Estimates from indirect procedure employing Hypothetic additive synthetic produced higher levels (indicating lower mortality) for the intercensual period than for 1969. The mortality level declined by age-group of mother indicating increased exposure of older children to divergent mortality schedules.

The estimates obtained by the Kraly-Norris and Palloni's techniques for current mortality showed consistency and coherence, and thus were interpreted to represent mortality levels at the time of census.

He noted that the accuracy of an indirect method of estimating infant and childhood mortality depends on the appropriateness of the theory inherent in the method used to real demographic situation as well as the quality of data used.

1.8. THEORETICAL STATEMENT.

From the mortality studies on Kenya mentioned above, it is clear that infant and child mortality is influenced or determined by demographic variables (parity, sex of child. migration, total fertility rate, age of mothers e.t.c); environmental variables (geographical regions, disease, morbidity e.t.c); socio-economic-cultural variables (place of residence, education, marital status, occupation, religion, type of marriage, contraceptive use e.t.c). In addition developments such as roads, provision of piped water, medical facilities e.t.c have a great impact on infant and child mortality.

The theoretical statement of this study will therefore be that socio-economic factors are likely to affect the infant and child mortality rates of the eight divisions of Kakamega district.

1.9. CONCEPTUAL HYPOTHESES.

The following will form the conceptual hypotheses:-

1. Infant and Child mortality in the divisions of Kakamega district is likely to be affected by level of education of the mother.

2. Infant and Child mortality in Kakamega district is likely to be affected by place of residence of mother:

3. Infant and Child mortality in Kakamega district is likely to be affected by marital status of mother.

1.10. OPERATIONAL HYPOTHESES.

The operational hypotheses are as listed below:

1. That maternal education is inversely related to infant and child death.

2. Infant and Child death is lower in urban areas than in rural areas.

3. Infant and Child death is lower for single and married women than for divorced and separated and widowed women.

SECTION 2

DATA SOURCES, QUALITY AND METHODOLOGY

2.1 INTRODUCTION.

Many techniques have been developed by demographers for the estimation of mortality even in instances of incomplete data. The developing countries and to some extent the developed world both suffer from this problem. Kenya is no exception and most estimates are made from incomplete data often not meant for demographic purposes. Reasons advanced (Ronoh, 1981) for lack of adequate and accurate demographic data are:-

1. Lack of adequate financial resources for carrying out detailed surveys.
2. Little or no application of data in development programmes.
3. Lack of adequately trained manpower to carry out surveys and handle (process and use) the data collected.

With the appreciation of the importance of population as an ingredient of development, African countries have engaged in conducting censuses, sample surveys and vital registration which now provide a wealthy source of data for demographic studies.

2.2 DATA SOURCES.

Kenya's census history dates to 1948 and has since then been done for years 1962, 1969 and 1979.The next one is planned for in 1989.The 1979 census had detailed demographic questions that have enhanced Kenya's demographic data base. Many sample surveys have also been conducted and also form an important data base. Among the most important are the Kenya Fertility Survey (KFS) of 1977/78; the National Demographic Survey (NDS) of 1977; the Kenya contraceptive Prevalence Survey (KCPS) of 1984; the National Demographic Survey (1983) which was basically a survey for all urban centers; and the 1988 Kenya Demographic Health Survey (forthcoming). One advantage of sample surveys over the other sources is that they are carried out under strictly supervised, well trained personnel and often yield remarkably reliable data.

Vital Registration systems are the least developed among the data sources in Kenya and many third world countries. In fact by 1971 there was no country in Africa South of the Sahara with a system of civil registration capable of producing worth while demographic statistics on a national level (Blacker 1971). In Kenya the introduction of the vital registration system is quite recent and has only been introduced in about 7 districts out of the 41 districts with Central Province taking a leading role. Complete vital registration started in Central Province in 1982 and it has been extended to Western Province.

2.3 DATA COLLECTION AND LIMITATIONS.

The data used was from the 1979 Kenya population census for Kakamega district broken down into divisions:

Specifically it included:-

a) Total female population (FPOP) of reproductive ages (15-49) in 5 year age groups for Kakamega district by division

b) Children ever born (CEB) to the female of reproductive age for Kakamega district by division.

c) Children dead (CD) by age group of mother for Kakamega district by division.

d) the data was collected by the differentials of education catagorized into no education, primary education, secondary plus education; marital status categonized into single, married, widowed, divorced and separated and place of residence categorised into rural and urban.

Note should be taken of the fact that since the analysis is at macro level (division) the data used is also at macro level and not micro level.

The 1979 Kenya population census data is plagued by the following limitation:-

i) Under-reporting or mis-reporting of deaths

ii) Inclusion of still births in numbers of children dead

iii) Under-reporting of children ever born.

iv) Age mis-reporting for both children and mother.

v) Non reporting of a birth and subsequent death

vi) Heaping of deaths at one year or six month mark.

2.4. METHODOLOGY

The methodology to be applied to the data mentioned above is the Trussell's method of estimation of child mortality from information on children ever born and children dead which is the most recent version of the original Brass estimation proceedure. Our interest will be to obtain the proportion dead among children ever born to women of successive five year age groups and then to convert this proportion denoted by D(i) for each age group into estimates of q(x) which is the probability of dying between birth and exact age x.

After obtaining the q(x) values we shall then construct life tables by use of the Coale-Demeny model life table west motality model.

2.4.1. ESTIMATION OF g(x) VALUES.

STEP 1: CALCULATION OF P(i)

Use is made of the data for Vihiga given in table 3 below to compute the average parity per woman P(i) where i refers to the different five year age group. Therefore i = 1 refers to the age group 15-19; i = 2 to the age group 20-24 ...., i = 7 to the age group 45-49. The general formula for obtaining P(i) is:

$$P(i) = CEB(i)/FPOP(i) \qquad (2.1).$$

Where:-

CEB(i) = The number of children ever born by women in age group (i); and

FPOP(i) = the total number of women in age group (i) irrespective of their marital status

TABLE III MORTALITY BY DIFFERENTIALS IN VIHIGA
NO EDUCATION

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	1122	838	111	0.746880	0.132458	0.285600	0.037830
20-24	2090	4937	659	2.362200	0.133481	0.931520	0.124341
25-29	2280	9184	1538	4.028070	0.167465	0.940146	0.157441
30-34	2085	12863	2502	6.169304	0.194511	0.921475	0.179237
35-39	2436	18077	3837	7.420771	0.217790	0.925419	0.201547
40-44	2751	22845	5620	8.304252	0.246005	0.908534	0.223504
45049	2856	24562	6745	8.600140	0.274611	0.903816	0.248198

Our value for P(2) will be:

P(2) = CEB(2)/FPOP(2)
= 4937/2090
2.362200

Therefore the average parity per woman in age group 20-24 with no education in Vihiga division was 2.362200

STEP II: CALCULATION OF D(i).

To compute D(i) that is, the proportion of children dead by age group of mother the formula used is:-

$$D(i) = CD(i)/CEB(i) \qquad (2.2)$$

Where:-

CD (i) = The number of children dead reported by women in age group (i) and CEB(i) is as in (2.1).

Therefore the value for D(2) will be:-

$$D(2) = CD(2)/CEB(2)$$
$$= 659/4937$$
$$= 0.133481$$

The ratio of reported children dead to reported children ever born to women of no education in age group 20-24 in Vihiga division was 0.133481.

STEP III CALCULATION OF K(i)

Ki) is defined as the multipliers which adjust for the non-mortality factors determining the values of D(i) from the coefficient given in table VI below.

TABLE IV: COEFFICIENTS FOR ESTIMATION OF CHILD MORTALITY MULTIPLIERS, TRUSSELL'S VARIANT, WHEN DATA ARE CLASSIFIED BY AGE OF MOTHER.

(WEST MORTALITY MODEL)

AGE GROUP	INDEX	COEFFICIENTS		
	i	a(i)	b(i)	c(i)
15-19	1	1.1415	-2.707	0.7663
20-24	2	1.2563	-0.5381	-0.2637
25-29	3	1.1851	0.0633	-0.4177
30-34	4	1.172	0.2341	-0.4272
35-39	5	1.1865	0.3080	-0.4452
40-44	6	1.1746	0.3314	-0.4537
45-49	7	1.1639	0.3190	-0.4435

SOURCE: MANUAL X PP 77.

The formula for deriving K(i) is:-

$$K(i) = a(i) + b(i)(P1/P2) + C(i)(P2/P3) \quad (2.3).$$

Where:-

a(i), b(i) and C(i) are constant coefficients to estimate the multipliers K(i)

For our case. we shall use the west mortality model Trussell's coefficients a(i), b(i) and c(i) as shown in table IV above.

From the Vihiga data above,

P1 = 0.746880

P2 = 2.362200

P3 = 4.028070

Therefore

$$K(7) = a(7) + b(7)\ (P1/P2) + c(7)\ (P2/P3).$$

$$= 1.1639 + 0.3190 \times (0.746880/2.362200)$$

$$- 0.4435\ (2.362200/4.028070).$$

$$= 0.903816$$

This value is then the multiplier that adjusts for the non-mortality factors determining the value of D(7)

STEP IV: CALCULATION OF q(x).

To compute q(x), the probability of dying between birth and exact age x the formula below is used;

$$q(x) = K(i)\ D(i), \qquad (2.4)$$

for x = 1, 2, 3, 5, 10, 15, and 20 with corresponding i = 1, 2, 3, 4, 5, 6, and 7

Therefore, for example

$$q(10) = K(5)\ D(5)$$

$$= 0.925419 \times 0.217790$$

$$= 0.201547.$$

2.4.2 LIFE TABLE CONTRUCTION.

STEP I: COMPUTATION OF P(x) VALUES

In this subsection we shall now use the data on Vihiga for combined cases. The proceedure used for obtaining q(x) values is the same as that described in sub-section 2.4.1 where we have used the data for Vihiga no education. The p(x) values for Vihiga combined have been calculated elsewhere as shown in table V below:-

TABLE V: px VALUES FOR VIHIGA COMBINED CASES.

x	q(x)	p(x)
1	0.073641	0.926359
2	0.110015	0.889985
3	0.130013	0.869987
4	0.148280	0.85172
5	0.183252	0.816748
6	0.203558	0.796442
7	0.234146	0.765852

The formula used to derive the nPx is

$$nPx = 1 - qx \qquad (2.5)$$

Which is the probability of surviving from birth upto exact age x.

STEP II: COMPUTATION OF INTERPOLATED LEVELS.

From the px obtained above we wish to obtain their corresponding mortality levels as expressed in the Coale-Demeny model life tables. However, since the Coale-Denemy model life table mortality levels are in whole integers some interpolation will be necessary. This interpolation formula is given as:

$$\text{Interpolated Level} = \text{Lower Level} + \frac{(\text{CALCULATED Px} - \text{LOWER LEVEL Px})}{(\text{UPPER LEVEL px} - \text{LOWER LEVEL Px})} \quad (2.6)$$

This is done for P(2), P(3), and P(5) and then the mean is taken to be the average level.

Table V below shows the colums described

TABLE VI: COMPUTATION OF INTERPOLATED LEVELS.

VIHIGA 1x	LOWER LEVEL	UPPER LEVEL	LOWER Px	UPPER Px	IMPLIED LEVEL	AVERAGE LEVEL
2	15	16	0.87421	0.89028	15.9816	
3	15	16	0.86388	0.88157	15.3452	15.4369
5	14	15	0.83174	0.85205	14.9838	

The implied level for P(2) above is thus:-

$$IL = 15 + \left(\frac{0.889985 - 0.87421}{0.89028 - 0.87421}\right) = 15.9816$$

For P(3)

$$IL = 15 + \left(\frac{0.869987 - 0.86388}{0.88157 - 0.86388}\right) = 15.3452$$

and for P(5)

$$IL = 14 + \left(\frac{0.85172 - 83174}{0.852207 - 83174}\right) = 14.9838$$

Our average level = 15.9816 + 15.3452 + 14.9838/3 = 15.4369

STEP III COMPUTATION OF INTERPOLATED l(x) (survivors)

To compute the interpolated l(x) we retrieve the probabilities of survival for the lower level and upper level by using the actual number of the average level as the lower level and the next one as the upper level. In our case 15 is the lower level and 16 the upper level as table VII illustrates:

TABLE VII: VIHIGA ESTIMATED l(x) VALUES.

