THE ESTIMATION OF NET INTERCENSAL RURAL-URBAN MIGRATION IN KENYA.

BY

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DECLARATION

This thesis is my own original work and has not been presented for a degree in any other university.

EZEKIEL MASHA OTIENO

This thesis has been submitted for examination with our approval as university supervisors.

DR. B. K'OYUGI	1/8/2001 DATE
DR. M. KIMANI	22/8/2001 DATE

DEDICATION

This work is dedicated to young school leavers and potential adult migrants who despite overt and covert urban employment prospects tend to reverse the expected shift in the pattern of urban growth from the primacy of the major metropolis to the medium and smaller urban centres.

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ABSTRACT

This study attempts to estimate intercensal rural-urban migration in Kenya for the decade 1979-1989 using the Life Table Survival Ratio model. The study is based on urban population of the forty districts which had urban centres in 1979 but excludes Elgeyo Marakwet District which had no urban centre by the 1979 census report. These urban populations are referred to hereafter as forty urban districts. The 1979 and 1989 Population census data sets were utilized in this study.

The results show migration to urban centres to be highly dependent on age and portray considerable variations in sex-age specific net migration rates by urban place of destination. Most urban areas are found to experience net gains in the population of young adults within age bracket 20-29 years while registering notable net out-flows of population in older age bracket 50-59 years. Age bracket 10-19 also features prominently as the other crucial one in the accelerated internal rural-urban migration. The results further indicate that age 30 years, which according to this study defines the divide between urban in- and out-migration, marks the population age point that most likely constitute inter-urban movements. Though not dominant in Kenya these movements are on the increase as the results of this study indicate. The regional male and female in- and out-flow patterns are found to be similar.

The main conclusions of this study are: sex and age provide a better insight into the male vis-a-vis female migration; the nearly proportionate migration of males and females into urban areas is an indication of exposure to equal opportunities for both sexes. The study's main recommendations for policy are : intensified generation of comprehensively integrated development strategies; reduction of regional imbalances in development; according agriculture greater emphasis in the educational system so as to develop skills more suited to rural employment opportunities; and, migration control to form part of the overall national development strategies.

CHAPTER ONE

GENERAL INTRODUCTION

1.1 INTRODUCTION

Population distribution in Kenya is influenced by a number of factors among them the physical, historical, pattern of economic development and policies pertaining to land settlement. Even the population distribution between provinces clearly shows considerable regional imbalances; in the two western provinces an average of 200 persons lived in each sq. km.(Republic of Kenya, 1988). The figures for the individual districts are even more drastic: in the completely rural districts of Kisii and Kakamega, population density by the end of 1980 was 300 and 400 persons per sq. km.(Goldschmidt, 1981). As a result of migrants from rural to urban areas the urban population increased from 2.3 million in 1979 to 3.9 million in 1989 giving an intercensal growth rate of 5.2 percent per annum (Republic of Kenya, 1996).

The total urban population rose to 9.9 percent of the total population of Kenya and the average intercensal urban growth rate had accelerated to 7.2 percent per annum as compared to 1948-1962 (Kenya censuses: 1969,1979 & 1989). Thus, the urban population was doubling every 10 years between 1969 and 1979. Thus, it can be seen that the urban population increased and more than doubled from 7.8 percent of the total population in 1962 to 16.4 percent in 1989. The number of urban centres also increased phenomenally from 34 in 1962 to 139 in 1989 (Republic of Kenya, 1996).

Urban centres in the 100, 000+ category contributed 61.1 percent to the urbanization process during the period 1962-89 (Republic of Kenya, 1996). This therefore indicates that these centres can be attributed to this rapid process. This substantial contribution by the larger cities further explains the ever increasing urbanward tendencies.

Despite its rich multiracial and demographic structures, Kenya is still confronted with a variety of development challenges; the critical ones which have persisted since independence being poverty and unemployment (Goldschmidt, 1981).

Increases in urban population and level of urbanization have also been attributed to urbanward shifts. Population mobilities in Kenya, a result of cultural and socioeconomic changes, have motivated spatial redistribution in which the most remarkable has been accelerated migration from rural to urban areas (Ominde, 1977b). However, rural to rural and urban to rural flows apparently do also take place.

Contemporary rapid urbanization in developing countries is attributed to three factors: a high natural increase of population, rural-urban migration and reclassification of rural localities. Of the three factors, rural-urban migration provides a critical dimension for not only understanding the urbanization process, but also the nature and consequences of rapid urbanization (World Bank, 1984). However, spatial population change has become characterised by accelerating rural-urban drift (Ominde, 1977b). This depicts the centre periphery relationship inherited from the colonial era. Rural-urban migration in many African countries accounts for a good proportion (above 5 percent) of urbanization (World Bank, 1984). Rapid urbanization in Sub-Saharan Africa which includes Kenya is mainly due to both a high natural increase of population and rural-urban shifts (Oucho, 1985). It is estimated that about half of urbanites in Eastern Africa is the result of rural-urban migration and that individual countries record even higher proportions: in the decade 1950 - 60 close to 70 percent for Kenya and 77 percent for Tanzania (Aryee, 1975).

The primary aim of this study is to estimate net intercensal rural-urban migration in a Kenya's spatial setting. It will examine migration patterns, rates by age and sex, overall rates, direction and volumes. It disregards population mobility epitomized by political and/or ethnic differences. The estimates are intended to determine the volume and patterns of the trends of the phenomenon. It bases its computational and analytical techniques on the Life Table Survival Ratio (LTSR) Method guided by the assertion that this method has been found useful in estimating net migration in statistically under-developed countries (Siegel et al., 1952). The results of this study will provide the sex-age patterns of rural-urban migration and the associated spatial variation in Kenya's urban settlement system.

The study of migration in Kenya has been hampered by lack of estimates based on modern techniques of migration measurement. This apparent obstacle prompts two research questions for investigation. The first research question being: can life table survivorship probabilities be useful in filling the above gap besides representing the force of mortality of a population? The second question is: are the estimates they generate likely to give a true reflection of the extent and breadth of the phenomenon across the selected urban population age profiles?

1.2 PROBLEM STATEMENT

During the period over the last 30 years Kenya has experienced high population growth rate that has accelerated the increase in the population size which has had to be accommodated on the limited arable land and within urban areas. Rural to urban migration was enhanced from the continued increase in population pressure and has been a major contributing factor to rapid urbanization (Ominde, 1975).

Although about 60 percent of the rise in urban population is attributed to natural increase and only 8-15 percent to reclassification of rural areas to urban areas, the contribution of rural-urban migration remains unknown albeit a significant quantity (World Bank, 1984: 97). Despite the intercensal period 1979-89 period having given an urban population growth rate of 5.2 per cent, individual urban areas even show annual urban growth rate far much above the national average (Republic of Kenya, 1996). Viewed on account of urban population alone these rates of growth are considered much higher.

Spatial population mobility in favour of already established metropolis are leading to increasing impoverishment of the rural areas and hence a widening of the gap in living conditions between urban and the rural locations. With the acceleration in the rate of urbanization at the national and regional levels, the intensity of the problems is bound to grow and the competition for scarce development resources is bound to stiffen (Ominde, 1977b: 231).

Rural-urban migration remains phenomenal and this migration flow appears to swell whenever urban prospects improve or do not improve. The unprecedented increase in Kenya's urban population and its immediate prospects have ominous economic and social implications for employment, education and health. This rapid urban proliferation will exacerbate the prevailing social ills (Obudho and Mhlanga, 1988).

Most urban and municipal councils have been unable to grasp the implications of influx of large numbers of migrants of increasing magnitude. This can be attributed to severe policy problems that have beset the country since independence because of the least attention accorded the migration phenomenon and of the failure to predict and plan for urban growth.

Although migration is not the most important determinant of change in size of the population, its study has been hampered by conceptual and measurement problems and lack of estimates based on modern techniques of migration measurements (Republic of Kenya, 1996). Since migration in Kenya just as in many other regions can completely surpass population change resulting from natural increase, this study embarks on the use of survival ratio technique to address itself to the problems of migration estimation.

1.3 STUDY OBJECTIVES

1.3.1 BROAD OBJECTIVE

The broad objective is to estimate intercensal rural-urban migration in Kenya for the intercensal period 1979-89 using survivorship probabilities through a life table analysis.

1.3.2 SPECIFIC OBJECTIVES

Based on the foregoing broad objective and problems cited above, the specific objectives are:

1. To estimate, using the Life Table Survival Ratio (LTSR) Technique, the net intercensal rural-urban migration rates in Kenya so as to determine the age profiles of migrants for the period 1979-89.
2. To determine patterns of migration from the estimated migration rates.
3. To examine how the migration has influenced patterns of urbanization.

1.4 SCOPE AND LIMITATION

The study focuses urban centres which had a population of 2000 and over in 1979 census and which were enumerated as urban centres in the subsequent census of 1989. This is important for this study because an urban population is growing at least in part due to rural to urban migration in countries with multiple urban centres. A recent past review indicates that among most less developed countries rural to urban migration dominates (United Nations, 1973). The study covers the entire urban population as defined at the 1979 census and the same population as defined at the 1989 census.

In the study of migration it is important to focus on migration rates which vary with demographic characteristics. The study therefore attempts to focus on sex and age migration differentials since the propensity to migrate is known to be associated with these factors. This is useful in elucidating the sex and in particular age profile that influence the migration patterns. Since the estimation of age-specific net intercensal migration rates are to be computed for the intercensal period (1979-89), this study undertakes to execute the computations by sex and 10-year age groups. This is important for this study because the age group and the estimation period are both time-dependent functions, a fact that calls for a uniform interval for the two to facilitate comparison. Further, in view of the fact that the 1979 census data for urban populations obtained from Central Bureau of Statistics(CBS) in the Ministry of Planning and National Development had zero entries in 20-24 age group it was useful to iron out this anomaly by regrouping the usual five-year age group into ten-year age groups through lumping two consecutive five-year age group entries. This was necessitated by revelation after careful scrutiny that the missing 20-24 age group entries were heaped into the next age group's (25-29) entries.

Since age reporting remains very poor in many countries of the world including Kenya data used here has some limitations such as age misreporting, incompleteness of enumeration, boundary changes and annexations which are likely to affect the results of this study.

1.5 RATIONALE AND JUSTIFICATION OF THE STUDY

This study intends to shed light not into the factors which significantly influence the migration process but into levels, patterns and trends of migration and the associated urbanization effect portrayed by the 1979-89 intercensal period. Unlike mortality and fertility, the other two dynamics of population change, appropriate analytical techniques and models for migration are limited. Given this constraint, the study adopts an indirect method employing survival ratios derived from life tables. Survival ratios are mortality measures and measure survivorship over a span of time represented by the difference between two ages. Survival ratio method is employed to estimate intercensal net migration by sex and age. To apply this method to urban populations it is necessary to have data categorized by urban place of residence by sex and age at two consecutive censuses and a set of survival ratios that validly reflect the mortality patterns in the population for which estimation is to be made.

The study recognizes that migration has been one of the important demographic processes influencing changes in the size and composition of geographically based populations. Rural to urban movement has then been particularly important for the urbanization process.

Urbanization in this country has been occasioned by rural-urban migration. This is a problem worth studying. Although urbanward flow has mainly contributed to rapid urbanization its potential has not been fully exploited and this poses a big policy problem which needs to be addressed. The phenomenal population increase in Kenya's urban settlement system has not resulted in proper redistribution of the urban population but perpetuated the colonial economic development legacy that maintained large urbanward shifts of populations from rural bases to expanding towns. Because migration sometimes can overwhelm population change resulting from natural increase there is widespread need for knowledge about it.

This study therefore intends to furnish a body of information that is likely to be useful in the generation of positive spatial planning measures that would address the ominous socioeconomic problems besetting the country.

1.6 LITERATURE REVIEW

Rogers [1973 (a) and (b), 1975] observes that it is also viable to estimate migration from concepts borrowed from both mortality and fertility analysis. Such concepts can be adjusted where necessary to incorporate issues peculiar to population mobility. He further notes that from mortality analysis migration studies can borrow the notion of the life table.

Wilkens and Rogers (1978) used the Yugoslavian data to estimate age-specific out-migration and death probabilities. Using annual age-specific rates of out-migration and out-migrants or deaths in a certain age group they computed life table probabilities. They noted that the probabilities of dying and out-migrating may be computed along two lines starting from the observed rates. The basic difference is the assumption about multiple transitions. The early formulations of the probability estimation procedure permitted no multiple transitions (Rogers, 1975a, p.82). It was assumed that an individual only makes one move during a unit time period , five years say. They therefore used formulations which relaxed this assumptions (Schoen, 1975; Rogers and Ledent, 1976). Wilkens and Rogers (1978) identified that the assumption of multiple versus no multiple transitions affects not only the probabilities directly but also the person-years lived in the last open-ended age groups. Moreover, under the assumption of no multiple transitions people cannot migrate and die during the same time-interval. Thus, since all people die in the last age group, the off-diagonal elements of the matrix are zero and the diagonal consists of regional death rates.

Wilkens and Rogers (1978) using the Yugoslavian data at the same time applied two alternative approaches to express the level of migration in a multiregional system (Rogers, 1975b). In their first approach they expressed migration level in terms of expected durations, that is, the fraction of an individual's life time that is spent in a particular region. They found that the total life expectancy of a girl born in Slovenia was 72.48 years of which 64.90 years were expected to be lived in Slovenia and 7.58 years in the rest of Yugoslavia. In their second approach they adopted a fertility perspective to migration analysis. Noting that unlike death, migration was a recurrent event analogous to birth, they found that its level could be measured by counting the number of moves an average person made during his lifetime.