Age (x) (1)	l(x) Level 15 (2)	l(x) Level 16 (3)	estimated l(x) (4)
1	0.96125	0.96817	0.964273
5	0.98603	0.98822	0.986195
10	0.98523	0.98744	0.986195
15	0.97998	0.98285	0.981233
20	0.97572	0.97908	0.977187
25	0.97237	0.97605	0.973977
30	0.96065	0.97258	0.965862
35	0.96427	0.96829	0.966026
40	0.9581	0.96209	0.959843
45	0.94636	0.95071	0.948260
50	0.92742	0.93259	0.929678
55	0.89662	0.90312	0.899459
60	0.84916	0.85715	0.852650
65	0.7783	0.78747	0.782306
70	0.67647	0.68656	0.680878
75	0.42345	0.43303	0.427635

The formula for calculating the interpolated probabilities of survival from age 1-75 and over is

$$\text{interpolated } P_x = \text{Lower } P_x + (\text{Upper } P_x - \text{Lower } P_x) \times \frac{(\text{Average level} - \text{Lower level})}{\text{Upper Level} - \text{Lower Level}}$$

In our example the interpolated Px for age 5 is:-

$$\text{Interpolated } l(5) = 0.98603 + (0.98822 - 0.98603) \times \frac{(15.4369 - 15)}{16 - 15} = 0.986986$$

It is this survivorship probabilities calculated for a ages 0-1, 1-4, 5-9. ......70-74 that are used as the initial life table function from which all the others are calculated. The probability for ages 75 and above is assumed to be 0 while the corresponding nQx will be assumed as 1 as table VIII below shows

TABLE VIII: LIFE TABLE FOR VIHIGA DIVISION

AGE GROUP	nQ(x)	nP(x)	l(x)	nd(x)	nL(x)	T(x)	e(x)
0-1	0.035727	0.964273	100000	3572.7	98213.65	5581286.	55.81286
1-4	0.013014	0.986986	96427.3	1254.904	478999.2	5483072.	56.86224
5-9	0.013805	0.986195	95172.39	1313.854	472577.3	5004073.	52.57904
10-14	0.018767	0.981233	93858.54	1761.443	464889.0	4531496.	48.28006
15-19	0.022813	0.977187	92097.09	2101.011	455232.9	4066607.	44.15564
20-24	0.026023	0.973977	89996.08	2341.968	444125.5	3611374.	40.12812
25-29	0.034138	0.965862	87654.11	2992.336	430789.7	3167248.	36.13348
30-34	0.033974	0.966026	84661.78	2876.299	416118.1	2736458.	32.32224
35-39	0.040157	0.959843	81785.48	3284.259	400716.7	2320340.	28.37105
40-44	0.05174	0.94826	78501.22	4061.653	382351.9	1919623.	24.45342
45-49	0.070322	0.929678	74439.56	5234.739	359110.9	1537271.	20.65127
50-54	0.100541	0.899459	69204.82	6957.922	328629.3	1178160.	17.02425
55-59	0.147335	0.852665	62246.90	9171.148	288306.6	849531.6	13.64777
60-64	0.217694	0.782306	53075.75	11554.27	236493.1	561224.9	10.57403
65-69	0.319122	0.680878	41521.48	13250.41	174481.3	324731.8	7.820815
70-74	0.572365	0.427635	28271.06	16181.36	100901.9	150250.5	5.314638
75+	1	0	12089.69	12089.69	49348.6	49348.6	4.081872

2.4.3 DESCRIPTION OF LIFE TABLE FUNCTIONS

nQx = This is defined as the probability of dying between exact age x and x + n.

It is derived by the formular:-

nQx = 1 - nPx (2.8)

or

nPx = The probabilities of survival. It is the measure that an individual of exact age x will survive upto exact age x+n and is derived by the formula.

nPx = 1 (x+n)/1(x) (2.9)

ndx = Denotes deaths experienced by the life table cohort within the interval x to x + n. It can be interpreted as the number of people dying during the n year period after reaching exact age x.

ndx = 1(x) x nQ(x) (2.10).

or

1(x) - 1(x+n) (2.11).

nLx = It shows the number of person-years lived by the cohort during the interval between specified birthdays.

The general formula applied between age 5-74 is:

$$nLx = nlx - n/2\ (ndx). \quad (2.12)$$

or

$$5L5 = 5/2\ (1(5) + 1(10)) \quad (2.13)$$

For age 0-1 has a special formula:-

$$1Lo = .3(1o) + .71(1(1)) \quad (2.14)$$

For age 1-4 the formula is:-

$$4L1 = 1.3(1(1) + 2.7(1(5)) \quad (2.15)$$

For age 75+ the formula is

$$\&L75+ = 1(75)\ Log\ 10\ 1(75) \quad (2.16)$$

Where & represents infinity.

Apart from formulae 2.13 and 2.14, the others have special formulae due to the mortality rates applying to these ages.

Tx = Is defined as the person years-lived after exact age x and is derived directly from the nLx column. It is the summation of the nLx column commencing with the terminal of the stationary population.

$$Tx = T(x+n)+nLx \quad (2.17)$$

e(x) Is the expectation of life remaining to persons who attain the exact age x. The function is derived from the lx and Tx columns by the relationship:-

$$e(x) = Tx/1x \quad (2.18)$$

SECTION 3

DISCUSSION OF THE FINDINGS.

3.1 INTRODUCTION

In discussing the infant and child mortality differentials in Kakamega district by division and by differentials of education, marital status and residence, we have chosen to confine ourselves to the q(2) mortality estimates (obtained from tables in appendix 1-6) and the e(o) values form the life tables constracted for a few of these tables. It is important to acknowledge that any other values, that is, q(3); q(5), 1qo and 1q4 would have been chosen to be used as estimates with equally accurate results. However reasons why q(1) and q(10) and over are not preferred is because the former is untrustworthy while the latter are based on the memory of remote events by women whose responses are not representative of current mortality experiences (Kibet 1981).

3.2. INTER-DIVISIONAL VARIABILITY.

There is wide infant and child mortality differences in Kakamega district by specific divisions as indicated in Table IX below.

Table IX gives us the classification of the divisions in Kakamega district by size of child mortality at age 2-1000 q(2). It can be seen that although there are five classes, the divisions actually do fall within only four of these, thus:-

TABLE IX: CLASSIFICATION OF DIVISIONS IN KAKAMEGA DISTRICT BY SIZE OF MORTALITY AT AGE TWO-1000. q(2).

DISTRICT	DIVISIONS WITH GIVEN RANGE OF DEATHS PER 1000 BIRTHS				
	100-119	120-139	140-159	160-179	180-199
	1	2	3	4	5
KAKAMEGA	Lugari Hamisi Vihiga	Kabras Ikolomani	-	Lurambi Butere	Mumias

SOURCE: coumputer print-out.

Lugari, Hamisi and Vihiga fall in the first class with early childhood mortality of between 100-119 deaths per 1000 live births. The second class is occupied by Kabras and Ikolomani with range of between 120-139 deaths per 1000 live births. The third class is empty while the fourth holds Lurambi and Butere with early childhood mortality of 160-179 deaths per 1000 live births. Mumias comes last with exceedingly high figures of 180-199 deaths per 1000 live births. In broad terms there seems to be quite a difference between the divisions in columns 1 and 2 and those in 4 and 5 due to the gap in the values as shown in column 3.

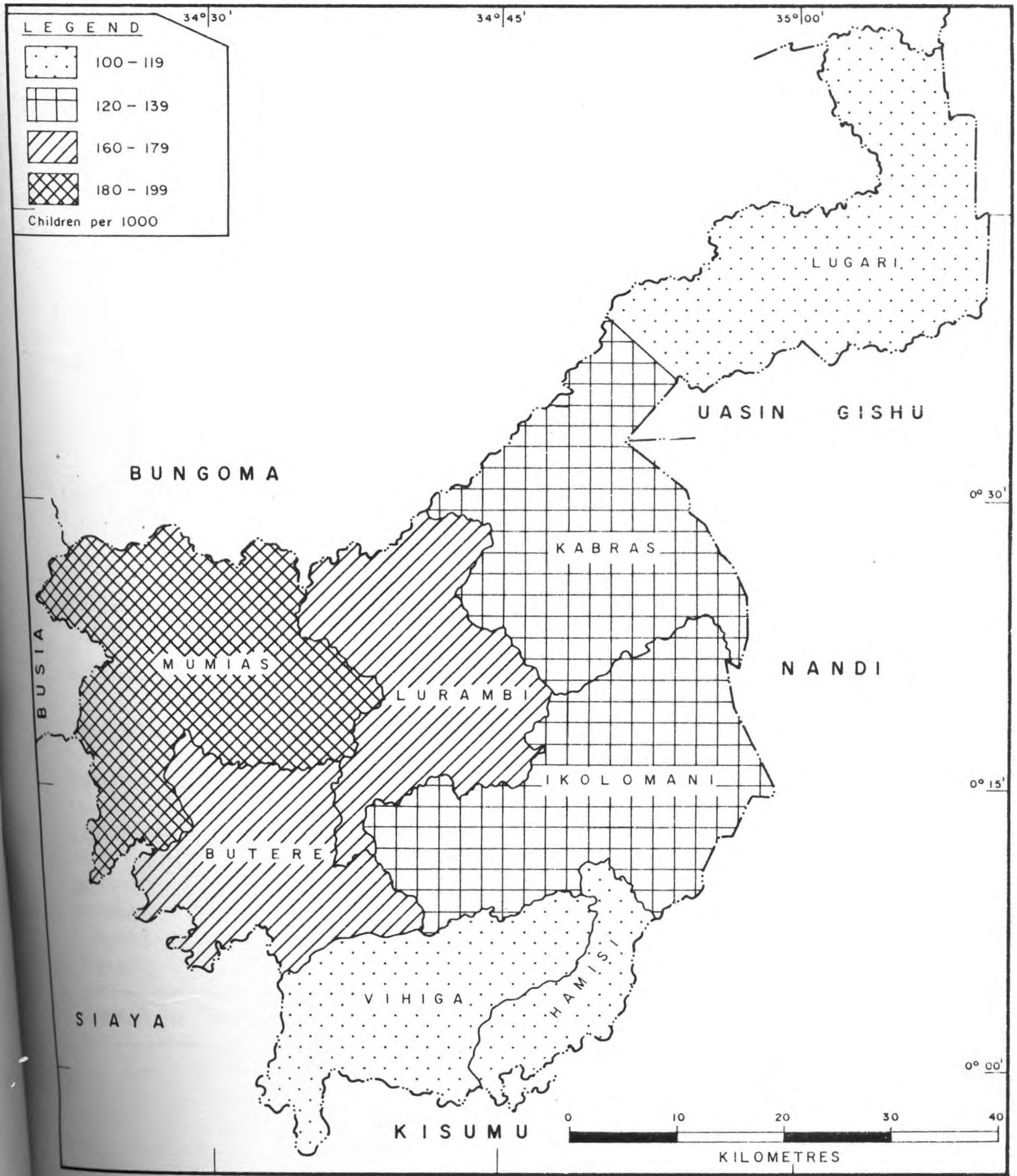
Table X below shows the specific child mortality estimates (q(2) with the corresponding values for life expectancy at birth for all the eight divisions all cases combined. It is evident that Lugari has the highest life expectancy at birth of about 57 years while Mumias has the lowest of about 46 years giving a gain of 11 years for babies born in Lugari.

TABLE X KAKAMEGA DISTRICT: ALL CASES MORTALITY ESTIMATION

Division	1000.q(2)	eo
Vihiga	110	55.81
Hamisi	102	56.89
Lurambi	163	52.46
Ikolomani	138	53.37
Butere	167	51.36
Kabras	136	53.59
Lugari	101	57.23
Mumias	198	46.31

Figure 2 below shows the geographical differences diagramatically. As observed there is no homogeneity in the mortality pattern. Thus, the proximity explanation that those areas near the lake have higher mortality estimates does not hold since Vihiga and Hamisi are very near kisumu but record lower values compared to those of Kisumu district (0.204584) or even Siaya (0.204127) (Kichamu 1986). What might seem to explain these variation would be local ecological factors. Neither does migration answer why Lugari, basically a settlement area has such low values, as most of its in-migrants came from areas of high mortality estimate both within the district and outside. Better nutrition in Lugari could possibly explain this since it is mainly a food-crop region. It is for these reasons that we feel that other variables actually do explain the child mortality situation in the divisions in Kakamega.

FIG.2 1979 INFANT MORTALITY RATE BY DIVISION KAKAMEGA DISTRICT



3.3 INTRA DIVISIONAL VARIABILITY.

Among all the eight divisions Mumias stands out with the highest values of child mortality by all differentials except in one case (widowed) where it is suppassed by Butere with q(2) value of 0.401 a factor that we have chosen to treat with suspecion (data quality) because it is too high and deviates emphatically from the trend. Lugari division has the least values.

Tables XI and XII below summarise the mortality estimates (q(2) values) for ease of references for the next few sub-sections.

TABLE XI: MORTALITY ESTIMATES Q(2) BY MATERNAL EDUCATION AND PLACE OF RESIDENCE

DIVISION	No EDUCAION	PRIMARY EDUCATION	SECONDARY+ EDUCATION	RURAL RESIDENCE	URBAN RESIDENCE
VIHIGA	0.1243	0.1107	0.0491	0.1103	0.0931
HAMIS	0.1108	0.0948	0.0722	0.1020	N/A
LURAMBI	0.1731	0.1504	0.0842	0.1773	0.1308
IKOLOMANI	0.1460	0.1275	0.0627	0.1382	N/A
BUTERE	0.1740	0.1548	0.1053	0.1673	N/A
KABRAS	0.1364	0.1389	0.0737	0.1362	N/A
LUGARI	0.1020	0.0991	0.0782	0.1014	N/A
MUMIAS	0.2015	0.1905	0.1363	0.1982	N/A
KAKAMEGA	0.1524	0.1524	0.1323	0.0768	0.1282

3.3.1 DIFFERENTIALS BY EDUCATION.

Apart from Kabras whose child mortality estimates for women with primary education is 138%., all the other divisions exhibit the observed patterns that is, mortality is inversely related to mothers education (Kibet 1981, Kichamu 1986). Lugari division has the lowest estimates of 102%. for women with no education. 99 deaths per 1000 live births for women with Primary education but its 78 deaths per 1000 live births for women with secondary plus education is the fifth overall because it comes after Vihiga (49%.), Ikolomani (62%.), Hamisi (72%.) and Kabras (73%.). Mumias division has the highest values of 201 deaths per 1000 live births for women with no education, 190 deaths per 1000 live births for women with primary education and 136 deaths per 1000 live births for women with secondary plus education.

3.3.2: DIFFERENTIALS BY RESIDENCE.

Only two divisions in Kakamega district were classified as having urban areas by 1979, that is, Vihiga and Lurambi. All the others had basically rural populations. For the two divisions we confirm that the mortality in the rural areas is higher than in the urban areas. Vihiga has a lower urban child mortality of about 93 deaths per 1000 live births as compared to Lurambi with about 130 deaths per 1000 live births. The values for the rural areas are 110%. for Vihiga and 177%. for Lurambi.

3.3.3. DIFFERENTIALS BY MARITAL STATUS.

TABLE XII: MORTALITY ESTIMATES [q(2)] BY MATERNAL MARITAL STATUS

DIVISION	SINGLE	MARRIED	WIDOWED	DIVORCED/ SEPARATED
VIHIGA	0.0677	0.0995	0.2221	0.0718
HAMISI	0.0942	0.0853	0.2051	0.1079
LURAMBI	0.1171	0.1407	0.2615	0.1402
IKOLOMANI	0.0969	0.1204	0.1123	0.1206
BUTERE	0.1211	0.1456	0.4014	0.1484
KABRAS	0.0728	0.1194	0.1628	0.1244
LUGARI	0.0848	0.0876	0.0660	0.1121
MUMIAS	0.1334	0.1977	0.2937	0.2032
KAKAMEGA	0.0908	0.1307	0.2468	0.1238

In all the divisions other than Hamisi and Lugari the child mortality estimates for single women is the lowest. Vihiga has the least of about 67 deaths per 1000 live births and Mumias has the highest of about 133 deaths per 1000 live births. In Hamisi the married women have the least child mortality estimates of about 85 deaths per 1000 live births. While the widowed and divorced and separated women have the highest mortality estimates in most divisions. Lugari stands out different among the widowed registering a low estimate of 66 deaths per 1000 live births. The explanation for this may be that most women return to their original homes after the death of a husband who had migrated to Lugari. The observed pattern is that the single and married women on the average experience low infant and child mortality estimates while the widowed and divorced and separated have higher values.

3.3.4: OVERVIEW FOR KAKAMEGA DISTRICT.

From table XIII below it is indicated that Kakamega district has child mortality estimate of about 144 and a life expectancy at birth of only 53 years for all cases combined which can be treated as the average. As expected this estimates decrease as the level of mothers education increases. Mothers with no education in Kakamega district register child mortality estimates of 152 deaths per 1000 live births; those with primary level education 132%. and those with secondary plus education observe only 76 deaths per 1000 live births.

Likewise life expectancy at birth is high (60 years) for children born to mothers with secondary plus education followed by children of mothers with primary level education (55 years) and last by children of mothers with no education (52 years). The place of residence differential shows rates of 145%. and 128%. for the rural and the urban areas respectively with the rural areas having a life expectancy at birth of 45 years and the urban area 56 years.

For marital status differential, the figures show that the widowed women have the highest child mortality estimates of about 246 deaths per 1000 live births. The single women have only about 90 deaths per 1000 live births. The married and the divorced and separated women fall in between with 130%. and 123%. respectively. The children of single parents have a life expectancy at birth of 55 years while those of widowed women have only 47 years life expectancy at birth. The children of married women have 53 years and those of mothers who are divorced or seperated observe 51 years of life expectancy at births.

TABLE XIII: KAKAMEGA DISTRICT MORTALITY ESTIMATES FOR COMBINED CASES

DIFFERENTIAL	1000.q(2)	e(o)
NO EDUCATION	152	52.53
PRIMARY EDUCATION	132	55
SECONDARY + EDUCATION	76	60.53
RURAL RESIDENCE	144	45.60
URBAN RESIDENCE	128	56.07
SINGLE	90	55.76
MARRIED	130	53.76
WIDOWED	246	47.92
DIVORCED/SEPERATED	123	51
COMBINED CASES	144	53.07

SECTION 4.

SUMMARY AND POLICY IMPLICATION

4.1 INTRODUCTION

This study achieved the objectives that it set out to accomplish, that is, to show that infant and child mortality differentials do exist in Kakamega district first by region and secondly by the differentials of education (no education, primary education and secondary education and above); Place of residence (urban/rural) and by marital status (single, married, widowed, divorced and separated). The differentials have mainly been explained by looking at the indicies of q(2) estimates of child mortality and the life expectancy at birth (eo). The q(2) estimates were derived by the Trussel's technique of infant and child mortality estimation while the e(o) was obtained from the subsequent life tables.

As explained this study cannot pride of being exhaustive as we have pointed out several pitfalls that besets it. Firstly there is the case of data unreliability. Secondly is the issue of the differentials covered (only four) as opposed to a whole range of those available. This is however mainly due to the fact that the data used (1979 Kenya population census data) only covered those differentials studied.Despite this shortfall the importance of the study both as a groundwork to further research and as a tool for health policy formulation and implementation in Kakamega district should not be underscored.

4.2 MAJOR FINDINGS:

The study had several major findings to its credit but which do not differ greatly from what has been found to exist at the national, provincial and district levels.

(1) That infant and child mortality differentials do exist by geographical regions (divisions) in Kakamega district. Mumias division is the most disadvantaged among all the eight divisions given the well accepted view that infant and child mortality is a measure of socio-economic development.

(2) That the level of mothers education has an influence on infant and child mortality in Kakamega district showing a marked inverse relationship and a gain in life expectancy of about 8 years for children whose mothers have secondary education and above (60.5 years) and those whose mothers have no education at all (52.5 years).

(3) That the place of residence influences infant and child mortality. Although not showing wide differences this study confirms that both the divisions and the district generally conform to the national experience of infant and child mortality being high in the rural areas and low in the urban centres.

(5) Marital status does not have a definite pattern. Although many (if not all) studies including this one have found out that the single women have the least infant and child mortality estimates this has been due to the fact that the

numbers of single mothers is generally small and therefore the proportions of children ever born also remain small. What changes ranks with different studies are the other three categories. Whether these variations depend on the data used, its inaccuracy and methodology remains to be estiblished. For this study was found out that the single had the least q(2) values followed by the married women while the widowed and divorced and separated change ranks as one moves from one division to another.

4.3 RECOMMENDATIONS FOR POLICY MAKING.

As we are all aware, Kenya's development strategy is now focused at the district level. But to gloss over the general mortality level at the district is not enough. This is why this study sought to use the administrative divisions of Kakamega which form the core on to which socio-economic planning should be based. It is true that government actions on any one of the determinants of infant and child mortality is in itself not enough to guarantee a reduction of the mortality level. What is needed is the 'correct' form of combination of most of these determinants so as to reach a threshold from where infant and child mortality can decline substantially. The Government should therefore considers specific interventions in health nutrition sanitation, education and agriculture to mention a few.

1. HEALTH:

By 1979 the Doctor Patient ratio was 1:10,000 at the national level. During the same year Kakamega district had only 1 govenment district hospital, 285 beds and cots and a population of 1,030,887 giving the proportion as 0.26 beds per 1000 persons. The population has increased to an estimated 2,000,000 people in 1988 but the health facilities have remained constant. Since the Ministry of health uses the number of govenment hospital beds (including cots) per 1,000 persons and the number of persons per health facility for each district in determining which districts have the highest need for improvement and in assessing utilization of these facilities (Kibet 1981) it would be interesting to see this done at the division level so that the divisions with most urgent needs can be given preference. With the introduction of Nyayo wards in all districts the number of beds and cots will increase and hence an expected decrease of the high mortality.

2. EDUCATION:

As we have noted the level of mothers education plays a very vital role in determining the level of infant and child mortality. Presently the government provides free education in primary schools which boosted enrollment of future mothers. Some studies on the enrolment of pupils in primary education in Kenya (Munoru 1987, Kuria 1987, Wekesa 1988/89) have shown that though the number of enrolments increased substantially in 1974 and 1978 due to free education and free milk scheme, the subsequent years showed a relative decline with the introduction of school-building funds. Due to cultural reasons girls were naturally affected reducing the level of enrolment of the future mothers. So the proposed cost-sharing education may have such adverse effects. By the year 2,000 when the effects of cost-sharing shall be being felt in the child bearing ages who would not have been taken to school then both infant and child mortality, maternal mortality and fertility will be as high or even higher than today. If demographic factors had been considered then one would have expected an expanded 'compulsary' free education up to secondary level i.e 9 plus years of education (Ondimu 1987, Osiemo 1988,).

3. AGRICULTURE:

Rural families basically get their nutritional requirements from the crops they grow that are of a subsistance nature. Any other income (either from cash crops or other sources) help to facilitate for better diet. It is highly suspected that Mumias division has high infant and child mortality estimates due largely to nutritional defficienty which is linked to the wholesale switch from subsistence farming to sugar-cane production with a long period of approximately 2 years waiting time before supplementary income can be gained. This has affected the infants and mothers to the extent that infant and child mortality is the highest in the district. Infact the monetary gain has not been converted to arrest the nutritional deficiency but rather to acquire second wives which also militates against mortality reduction as it is known in polygamy infant and child mortality is higher than in monogamy. What is therefore needed is the extention of credit to both women and men or to educate the men on the need to re-invest wisely the funds obtained from the sugarcane harvests. Secondly the policy of setting aside apart of the farmland for subsistence farming should be reinforced.