Wilber (1963) and Long (1973) developed such indices for a population aggregated at the national level. Rogers (1975b) combined Wilber's and Long's ideas of " expected moves" with the approach generalizing the expected number of children (NRR) to a multiregional system (NRR).

In their study of the patterns of spatial population growth in Poland, Dziewonski and Korcelli (1981) used Multiregional Model, Multiregional Life Table and Fertility and Mobility Analysis in an attempt to compute the size and composition or interregional migration flows. In applying the Multiregional Model they used the modelling framework developed by Rogers and associates (Rogers, 1975; 1978) and Wilkens and Rogers (1978) to study the complex interdependence between interregional demographic factors. They identified that unlike the behaviour of single-region cohort-survival models, the structure and evolution of population in a multiregional model are dependent not only on regional fertility and mortality levels but also on the size and composition of interregional migration flows taking into account the age structure , fertility and mortality of migrants.

The study notes that the conceptual problem related to the application of the multiregional model and also the single-region version include the necessary assumptions of constant transition probabilities and the total closure of the system. In addition, interregional age-specific migration patterns are exogenous to the model. The study observes further that since patterns of migration are generally less stable than those of fertility and mortality, it is essential that the data used pertain to a relatively "normal" period or are representative of trends in the intensity and direction of internal population movements that are likely to be sustained. However, many of these restrictions are necessary only when the basic form of the model is considered. Thus, within a broader modelling framework, separate sub-models pertaining to the demometrics of migrations can be used (Rogers, 1976). On the other hand , changing demographic parameters may be introduced into the model either as empirical or policy variables thus allowing the long term impacts of observed trends, population policies or exogenous "shocks" introduced into the multiregional system to be traced.

Noted also was a limitation that a number of important characteristics were uncovered in the analysis of the multiregional life table. The table describes the history of a hypothetical cohort born in a certain region and subjected to a given set of age- and region-specific mortality and out-migration rates. The effects of migration on the interregional population structure are traced not only with respect to the absolute size of the flows and their sizes relative to the populations of the regions of origin and destination, but also by taking account of the timing of the migration (the age-specific probability of moving) and the existing interregional fertility and mortality differentials.

Application of Fertility and Mortality Analysis in the same study showed that interregional fertility pattern in Poland were characterized by considerable variations in terms of net reproduction rates (NRR) particularly with the urbanized regions (except for Gdansk) showing total values below unity. Basically, the total spatial NRR_s for regions of high fertility and net out-migration are lower than the corresponding single-region NRR_s, and for the regions of low fertility and net in-migration they are higher than the single-region values. The study notes that initial interregional fertility differentials are large enough to overshadow the out-migration patterns when NRR_s are presented within a multiregional framework. In both cases it further identifies that the urbanized regions are characterized by NRR_s below replacement level while the regions of highest NRR_s are also those with the highest net out-migration rates. However, it was noted that the total spatial NRR_s of the regions with net out-migration were considerably lower and those of regions of net in-migration somewhat higher than the corresponding single-region values (Dziewonski and Korcelli, 1981: 51).

The study concludes by noting that the pattern of mean ages of migrants seems to be typical of other countries as well (although the high degree of variation is more unusual) and it suggests the following interpretations: labour-market entry and education-oriented moves, which mainly involve migrants in their early twenties, take place from less toward more-urbanized and industrialized regions. Out-migration from the urban industrial regions occurs at a later stage in the life cycle: it may take the form of a return migration a forward move related to career advancement or less frequently retirement. It is further observed that the age pattern for specific migration flows are influenced by physical distance. For instance, migrants who move to Warsaw from the neighbouring regions of East, North East, and East Central are younger on the average than those arriving from the more-distant Gdansk, Katowice, or West Central regions. One plausible explanation is that long-distance moves mainly involve persons with higher levels of skill which are gained at a lower age.

As part of a search for convincing evidence as to whether cities grow mostly by net in-migration or their own natural increase , Keyfitz (1980) initiated a research under various hypothetical conditions on a national population that at first was entirely rural in an attempt to identify the relative contributions of these two components of city growth. Using Mexico data, the study found that in-migration ceased to dominate urban increase at a point where the urban population was still much less than the rural.

Using population censuses of 1973 and 1983 in her study of migration to Banjul and Kombo Saint Mary in the Gambia, Yamuah (1989) notes that the two areas had the highest proportions of persons born outside the region on account of the statistics on place-of-birth and place-of-enumeration. Results of the study showed that although the Gambia was a small country with a small population it was not free from the problems of rapid urbanization. The capital city of Banjul had become very densely populated and this had put increasing pressure on the government's limited resources. She then inferred that steady migration from farm to city had historically been one of the most obvious concommitants of economic development.

Ominde (1977a) in his study of urbanization in Africa notes that the heavy rural to urban migration which has resulted in a relatively youthful population in the urban areas of Eastern and Southern Africa underlies the rapid growth of city population and of dominantly male population. The urban migrant faces acute social and economic problems. Because of difficulties of finding jobs many of the urban migrants tend to settle on marginal occupations the main source of livelihood of the urban poor. The study reaches a conclusion that although urbanization is an essential aspect of modernization of Africa, if unplanned it will undoubtedly increase environmental, social and economic problems of developing Africa.

Bures (1994) studied patterns of pre-elderly (ages 55-64) net migration in the United States for the period 1980-1990. The main objective was to explore the hypothesis that there existed a retirement transition that characterised pre-elderly migration. The study was focused on this group based on the contention that little effort had been made to explore this group's migration behaviour and because the group was significant given that many of its members were in transition from career-oriented lifestyles to retirement or accompanying their husbands who were in transition. County-level net migration patterns for young (25-54) , pre-elderly (55-64) and elderly (65+) age groups were compared. Pre-elderly migration patterns emerged as different from both young and elderly. Ordinary least squares regression was used to compare the effects of demographic, economic and amenity factors on net migration for the three groups. The model best explained the pre-elderly patterns. The results were weaker for the elderly and even weaker for the young. It was suggested that patterns of pre-elderly net migration differed from those of younger adults in that they were not fully driven by labour-force considerations. At the same time, pre-elderly migration appeared to be driven by factors beyond retirement.

A cross-sectional analysis to compare pre-elderly migration patterns with those of both younger adults and the elderly revealed that migration among pre-elderly represented a retirement transition from family and labour-force considerations of younger adults to the retirement and eventual assistance needs of the elderly. Consistent with the hypothesized relationship between the age groups, the analysis results showed that the pre-elderly shared the elderly preference for less concentrated and amenity areas for the period 1980-1990. However, it was observed that pre-elderly patterns seemed to favour less concentrated and amenity areas to an even greater extent than did those of the elderly. It was finally concluded that on a national level desegregating by age groups more effectively captured cause-specific variation in migration streams.

In a study in Sierra Leone, Campbell(1980: SL55 and SL61) notes that there exists a problem on how the rate of migration is obtained. When the unit of study is the destination area, the impact or ratio of migration could be misstated as the rate of migration. It was noted that the impact of cityward migration from rural areas in 1975 of 22.1 per cent overstated the true or net impact of rural-origin migrants in the city and was most probably an overstatement of the true rate. It was found that the impact of migration from rural through urban centres to the city , 20.6 per cent, was higher than that of migration from rural, through rural centres to the city, 0.8 per cent. This suggested that rural-urban migration was more frequent than rural-rural movements in the country. However, findings by Byerlee et al. (1976:42 and 45) suggested that net rural-urban migration, 0.48 per cent was less than net rural-rural migration in Sierra Leone, 0.52 per cent. In another study Campbell (1985) studied rural-urban migration and rural development interrelations in West Africa. The study aimed to point out some of the obstacles to attainment of the final objectives of rural development programmes in West Africa. It noted that the process of rural-urban migration was of significant relevance to development in the region and that a relationship existed between this process and rural development . Contrary to expectations as per Development Plans that rural development would stem urbanward migrations, the study found that no West African state could boast of having attained its ultimate goals as anticipated through rural development. Reasons for this were attributed to research, conceptual and managerial limitations. It was therefore suggested that the migration / rural development hypothesis was likely to hold in the short term but would fail to stand the test of time over long periods.

1.6.1 MIGRATION STUDIES IN KENYA

While information on rural-urban income gaps is less conclusive than commonly assumed, it is quite obvious that the more important urban centres offer the better opportunities for education and training. Furthermore, a whole range of amenities not available in rural areas is found in the towns especially in the capital cities.

School leavers have at times been thought to constitute a particular problem in that the type of education they obtained did not equip them for agricultural pursuits making them adverse to farming. Indeed the more educated are more likely to move in search of urban employment; a fact that is explained in terms of rational economic calculation. Rempel(1974) shows for Kenya that the return realized for an additional year of education is higher in the towns than in the rural areas and the probability of being selected from a given stock of unemployed varies directly with the level of education of the unemployed. In a much earlier study of rural-urban migration based on survey data he found out that although the number of rural-urban migrants appeared large from the perspective of the receiving centres, the proportion of the rural population moving to towns was very small indeed. He further revealed that although rural-urban migration appeared to vary among ethnic groups, it was more pronounced in the regions where possibilities for cash crop farming were limited.

In developing countries where very few censuses have been undertaken cross-tabulation of the place-of-birth statistics with place-of-enumeration data has been the most widely used method for estimating net migration. Ominde(1968a) in a pioneering work on the Kenya's internal migration used 1962 census data in measuring internal migration. Direct techniques for measuring internal migration were used, specifically cross-tabulation of place-of-birth with place-of-enumeration to ascertain migration volumes. Also calculation of sex ratios to distinguish male-dominated (high sex ratio) areas from female-dominated (low sex ratio) areas, the two due to migration selectivity of males as defined by in-migration and out-migration areas respectively were widely applied.

Direct measurement of migration rate was adopted in subsequent works based on 1969 and 1979 census data. Rempel(1977) made use of the direct method of measuring migration based on 1969 census data and Beskok(1981) used the direct method based on 1979 census data. Oucho(1988) did the same. However, these studies vary in detail and interpretation of the individual results.

Ominde(1968a) identified two major types of internal migration namely rural-urban and rural-rural migration typologies. He pointed out that economic differentials between different geographic areas of Kenya as the determinants. He identified Coast, Rift Valley and Nairobi Provinces as the main net receivers and therefore major destination areas for migrants from other provinces.

Knowles and Anker(1977) identified two kinds of rural-rural migration besides rural-urban migration:

(i) rural-rural migration for resettlement purposes into areas which were formerly reserved for white settlement during the colonial period,

and

(ii) rural-rural migration to obtain employment in the cash crop estate sectors.

They inferred that migration in Kenya takes place in stages and that land pressure appears to encourage out-migration. The predominance of males among rural-urban migrants and the temporary nature of this type of migration are apparently characteristics of internal migration.

Rempel(1977) study revealed among other things extensive out-migration of children from Nairobi, the dominance of rural-rural migration over other types of migration and the dominance of young adults (job seekers) among rural to urban migrants. People born in Coast Province and Northern Kenya seemed to migrate less to other regions outside their districts. He further showed that although rural-urban migration appeared to vary among ethnic groups it was more pronounced in the regions where possibilities for cash crop farming were limited.

Nyaoke(1974) in a research to determine the causal factors of rural-to-urban and urban-to-rural migration in Kenya found that economic factors such as job opportunity, income differentials, and land density and non-economic factors such as level of education and clan contacts had a bearing on the two migration typologies. The study further revealed that the rate of rural-urban migration was dependent on the rate of economic development of the sending areas, that is, in more economically developed areas more people showed high propensity to migrate to urban centres. Job opportunity, as far as primacy of determinants of rural-to-urban and return migration were concerned, ranked first and foremost in significance, followed by income differential and land density.

In a much earlier study based on 1962 and 1968 Kenya censuses, Huntington(1974) singled out ethnic linkage as a major determinant of rural to urban migration. Beskok (1981) analyzing lifetime migration data provided in 1979 census portrayed considerable regional variations in internal migration. Oucho and Mukras(1983) using data collected from two rural districts (Siaya and Kisumu), the Kisumu Municipality and the city of Nairobi to investigate rural-urban migration, discovered that migrants never severed links with their home places. They normally maintained strong socio-cultural links with their district of birth through home visits as well as making urban-rural (return migration) remittances.

Okatcha(1982) in her study of population mobility and employment in Athi River Township tried to determine the source regions of the migrants and factors that have influenced out-migration from the area of origin. In her finding she noted that return migration was negligible. As a result low levels of economic opportunities and massive unemployment had existed in the rural environment.

Preston and Coale(1982) developed a technique which could be used to estimate migration for non-stable populations. Most techniques for estimating migration used in developing countries which are characterised by unstable populations have largely depended upon the stable population model. Wakajummah(1986) used the Preston and Coale technique of estimating migration which employs the computation of Age-Specific Growth Rate (ASGR) on the Kenyan data. In estimating intercensal net migration at district level using this non-stable population model, the study notes that even though there are different rates of net migration in different districts there is a general same pattern of out-migration from rural to urban areas and a reverse urban-rural migration after attaining the age 65 years. Major urban centres are found to register net gains in the population of young adults aged between 10 and 39 years while most rural districts tend to experience net out-flows of population in similar age brackets. Major urban districts are found to experience net out-flows of children population aged between 0 and 9 years. The study further indicate that most of the former non-scheduled districts and other re-settlement districts in Kenya tend to register population net gains in all age groups. Similar phenomenon is observable in most districts along Kenya's borders with neighbouring countries. Most of the major cash crop-growing districts are found to gain population of children aged between 9 and 19 years.