4. MCH - FP PROGRAMS:

Kakamega district is basically rural and the introduction of maternal child health and family planning programs will be quite helpful in curbing infant and child mortality. If properly educated on the importance of attending both ante-natal and post-natal clinics and the values of contracepting vis-a-vis infant and child mortality and fertility, rural women would be as receptive as educated women.

The point, to be stressed whoever is that the intervention by just introducing one aspect of all those discussed in this study is not enough but an appropriate combination of most of them.

RECOMMENDATIONS FOR FURTHER RESEARCH.

There are several researches that could be carried out in future.

a) Finding what it is that education does to women so as to improve the survival probabilities of children born of them.

b) Studies at divisional level as good as they might be should be expanded to use primary data so that many variables can be important. For example, is it bv coincidence that Mumias with its high infant and child mortality estimates also has has the highest number of Muslims in Kakamega district and yet it is known that children born to Muslim mothers have low survival rates? Or is the religion to be linked strongly with the accompanying cultural practices?

c) Research should be done at his level countrywide to enable the D.D.C.'s in making their socio-economic plans appropriately.

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APPENDIX 1
MORTALITY BY DIFFERENTIALS IN VIHIGA

NO EDUCATION.

GE ROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
5-19	1122	838	111	0.746880	0.132458	0.285600	0.037830
0-24	2090	4937	659	2.362200	0.133481	0.931520	0.124341
5-29	2280	9184	1538	4.028070	0.167465	0.940146	0.157441
0-34	2085	12863	2502	6.169304	0.194511	0.921475	0.179237
5-39	2436	18077	3937	7.420771	0.217790	0.925419	0.201547
0-44	2751	22845	5620	8.304252	0.246005	0.908534	0.223504
5-49	2856	24562	6745	8.600140	0.274611	0.903816	0.248198

PRIMARY EDUCATION.

GE ROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
5-19	9770	2112	183	0.216171	0.086647	0.847994	0.073476
0-24	5121	10210	1064	1.993751	0.104211	1.062666	0.110742
5-29	4329	16823	1982	3.886116	0.117814	0.970801	0.114374
0-34	3623	20921	2720	5.774496	0.130012	0.952827	0.123879
5-39	2621	19351	3132	7.383059	0.161852	0.958092	0.155069
0-44	2373	19947	3480	8.405815	0.174462	0.941831	0.164314
5-49	1671	14582	2852	8.726511	0.195583	0.936364	0.183137

SECONDARY + EDUCATION.

GE ROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
5-19	4619	577	36	0.124918	0.062391	0.776241	0.048431
0-24	2884	2670	120	0.925797	0.044943	1.092425	0.049097
5-29	849	2271	185	2.674911	0.081461	1.040532	0.084763
0-34	271	1249	116	4.608856	0.092874	1.024144	0.095116
5-39	101	617	43	6.108910	0.069692	1.032414	0.071951
0-44	67	482	58	7.194029	0.120331	1.017572	0.122446
5-49	34	269	35	7.911764	0.130111	1.010402	0.131465

MORTALITY BY DIFFERENTIALS IN HAMISI

NO EDUCATION.

GE ROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
5-19	637	375	37	0.588697	0.098666	0.419219	0.041362
0-24	1197	2641	304	2.206349	0.115107	0.962209	0.110757
5-29	1078	4167	606	3.865491	0.145428	0.946684	0.137674
0-34	874	5195	831	5.943935	0.159961	0.928162	0.148470
5-39	1114	8319	1496	7.467684	0.179829	0.932388	0.167670
0-44	1017	8524	1692	8.381514	0.198498	0.915636	0.181752
5-49	1053	9293	2112	8.825261	0.227267	0.910758	0.206986

PRIMARY EDUCATION.

GE ROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
5-19	3716	854	67	0.229817	0.078454	0.810246	0.063567
0-24	1796	3373	301	1.878062	0.089238	1.062538	0.094818
5-29	1395	5401	593	3.871684	0.109794	0.982483	0.107871
0-34	1063	6280	827	5.907808	0.131687	0.964775	0.127049
5-39	817	6001	814	7.345165	0.135644	0.970544	0.131648
0-44	634	5545	929	8.746056	0.167538	0.954520	0.159918
5-49	486	4444	826	9.144032	0.185868	0.948768	0.176346

SECONDARY + EDUCATION.

GE ROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
5-19	1257	194	13	0.154335	0.067010	0.672161	0.045041
0-24	874	778	53	0.890160	0.068123	1.060566	0.072249
5-29	247	566	36	2.291497	0.063604	1.022839	0.065056
0-34	105	482	37	4.590476	0.076763	1.006048	0.077227
5-39	34	213	25	6.264705	0.117370	1.013556	0.118962
0-44	18	144	15	8	0.104166	0.998354	0.103995
5-49	6	53	6	8.833333	0.113207	0.991617	0.112258

MORTALITY BY DIFFERENTIALS IN LURAMBI

NO EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	1591	1157	182	0.727215	0.157303	0.316231	0.049744
20-24	2133	5088	941	2.385372	0.184944	0.936123	0.173131
25-29	1870	7534	1639	4.028877	0.217547	0.937792	0.204014
30-34	1445	8603	1983	5.953633	0.230500	0.919068	0.211846
35-39	1604	11983	3115	7.470698	0.259951	0.922910	0.239912
40-44	1317	10629	3039	8.070615	0.285915	0.905978	0.259033
45-49	1251	10454	3342	8.356514	0.319686	0.901317	0.288138

PRIMARY EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	3524	1029	133	0.291997	0.129251	0.777221	0.100457
20-24	1872	4062	585	2.169871	0.144017	1.044005	0.150355
25-29	1403	5739	937	4.090520	0.163268	0.963525	0.157313
30-34	982	5868	891	5.975560	0.151840	0.945385	0.143547
35-39	598	4214	667	7.046822	0.158281	0.950337	0.150421
40-44	382	3033	521	7.939790	0.171777	0.933928	0.160427
45-49	197	1687	348	8.563451	0.206283	0.928639	0.191562

SECONDARY + EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	1431	194	23	0.135569	0.118556	0.773241	0.091672
20-24	1158	1154	89	0.996545	0.077123	1.092505	0.084257
25-29	504	1462	118	2.900793	0.080711	1.041602	0.084069
30-34	175	795	60	4.542857	0.075471	1.025238	0.077376
35-39	72	401	46	5.569444	0.114713	1.033554	0.118562
40-44	25	204	32	8.16	0.156862	1.018734	0.159801
45-49	18	97	3	5.388888	0.030927	1.011538	0.031284

MORTALITY BY DIFFERENTIALS IN IKOLOMANI

NO EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	2025	1202	108	0.593580	0.089850	0.411103	0.036937
20-24	2926	6437	976	2.199931	0.151623	0.963058	0.146022
25-29	2315	9071	1703	3.918358	0.187741	0.950585	0.178464
30-34	2032	12022	2420	5.916338	0.201297	0.932151	0.187639
35-39	2389	17459	3798	7.308078	0.217538	0.936545	0.203734
40-44	2023	16583	4110	8.197231	0.247844	0.919873	0.227985
45-49	1822	15440	4185	8.474204	0.271049	0.914900	0.247983

PRIMARY EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	4722	925	101	0.195891	0.109189	0.862116	0.094133
20-24	1932	3667	436	1.898033	0.118898	1.072051	0.127465
25-29	1481	5759	796	3.888588	0.138218	0.981219	0.135622
30-34	1156	6641	971	5.744809	0.146212	0.963482	0.140873
35-39	815	5972	906	7.327607	0.151707	0.969196	0.147034
40-44	569	4822	787	8.474516	0.163210	0.953147	0.155563
45-49	342	2356	652	6.888888	0.276740	0.947426	0.262190

SECONDARY + EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	1749	194	17	0.110920	0.087628	0.783582	0.068664
20-24	1105	927	53	0.838914	0.057173	1.096810	0.062708
25-29	363	909	77	2.504132	0.084708	1.045165	0.088534
30-34	136	589	44	4.330882	0.074702	1.028882	0.076860
35-39	63	367	32	5.825396	0.087193	1.037352	0.090450
40-44	40	268	22	6.7	0.082089	1.022605	0.083945
45-49	21	157	15	7.476190	0.095541	1.015322	0.097005

MORTALITY BY DIFFERENTIALS IN BUTERE

NO EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	1781	1204	288	0.676024	0.239202	0.368934	0.088250
20-24	2213	5242	969	2.368730	0.184853	0.941532	0.174045
25-29	2088	8091	1686	3.875	0.208379	0.929766	0.193744
30-34	1987	11730	2746	5.903371	0.234100	0.910858	0.213232
35-39	2118	14919	3888	7.043909	0.260607	0.914355	0.238287
40-44	1995	15239	4573	7.638596	0.300085	0.897259	0.269254
45-49	2214	17319	5906	7.822493	0.341012	0.892795	0.304454

PRIMARY EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	4498	1164	156	0.258781	0.134020	0.797225	0.106844
20-24	2099	4271	632	2.034778	0.147974	1.046416	0.154843
25-29	1641	6225	984	3.793418	0.158072	0.961046	0.151914
30-34	1095	6409	1181	5.852968	0.184272	0.942851	0.173741
35-39	839	6181	1253	7.367103	0.202718	0.947696	0.192115
40-44	524	4265	915	8.139312	0.214536	0.931236	0.199784
45-49	399	3181	771	7.972431	0.242376	0.926007	0.224442

SECONDARY + EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	1200	196	20	0.163333	0.102040	0.741380	0.075651
20-24	676	747	74	1.105029	0.099062	1.063119	0.105315
25-29	234	600	57	2.564102	0.095	1.005087	0.095483
30-34	99	477	42	4.818181	0.088050	0.987893	0.086984
35-39	39	229	18	5.871794	0.078602	0.994635	0.078180
40-44	31	205	19	6.612903	0.092682	0.979072	0.090743
45-49	14	70	6	5	0.085714	0.972768	0.083380

MORTALITY BY DIFFERENTIALS IN KABRAS

NO EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	913	611	78	0.669222	0.127659	0.370180	0.047257
20-24	1672	3927	563	2.348684	0.143366	0.951872	0.136466
25-29	1437	5890	1045	4.098816	0.177419	0.945751	0.167794
30-34	1235	7588	1683	6.144129	0.221797	0.927207	0.205652
35-39	1401	10902	2469	7.781584	0.226472	0.931393	0.210934
40-44	1200	10613	2481	8.844166	0.233769	0.914623	0.213811
45-49	1186	10964	2976	9.244519	0.271433	0.909767	0.246941

PRIMARY EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	4126	876	152	0.212312	0.173515	0.858098	0.148893
20-24	1895	3843	500	2.027968	0.130106	1.067766	0.138923
25-29	1525	6169	924	4.045245	0.149781	0.975698	0.146141
30-34	1063	6296	988	5.922859	0.156925	0.957835	0.150308
35-39	651	4962	860	7.622119	0.173317	0.963311	0.166958
40-44	354	3193	593	9.019774	0.185718	0.947150	0.175903
45-49	233	2182	499	9.364806	0.228689	0.941563	0.215325

SECONDARY + EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	1278	153	13	0.119718	0.084967	0.823477	0.069968
20-24	998	1017	68	1.019038	0.066863	1.102631	0.073725
25-29	309	918	85	2.970873	0.092592	1.041824	0.096465
30-34	66	306	25	4.636363	0.081699	1.025466	0.083779
35-39	26	160	9	6.153846	0.05625	1.033792	0.058150
40-44	7	68	22	9.714285	0.323529	1.018976	0.329668
45-49	3	23	3	7.666666	0.130434	1.011775	0.131970

MORTALITY BY DIFFERENTIALS IN LUGARI

NO EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	499	337	32	0.675350	0.094955	0.448224	0.042561
20-24	843	2223	236	2.637010	0.106162	0.960498	0.101969
25-29	867	3816	500	4.401384	0.131027	0.934842	0.122489
30-34	674	4272	736	6.338278	0.172284	0.916050	0.157821
35-39	843	6424	1134	7.620403	0.176525	0.919766	0.162362
40-44	817	7052	1349	8.631578	0.191293	0.902773	0.172694
45-49	702	6336	1402	9.025641	0.221275	0.898184	0.198746

PRIMARY EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	2533	636	43	0.251085	0.067610	0.844899	0.057123
20-24	1214	2782	260	2.291598	0.093457	1.060400	0.099102
25-29	906	3998	425	4.412803	0.106303	0.968185	0.102921
30-34	652	4030	441	6.180981	0.109429	0.950152	0.103974
35-39	508	4010	483	7.893700	0.120448	0.955304	0.115065
40-44	380	3535	526	9.302631	0.148797	0.938990	0.139719
45-49	263	2643	461	10.04942	0.174423	0.933587	0.162839

SECONDARY + EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	1009	114	11	0.112983	0.096491	0.838743	0.080931
20-24	588	594	42	1.010204	0.070707	1.105753	0.078184
25-29	173	510	47	2.947976	0.092156	1.041963	0.096024
30-34	66	333	23	5.045454	0.069069	1.025608	0.070837
35-39	42	318	19	7.571428	0.059748	1.033940	0.061776
40-44	15	109	9	7.266666	0.082568	1.019127	0.084148
45-49	4	38	3	9.5	0.078947	1.011922	0.079888

MORTALITY BY DIFFERENTIALS IN MUMIAS

NO EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	2600	1974	389	0.759230	0.197061	0.243064	0.047898
20-24	3380	7732	1680	2.287573	0.217278	0.927408	0.201506
25-29	2880	11559	2998	4.013541	0.259364	0.947026	0.245625
30-34	2379	14214	4278	5.974779	0.300970	0.928511	0.279454
35-39	2178	15521	5005	7.126262	0.322466	0.932752	0.300781
40-44	2023	15898	5918	7.858625	0.372248	0.916007	0.340981
45-49	2175	18056	7444	8.301609	0.412272	0.911120	0.375630

PRIMARY EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(i)
15-19	4535	1535	274	0.338478	0.178501	0.709047	0.126566
20-24	2442	5174	962	2.118755	0.185929	1.024388	0.190464
25-29	1717	6573	1319	3.828188	0.200669	0.953919	0.191422
30-34	1038	5926	1228	5.709055	0.207222	0.935561	0.193869
35-39	595	4288	1014	7.206722	0.236473	0.940098	0.222308
40-44	396	3094	807	7.813131	0.260827	0.923494	0.240872
45-49	288	2375	750	8.246527	0.315789	0.918439	0.290033

SECONDARY + EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	1103	244	32	0.221214	0.131147	0.633822	0.083124
20-24	880	1038	132	1.179545	0.127167	1.072183	0.136347
25-29	218	815	89	3.738532	0.109202	1.053311	0.115024
30-34	83	351	45	4.228915	0.128205	1.037213	0.132976
35-39	39	241	32	6.179487	0.132780	1.046034	0.138892
40-44	21	132	13	6.285714	0.098484	1.031452	0.101582
45-49	5	27	3	5.4	0.111111	1.023971	0.113774

APPENDIX II

MORTALITY BY DIFFERENTIALS IN VIHIGA

URBAN RESIDENCE.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	250	74	8	0.296	0.108108	0.575703	0.062238
20-24	173	245	22	1.416184	0.089795	1.036527	0.093075
25-29	127	442	69	3.480314	0.156108	1.015132	0.158470
30-34	93	563	89	6.053763	0.158081	0.998166	0.157791
35-39	64	478	92	7.46875	0.192468	1.005342	0.193496
40-44	69	610	141	8.840579	0.231147	0.989983	0.228832
45-49	43	344	88	8	0.255813	0.983434	0.251576

RURAL RESIDENCE.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	15329	3471	322	0.226433	0.092768	0.793973	0.073655
20-24	10007	17650	1828	1.763765	0.103569	1.064513	0.110251
25-29	7377	27962	3657	3.790429	0.130784	0.990735	0.129572
30-34	5930	34657	5275	5.844350	0.152205	0.973215	0.148129
35-39	5128	37781	7064	7.367589	0.186972	0.979339	0.183109
40-44	5149	42888	9045	8.329384	0.210898	0.963484	0.203196
45-49	4539	39230	9585	8.642872	0.244328	0.957530	0.233951

MORTALITY BY DIFFERENTIALS IN HAMISI

RURAL RESIDENCE.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	5645	1428	117	0.252967	0.081932	0.750109	0.061458
20-24	3906	6834	661	1.749615	0.096722	1.055042	0.102046
25-29	2739	10236	1245	3.737130	0.121629	0.989544	0.120357
30-34	2054	12011	1696	5.847614	0.141203	0.971997	0.137249
35-39	1976	14602	2346	7.389676	0.160662	0.978070	0.157139
40-44	1682	14263	2643	8.479785	0.185304	0.962190	0.178298
45-49	1558	13894	2956	8.917843	0.212753	0.956266	0.203449

MORTALITY BY DIFFERENTIALS IN LURAMBI

URBAN RESIDENCE.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	2056	715	85	0.347762	0.118881	0.601623	0.071521
20-24	1791	3123	403	1.743718	0.129042	1.013741	0.130815
25-29	1280	4352	537	3.4	0.123391	0.970879	0.119798
30-34	785	4289	567	5.463694	0.132198	0.952906	0.125973
35-39	629	3935	705	6.255961	0.179161	0.958175	0.171668
40-44	434	3043	692	7.011520	0.227407	0.941916	0.214198
45-49	314	2111	494	6.722929	0.234012	0.936447	0.219140

RURAL RESIDENCE.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	4533	1682	255	0.371056	0.151605	0.665230	0.100852
20-24	3413	7198	1242	2.108995	0.172547	1.027545	0.177300
25-29	2517	10440	2095	4.147794	0.200670	0.972715	0.195195
30-34	1823	11046	2387	6.059243	0.216096	0.954785	0.206325
35-39	1656	12745	3139	7.696256	0.246292	0.960132	0.236473
40-44	1304	10913	2921	8.368865	0.267662	0.943910	0.252649
45-49	1159	10177	3264	8.780845	0.320723	0.938397	0.300965

MORTALITY BY DIFFERENTIALS IN IKOLOMANI

RURAL RESIDENCE.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	8538	2334	260	0.273366	0.111396	0.742843	0.082750
20-24	6003	11143	1470	1.856238	0.131921	1.047702	0.138214
25-29	4184	15833	2588	3.784177	0.163456	0.980207	0.160220
30-34	3356	19411	3464	5.783969	0.178455	0.962447	0.171754
35-39	3270	23877	4741	7.301834	0.198559	0.968117	0.192228
40-44	2651	20734	4929	7.821199	0.237725	0.952048	0.226326
45-49	2190	18661	4854	8.521004	0.260114	0.946351	0.246159

MORTALITY BY DIFFERENTIALS IN BUTERE

RURAL RESIDENCE.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	7526	2587	398	0.343741	0.153846	0.687815	0.10581
20-24	5019	10294	1685	2.051006	0.163687	1.022103	0.16730
25-29	3989	14981	2758	3.755577	0.184099	0.956984	0.17618
30-34	3208	18747	3990	5.843827	0.212834	0.938696	0.19978
35-39	3004	21364	5172	7.111850	0.242089	0.943366	0.22837
40-44	2570	19825	5549	7.714007	0.279899	0.926824	0.25941
45-49	2640	20674	6716	7.831060	0.324852	0.921694	0.29941

MORTALITY BY DIFFERENTIALS IN KABRAS

RURAL RESIDENCE.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	6365	1648	193	0.258915	0.117111	0.775395	0.09080
20-24	4605	8816	1137	1.914440	0.128970	1.056027	0.13619
25-29	3291	13031	2057	3.959586	0.157854	0.983144	0.15519
30-34	2384	14314	2544	6.004194	0.177728	0.965450	0.17158
35-39	2092	16103	3344	7.697418	0.207663	0.971247	0.20169
40-44	1576	14002	3113	8.884517	0.222325	0.955238	0.21237
45-49	1429	13197	3484	9.235129	0.263999	0.949469	0.25065

MORTALITY BY DIFFERENTIALS IN LUGARI

RURAL RESIDENCE.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	4069	1091	89	0.268124	0.081576	0.794394	0.06480
20-24	2691	5627	539	2.091044	0.095788	1.058188	0.10136
25-29	1954	8345	973	4.270726	0.116596	0.980584	0.11433
30-34	1403	8689	1200	6.193157	0.138105	0.962833	0.13297
35-39	1400	10770	1589	7.692857	0.147539	0.968520	0.14289
40-44	1220	10741	1813	8.804098	0.168792	0.952458	0.16076
45-49	978	9078	1820	9.282208	0.200484	0.946752	0.18980

MORTALITY BY DIFFERENTIALS IN MUMIAS

RURAL RTESIDENCE

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	8269	3760	696	0.454710	0.185106	0.548798	0.101586
20-24	6735	13987	2780	2.076763	0.198755	0.997355	0.198230
25-29	4896	18999	4417	3.880514	0.232485	0.961556	0.223548
30-34	3521	20589	5582	5.847486	0.271115	0.943372	0.255762
35-39	2818	20076	6044	7.124201	0.301055	0.948239	0.285473
40-44	2446	19140	6743	7.825020	0.352298	0.931790	0.328268
45-49	2470	20471	8203	8.287854	0.400713	0.926548	0.371280

APPENDIX III
MORTALITY BY DIFFERENTIALS IN VIHIGA

SINGLE WOMEN

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	12941	1195	83	0.092342	0.069456	0.791496	0.054974
20-24	3079	2199	139	0.714192	0.063210	1.070887	0.067691
25-29	759	1234	124	1.625823	0.100486	1.001612	0.100648
30-34	291	792	113	2.721649	0.142676	0.984339	0.140442
35-39	142	523	91	3.683098	0.173996	0.990932	0.172418
40-44	110	591	163	5.372727	0.275803	0.975298	0.268990
45-49	89	444	117	4.988764	0.263513	0.969078	0.255365

MARRIED WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	2463	2236	233	0.907835	0.104203	0.033456	0.003486
20-24	6788	15055	1680	2.217884	0.111590	0.891868	0.099524
25-29	6466	26230	3438	4.056603	0.131071	0.956729	0.125399
30-34	5416	32843	4980	6.064069	0.151630	0.938435	0.142295
35-39	4688	36292	6552	7.741467	0.180535	0.943093	0.170262
40-44	4593	38999	8088	8.490964	0.207389	0.926546	0.192156
45-49	3404	34518	8282	10.14042	0.239932	0.921423	0.221079

WIDOWED WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	10	9	0	0.9	0	0.447831	0
20-24	41	144	35	3.512195	0.243055	0.913859	0.222118
25-29	72	326	70	4.527777	0.214723	0.861090	0.184896
30-34	114	935	178	8.201754	0.190374	0.840621	0.160032
35-39	247	1846	396	7.473684	0.214517	0.841158	0.180443
40-44	425	3385	825	7.964705	0.243722	0.822665	0.200501
45-49	520	4217	1149	8.109615	0.272468	0.819877	0.223390

MORTALITY BY DIFFERENTIALS IN HAMISI

SINGLE WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	4585	514	35	0.112104	0.068093	0.748357	0.050958
20-24	1210	934	84	0.771900	0.089935	1.047499	0.09420
25-29	276	430	56	1.557971	0.130232	0.978149	0.12738
30-34	102	287	32	2.813725	0.111498	0.960342	0.10707
35-39	74	231	39	3.121621	0.168831	0.965924	0.16307
40-44	37	114	16	3.081081	0.140350	0.949813	0.13330
45-49	29	103	19	3.551724	0.184466	0.944166	0.17416

MARRIED WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	933	815	76	0.873526	0.093251	0.065884	0.00614
20-24	2505	5507	521	2.198403	0.094606	0.901703	0.08530
25-29	2233	9195	1065	4.117778	0.115823	0.962097	0.11143
30-34	1811	10989	1522	6.067918	0.138502	0.943926	0.13073
35-39	1744	13316	2123	7.635321	0.159432	0.948816	0.15127
40-44	1487	13004	2369	8.745124	0.182174	0.932378	0.16985
45-49	1352	12374	2626	9.152366	0.212219	0.927123	0.19675