The Directorate of National Sample Survey (India, 1962) used the National Growth Rate (NGR) technique to study migration in India. Zachariah(1964) also used the same method to study migration in the Indian sub-continent. Odipo(1995) used National Growth Rate (NGR) technique to study migration in Kenya. This method had not been applied in Africa before because few censuses undertaken were deficient in migration data. It is possible to make indirect estimates of intercensal net migration rates using the method adopted by Elridge and Yun Kim(1968) in the United States if place-of-birth statistics are available at two consecutive censuses.

The vital statistics method which involves balancing a population equation has been widely used in developed countries
(Elridge, 1965; Hamilton, 1966; Siegel, 1952; Leroy, 1967). However, its applicability in the developing world has been hampered by the poor registration of vital events which yield vital statistics sufficient for its application.

Most of the migration estimation techniques devised in developed countries have for years not proved conducive for estimation of migration in developing countries. However, with the development of the powerful population tools such as model life tables by Coale and Demeny, techniques which originally required an assumption of a stable population (a limitation for developing countries) have now been modified to accommodate lack of stability. Life Table Survival Ratio (LTSR) method is one such technique and is one of the useful techniques in net migration estimation in statistically under-developed countries (Siegel et al., 1952; Hamilton, 1967). This technique is very important as it takes into account changing mortality patterns of the population. However, this method has not fully been applied in Kenya. Given the success of other techniques outlined earlier on their application on the Kenyan data, this study focuses on estimation of intercensal net migration in an urban setting in Kenya based on a life table analysis.

1.6.2 GAPS IN MIGRATION STUDIES IN KENYA

A major shortcoming is lack of statistical study of migration but case studies by individual scholars provide useful evidence on migrant characteristics, determinants and consequences of migration.

Kenya exhibits an increasing spatial population mobility of growing intensity. In particular large shifts of population from the rural base to the expanding towns. In more developed parts of the world the movements have been well documented and their practical implications now form part of national and even regional development strategies. However, in Kenya these movements their cause and impact are little understood. Implications of such changes have not therefore been subjected to thorough scrutiny.

Spatial population change and its impact on urbanization constitutes a vital aspect of the modernization process. The country's success in economic development in the decades that lie ahead would depend to a large extent on the efforts made in harnessing these movements to constructive ends.

Migration work carried out in Kenya is still hampered by gaps. The most notable having been little attention accorded migration estimation using most of the developed techniques that have successfully been applied to developed as well as other developing countries's data sets. Under the stated limitation this study seeks to apply Life Table Survival Ratio (LTSR) method to an unstable population of a developing country - Kenya - to assess its suitability as well as its utility in estimating net migration rates.

Despite migration literature in Kenya showing some migration works conducted over different periods by various scholars there seems to be inadequate effort slotted to analysis of migration based on application of most of the developed techniques. Moreover, most works have documented migration differentials and determinants.

1.6.3 SUMMARY

The literature reviewed in the foregoing section has showed the objectives, sources of data, methodologies and the study results of every study that was considered relevant for this work. The objectives of the studies though noted to be different, were all however linked to migration measures and spatial variations over time. The sources of data were ranging from vital registration in particular place-of-birth statistics, household surveys to censuses. The methods used in the studies were either qualitative or quantitative or both. However, whether qualitative and / or quantitative they differed on account of the nature of the data that were available, detail and interpretation of the individual study's results.

Generally, economic factors have been stressed as the primary motivation for internal and particularly for rural-urban migration. If there are considerable regional and sectoral distortions in patterns of socioeconomic development, people tend to move from less developed to more developed areas in search of better economic opportunities. Rural-urban migration therefore functions as an indicator of these distortions (Preston, 1979). The distortions then create an imbalance rather than a gradation between rural and urban areas.

In Kenya, it can be seen that migration studies vary from works which attempt to identify typologies of population movements to those which attempt to establish major determinants of such movements by focusing upon the migrants' characteristics. Some of these studies were based on national censuses (Ominde, 1968a; Rempel, 1977; Huntington, 1974; Beskok, 1981) although most of the migration work in Kenya are based on sample surveys. It has explicitly been documented that the survey approach supplemented where necessary by census information offers the most promising avenue for computing migration rates and estimating net migration as well as avenue for future policy-oriented migration research (Todaro, 1976). Little attention therefore appears to have been accorded the migration estimation based on new estimation models.

1.7 THEORETICAL FRAMEWORK

So far the theories of life table and stable population for a single region have played a principal role in population analysis. However, Rogers has extended these theories to those of multiregional population thereby developing a theoretical model of multiregional population analysis using data on migration in addition to those on deaths and births. The multiregional life table is a device for exhibiting the mortality and mobility history of a population. Methods for constructing such a life table are treated in detail in Rogers (1975a, chapter 3). The theoretical framework developed in this study is therefore derived from Rogers (1975a) based on the understanding that:

(i) this theory of multiregional population analysis has wide applications as has had that of the single region population analysis,

(ii) application of this theory to a population which experiences almost negligible international migration (a condition in line with the assumptions of the estimation model used in this study) produces many results which former theories have left unattainable,

(iii) since regional population changes interdependently with all other remaining regions within a country, then migration is multiregional.

The computation of the multiregional life table begins with an artificial population called a *cohort* or *radix* (a group of people born at the same moment in time and in the same region). Probabilities of dying and migrating are the inputs for calculating life table attributes. These are derived from observed schedules of mortality and migration. The theory adopts the following notation:

$q_i(x)$: the probability that a person in region i at exact age x dies before reaching age $x+5$.

$p_{ij}(x)$: the probability that a person in region i at exact age x will reside in region j at exact age $x+5$.

${}_{jo}l_i(x)$: the number of people in region i at exact age x who are born in region j. (the radix or birth cohort of region j may be represented by ${}_{jo}l_j(o)$).

${}_{jo}l_{i\delta}(x)$: the expected number of people alive in region i at exact age x, born in region j, who will die before reaching $x+5$.

${}_{jo}l_{ik}(x)$: the expected number of migrants from i to k between ages x and x + 5 among the people living in i at age x and born in j.

The life history of the cohorts is derived by the consecutive multiplication of the birth cohort (hypothetical population) by the mortality and migration probabilities. For instance, of the $_{10}l_1(o)$ (radix) babies born in region 1, the number that will die before they reach age 5 is

$$_{10}l_{1\delta}(o) = {_{10}l_1(o)} * q_1(o)$$

and those who move to region 2 will be

$$_{10}l_{12}(o) = {_{10}l_1(o)} * p_{12}(o)$$

while those who remain in region 1 will be

$$_{10}l_{11}(o) = {_{10}l_1(o)} * p_{11}(o)$$

Therefore, of the people born in region 1, only $_{10}l_{12}(o)$ will have migrated 5 years later. These migrants die, some move back to region 1 or stay in region 2. Pursuing the above procedure until the last age group, a detailed description of the life history of the people born in region 1 is got. In a case where multiple transitions occur, matrix approach to mobility analysis is adopted whereby **P(x)** represents a matrix denoting the probability of being in region j at age x + 5 while in region i at age x and **M(x)**, a matrix of observed death and out-migration rates. Then the probability matrix **P(x)** at age x is obtained from matrix **M(x)** by

$$\mathbf{P(x)} = [\ \mathbf{I} + 5/2\mathbf{M(x)}]_{-1}[\ \mathbf{I} - 5/2\mathbf{M(x)}\ ]$$

and expected survivors by

$$\mathbf{l}(x+5) = \mathbf{P}(x)\mathbf{l}(x)$$

where l(x) is a square matrix having $_{j0}l_i(x)$ as (i,j) elements, that is, the number of people surviving in region i at age x of $_{j0}l_j(o)$ (radix) babies born in region j.

Since regional model life tables offer a radical departure from the assumption of a stable population and further to migration as a social process being a response to socioeconomic, geopolitical and cultural change, it can be theorised that Life Table Survival Ratio technique can be applied to compute net migration rates both in a stable and unstable population.

1.7.1 DEFINITION OF CONCEPTS

The terminologies and definitions reviewed here are not always precise but are rather stated in terms general enough to allow their application to many different operational situations. This is because countries have used definitions based on different criteria. Even though some recently recommended definitions for a few basic migration terms have been accepted by a number of countries the problems resulting from the absence of universally accepted definitions are compounded by variations among nations in definitions adopted and in sources of migration information available.

Urban centre

Any city, municipal, town and urban council, district headquarters and trading centre with congregations of over 2000 people.

Rural-urban Migrant and Rural-urban Migration

A person who changes his usual place of residence from a rural to an urban area during a given period of time is referred to as a rural-urban migrant

Rural-urban migration is a typology of internal migration that involves change of usual place of residence from a rural to an urban area during a given period of time.

Urban-rural and Interurban Migrants

An urban-rural migrant is a person who changes his usual place of residence from an urban to a rural area in a given period of time.

A person who changes his usual place of residence from one urban to another urban area in a given period of time is referred to as an interurban migrant.

Area of Origin (Departure) and Area of Destination (Arrival)

Place from which the migrant leaves is the origin. The area in which the migrant's move terminates is the area of destination (area of residence at the end of the migration interval).

Migration Interval

Migration as a process is executed over a given period of time. A migration interval is therefore the period of time over which the process of migration is measured. The migration interval must be definite such as one, five or ten years or indefinite, such as the lifetime of a population at a given date.

In-migrant and In-migration

A person who enters a migration-defining area by crossing its boundary from some point outside the area but within the same country is referred to as an in-migrant.

Every move is an in-migration with respect to the area of destination.

Out-migrant and Out-migration

Every migrant is an out-migrant with respect to the area of departure. Thus, an out-migrant is a person who departs from a migration-defining area by crossing its boundary to a point outside it but within the same country.

Every move is an out-migration with respect to the area of origin.

Lifetime Migrant and Lifetime Migration

A person whose district of residence at the time of enumeration differs from his district of birth is a lifetime migrant. The number of such persons in a population is commonly referred to as lifetime migration.

Gross and Net Migration

Gross migration refers to all moves or all migrants with respect to a given area, the sum of in-migration and out-migration, or of in-migrants and out-migrants is gross migration (turnover).

Net migration refers to the balance of movements in opposing directions. With reference to an area, it is the difference between in-migration and out-migration. There is net gain to the area classifiable as net in-migration which takes a positive sign if in-migration exceeds out-migration. The net loss to the area is then net out-migration and takes a negative sign.

Migration Stream and Migration Counterstream

A migration stream is the body of migrants departing from a common area of origin and arriving at a common area of destination during a specified migration interval.

Counterstream is a body of migrants having a common area of origin and of destination within the same migration interval but in opposite direction to migration stream.

Migration Pattern

The configuration of migration streams during a given time interval.

Urbanization

Refers to the increase in the proportion of population that resides in urban areas.

Migration Rate

Is a measure of the probability of migration within a specified period (United Nations, 1970: 40-42).

1.8 OPERATIONAL FRAMEWORK

From the above theoretical framework it is operationalized that although the Life Table Survival Ratio technique does not detect determinants of the migration process, it is a useful method for computation of intercensal net migration in an unstable population as well.

1.8.1 OPERATIONAL HYPOTHESES

Given the above operational statement the following hypotheses are advanced by this study:

General Hypotheses

1. The Life Table Survival Ratio (LTSR) method is suitable for estimating rural-urban migration in Kenya.

2. LTSR technique is more an appropriate method to apply in populations where age misstatement and underenumeration are unusually serious at one census but not at another.

Specific Hypotheses

1. The Life Table Survival Ratio (LTSR) technique can be successfully used for computing intercensal net migration rates in Kenya.

2. Trends and patterns traced by ASGR, NGR and LTSR methods are likely to be the same.

3. Urban centres are likely to experience net gains in their population at younger ages and net losses in much older ages.

4. The computed sex/age-specific net migration rates are likely to vary from one region to another given the differential regional socio-economic, demographic, cultural and geographical factors.

5. There is likely to be differential regional variation in the influence of the migration on urbanisation.

CHAPTER TWO

DATA AND METHODOLOGY

2.1 SOURCES OF DATA

The most common sources of migration data in Kenya are the census and sample surveys. For this study the main sources of data were the 1979 and 1989 population censuses. These sources were used to estimate net migration rates for the urban settlement system of Kenya. The major driving force behind the estimation of net migration for this study was population data tabulated separately for urban areas by age and sex at two consecutive censuses.

The study further used the 1989 Kenya census lifetime migrant statistics to determine the direction of the mobilities. Based on the above sources the study then determined the patterns of net migration rates, and urbanization as influenced by the migration for the 1979-1989 intercensal period.

2.2 QUALITY OF DATA

In Kenya migration data are gathered based on two types of questions: current-migration questions that capture recent migrants and open-period questions that capture lifetime migrants. For current-migration questions a fixed period of time which must be recent is the major distinguishing component. The questions cover the duration of residence and the place of residence. Duration of residence questions suffer a problem of repeat migration a fact that makes estimation of migration patterns of persons who have made more than one move difficult. Because the ten year census period might be punctuated with numerous moves, memory lapse is a common problem when asking the place of residence at a fixed period.

Dating reference distinguishes current-migration questions from open-period ones. Therefore, questions which ask for place of usual residence or place of previous residence, birth place without dating reference are all open-period questions. Such questions suffer response errors for instance, if a person has lived in a place long enough there could be a tendency to refer to it as his birth place. Several erroneous misstatement of birthplace seriously affects estimates based on migration data. Place of birth may also have undergone a reclassification without the respondent's knowledge. Such alterations make the open-period question suffer the problem of false enumeration.

Migration data in Kenya are often computed by district of birth and district of enumeration. Despite some of the limitations experienced in this study that include errors in census data committed during data gathering process, censuses remain the major sources of data for migration estimation. In 1979 the not-stated were 4971 and represented 0.2 percent of the total urban population; in 1989 they were 8745 representing 0.3 percent of the total urban population (Censuses: 1979 & 1989). Thus, the not-stated responses increased proportionally with the total urban population between 1979 and 1989. This study therefore, seeks to estimate net rural-urban migration for Kenya on the basis of 1979 and 1989 censuses by excluding the not-stated responses in its computation to limit the amount of error inherent in these censuses. The study also uses life-time migration data (Kenya census, 1989) in an attempt to identify directions of migration streams.

2.3 NET MIGRATION ESTIMATION TECHNIQUES

(a) Available Methods

A variety of methods have been applied to estimate intercensal net migration in different parts of the world. In this section, an attempt is made to review some of the methods that have been largely used for the purpose of determining the estimates of intercensal net migration in different regions of the world. The models invoke rigorous mathematical formulations that are not necessary for review other than only for the preferred model - LTSR. The review is to depict the varying requirements, procedures and application entailed in the estimation models outlined herein. Some of the methods that have widely been used for migration estimation include:

(i) The Vital Statistics (VS) method also known as the Balancing Equation method;

(ii) Birth-Place and Place-of-Residence Statistics method;

(iii) The National Growth Rate (NGR) method;

(iv) The Age Specific Growth Rate (ASGR) method;

(V) The Survival Ratio (SR) method.

The ***VITAL STATISTICS (VS)*** method employs the " balancing equation " below to obtain its estimate of intercensal net migration

$$M_i = \left[P(t+n) - P(t) \right] - \left[{}_nB_t - {}_nD_t \right] \quad . \quad . \ . \ . \ . \ (2.1)$$

where M_i is intercensal net migration for area j; n is the intercensal period; $P(t+n)$ is the population of area j at time $t+n$; $P(t)$ is the population of area j at time t; ${}_nB_t$ is the number of births occurring at area j during the interval t to $t+n$; ${}_nD_t$ is the number of deaths occurring at area j during the interval t to $t+n$.

The remarkably persistent changes in regional boundaries affect the estimation of net migration by this method making regional comparability exceedingly difficult (United Nations, 1970) despite its value in detecting underenumeration or overenumeration in the census being widely recognised. However, although it has worked well in developed countries it has not been successful in developing countries because its success requires a virtually rich vital registration system.

An estimate of intercensal net migration by ***BIRTH-RESIDENCE STATISTICS*** method for a given unit is given by :

$$NM = \left[I(t+n) - O(t+n) \right] - \left[S(1)*I(t) - S(o)*O(t) \right] \quad . . (2.2a)$$

where I(t) and I(t+n) are numbers of lifetime in-migrants in particular area at times t and t+n; O(t) and O(t+n) are corresponding lifetime out-migrants; S(1) and S(o) are intercensal survival ratios defined by equation (2.2b) that give the proportions of I(t) and O(t) that will survive the intercensal period

$$S = \frac{AB(2) + BB(2)}{AB(1) + BB(1)} \quad . . . . (2.2b)$$

where AB(2) are people born in A and enumerated in B at the second census; BB(2) are people born in B and enumerated in B at the second census; AB(1) and BB(1) refer to the corresponding figures at the first census. This method requires two consecutive censuses. It also requires the number of lifetime in-migrants and the corresponding lifetime out-migrants in a particular area at two consecutive censuses. Elridge and Yun Kim (1968) found that this technique gives more accurate estimates of net migration than the "migration streams" technique. It is therefore regarded as a refinement of migration stream technique. However, the technique is affected by errors associated with place of birth statistics.

As an estimation model the ***NATIONAL GROWTH RATE (NGR)*** technique may be mathematically denoted by :

$$M_i = \left[\frac{P(i,1) - P(i,o)}{P(i,o)} - \frac{P(T,1) - P(T,o)}{P(T,o)} \right] * K . \quad (2.3)$$

where M_i is net migration rate for area i; P(i,1) is population of area i at the end of the intercensal period; P(i,o) is population of the area i at the beginning of the intercensal period; P(T,1) is the national population at the end of the intercensal period; P(T,o) is the national population at the beginning of the intercensal period; K is a constant which is usually 100 or 1000. This technique requires national and regional populations for two consecutive censuses which are readily available in Kenya.

In an attempt to identify the rate, pattern and direction of intercensal net migration in Kenya for the decades 1969-79 and 1979-89, Odipo (1995) used this method and the results found were almost similar to Wakajummah's(1986) who used the Age Specific Growth Rate method. However, it cannot show the direction of population mobility. Thus, it cannot show areas which may be gaining or losing population to which other area (Shryock and Siegel, 1976). Though a simple method of estimating net migration, it is of questionable accuracy since the underlying assumption that natural increase and the rate of net international migration are identical for both urban and rural areas can hardly be justified in most instances.

To estimate net intercensal migration ***AGE SPECIFIC GROWTH RATE (ASGR)*** technique proceeds by adjusting the age distribution [C(a) - proportion of people at age "x"] in the stable population model [$C(a) = b * \exp(-rx)p(a)$, where b is the birth rate; r is the growth rate and p(a) is the probability of survival upto age "x" from birth] based on the growth rate r which is always assumed to be constant through all ages. The technique then assumes constant growth rate just within specific age groups for all ages. Since growth in population is not only attributed to natural increase but also to migration, the technique introduces this component in the stable model whereby upon reformulations and manipulations the model boils down to

$$ {}_5m_a = -\frac{1}{5} \ln\left[\frac{N(a+5)}{N(a)} * \frac{p(a)}{p(a+5)} \right] - {}_5r_a \quad . \qquad (2.4) $$

where ${}_5m_a$ is the migration rate between ages "a" and "a + 5"; N(a) and N(a + 5) are the populations at ages "a" and "a + 5"; p(a) and p(a + 5) are the probabilities of survival upto ages "a" and "a + 5" respectively from birth and ${}_5r_a$ is the age-specific growth rate between age "a" and "a + 5". The technique thus requires appropriate life tables from which the probability of survival can be computed and two consecutive population censuses tabulated by five-year age groups. This makes it suitable for application in developing countries where both birth and death rates have a fluctuating characteristic. However, this technique does not necessarily need the census interval to be 5 years or a multiple of 5 and like the above method cannot show the direction of mobility. The method, developed in 1982 by Preston and Coale, could be used to estimate mortality, fertility and migration for non-stable populations. However, it has been used before (Wakajummah, 1986).

The ***SURVIVAL RATIO (SR)*** method employs two types of survival ratios termed as ***Census Survival Ratio (CSR)*** [computed from census statistics] and ***Life Table Survival Ratio (LTSR)*** [computed from an appropriate life table]. Either method requires only two censuses tabulated by age groups (usually five-year age groups) and a set of survival ratios that reasonably may be assumed to represent the force of mortality. The method is of particular value in situations where there are no vital statistics for deaths and births. This limitation underlines the Kenyan case where registration of vital events is still very underdeveloped hence the usage of such an estimation technique in this study.

In ***CENSUS SURVIVAL RATIO (CSR)*** technique the ratios are computed directly from the age distribution of two consecutive censuses, using statistics for a closed population (not affected by migration). The net migration estimate is then given by the model

$$M_i = P_i'' - SP_i' \; . \; . \; . \; . \; . \; . \; . \; . \; . \; . \; . \; . \; (2.5)$$

where M_i is the net migration estimate; P_i' and P_i'' are the populations in area i at the first and second censuses and S (obtained by dividing P_i'' by P_i' for a particular age group) is the census survival ratio for that particular age group. The chief assumptions involved in this method are that *the national population is closed, (entered only by birth and left only by death) and the specific mortality rates are the same for each area as for the nation.* But this assumption of equality of mortality is essentially an assumption of equality of 10-year survival ratios in all the areas of a country, a fact that assumes homogeneity of mortality. In Kenya great diversity in mortality conditions in various regions does exist and this makes regional differences in mortality significant. These then are exactly the conditions under which migration estimates uncorrected for mortality differences may be highly misleading. The census survival ratios therefore suffer the disadvantage of being corrected for mortality differences using a regional or areal life table. Further more, census survival ratios may be very different from life table survival ratios and in some cases have values greater than one. In addition large urban-rural mortality differences can lead to a serious bias in estimating net urban or rural migration if the same set of census survival ratios are used for both populations (Hamilton, 1966; Siegel and Hamilton, 1952). Oucho and Omogi in their unpublished paper titled "Estimation of Intercensal Migration in Kenya, 1969-1979", used CSR method in their calculation for Kenya's eight provinces.

(b) Preferred Method For Study

The preferred method is ***LIFE TABLE SURVIVAL RATIO (LTSR)*** technique. This method has not been used before and unlike in the intercensal period 1969-79, regional analysis of life tables was properly done in 1979-89 making available national, provincial and district model life tables that permit estimation of migration.

Essentially, life table survival ratios can as well be computed from any life table that validly can be assumed to represent the force of mortality by age in the area where estimation is to be made. For this purpose model life tables such as those of Ansley Coale and Paul Demeny may be used. The success of the life table survival ratio technique rests largely upon the possibilities of computing survival ratios that validly represent the force of mortality during the intercensal period.

Since the age specific patterns of males and females mortality are different the method is then useful for estimating net intercensal migration for males and females separately based on survival ratios that enable differences in migration trends and propensities to be properly tracked through their allowance for sex and age mortality differentials. Since the study's analysis is based on the life table it is important to describe and derive the life table functions that are the driving force behind estimation.

2.4 DETAILED DESCRIPTION OF THE LTSR METHOD

(a) Basic Model

As an estimation model LTSR technique may be mathematically denoted by:

$$NMR = \frac{M^{A}}{({}_{t}S_{x,\,x+n})({}_{n}P_{x})} * k \quad . \quad . \quad (2.6a)$$

where k is a constant , usually 100 or 1000; ***NMR*** is the net intercensal migration rate; M^{A} is the average net migration estimate; ${}_{t}S_{x,\,x+n}$ is the life table survival ratio and ${}_{n}P_{x}$ is the population aged x to $x+n$ at the initial census.

(b) Assumptions of the Model

1. *International migration is negligible*. Only about 0.6 percent of the people who were enumerated in the 1989 census reported themselves as having been born outside Kenya (CBS, 1996a). This volume of international migration is too small to merit consideration in this study's estimation since it is insignificant.

2. *Urban boundaries are fixed over time so that the urban areas remain constant during the intercensal period.* Survival ratio estimates are particularly sensitive to changes in areal boundaries and annexations of new areas. For instance, urban centres of Siaya, Nandi and South Nyanza exhibit higher rates of migration and urban growth rates (tables 4.6, 4.7 and Appendix IV) in the country attributable to extended boundaries after 1979 census.

3. *The survival ratios for each sex simulates the age specific patterns of mortality in the populations for which the estimates are to be made.* Age misstatement affects the overall net intercensal migration estimates. This is because the age-specific survival ratios fail to validly represent the age-specific mortalities for each sex and all discrepancies in age reporting enter directly into the determination of the net migration estimate which is a residual.

(c) Components of The Model

(i) Life Tables

Life tables essentially illuminate and summarize the mortality experience of a population. In addition to this function, they also constitute one of the most important tools in demographic analysis. They are usually of two types: the complete and the abridged life tables.

A complete life table is a table in which the mortality experience is considered in single years of age throughout the life span. It is extremely detailed and one of the limitation of its construction is that it needs very extensive, detailed data which is not always available to most countries. An abridged life table is one in which the measures are given for age groups rather than for every single year of age.

A life table is described in terms of a set of functions :

${}_nM_x$, l_x , ${}_nd_x$, ${}_nq_x$, ${}_np_x$, ${}_nL_x$, T_x and e_x . The functions are classified into two categories : those which refer to intervals of age and those which refer to exact ages. Functions referring to an interval of age carry two subscripts, for example ${}_np_x$ where **n** represents the number of completed years over which the interval extends and **x** represents the exact age at which the interval commences. Thus, the interval extends from age **x** to **x + n** . Functions referring to exact age (complete life table) carry only one subscript, for example, q_x , n = 1, that is, all intervals are equal to 1.

The main life table function for this study is ${}_nL_x$ and since the regional model life tables are given in terms of the functions l_x and e_x , it is then important to define the latter for the former can be derived from either of the two.

l_x :- Denotes the survivors of a cohort to the exact age x . This function is finite, non-negative, monotonic and non-increasing for all real populations. The initial value of the survivors column is l_0 and is known as the radix. It can assume values 1, 100, 1000, or 100,000.

e_x :- Is the expectation of life remaining to persons who attain the exact age **x** . Rather is the average period in years lived beyond the age **x** by persons attaining exact age **x** and is defined by:

$$e_x = T_x/l_x \qquad . \quad . \quad . \ (2.6b)$$

${}_nL_x$:- Is the life table (stationary) population and shows the number of person-years lived by the cohort between x and $x+n$ .Defined as:

$$ {}_nL_x = n/2\,(\,l_x + l_{x+n}\,) \;.\;.\;.\;.\;.\;. \;(2.6c) $$

for regular 5-year intervals (starting from age 5)

And

$$ L_x = l_x \log_{10} l_x $$

for open-ended intervals.