WIDOWED WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	4	1	0	0.25	0	0.915916	0
20-24	15	45	9	3	0.2	1.025629	0.20512
25-29	35	149	37	4.257142	0.248322	0.890747	0.22119
30-34	50	305	56	6.1	0.183606	0.870953	0.15991
35-39	93	699	117	7.516129	0.167381	0.872768	0.14608
40-44	106	858	196	8.094339	0.228438	0.854878	0.19528
45-49	147	1211	258	8.238095	0.213047	0.851366	0.18138

MORTALITY BY DIFFERENTIALS IN LURAMBI

SINGLE WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	4445	374	42	0.084139	0.112299	0.786385	0.088310
20-24	1068	685	74	0.641385	0.108029	1.083613	0.117061
25-29	265	439	61	1.656603	0.138952	1.023379	0.142200
30-34	85	197	33	2.317647	0.167512	1.006601	0.168618
35-39	58	194	53	3.344827	0.273195	1.014132	0.277056
40-44	39	120	22	3.076923	0.183333	0.998941	0.183139
45-49	25	118	46	4.72	0.389830	0.992190	0.386786

MARRIED WOMEN

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	2064	1970	291	0.954457	0.147715	0.040525	0.005986
20-24	3974	9326	1479	2.346753	0.158588	0.887074	0.140680
25-29	3372	13877	2470	4.115361	0.177992	0.946909	0.168542
30-34	2388	14358	2760	6.012562	0.192227	0.928392	0.178462
35-39	2061	15469	3530	7.505579	0.228198	0.932628	0.212824
40-44	1525	12649	3234	8.294426	0.255672	0.915881	0.234165
45-49	1230	10460	3088	8.504065	0.295219	0.910997	0.268944

WIDOWED WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	7	7	1	1	0.142857	0.406265	0.058037
20-24	22	81	25	3.681818	0.308641	0.847198	0.261481
25-29	26	96	14	3.692307	0.145833	0.768586	0.112085
30-34	59	365	83	6.186440	0.227397	0.746013	0.169641
35-39	110	760	209	6.909090	0.275	0.742564	0.204205
40-44	133	986	295	7.413533	0.299188	0.722188	0.216070
45-49	183	1485	551	8.114754	0.371043	0.721659	0.267767

MORTALITY BY DIFFERENTIALS IN IKOLOMANI

SINGLE WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	6604	544	58	0.082374	0.106617	0.794242	0.084680
20-24	1590	1021	92	0.642138	0.090107	1.075109	0.096875
25-29	412	622	96	1.509708	0.154340	1.007435	0.155488
30-34	180	539	93	2.994444	0.172541	0.990295	0.170867
35-39	104	269	59	2.586538	0.219330	0.997138	0.218703
40-44	78	254	61	3.256410	0.240157	0.981623	0.235744
45-49	53	163	42	3.075471	0.257668	0.975262	0.251294

MARRIED WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	1800	1695	190	0.941666	0.112094	0.047349	0.005307
20-24	4179	9736	1321	2.329743	0.135682	0.887092	0.120362
25-29	3596	14562	2335	4.049499	0.160348	0.944790	0.151496
30-34	2984	17926	3167	6.007372	0.176670	0.926224	0.163636
35-39	2935	22128	4367	7.539352	0.197351	0.930369	0.183609
40-44	2345	19833	4467	8.457569	0.225230	0.913578	0.205765
45-49	1882	16507	4231	8.770988	0.256315	0.908747	0.232925

WIDOWED WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	12	23	10	1.916666	0.434782	-1.72578	-0.75034
20-24	21	38	7	1.809523	0.184210	0.609617	0.112297
25-29	41	255	66	6.219512	0.258823	1.063573	0.275277
30-34	82	527	96	6.426829	0.182163	1.047709	0.190854
35-39	139	1032	233	7.424460	0.225775	1.056972	0.238638
40-44	172	1434	351	8.337209	0.244769	1.042599	0.255196
45-49	210	1760	513	8.380952	0.291477	1.034866	0.301640

MORTALITY BY DIFFERENTIALS IN BUTERE

SINGLE WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	5283	461	69	0.087261	0.149674	0.731151	0.109434
20-24	1084	624	73	0.575645	0.116987	1.035174	0.121102
25-29	342	372	63	1.087719	0.169354	0.964043	0.163265
30-34	123	306	55	2.487804	0.179738	0.945916	0.170017
35-39	79	246	54	3.113924	0.219512	0.950890	0.208731
40-44	58	202	59	3.482758	0.292079	0.934491	0.272945
45-49	42	150	42	3.571428	0.28	0.929189	0.260173

MARRIED WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	2129	2045	317	0.960544	0.155012	0.091394	0.014167
20-24	3749	9283	1525	2.476126	0.164278	0.886382	0.145613
25-29	3478	14090	2586	4.051178	0.183534	0.929796	0.170649
30-34	2913	17559	3725	6.027806	0.212141	0.910890	0.193238
35-39	2705	19652	4742	7.265064	0.241298	0.914388	0.220640
40-44	2213	17423	4753	7.873023	0.272800	0.897293	0.244781
45-49	2139	17093	5390	7.991117	0.315333	0.892827	0.281538

WIDOWED WOMEN

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	12	3	0	0.25	0	0.887718	0
20-24	30	80	30	2.666666	0.375	1.070374	0.401390
25-29	42	218	54	5.190476	0.247706	0.970501	0.240399
30-34	81	518	136	6.395061	0.262548	0.952521	0.250082
35-39	139	1007	279	7.244604	0.277060	0.957773	0.265361
40-44	244	1847	645	7.569672	0.349214	0.941506	0.328788
45-49	411	3127	1199	7.608272	0.383434	0.936046	0.358912

MORTALITY BY DIFFERENTIALS IN KABRAS

SINGLE WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	4739	230	31	0.048533	0.134782	0.948072	0.127783
20-24	823	559	37	0.679222	0.066189	1.099884	0.072800
25-29	191	290	46	1.518324	0.158620	0.998241	0.158341
30-34	80	213	44	2.6625	0.206572	0.980892	0.202625
35-39	44	187	36	4.25	0.192513	0.987339	0.190076
40-44	30	167	38	5.566666	0.227544	0.971637	0.221091
45-49	14	39	5	2.785714	0.128205	0.965500	0.123782

MARRIED WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	1564	1368	156	0.874680	0.114035	0.064922	0.007403
20-24	3637	7999	1058	2.199340	0.132266	0.902512	0.119372
25-29	2973	12335	1936	4.149007	0.156951	0.963682	0.151251
30-34	2169	13400	2383	6.177962	0.177835	0.945546	0.168152
35-39	1911	14996	3098	7.847200	0.206588	0.950504	0.196363
40-44	1399	12684	2782	9.066476	0.219331	0.934098	0.204877
45-49	1203	11449	3293	9.517040	0.287623	0.928805	0.267146

WIDOWED WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	2	0	0	0	ERR	1.1415	ERR
20-24	19	48	7	2.526315	0.145833	1.116049	0.162757
25-29	28	133	22	4.75	0.165413	0.962943	0.159283
30-34	56	374	66	6.678571	0.176470	0.944791	0.166727
35-39	81	644	161	7.950617	0.25	0.949717	0.237429
40-44	87	785	215	9.022988	0.273885	0.933296	0.255616
45-49	168	1500	485	8.928571	0.323333	0.928021	0.300060

MORTALITY BY DIFFERENTIALS IN LUGARI

SINGLE WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	3151	258	19	0.081878	0.073643	0.836086	0.061572
20-24	587	426	33	0.725724	0.077464	1.094184	0.084760
25-29	133	251	40	1.887218	0.159362	1.024474	0.163262
30-34	51	123	24	2.411764	0.195121	1.007721	0.196628
35-39	25	115	20	4.6	0.173913	1.015299	0.176573
40-44	26	126	29	4.846153	0.230158	1.000131	0.230188
45-49	15	70	11	4.666666	0.157142	0.993353	0.156098

MARRIWD WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	850	784	67	0.922352	0.085459	0.142474	0.012175
20-24	1989	4971	478	2.499245	0.096157	0.910707	0.087571
25-29	1724	7729	885	4.483178	0.114503	0.952244	0.109035
30-34	1270	8148	1108	6.415748	0.135984	0.933848	0.126988
35-39	1257	9959	1432	7.922832	0.143789	0.938313	0.134919
40-44	1079	9742	1638	9.028730	0.168137	0.921675	0.154968
45-49	848	8145	1624	9.604952	0.199386	0.916661	0.182769

WIDOWED WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	2	0	0	0	ERR	1.1415	ERR
20-24	14	34	2	2.428571	0.058823	1.122395	0.066023
25-29	23	110	12	4.782608	0.109090	0.972995	0.106144
30-34	25	176	30	7.04	0.170454	0.955071	0.162796
35-39	59	391	62	6.627118	0.158567	0.960430	0.152293
40-44	71	607	98	8.549295	0.161449	0.944214	0.152443
45-49	79	646	123	8.177215	0.190402	0.938694	0.178729

MORTALITY BY DIFFERENTIALS IN MUMIAS

SINGLE WOMEN

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	4422	231	44	0.052238	0.190476	0.894392	0.170360
20-24	685	392	48	0.572262	0.122448	1.089613	0.133422
25-29	134	172	32	1.283582	0.186046	0.998875	0.185837
30-34	50	133	40	2.66	0.300751	0.981540	0.295200
35-39	22	56	17	2.545454	0.303571	0.988015	0.299933
40-44	16	47	9	2.9375	0.191489	0.972325	0.186190
45-49	13	63	26	4.846153	0.412698	0.966173	0.398738

MARRIED WOMEN

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	3713	3338	636	0.899003	0.190533	0.062481	0.011904
20-24	5850	13194	2919	2.255384	0.221236	0.893396	0.197652
25-29	4520	18113	4218	4.007300	0.232871	0.950010	0.221230
30-34	3264	19351	5217	5.928615	0.269598	0.931563	0.251148
35-39	2593	18805	5621	7.252217	0.298909	0.935933	0.279759
40-44	2115	16750	5778	7.919621	0.344955	0.919249	0.317099
45-49	2011	16731	6460	8.319741	0.386109	0.914289	0.353016

WIDOWED WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	5	10	0	2	0	-0.212	0
20-24	26	104	41	4	0.394230	0.745036	0.293716
25-29	62	270	58	4.354838	0.214814	0.801434	0.172160
30-34	117	783	352	6.692307	0.449553	0.779608	0.350475
35-39	139	923	316	6.640287	0.342361	0.777575	0.266212
40-44	265	2079	865	7.845283	0.416065	0.757868	0.315322
45-49	409	3443	1586	8.418092	0.460644	0.756537	0.348494

APPENDIX IV

MORTALITYY DIFFERENTIALS IN VIHIGA

DIVORCED & SEPARATED

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	94	104	14	1.106382	0.134615	-0.35598	-0.04792
20-24	245	490	45	2	0.091836	0.781304	0.071752
25-29	194	577	90	2.974226	0.155979	0.904220	0.141039
30-34	154	634	92	4.116883	0.145110	0.884732	0.128383
35-39	108	566	109	5.240740	0.192579	0.887128	0.170842
40-44	80	489	101	6.1125	0.206543	0.869512	0.179592
45-49	66	374	104	5.666666	0.278074	0.865671	0.240721

MORTALITYY DIFFERENTIALS IN HAMISI

DIVORCED & SEPERATED.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	87	96	6	1.103448	0.0625	-0.31624	-0.01976
20-24	163	334	45	2.049079	0.134730	0.800823	0.107895
25-29	138	450	86	3.260869	0.191111	0.922623	0.176323
30-34	87	419	86	4.816091	0.205250	0.903554	0.185455
35-39	62	352	114	5.677419	0.323863	0.906743	0.293661
40-44	50	287	62	5.74	0.216027	0.889501	0.192157
45-49	29	206	53	7.103448	0.257281	0.885211	0.227748

MORTALITYY DIFFERENTIALS IN LURAMBI

DIVORCED & SEPARETED.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	54	46	4	0.851851	0.086956	0.015541	0.001351
20-24	125	256	42	2.048	0.164062	0.854317	0.140161
25-29	128	388	87	3.03125	0.224226	0.902889	0.202452
30-34	84	395	78	4.702380	0.197468	0.883371	0.174437
35-39	55	257	48	4.672727	0.186770	0.885710	0.165424
40-44	40	199	60	4.975	0.301507	0.868067	0.261728
45-49	33	225	73	6.818181	0.324444	0.864258	0.280403