T_x :- Is derived directly from the ${}_nL_x$ column and is simply the summation of the ${}_nL_x$, the summation commencing with the beginning or the terminal of the stationary population. It may also be used to derive values of ${}_nL_x$. For example,

$$ T_x = \sum_{i=x}^{k} L_i \quad .\;.\;.\;.\;. \;(2.6d) $$

where **k** is the highest age attainable

$$ T_o = L_o + L_1 + L_2 + \ldots + L_k \quad .\;.(2.6e) $$

generally

$$ {}_nL_x = T_x - T_{x+n} \quad .\;.\;. \quad (2.6f) $$

$$ T_x = T_{x+n} + {}_nL_x \quad .\;.\;. \quad (2.6g) $$

T_x is then total stationary or life table population at age **x** and all higher ages or is the total number of years lived by the life table cohort from age **x** to the end of the life span.

(ii) Life table survival ratios

The life table survival ratios, ${}_tS_x$, are derived from the ${}_nL_x$ column of the life table and are simply the ratio of number of persons in the stationary population that would be alive at a certain age to the number of persons alive at an earlier age. For age groups,

$$ {}_{t}S_{x,\,x+n} = \frac{{}_{n}L_{x+t}}{{}_{n}L_{x}} = \frac{T_{x+t} - T_{x+t+n}}{T_{x} - T_{x+n}} \quad . \;. (2.7) $$

Survival rates used to reduce a population for deaths are multiplied against the initial population and survival rates used to restore deaths in a reverse calculation are divided into the terminal population. The two methods are called ' forward' and ' reverse' survival ratios respectively.

Forward Survival Ratio Method

If an initial population is survived forward, net migrants' estimate is given by (age groups)

$$ {}_{n}M^{F}_{x+t} = {}_{n}P_{x+t} - ({}_{t}S_{x,\,x+n})({}_{n}P_{x}) \quad . \quad . \quad . \quad . (2.8) $$

where ${}_{n}M^{F}_{x+t}$ is the net migration to persons age **x** to **x+n** at the beginning of the interval but who are t years at the end of the interval; ${}_{n}P_{x}$ is the population aged **x** to **x+n** at the initial census ; ${}_{t}S_{x,\,x+n}$ is the proportion of persons in age **x** to **x+n** that survive for **t** years (intercensal period, **t** = 10); ${}_{n}P_{x+t}$ is the population in age **x+t** to **x+n+t** at the final census. *The assumption is that all deaths occur to the actual as well as potential migrants before they migrate.*

Reverse Survival Ratio Method

If the terminal (final census) population is reverse survived to the initial census date, net migrants' estimate is given by,

$$ {}_nM^R_x = \frac{{}_nP_{x+t}}{{}_tS_{x,\,x+n}} - {}_nP_x \quad . \quad . \quad . \quad (2.9) $$

where ${}_nM^R_x$ is the reverse net migrants' estimate and ${}_nP_{x+t}$, ${}_nP_x$, ${}_tS_{x,\,x+n}$ as defined above. The value of the reverse survival ratio is itself identical to the forward survival ratio. *The assumption here is that all deaths occur to actual as well as potential migrants only after they have migrated.*

Some of the persons enumerated at the initial census but who died before the second census would have migrated before they died, but by forward estimates they are counted as nonmigrants. Similarly, in cases of net out-migration from a region, the reverse method estimates more net departures. These two limitations lead to different forward and reverse net migration estimates. Because the problem is not inconsequential, the most reasonable compromise is to compute average net migration :

$$ M^A = 1/2\,(M^F + M^R) \quad . \quad . \quad . \quad . \quad (2.10) $$

Where M^A is the average net migration estimate; M^F is the forward net migration estimate and M^R the reverse net migration estimate. This together with ${}_tS_{x,\,x+n}$ and ${}_nP_x$ then constitute the estimation model given in equation (2.6a).

(d) Assessing Effect of Rural-urban Migration on Urbanization

As we have seen in chapter one urban population grows in part due to rural-urban migration. It is therefore important to assess the effect of the estimated migration on the urbanization process. However, if the rate of natural increase in rural areas is equally high urbanization would not occur unless population transfers were occurring. The migration contributive effect to urbanization is denoted by:

$$NMRR = \frac{NMR}{r_U - r_P} \quad . \quad . \quad . \quad (2.11)$$

Where NMRR is net migration role and NMR the net migration rate.

This index is generated as described below:

The appropriate measure of the rate of urbanization is the difference between growth rates of the urban population and of the national population. We therefore, define the urban proportions (UP) at times **t** and **t+n** as :

$$UP(t) = \frac{U(t)}{P(t)} \quad . \quad . \quad . \quad . \quad (2.12)$$

and

$$UP(t+n) = \frac{U(t+n)}{P(t+n)} \quad . \quad . \quad . \quad (2.13)$$

Urban population growth rate then becomes,

$$r_{UP} = \frac{\ln[UP(t+n)/UP(t)]}{n}$$

$$= \frac{\ln [[\ U(t+n)/U(t)]/[P(t+n)/P(t)]]}{n}$$

$$= r_U - r_P \quad . \quad . \quad (2.14)$$

Where r_U is urban population growth rate; r_P is total population growth rate and **n** the time interval.

The proportionate contribution of net rural-urban migration to urbanization process in Kenya can then be examined by computing the ratios NMRR. These values were computed and are provided in Appendix IV. When this ratio is equal to unity, all of the growth in the urban proportion is attributed to net migration; when it exceeds unity, urban natural increase falls short of the national population growth rate; when this ratio falls short of unity, net migration is contributing only the indicated proportion of urbanization and the remainder is contributed by an excess of urban natural increase over the national population growth rate.

Supporting Model : Net Migration Estimation By Streams

As pointed out earlier , this study uses place of birth data extracted from 1979 and 1989 population census in identifying migration streams. Since the LTSR technique provides only net estimates, a two-way classification of Place-of-Birth (POB) by Place-of-Enumeration (POE) statistics is important for this study to support the former because it provides estimates of in-, out-, net and turnover migration rates and inter-provincial migration rates.

However, this method unlike the LTSR technique is not an intercensal estimation technique. Its use here is therefore purely to support the LTSR technique in depicting the direction of population movement.

The estimation is performed based on a cross-tabulation showing place of enumeration and place of birth as shown below. Since the model is used as a support it is therefore, necessary to explain its derivation.

Table 2.1. Migration Stream Matrix

PLACE OF ENUMERATION (i) ↓					PLACE OF BIRTH (j) →	
i\j	1	2	3	4	5	Total
1	n_{11}	n_{12}	n_{13}	n_{14}	n_{15}	N_{1i}
2	n_{21}	n_{22}	n_{23}	n_{24}	n_{25}	N_{2i}
3	n_{31}	n_{32}	n_{33}	n_{34}	n_{35}	N_{3i}
4	n_{41}	n_{42}	n_{43}	n_{44}	n_{45}	N_{4i}
5	n_{51}	n_{52}	n_{53}	n_{54}	n_{55}	N_{5i}
Total	N_{i1}	N_{i2}	N_{i3}	N_{i4}	N_{i5}	$N_{..}$

SOURCE: Kpedepko (1982 : 152). Essentials of Demographic Analysis for Africa.

where i - district of enumeration,

j - district of birth

n_{ij} - the number of people living in district i and born in district j, including those living in the district of birth i=j.

N.. - the total population

N_{ij} - the total population living in district i and born in the district j, including those living in the district of birth, i=j.

M_{ij} - the migrants living in district i and born in district j.

$$\text{In-migrants} = \sum M_{1j} = \sum n_{1j} - n_{11}$$

$$\text{Out-migrants} = \sum M_{i1} = \sum n_{i1} - n_{11}$$

$$\text{Net-migrants} = \sum M_{1j} - \sum M_{i1}$$

$$\text{Gross migration} = \sum M_{1j} + \sum M_{i1}$$

$$\text{Inter-district migrants} = N_{..} - \sum n_{i=j}$$

(a) Out-Migration Rate (OMR)

$$OMR = \frac{\sum M_{i1}}{N_{1j}} * 100$$

where M_{i1} is the migrants from province 1 to the ith province and N_{1j} the total population born in province 1.

(b) In-Migration Rate (IMR)

$$IMR = \frac{\sum M_{1j}}{N_{1j}} * 100$$

(c) Inter-district Migration Rate (PMR)

$$PMR = \frac{\sum n_{ij} - \sum n_{i=j}}{N..} * 100$$

Where $\sum n_{i=j}$ is the sum along the diagonal (non-migrants).

(d) Net Migration Rate (NMR)

$$NMR = \frac{\sum M_{1j} - \sum M_{i1}}{\sum N_{1j}} * 100$$

That is, subtract out-migrants from in-migrants to obtain net migrants.

(e) Gross Migration Rate (GMR)

$$GMR = \frac{\sum M_{1j} + \sum M_{i1}}{\sum N_{1j}} * 100$$

The use of place of birth data in estimating the volume of migration does not yield information about the date of arrival or length of stay or previous migratory movements. Further, uncertainties about area boundaries at birth time and about birth place also abound; the factor of return migrants makes the distinguishing aspect of the migrants and non-migrants difficult because of the seasonality of migration in this country. Therefore, by allocating to each person only one migration the district birth data tends to reduce the volume of migration. However, despite these disadvantages its use in this study is strictly for the purpose of supporting the estimation model in identifying the direction of flow.

2.5 SUMMARY

The foregoing section has showed sources of data, computational procedures and limitations of the selected internal migration estimation techniques which were considered relevant for review. The techniques though classified as either direct or indirect are all linked to measurement of migration. Their sources of data range from vital registration in particular births and deaths, birth-place and place-of-residence statistics, lifetime in- and out-migrants to censuses. Although techniques such as ASGR, CSR and NGR have been used before with the Kenyan data, knowledge gaps to be filled still abound as to the utility and applicability of the others not tested before.

CHAPTER THREE

ESTIMATION OF NET INTERCENSAL MIGRATION RATES

3.1 INTRODUCTION

This chapter presents a practical application of the Life Table Survival Ratio (LTSR) technique in estimating net intercensal migration rates. Since the application involves the use of life tables, it will be necessary to show clearly how survival ratios are derived from the intercensal model life tables used in this study.

The survival ratios (${}_{t}S_{x,x+n}$) are computed from the Coale-Demeny model life tables constructed for hypothetical cohorts of males and females for the intercensal period 1979-89. These ratios are then used to estimate the net intercensal migration rates. The last section of this chapter examines the obtained net migration rates to explain the level and nature of internal migration in Nairobi. It also attempts to establish possible reasons for the observed movements besides examining the overall effect of the migration to the urbanisation process. This is important for this study and contingent upon the fact that migration is among the major contributors to the above process. Finally, the birth-place statistics provided in the Appendix II supports the application model in depicting the directional flows of the migrants.

3.2 COMPUTATION OF SURVIVAL RATIOS FOR NAIROBI

(a) Procedure

As has been pointed out above the estimation technique requires ${}_tS_{x,x+n}$ values derived from appropriate life tables. It is therefore necessary to briefly describe how the intercensal model life tables used in this study were constructed before we explicitly embark on derivation of ${}_tS_{x,x+n}$ values. In essence model life tables perform the dual function of linking the estimates of child mortality with those of adult mortality.

Brass two-parameter logit life table system was used in the construction of model life tables for the 1979-89 intercensal hypothetical cohorts of males and females. In the logit system the estimates of child mortality derived from the proportions of children dead for the 1979-89 hypothetical cohort of mothers, and estimates of adult mortality from the orphanhood data also computed for the intercensal cohort were linked and model life tables constructed separately for males and females. Essentially, the logit life table system consists of taking a standard life table and modifying it mathematically until it fits the empirical data which in this case is data on children dead and orphanhood. The two parameters used for the modification process are alpha which determines the overall level of mortality and beta which determines the steepness with which the mortality increases with age. These alpha and beta values were computed for all districts and provinces as well as for the entire country by sex.

Employing the above methods district, provincial and national model life tables were constructed for the hypothetical cohort 1979-89. The number of survivors (lx) and the corresponding expectation of life (e(x)) of males and females for Nairobi are presented in table 3.1.

Table 3.1. Model Life Tables of Males and Females for Nairobi: 1979-89.

Age (x)	Life Table Survivors		Expectation of Life	
	Male-lx	Female-lx	Male-e(x)	Female-e(x)
0	1.0000	1.0000	65.3	66.3
1	0.9495	0.9531	67.8	69.1
5	0.9220	0.9280	65.7	66.9
10	0.9152	0.9218	61.2	62.3
15	0.9101	0.9172	56.5	57.6
20	0.9014	0.9093	52.1	53.1
25	0.8896	0.8985	47.7	48.7
30	0.8774	0.8874	43.3	44.3
35	0.8646	0.8757	39.0	39.9
40	0.8500	0.8625	34.6	35.4
45	0.8326	0.8466	30.2	31.1
50	0.8106	0.8265	26.0	26.7
55	0.7813	0.7995	21.9	22.6
60	0.7406	0.7621	17.9	18.6
65	0.6826	0.7081	14.3	14.8
70	0.5983	0.6286	10.9	11.3
75	0.4783	0.5127	8.0	8.3
80	0.3210	0.3546	5.7	5.9
85	0.1566	0.1802	4.1	4.2
90	0.0450	0.0542	3.2	3.2
95	0.0062	0.0079	2.5	2.5

SOURCE: Central Bureau of Statistics (1996b), pp. 83.