MORTALITYY DIFFERENTIALS IN IKOLOMANI

DIVORCED & SEPARETED.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	79	68	2	0.860759	0.029411	-0.11210	-0.00329
20-24	184	342	49	1.858695	0.143274	0.842007	0.120638
25-29	128	380	90	2.96875	0.236842	0.923583	0.218743
30-34	105	453	108	4.314285	0.238410	0.904535	0.215650
35-39	90	426	79	4.733333	0.185446	0.907766	0.168341
40-44	53	243	50	4.584905	0.205761	0.890544	0.183239
45-49	41	223	67	5.439024	0.300448	0.886230	0.266266

MORTALITYY DIFFERENTIALS IN BUTERE

DIVORCED & SEPERATED.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	84	76	12	0.904761	0.157894	-0.06315	-0.00997
20-24	151	307	57	2.033112	0.185667	0.799535	0.148448
25-29	122	301	55	2.467213	0.182724	0.840893	0.153651
30-34	81	360	72	4.444444	0.2	0.819964	0.163992
35-39	80	452	95	5.65	0.210176	0.819631	0.172267
40-44	51	342	91	6.705882	0.266081	0.800727	0.213059
45-49	46	288	79	6.260869	0.274305	0.798432	0.219014

MORTALITYY DIFFERENTIALS IN KABRAS

DIVORCED & SEPARATED.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	40	47	5	1.175	0.106382	-0.52459	-0.05580
20-24	110	210	35	1.909090	0.166666	0.746238	0.124373
25-29	97	273	53	2.814432	0.194139	0.901765	0.175067
30-34	74	317	49	4.283783	0.154574	0.882220	0.136368
35-39	53	262	47	4.943396	0.179389	0.884511	0.158671
40-44	56	348	72	6.214285	0.206896	0.866845	0.179347
45-49	37	197	45	5.324324	0.228426	0.863064	0.197146

MORTALITYY DIFFERENTIALS IN LUGARI

DIVORCED & SEPARATED.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	51	49	3	0.960784	0.061224	-0.15892	-0.00972
20-24	98	196	26	2	0.132653	0.844751	0.112058
25-29	74	255	36	3.445945	0.141176	0.942670	0.133082
30-34	55	241	37	4.381818	0.153526	0.924056	0.141867
35-39	56	295	71	5.267857	0.240677	0.928109	0.223375
40-44	43	266	48	6.186046	0.180451	0.911276	0.164440
45-49	35	217	62	6.2	0.285714	0.906496	0.258998

MORTALITYY DIFFERENTIALS IN MUMIAS

DIVORCED & SEPARATED

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(i)
15-19	94	78	15	0.829787	0.192307	-0.08162	-0.01569
20-24	159	292	70	1.836477	0.239726	0.848205	0.203336
25-29	140	411	107	2.935714	0.260340	0.923801	0.240503
30-34	87	322	73	3.701149	0.226708	0.904758	0.205116
35-39	59	292	90	4.949152	0.308219	0.907998	0.279862
40-44	48	242	84	5.041666	0.347107	0.890781	0.309196
45-49	34	222	127	6.529411	0.572072	0.886462	0.507120

APPENDIX V
MORTALITYY DIFFERENTIALS IN KAKAMEGA
BY DIFFERENTIALS.
NO EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	11205	7719	1225	0.688888	0.158699	0.601886	0.095518
20-24	11098	38353	6346	3.455847	0.165462	0.921277	0.152437
25-29	14859	59454	11751	4.001211	0.197648	0.824332	0.162928
30-34	12752	76727	17233	6.016860	0.224601	0.803027	0.180361
35-39	14134	103993	24940	7.357648	0.239823	0.801980	0.192334
40-44	13186	107706	28858	8.168208	0.267933	0.782739	0.209721
45-49	13998	112704	34161	8.051435	0.303103	0.780848	0.236678

PRIMARY EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	37510	9154	1109	0.244041	0.121149	0.816674	0.098939
20-24	18420	37462	4745	2.033767	0.126661	1.045077	0.132371
25-29	14435	52788	7969	3.656944	0.150962	0.952800	0.143837
30-34	10694	62454	9256	5.840097	0.148205	0.934417	0.138485
35-39	7456	55028	9139	7.380364	0.166079	0.938907	0.155932
40-44	5617	47470	8562	8.451130	0.180366	0.922279	0.166348
45-49	3885	33509	7166	8.625225	0.213852	0.917252	0.196157

SECONDARY + EDUCATION.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	13662	1870	165	0.136876	0.088235	0.760983	0.067145
20-24	9177	8936	631	0.973738	0.070613	1.088230	0.076843
25-29	2906	8073	694	2.778045	0.085965	1.038691	0.089291
30-34	1002	4582	392	4.572854	0.085552	1.022261	0.087456
35-39	416	2546	224	6.120192	0.087981	1.030451	0.090660
40-44	225	1613	190	7.168888	0.117792	1.015572	0.119627
45-49	105	734	68	6.990476	0.092643	1.008447	0.093425

URBAN RESIDENCE.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	2306	789	53	0.342150	0.067173	0.601398	0.040398
20-24	1964	3368	425	1.714867	0.126187	1.016217	0.128234
25-29	1407	4794	606	3.407249	0.126408	0.974871	0.123231
30-34	878	4852	656	5.526195	0.135201	0.956990	0.129386
35-39	693	4413	797	6.367965	0.180602	0.962430	0.173817
40-44	503	3653	833	7.262425	0.228031	0.946252	0.215775
45-49	357	2455	582	6.876750	0.237067	0.940686	0.223005

RURAL RESIDENCE.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	60414	18049	2330	0.298755	0.129093	0.721072	0.093085
20-24	42507	81766	11365	1.923589	0.138994	1.041515	0.144764
25-29	31038	119990	19835	3.865906	0.165305	0.977261	0.161546
30-34	20222	139792	26201	6.912867	0.187428	0.959434	0.179825
35-39	21407	157756	33537	7.369365	0.212587	0.964978	0.205142
40-44	18647	152867	36836	8.197940	0.240967	0.948848	0.228641
45-49	17006	145425	36104	8.551393	0.248265	0.943224	0.234169

SINGLE WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	46266	3816	381	0.082479	0.099842	0.810796	0.080952
20-24	10146	6850	580	0.675142	0.084671	1.072929	0.090846
25-29	2522	3817	489	1.513481	0.128111	0.998769	0.127953
30-34	964	2592	426	2.688796	0.164351	0.981432	0.161300
35-39	550	1822	369	3.312727	0.202524	0.987902	0.200074
40-44	394	1621	397	4.114213	0.244910	0.972210	0.238104
45-49	282	1150	308	4.078014	0.267826	0.966060	0.258736

MARRIED WOMEN

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	15567	14290	1966	0.917967	0.137578	0.059481	0.008183
20-24	32774	75268	11013	2.296576	0.146317	0.893229	0.130694
25-29	28439	116382	18975	4.092337	0.163040	0.950691	0.155001
30-34	22276	134894	24922	6.055575	0.184752	0.932259	0.172237
35-39	19953	151034	31567	7.569488	0.209005	0.936658	0.195767
40-44	16801	141421	33181	8.417415	0.234625	0.919988	0.215852
45-49	13256	127572	35079	9.623717	0.274974	0.915012	0.251604

WIDOWED WOMEN.

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(x)
15-19	54	53	11	0.981481	0.207547	0.271225	0.056292
20-24	189	577	156	3.052910	0.270363	0.912678	0.246755
25-29	330	1557	333	4.718181	0.213872	0.914826	0.195656
30-34	584	3983	997	6.820205	0.250313	0.895579	0.224175
35-39	1008	7314	1178	7.255952	0.161060	0.898432	0.144702
40-44	1504	11987	3493	7.970079	0.291399	0.881032	0.256731
45-49	2132	17433	5873	8.176829	0.336889	0.876932	0.295429

MORTALITYY DIFFERENTIALS ALL CASES COMBINED
FOR KAKAMEGA DISTRICT

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(i)
15-19	62720	18838	2383	0.300350	0.126499	0.716791	0.090673
20-24	44471	85134	11790	1.914371	0.138487	1.043398	0.144497
25-29	32445	127484	20441	3.929234	0.160341	0.981591	0.157390
30-34	21100	144644	26857	6.855165	0.185676	0.963862	0.178966
35-39	22100	162187	34334	7.338778	0.211693	0.969593	0.205256
40-44	19150	156520	37669	8.173368	0.240665	0.953551	0.229487
45-49	17363	147880	36686	8.516961	0.248079	0.947821	0.235135

APPENDIX VI

MORTALITYY DIFFERENTIALS ALL CASES COMBINED
VIHIGA

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(i)
15-19	15579	3545	330	0.227549	0.093088	0.791086	0.073641
20-24	10180	17895	1850	1.757858	0.103380	1.064180	0.110015
25-29	7504	28404	3726	3.785181	0.131178	0.991117	0.130013
30-34	6023	35220	5364	5.847584	0.152299	0.973606	0.148280
35-39	5192	38259	7156	7.368836	0.187040	0.979746	0.183252
40-44	5218	43498	9186	8.336144	0.211182	0.963899	0.203558
45-49	4582	39574	9673	8.636839	0.244428	0.957936	0.234146

MORTALITYY DIFFERENTIALS ALL CASES COMBINED
LURAMBI

AGE GROUP	FPOP	CEB	CD	P(i)	D(i)	K(i)	q(i)
15-19	6589	2397	340	0.363788	0.141843	0.644962	0.091484
20-24	5204	10321	1645	1.983282	0.159383	1.023349	0.163105
25-29	3797	14792	1632	3.895707	0.110329	0.972451	0.107290
30-34	2608	15335	2954	5.879984	0.192631	0.954514	0.183869
35-39	2285	16680	3844	7.299781	0.230455	0.959851	0.221203
40-44	1738	13956	3613	8.029919	0.258885	0.943623	0.244290
45-49	1473	12288	3758	8.342158	0.305826	0.938116	0.286901

APPENDIX VII

LIFE TABLE FOR VIHIGA

Age Group	nQ(x)	nP(x)	l(x)	nd(x)	nL(x)	T(x)	e(x)
0-1	0.035727	0.964273	100000	3572.7	98213.65	5580748.	55.80748
1-4	0.013114	0.986886	96427.3	1264.547	478975.1	5482535.	56.85667
5-9	0.013805	0.986195	95162.75	1313.721	472529.4	5003560.	52.57897
10-14	0.018767	0.981233	93849.03	1761.264	464841.9	4531030.	48.27999
15-19	0.022813	0.977187	92087.76	2100.798	455186.8	4066188.	44.15558
20-24	0.026023	0.973977	89986.96	2341.730	444080.5	3611001.	40.12805
25-29	0.034138	0.965862	87645.23	2992.033	430746.1	3166921.	36.13341
30-34	0.033974	0.966026	84653.20	2876.007	416075.9	2736175.	32.32217
35-39	0.040157	0.959843	81777.19	3283.926	400676.1	2320099.	28.37098
40-44	0.05174	0.94826	78493.26	4061.241	382313.2	1919423.	24.45334
45-49	0.070322	0.929678	74432.02	5234.209	359074.6	1537109.	20.65118
50-54	0.100541	0.899459	69197.81	6957.217	328596.0	1178035.	17.02416
55-59	0.14735	0.85265	62240.60	9171.152	288275.1	849439.2	13.64767
60-64	0.217694	0.782306	53069.44	11552.90	236464.9	561164.1	10.57414
65-69	0.319122	0.680878	41516.54	13248.84	174460.6	324699.1	7.820957
70-74	0.572365	0.427635	28267.70	16179.44	100889.9	150238.5	5.314846
75+	1	0	12088.25	12088.25	49348.6	49348.6	4.082357