As has been stated above, survival ratios (${}_tS_{x,x+n}$ values) are functions of ${}_nL_x$ values which in turn are functions of l_x values. Therefore, for each sex ${}_nL_x$ values are computed from the l_x values in table 3.1 using equations presented earlier in chapter two. For instance, for 10-14 age group of males, x = 10, x+n = 14 and age interval n = 5 (10, 11, 12, 13, 14). Then ${}_5L_{10}$ for this interval is given by

$$_5L_{10} = 2.5 * (l_{10} + l_{15})$$

$$= 2.5 * (0.9152 + 0.9101)$$

$$= 4.56325$$

Since the 0-1 and 1-4 age intervals of the life table are not five-year intervals, a modification involving scalar multiples of l_x values is employed in equation (2.8b) to combine the two age intervals into a regular five-year interval. From the generated $_nL_x$ values $_tS_{x,x+n}$ values are then computed. For example, for the above 10-14 age group of males, the survival rate , $_tS_{x,x+n}$, will be given by

$$_{10}S_{10,14} = {}_5L_{20} / {}_5L_{10}$$

$$= 4.47750/4.56325$$

$$= 0.981209$$

where $t = 10$ years, the intercensal period 1979-1989.

Thus, the $_nL_x$ value of the age group 20-24 is divided by the corresponding value for age group 10-14 to obtain the 10-year survival ratio.

If we define $M\text{-}l_x$, $M\text{-}_nL_x$ and $M_tS_{x,x+n}$ as male survivors, male person-years lived and male survival rate respectively then $F\text{-}l_x$, $F\text{-}_nL_x$, $F_tS_{x,x+n}$ and $C\text{-}l_x$, $C\text{-}_nL_x$, $C_tS_{x,x+n}$ will be the corresponding female and combined (both sexes) functions. For combined, survivors ($C\text{-}l_x$) and person-years lived ($C\text{-}_nL_x$) were computed using the equations :

$$C\text{-}l_x = SRB * M\text{-}l_x + F\text{-}l_x \quad . \quad . \quad . \quad . \quad (3.1)$$

Table 3.2. **Life Table Survival Ratios of Males, Females and Combined for Nairobi: 1979-89.**

Age	Life Table Functions					Survival Ratios		
(x)	$M\text{-}l_x$	$F\text{-}l_x$	$M\text{-}{}_nL_x$	$F\text{-}{}_nL_x$	$C\text{-}{}_nL_x$	$M_iS_{x,x+n}$	$F_iS_{x,x+n}$	$C_iS_{x,x+n}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
0	1.0000	1.0000	4.85180	4.86320	9.61796	0.940527	0.945365	0.942973
5	0.9220	0.9280	4.59300	4.62450	9.12564	0.986011	0.987404	0.986717
10	0.9152	0.9218	4.56325	4.59750	9.06949	0.981209	0.983034	0.982134
15	0.9101	0.9172	4.52875	4.56625	9.00443	0.975435	0.977772	0.976620
20	0.9014	0.9093	4.47750	4.51950	8.90745	0.972641	0.975274	0.973977
25	0.8896	0.8985	4.41750	4.46475	8.79390	0.970345	0.973291	0.971841
30	0.8774	0.8874	4.3550	4.40775	8.67565	0.965901	0.969372	0.967665
35	0.8646	0.8757	4.28650	4.34550	8.54627	0.958358	0.962547	0.960488
40	0.8500	0.8625	4.20650	4.27275	8.39512	0.946095	0.951378	0.948784
45	0.8326	0.8466	4.10800	4.18275	8.20859	0.926181	0.933357	0.929838
50	0.8106	0.8265	3.97975	4.06500	7.96516	0.894026	0.904182	0.899209
55	0.7813	0.7995	3.80475	3.90400	7.63266	0.841645	0.855981	0.848978
60	0.7406	0.7621	3.55800	3.67550	7.16234	0.635113	0.649615	0.642555
65	0.6826	0.7081	3.20225	3.34175	6.47996	0.000000	0.000000	0.000000
70+	0.5983	0.6286	2.25973	2.38766	4.60219	0.000000	0.000000	0.000000

SOURCE: Calculated from Central Bureau of Statistics (1996b), pp. 83.

and

$$C\text{-}{}_nL_x = SRB * M\text{-}{}_nL_x + F\text{-}{}_nL_x \quad . \quad . \quad . \quad . \quad . \quad (3.2)$$

where SRB - Sex Ratio at Birth (98 males per 100 females by 1989 census)

Survival ratios for combined were then computed using the generated $C\text{-}{}_nL_x$ values.

(b) Results

Table 3.2 provides a summary of the procedure outlined above. The person-years lived for males, females and combined are presented in columns (3), (4) and (5) respectively and the corresponding survival ratios in columns (6), (7) and (8) respectively of the table. Entries of column (5) are computed by applying equation(3.2). The sex ratio at birth (SRB) used in these computations is that of 1989 census found to be 98.

3.3 DISTRICT LEVEL SURVIVAL RATIO ESTIMATES

The number of deaths in many cases is usually unknown but can be estimated by applying survival ratio values. This ratio estimates what proportion of a hypothetically closed population would be present at the date of the terminal census. A set of these ratios therefore represents areal force of mortality and measure survivorship over a span of time represented by the difference between two ages.

Using the procedure outlined above survival ratios were calculated by sex, age and district and the results are provided in Appendix I. It is noticeable that the computed life table survival ratios unlike census survival ratios which in some cases may even have values greater than one are all less than unity as expected and mirror regional variations in mortality levels. The regional estimates show that five districts (Turkana, West Pokot, Siaya, Kisumu and South Nyanza) had lower survival rates. Busia, Mandera, Wajir, Garissa, Tana River and Kwale had rates slightly higher than those of the above five districts. However, 10 districts (Marsabit, Samburu, Isiolo, Bungoma, Kakamega, Kisii, Lamu, Kilifi, Mombasa and Taita Taveta) had even better rates than the above districts. All the remaining districts recorded the highest ratios. In most of the districts survival ratios for females were higher than those of males. This did not hold the same for Taita Taveta, Tana River, Embu, Isiolo, Meru and Nyandarua districts which had slightly lower rates for females an edge that was even more pronounced for all districts in North Eastern province.

3.4 COMPUTATION OF 1979-89 NET RURAL-URBAN MIGRATION RATES FOR NAIROBI

(a) Procedure

Survival ratios are the main driving force behind the estimation of net intercensal rural-urban migration for this study. These values having been generated as is shown in table 3.2 above , estimation of net migration rates by age and sex is then facilitated by applying these values to urban populations categorized by age and sex at two consecutive censuses, for this case the 1979 and 1989 censuses.

Referring 1979 and 1989 censuses to initial and terminal populations respectively and applying the calculated life table survival ratios to populations of Nairobi, net migration estimates were then calculated by both forward and backward methods. Using the set of survival ratios the initial population was aged forward to get net migrants forward estimate and the terminal population younged to get a reverse estimate. Average net migration was computed from the two estimates (see equation(2.10)). This average was substituted in the model defined in equation(2.6a) to obtain the net intercensal migration rate. For instance, for males in age group 10-19 , the 1979 census gave the population as 71278. This group was enumerated in 1989 census as age group 20-29 and corresponding population was 238497. From table 3.2, the male survival ratio for the population in this age group is 0.981209. Then the forward estimate for this group is given by equation(2.8):

$$_{n}M^{F}_{x+t} = {_{n}P_{x+t}} - {_{t}S_{x,x+n}} * {_{n}P_{x}}$$

where t = n = 10, intercensal period

x = 10 , x+n = 20.

$$_{10}M_{20} = {_{10}P_{20}} - {_{10}S_{10,19}} * {_{10}P_{10}}$$

$$= 238497 - 0.981209 * 71278$$

$$= 168558$$

and the reverse estimate by equation(2.9)

$$_{n}M^{R}_{x} = {_{n}P_{x+t}} / {_{t}S_{x,x+n}} - {_{n}P_{x}}$$

$$_{10}M_{10} = {_{10}P_{20}} / {_{10}S_{10,19}} - {_{10}P_{10}}$$

$$= 238497 / 0.981209 - 71278$$

$$= 171787$$

Table 3.3. Net Migration of Nairobi Males Computed by the Life Table Survival Ratio Method, 1979-89.

Age in		Population in		Life Table Survival Ratio	Expected Survivors	Forward Estimate	Reverse Estimate	Net Migration	Net Migration Rate (NMR)
1979	1989	1979	1989		(1)*(3)	(2)-(4)	(2)/(3)-(4)	((5)+(6))/2	(7)/(4)
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
0-9	10-19	105014	105460	0.940527	98769	6691	7115	6903	0.06989
10-19	20-29	71278	238497	0.981209	69939	168558	171787	170172	2.43317
20-29	30-39	149220	138548	0.972641	145137	-6589	-6775	-6682	-0.04604
30-39	40-49	81897	69440	0.965901	79104	-9664	-10006	-9835	-0.12433
40-49	50-59	43258	29071	0.946095	40926	-11855	-12531	-12193	-0.29793
50-59	60-69	18989	8528	0.894026	16977	-8449	-9450	-8949	-0.52716
60+	70+	8665	3821	0.635113	5503	-1682	-2649	-2165	-0.39349
TOTAL		478321	593365		456355			137251	0.300754

SOURCE: Calculated from 1979 and 1989 Censuses by LTSR method.

averaged net migration is then given by equation(2.10)

$$M^A = 0.5 * (M^F + M^R)$$

$$= 0.5 * (168558 + 171787)$$

$$= 170172$$

Table 3.4. Net Migration of Nairobi Females Computed by the Life Table Survival Ratio Method: 1979-89.

Age In		Population In		Life Table Survival Ratio	Expected Survivors	Forward Estimate	Reverse Estimate	Net Migration	Net Migration Rate
1979	1989	1979	1989	(LTSR)	(1)*(3)	(2)-(4)	(2)/(3)-(1)	((5)+(6))/2	(NMR) (7)/(4)
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
0-9	10-19	107554	128749	0.945365	101678	27071	28636	27853	0.27394
10-19	20-29	84729	169531	0.983034	83292	86239	87728	86984	1.04433
20-29	30-39	91709	70025	0.975274	89441	-19416	-19909	-19663	-0.21984
30-39	40-49	36322	27668	0.969372	35210	-7542	-7780	-7661	-0.21757
40-49	50-59	14569	10550	0.961378	13861	-3311	-3480	-3395	-0.24495
50-59	60-69	6982	5105	0.904182	6313	-1208	-1336	-1272	-0.20149
60+	70+	5847	3855	0.649615	3798	57	87	72	0.01895
TOTAL		347712	415483		333592			82919	0.248563

SOURCE: Calculated from 1979 and 1989 Censuses by LTSR method.

Age-specific net intercensal rural-urban migration rate (NMR) was computed by dividing the averaged net migration (M^A) by the expected survivors at the end of the estimation period, the component $({}_tS_{x,x+n} * {}_nP_x)$ at each age, and the result multiplied by a constant **k** usually 100 or 1000. Still using the above age group, the rate (NMR) was calculated by applying equation(2.6a):

$$NMR = \left[M^A / {}_tS_{x,x+n} * {}_nP_x \right] * k$$

$$= 170172 / (0.981209 * 71278)$$

$$= 2.43317$$

The constant k has not been used in this calculation to increase clarity by maintaining few digits before the decimal. Consequentially the computational procedure outlined above was performed for females and both sexes (combined) to obtain female and combined rates alongside males.

Table 3.5. Net Migration of Nairobi Combined Computed by the Life Table Survival Ratio Method: 1979-89.

Age In		Population In		Life Table Survival Ratio	Expected Survivors	Forward Estimate	Reverse Estimate	Net Migration	Net Migration Rate
1979	1989	1979	1989	(LTSR)	(1)*(3)	(2)-(4)	(2)/(3)-(1)	((5)+(6))/2	(NMR) (7)/(4)
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
0-9	10-19	212568	234209	0.942973	200446	33763	35805	34784	0.17353
10-19	20-29	156007	408028	0.982134	153220	254808	259443	257126	1.67815
20-29	30-39	240929	208573	0.973977	234659	-26086	-26783	-26435	-0.11265
30-39	40-49	118219	97108	0.967665	114396	-17288	-17866	-17577	-0.15365
40-49	50-59	57827	39621	0.948784	54865	-15244	-16067	-15656	-0.28535
50-59	60-69	25971	13633	0.899209	23353	-9720	-10810	-10265	-0.43956
60+	70+	14512	7676	0.642555	9325	-1649	-2566	-2107	-0.22599
TOTAL		826033	1008848		790265			219870	0.27822

SOURCE: Calculated from 1979 and 1989 Censuses by LTSR method.

(b) Results and Discussion

Following the above procedure age-specific net migration rates were then calculated by sex and age. A summary of these computations is presented in table 3.3 for males, table 3.4 for females and table 3.5 for the combined sexes. The age-specific net migration rates are represented by column (8) entries of these tables. Column (3) entries of these tables then constitute the computational values that make up the columns (6), (7) and (8) of table 3.2 respectively.

Examining the results above , it becomes evident that for the intercensal period 1979-89, Nairobi is characterized by a similar pattern of age specific migration for males and females. Males exhibit higher net in-migration and out-migration than females with more than 60 per cent of the gross migration to Nairobi being predominantly male.

Figure 3.1 provides a more vivid picture of sex-age specific migration that shows Nairobi as losing more females aged 40-49 but substantially gaining females aged 10-29 years before experiencing a declining trend of net out-migration within age group 30-69 years when a consistently small net in-migration sets in after age 70 years. The influx experienced within age group 10-19 may be attributed to the ever increasing number of private schools, tertiary and middle level colleges. Inter-urban drifts by those who fail to secure employment in the city then mirrors in the more substantial net loss among females aged between 30 and 39 years. Peak out-migration by the female population aged between 40 and 49 years then tend to reflect retirement transition by their male counterparts aged between 60 and 69 years returning to their respective home districts of birth.

Among males the same situation observed for females holds but net loss of population sets in at ages 30-39 insignificantly and gradually peaking up at ages 60-69. The peak of net in-migrational age 20-29 is particularly more spectacular than the females'. However, the pattern traced by males and females both in net gain and net loss situations remain the same with males being more migratory than females in both the net gain and net loss migration regimes. Among males a substantial loss at ages 30-59 may largely be attributed to inter-urban migration between the city and its neighbouring towns (Athi River, Thika, Ruiru) for employment, better job prospects or inability to cope up with the hardships and cost of living in Nairobi. It then appears that Ominde's (1968a) finding that rural-urban migration is concentrated in ages 15-44 years still persists in Kenya. Therefore, in Nairobi migration peaks within 20-29 years and males dominate such streams flows.

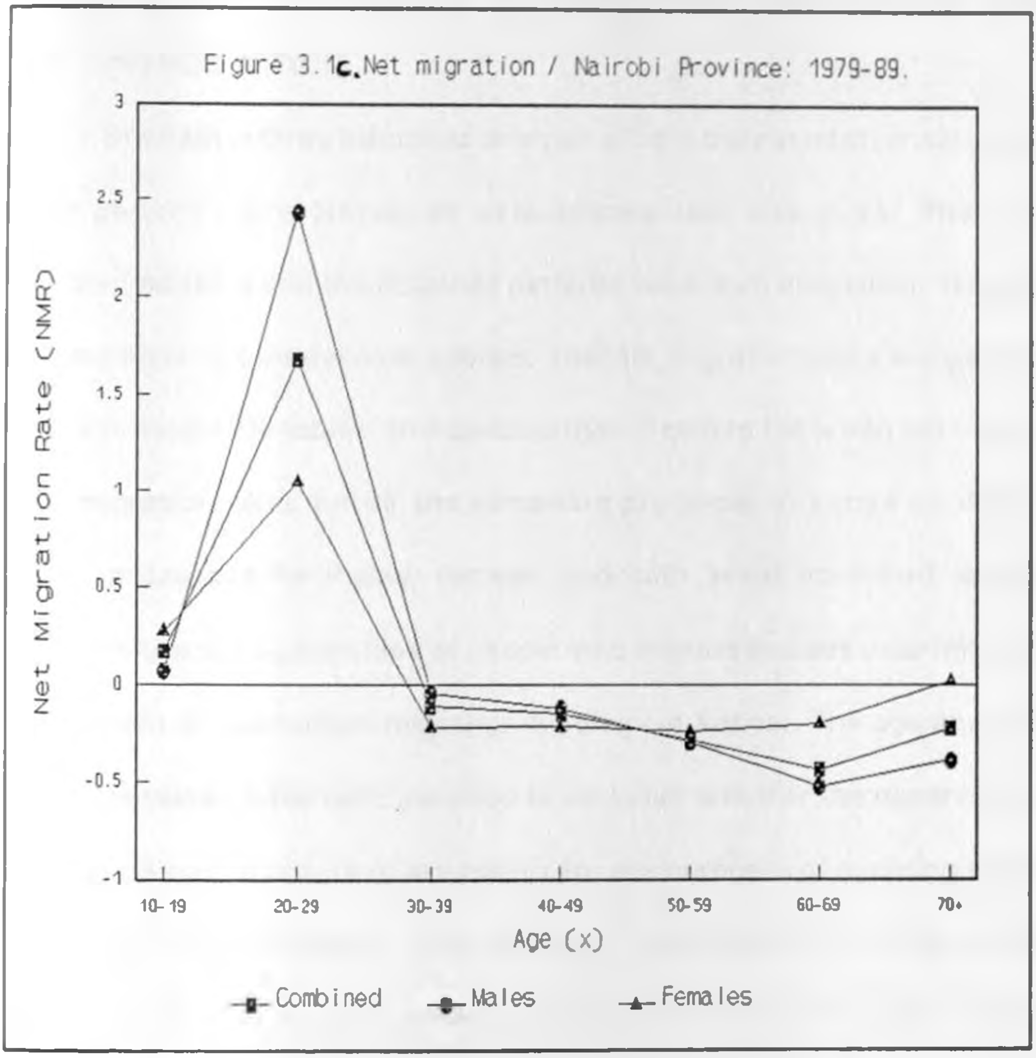


Figure 3.1c. Net migration / Nairobi Province: 1979-89.
Net Migration Rate (NMR)
3
2.5
2
1.5
1
0.5
0
-0.5
-1
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age (x)
Combined
Males
Females

CHAPTER FOUR

REGIONAL ESTIMATES AND PATTERNS OF NET RURAL-URBAN MIGRATION

4.1 INTRODUCTION

In chapter three a detailed analysis of how the net intercensal migration rates were derived taking Nairobi as an illustrative case was given. The implication of the derived rates and the obtained patterns were then discussed. Having therefore shown how net intercensal age-sex specific migration rates are generated from regional model life tables, this chapter then presents the urban net intercensal age-sex migration rates for all the remaining provinces in Kenya by district. These rates, presented for males, females and both sexes combined are analyzed to examine the sex-age profiles of people who migrate besides determining the nature and extent of rural-urban migration typology in Kenya. The age and sex variables of the obtained rates are then used to establish whether the observed movements are permanent in nature or are mainly for the purposes of securing employment in either urban or rural areas. The birth-place statistics together with these rates are further analyzed not only to make clear the reflected typological migration pattern but also to depict direction of the migrational stream flows.

4.2 PROVINCIAL ESTIMATES AND PATTERNS

Two distinctive patterns of age-specific migration in Kenya's urban fabric can be identified. For both sexes, North Eastern Province exhibits a pattern different from that of all other provinces: one in which a substantial peak net inflow occurs in the age brackets 10-19 and 70 plus, net outflow occurring between ages 30 and 69 years (figures 4.1c - 4.1.1c). This pattern is unique possibly because of the effects of international migration from the neighbouring countries of Somalia and Ethiopia. Eastern, Central, Nairobi, Nyanza, Western, Coast and Rift Valley constitute a distinctively almost identical pattern. Exhibiting first insignificant net in-migration at ages 10-19, these provinces experience the typical peak in-migration at ages 20-29 greater among females in Central Province and males in Nairobi Province. However, peak net out-migration obtains up to ages 60-69 in Nairobi and only at lower ages (30-39) in Central Province. Therefore net loss of population sets in Nairobi as the situation in Central Province fluctuates between net loss and net gain.

The national perspective of rural-urban migration is best explained by figures 4.1c and 4.1.1c whereby between the years 1979 and 1989, all the provinces are almost equally divided between out-migration and in-migration areas. The situation is complicated by Nyanza in which two out of four districts, Western in which one out of three districts and Central in which one out of five districts are notable net in-migration areas. Another peculiarity is noted in Coast Province made up of six districts, Rift Valley made up of thirteen districts and Eastern Province made up of six districts, one of which extensively lost population to rest of Kenya (Appendix VI).

Table 4.1. In- and Out-Migration as a Percent of Total Urban and Native Populations and Net Rural-Urban Migration in Kenya by Sex, 1979-89

Province	In-Migration as a percent of Total Urban Population		Out-Migration as a percent of Native Population		Net Urban Migration	
	Male	Female	Male	Female	Male	Female
Nairobi	27.0	24.8	8.3	9.2	137251	82919
Central	0.9	33.3	39.3	2.6	-27089	27681
Coast	13.5	15.3	0.6	8.9	33778	16749
Eastern	11.4	13.0	8.8	7.8	4792	8226
North Eastern	16.8	16.1	9.6	1.9	3496	5092
Nyanza	20.5	19.6	1.7	4.7	24259	17576
Rift Valley	28 2	27 4	7.1	8.1	61104	45743
Western	7.7	10.8	5.0	6.3	1754	3101
KENYA	20.8	21.5	7.5	7.5	239345	207087

Source: Calculated from the 1979 and 1989 Kenya Population Censuses by LTSR method.

The significance of rural-urban migration is explained by the importance of Nairobi and Mombasa as primary destinations of migrants from rural districts. For instance, Nairobi receives population from all districts in Central, Eastern, Coast, North Eastern, Nyanza, Western Provinces and only from Samburu, Baringo, Narok, Nandi, Nakuru, Laikipia, Kericho and Kajiado (nine of the thirteen) districts in Rift Valley Province. Mombasa is a primary destination for migrants originating from Coast Province; and Mombasa itself loses population to Nairobi (appendix II).

Table 4.1 shows two principal provinces Nairobi and Rift Valley as most important destinations of rural-urban migrants. Viewed on account of a national perspective, Nairobi, Rift Valley and Coast in that order dominate the urbanward stream flows. Nairobi the principal city and Rift Valley having 3 of the 8 major towns in the country then serve to explain the dominance of Nairobi and Rift Valley Provinces in interregional population movements. For instance, 27 percent of the male population in Nairobi were in-migrants compared with 25 percent of females (table 4.1). All other provinces except Central, Coast, Eastern and Western experienced the same general pattern. In all other provinces except Nairobi, Coast, Nyanza and Western male out-migration constituted a higher proportion of provincial population than female out-migration. This suggests higher out-migration rates for males than females which is a typical feature in African countries.

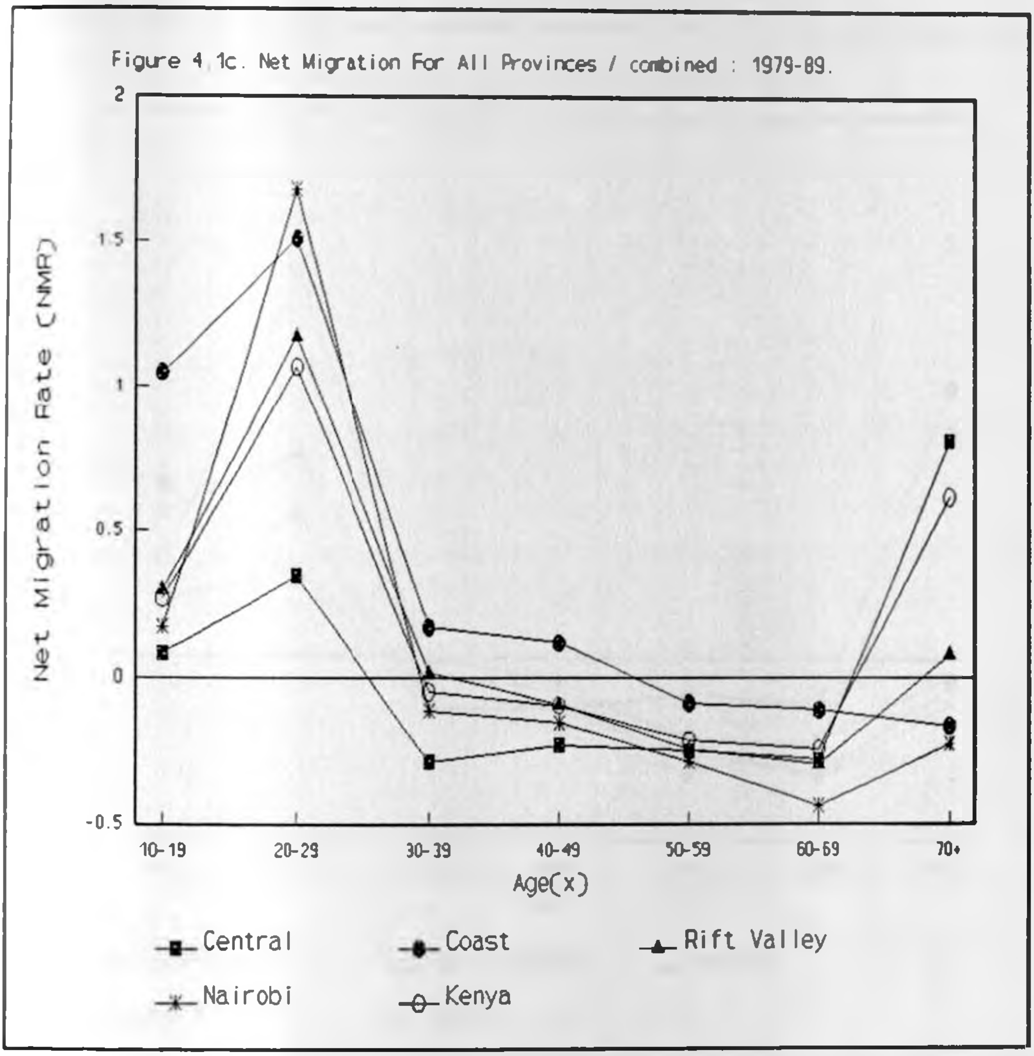


Figure 4.1c. Net Migration For All Provinces / combined : 1979-89.
Net Migration Rate (NMR)
2
1.5
1
0.5
0
-0.5
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age(x)
Central
Coast
Rift Valley
Nairobi
Kenya