LIFE TABLE FOR HAMISI

Age Group	nQ(x)	nP(x)	l(x)	nd(x)	nL(x)	T(x)	e(x)
0-1	0.031998	0.968002	100000	3199.8	98400.1	5688935.	56.88935
1-4	0.011833	0.988167	96800.2	1145.436	481137.4	5590535.	57.75334
5-9	0.012614	0.987386	95654.76	1206.589	475257.3	5109398.	53.41499
10-14	0.01722	0.98278	94448.17	1626.397	468174.8	4634140.	49.06543
15-19	0.021002	0.978998	92821.77	1949.442	459235.2	4165966.	44.88134
20-24	0.02404	0.97596	90872.33	2184.570	448900.2	3706730.	40.79053
25-29	0.027516	0.972484	88687.76	2440.332	437337.9	3257830.	36.73371
30-34	0.031808	0.968192	86247.43	2743.358	424378.7	2820492.	32.70233
35-39	0.038007	0.961993	83504.07	3173.739	409586.0	2396113.	28.69457
40-44	0.049396	0.950604	80330.33	3967.997	391731.6	1986527.	24.72948
45-49	0.067536	0.932464	76362.33	5157.206	368918.6	1594796.	20.88459
50-54	0.097038	0.902962	71205.12	6909.603	338751.6	1225877.	17.21614
55-59	0.143044	0.856956	64295.52	9197.089	298484.9	887125.8	13.79763
60-64	0.212752	0.787248	55098.43	11722.30	246186.4	588640.9	10.68344
65-69	0.313685	0.686315	43376.13	13606.44	182864.5	342454.5	7.894999
70-74	0.567202	0.432798	29769.69	16885.42	106634.8	159589.9	5.360820
75+	1	0	12884.26	12884.26	52955.1	52955.1	4.110060

LIFE TABLE FOR LURAMBI

Age Group	nQ(x)	nP(x)	l(x)	nd(x)	nL(x)	T(x)	e(x)
0-1	0.04334	0.95666	100000	4334	97833	5445627.	54.45627
1-4	0.015442	0.984558	95666	1477.274	474636.8	5347794.	55.90068
5-9	0.01623	0.98377	94188.72	1528.683	467121.9	4873157.	51.73822
10-14	0.0201	0.9799	92660.04	1862.466	458644.0	4406036.	47.55055
15-19	0.02428	0.97572	90797.57	2204.565	448476.4	3947391.	43.47464
20-24	0.02763	0.97237	88593.01	2447.824	436845.4	3498915.	39.49426
25-29	0.03135	0.96865	86145.18	2700.651	423974.2	3062070.	35.54545
30-34	0.03573	0.96427	83444.53	2981.473	409768.9	2638095.	31.61496
35-39	0.0419	0.9581	80463.06	3371.402	393886.7	2228326.	27.69378
40-44	0.05364	0.94636	77091.65	4135.196	375120.3	1834439.	23.79556
45-49	0.07258	0.92742	72956.46	5295.180	351544.3	1459319.	20.00260
50-54	0.13338	0.86662	67661.28	9024.661	315744.7	1107775.	16.37236
55-59	0.15084	0.84916	58636.62	8844.747	271071.2	792030.4	13.50743
60-64	0.2217	0.7783	49791.87	11038.85	221362.2	520959.2	10.46273
65-69	0.32353	0.67647	38753.01	12537.76	162420.6	299597.0	7.730935
70-74	0.582131	0.417869	26215.25	15260.71	92924.48	137176.3	5.232693
75+	1	0	10954.54	10954.54	44251.9	44251.9	4.039594

LIFE TABLE FOR IKOLOMANI

Age Group	nQ(x)	nP(x)	l(x)	nd(x)	nL(x)	T(x)	e(x)
0-1	0.046694	0.953306	100000	4669.4	97665.3	5337381.	53.37381
1-4	0.016466	0.983534	95330.6	1569.713	472728.7	5239716.	54.96363
5-9	0.017282	0.982718	93760.88	1620.375	464753.4	4766987.	50.84196
10-14	0.023244	0.976756	92140.51	2141.714	455348.2	4302234.	46.69210
15-19	0.028027	0.971973	89998.79	2522.396	443687.9	3846886.	42.74375
20-24	0.03173	0.96827	87476.40	2775.626	430442.9	3403198.	38.90418
25-29	0.035707	0.964293	84700.77	3024.410	415942.8	2972755.	35.09714
30-34	0.040124	0.959876	81676.36	3277.182	400188.8	2556812.	31.30419
35-39	0.046176	0.953824	78399.18	3620.160	382945.5	2156623.	27.50824
40-44	0.05825	0.94175	74779.02	4355.877	363005.4	1773678.	23.71892
45-49	0.078011	0.921989	70423.14	5493.779	338381.2	1410672.	20.03137
50-54	0.110201	0.889799	64929.36	7155.280	306758.6	1072291.	16.51473
55-59	0.159162	0.840838	57774.08	9195.438	265881.8	765532.7	13.25045
60-64	0.231157	0.768843	48578.64	11229.29	214819.9	499650.9	10.28540
65-69	0.333875	0.666125	37349.35	12470.01	155571.7	284830.9	7.626129
70-74	0.586125	0.413875	24879.33	14582.40	87940.67	129259.2	5.195447
75+	1	0	10296.93	10296.93	41318.6	41318.6	4.012708

LIFE TABLE FOR BUTERE

Age Group	nQ(x)	nP(x)	l(x)	nd(x)	nL(x)	T(x)	e(x)
0-1	0.056703	0.943297	100000	5670.3	97164.85	5136053.	51.36053
1-4	0.019627	0.980373	94329.7	1851.409	467019.9	5038888.	53.41784
5-9	0.020197	0.979803	92478.29	1867.784	457721.9	4571868.	49.43721
10-14	0.026452	0.973548	90610.50	2396.829	447060.4	4114146.	45.40474
15-19	0.031615	0.968385	88213.67	2788.875	434096.2	3667086.	41.57049
20-24	0.035806	0.964194	85424.80	3058.720	419477.2	3232990.	37.84603
25-29	0.040314	0.959686	82366.08	3320.506	403529.1	2813513.	34.15863
30-34	0.045061	0.954939	79045.57	3561.872	386323.1	2409983.	30.48853
35-39	0.051168	0.948832	75483.70	3862.350	367762.6	2023660.	26.80923
40-44	0.063756	0.936244	71621.35	4566.290	346691.0	1655898.	23.12017
45-49	0.084601	0.915399	67055.06	5672.925	321092.9	1309207.	19.52435
50-54	0.118511	0.881489	61382.13	7274.458	288724.5	988114.0	16.09774
55-59	0.169256	0.830744	54107.67	9158.049	247643.2	699389.4	12.92588
60-64	0.242514	0.757486	44949.62	10900.91	197495.8	451746.2	10.05005
65-69	0.346489	0.653511	34048.71	11797.50	140749.8	254250.3	7.467252
70-74	0.596935	0.403065	22251.20	13282.52	78049.73	113500.5	5.100870
75+	1	0	8968.683	8968.683	35450.8	35450.8	3.952731

LIFE TABLE FOR KABRAS

Age Group	nQ(x)	nP(x)	l(x)	nd(x)	nL(x)	T(x)	e(x)
0-1	0.045707	0.954293	100000	4570.7	97714.65	5358514.	53.58514
1-4	0.016156	0.983844	95429.3	1541.755	473292.1	5260800.	55.12772
5-9	0.016984	0.983016	93887.54	1594.586	465451.2	4787508.	50.99194
10-14	0.022887	0.977113	92292.95	2112.308	456184.0	4322056.	46.82975
15-19	0.027624	0.972376	90180.64	2491.150	444675.3	3865872.	42.86809
20-24	0.031282	0.968718	87689.49	2743.102	431589.7	3421197.	39.01490
25-29	0.035216	0.964784	84946.39	2991.472	417253.2	2989607.	35.19404
30-34	0.039615	0.960385	81954.92	3246.644	401658.0	2572354.	31.38742
35-39	0.045673	0.954327	78708.27	3594.843	384554.2	2170696.	27.57900
40-44	0.057703	0.942297	75113.43	4334.270	364731.5	1786142.	23.77926
45-49	0.077362	0.922638	70779.16	5475.617	340206.7	1421410.	20.08233
50-54	0.109385	0.890615	65303.54	7143.228	308659.6	1081203.	16.55658
55-59	0.158171	0.841829	58160.31	9199.275	267803.4	772544.1	13.28301
60-64	0.230039	0.769961	48961.04	11262.94	216647.8	504740.7	10.30902
65-69	0.332644	0.667356	37698.09	12540.04	157140.3	288092.8	7.642106
70-74	0.585011	0.414989	25158.04	14717.73	88995.90	130952.5	5.205193
75+	1	0	10440.31	10440.31	41956.6	41956.6	4.018710

LIFE TABLE FOR LUGARI

Age Group	nQ(x)	nP(x)	l(x)	nd(x)	nL(x)	T(x)	e(x)
0-1	0.030687	0.969313	100000	3068.7	98465.65	5723994.	57.23994
1-4	0.011411	0.988589	96931.3	1106.083	481891.2	5625528.	58.03624
5-9	0.012183	0.987817	95825.21	1167.438	476207.4	5143637.	53.67728
10-14	0.016662	0.983338	94657.77	1577.187	469345.9	4667429.	49.30846
15-19	0.020344	0.979656	93080.59	1893.631	460668.8	4198083.	45.10160
20-24	0.023311	0.976689	91186.95	2125.659	450620.6	3737414.	40.98628
25-29	0.026734	0.973266	89061.29	2380.964	439354.0	3286794.	36.90485
30-34	0.030998	0.969002	86680.33	2686.917	426684.3	2847440.	32.84989
35-39	0.037195	0.962805	83993.41	3124.135	412156.7	2420755.	28.82078
40-44	0.048501	0.951499	80869.28	3922.241	394540.8	2008599.	24.83760
45-49	0.066468	0.933532	76947.04	5114.515	371948.9	1614058.	20.97622
50-54	0.095679	0.904321	71832.52	6872.864	341980.4	1242109.	17.29174
55-59	0.141369	0.858631	64959.66	9183.282	301840.1	900128.9	13.85673
60-64	0.21082	0.78918	55776.37	11758.77	249484.9	598288.8	10.72656
65-69	0.311545	0.688455	44017.60	13713.46	185804.3	348803.8	7.924190
70-74	0.565129	0.434871	30304.13	17125.74	108706.3	162999.5	5.378787
75+	1	0	13178.39	13178.39	54293.2	54293.2	4.119865

LIFE TABLE FOR MUMIAS

Age Group	nQ(x)	nP(x)	l(x)	nd(x)	nL(x)	T(x)	e(x)
0-1	0.081076	0.918924	100000	8107.6	95946.2	4630620.	46.30620
1-4	0.027376	0.972624	91892.4	2515.646	453172.8	4534674.	49.34765
5-9	0.027864	0.972136	89376.75	2490.393	440657.7	4081501.	45.66624
10-14	0.035976	0.964024	86886.35	3125.823	426617.2	3640843.	41.90350
15-19	0.042691	0.957309	83760.53	3575.821	409863.1	3214226.	38.37399
20-24	0.048165	0.951835	80184.71	3862.096	391268.3	2804363.	34.97378
25-29	0.053876	0.946124	76322.61	4111.957	371333.1	2413094.	31.61703
30-34	0.059321	0.940679	72210.66	4283.608	350344.2	2041761.	28.27506
35-39	0.065658	0.934342	67927.05	4459.954	328485.3	1691417.	24.90049
40-44	0.079822	0.920178	63467.09	5066.070	304670.3	1362931.	21.47462
45-49	0.103903	0.896097	58401.02	6068.041	276835.0	1058261.	18.12059
50-54	0.143042	0.856958	52332.98	7485.814	242950.3	781426.4	14.93181
55-59	0.199612	0.800388	44847.17	8952.033	201855.7	538476.0	12.00691
60-64	0.277446	0.722554	35895.13	9958.962	154578.2	336620.3	9.377880
65-69	0.385392	0.614608	25936.17	9995.594	104691.8	182042.0	7.018846
70-74	0.625193	0.374807	15940.58	9965.939	54788.05	77350.15	4.852405
75+	1	0	5974.641	5974.641	22562.1	22562.1	3.776310