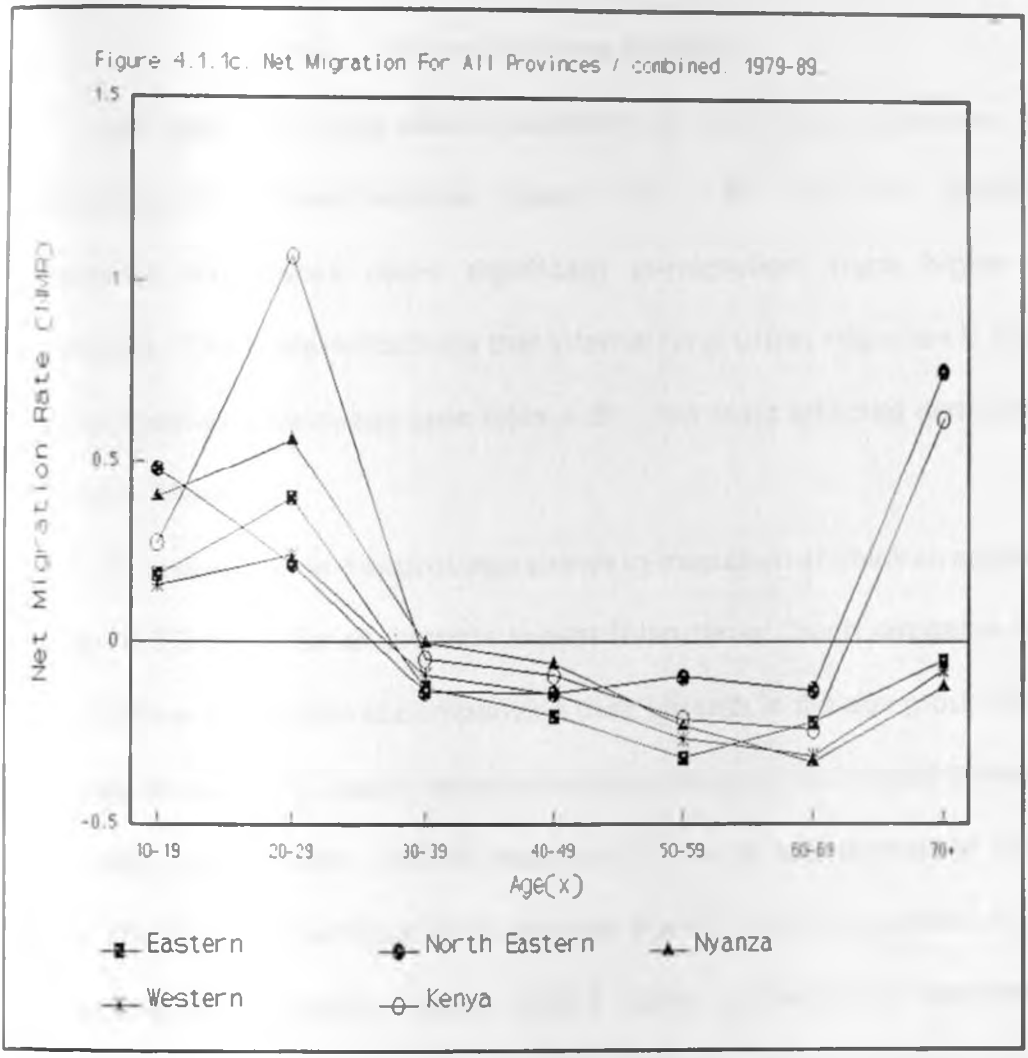


Figure 4.1.1c. Net Migration For All Provinces / combined. 1979-89.
1.5
1
0.5
0
-0.5
Net Migration Rate (NMR)
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age(x)
Eastern
North Eastern
Nyanza
Western
Kenya

4.3 DISTRICT ESTIMATES AND PATTERNS

(a) Central Province Districts

Net gain of young adults indicative of rural-urban migration is equally observable in Central Province (figure 4.2c). All other four districts except Nyandarua experience more significant in-migration much higher than the province's. There are indications that internal rural-urban migration is substantially high in Nyeri and Kirinyaga (see table 4.2). The least affected district then turns out to be Muranga.

Net migration in this province shows in-migration of children aged within age group 10-19 years for all districts except Nyandarua. Such net gains may be due to the inflow of children accompanying their parents in the age group 20-39 years. The heaviest influx is clearly revealed among labour entrants aged between 20 and 29 years (figures 4.2m - 4.2f in Appendix VI) for all the districts in the province. Thus, 20-29 years turns out to be the peak age of urban in-migration for males and females alike. However, males exhibit higher mobility than females by being dominant in migration streams. Both the male and female patterns are characterized by net in-flow of children and young adults.

Out-migration is evident by the observable net losses of females spanning well over age 30 years. A similar trend is also observable among males and thus suggests that the province also experiences inter-urban and urban-rural flows. However, Nyandarua turns out to be a notable net loser as its urban population suffers substantial losses that are not only pronounced within age group 10-19 but also persistent within age group 30-69 with heaviest losses within age group 50-69; an indication of retirement transition. Most probably such extensive urban outward flows also incorporate inter-urban population movements directed towards other urban centres within the province. Out-migration of middle and older adults from the province strengthens the birth-place statistics observation that out-migrants from the province move out to seek permanent settlement and/or employment outside their birth-place districts. Rift Valley is singled out by the birth-place statistics as a major recipient of migrants born in Central Province (Appendix II).

Although it is apparent that most districts in the province are both net receivers and losers of urban population, Nyeri remains a predominantly net receiver of male and female migrants at all ages (table 4.1). The net in-migration of young adults and the old alike portray the significant role of rural-urban migration in this important urban district of Central Province. The role of cyclic migration of inter-urban type can be noticed in the net gain of male and female populations at old adult age brackets with that of females being more spectacular than males'. This also tends to imply the possibility of movements in the context of return migration affecting the 50-59 early retirement age bracket which with time converted into inter-urban movements by the retired but enterprising people. Whereas in Nyeri females dominate the province's female migration streams, Kirinyaga males turn out to be the most dominant in such male stream flows. Nyeri's developed social and economic infrastructure augmented by the growth of Nyeri Town as both the district and provincial headquarters then serve to explain the observed population in-flow and the notable population interchange between urban centres within the province.

However, female migration pattern resembles males' there being differences only in the levels of net migration. Whereas patterns of the other districts agree with Rogers (1981) finding that migration rates decline with age to the ages of retirement after attaining a high peak at about age 22, Nyeri partially shows aberration from such trend while the other districts' age-specific net migration rates exhibit remarkably persistent regularities. Thus, migration rates of young children in 10-19 age bracket tend to strongly reflect the relatively high rates of their parents, young adults in their late twenties thereby confirming Rogers' observation. The variations in the sex age-specific net migration may then be viewed to mirror the diverse socio-economic potential in the region.

Table 4.2. Combined Net Rural-urban Migration Rates by Age and District - Central Province.

District	Age							Total NMR
	10-19	20-29	30-39	40-49	50-59	60-69	70+	
Kiambu	0.15005	1.50456	0.20719	-0.14521	-0.26411	-0.35034	-0.04338	0.20893
Kirinyaga	0.44544	1.98384	0.06162	-0.06071	-0.06639	-0.00835	0.27295	0.53722
Muranga	0.11716	0.41875	-0.15216	-0.16699	-0.26524	-0.20749	0.09027	0.05908
Nyeri	1.13320	1.78215	0.19848	0.43155	0.54923	0.84434	2.10264	0.93560
Nyandarua	-0.10262	0.82984	-0.30426	-0.35871	-0.41037	-0.48625	-0.02336	-0.01641
Central	0.08462	0.34647	-0.28658	-0.22866	-0.24951	-0.28003	0.81159	0.00308
NATIONAL	0.27047	1.06766	-0.04904	-0.09535	-0.21483	-0.24368	0.62017	0.21681

Source: LTSR Method Computational Results.

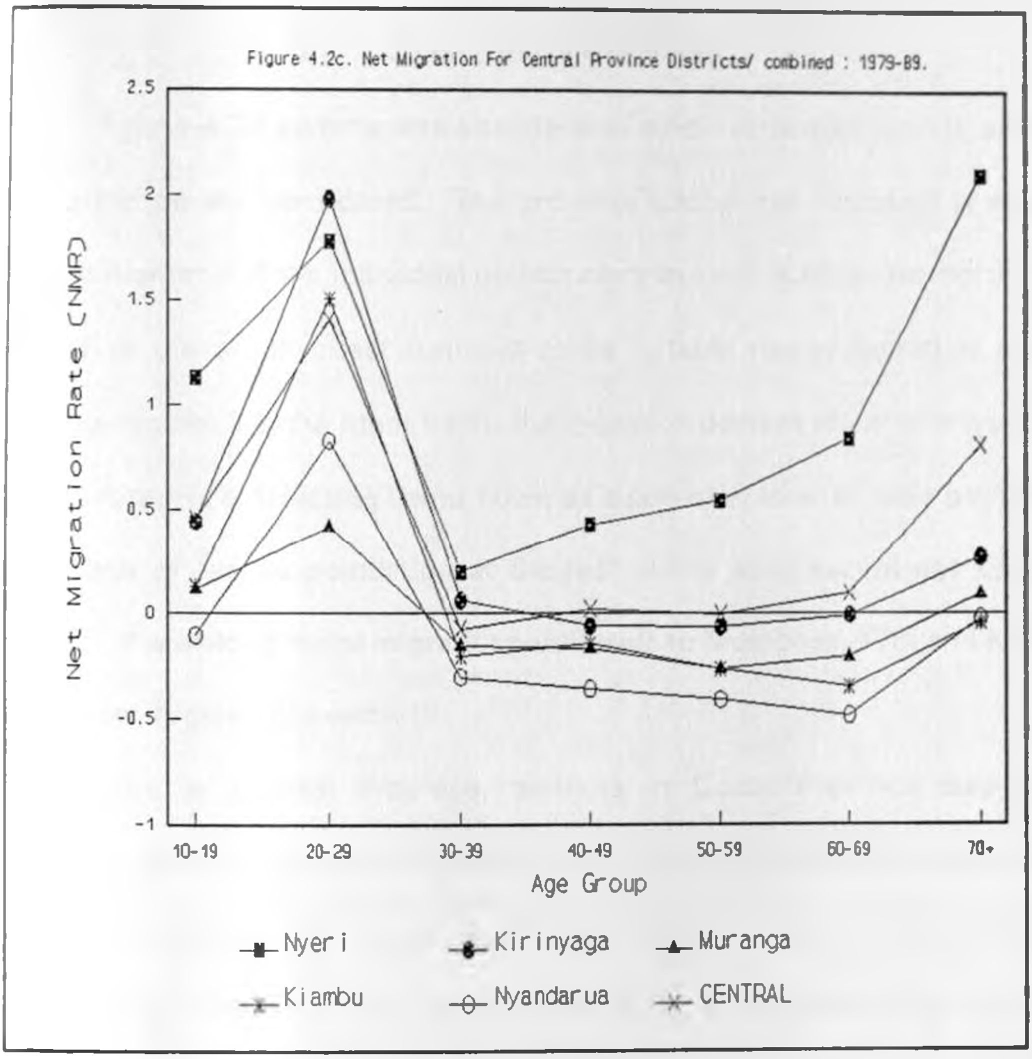


Figure 4.2c. Net Migration For Central Province Districts/ combined : 1979-89.
Net Migration Rate (NMR)
2.5
2
1.5
1
0.5
0
-0.5
-1
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age Group
Nyeri
Kirinyaga
Muranga
Kiambu
Nyandarua
CENTRAL

(b) Coast Province Districts

Figure 4.3c summarizes situations in which total migration in all districts in the province are considered. The province's total net migration is substantially higher than any of the individual district contribution. Kilifi in the north coast and Kwale in the south coast turn out to be notable net in-migration areas in the coastal region. On the other hand, the migration pattern of Lamu is typically of the urban-rural type depicting Lamu Town as a potential loser of male population at all ages and of female population at the rest of the ages except age 60 years and above. It is among major migrant contributors to Mombasa, Kilifi and Kwale within the coast region (Appendix II).

Like in Central Province, districts in Coast Province also experience substantial net in-migration of young adults in the economically active age bracket 20-29 consistent with the job-seeking hypothesis. Among males who apparently portray higher mobility than females net in-flows of children and young adults aged between 10 and 19 years the age cohort of 0-9 years in 1979 are noticeable in all districts except Lamu. Age bracket 20-29 then prominently features as the peak age of in-migration for most districts. However, Kwale's pattern turns out uniquely such that unlike the other districts with their typical peak at 20-29, its peak is relegated to children in 10-19 years for both males and females. This observation may be explained by the fact that Kwale enjoys the presence of many educational institutions and further to the fact that a large proportion of both boys and girls join school when they are over age (Development Plan, 1984). Extensive net gains among urban females of Kwale and similar small net gains observable at some ages after age 30 years in Kilifi, Tana River and Taita Taveta most likely moderate the migration pattern of the province that appears heavily affected by net losses among males. Such net gains then tend to suggest that rural-urban migration streams by females terminating in urban centres of these districts imply short-distance migration. Appendix II portrays Mombasa as a major recipient of inter-urban migrants from other districts in the province.

Out-migration from the urban centres of the districts is heavily concentrated within the age bracket 50-69 years (table 4.3). Among the major migrant recipients Kilifi experiences the least out-migration among females when Kwale enjoys notable net gains at all ages for this sex (Appendix VI). Mombasa suffers heavy loss in urban population at all the remaining ages after age 29 years. This coastal town therefore also experiences urban-urban migration through the loss of middle adults and urban-rural migration through the loss of old adults. This observation thus confirms an earlier finding that migrants from outside Coast Province converge in Kilifi and Kwale urban via Mombasa (Wakajummah, 1986); in particular those who turn out to be unable to secure employment in Mombasa Town. Thus, massive out-migration characterising Mombasa's middle and old adults and the notable net gains experienced in the same age groups by the neighbouring districts of Kilifi and Kwale tend to imply that some migrants use Mombasa as a stop-over point to other coastal towns. Bordering Mombasa in the north, Kilifi boasts of a flourishing tourist industry, Cashew nut Factory, expansion of Malindi Town and Wakala Pineapple establishment all of which serve to explain the observed net gains. Kwale in the south is also a tourist attraction and together with the presence of Ramisi Sugar Factory and growth of Msambweni and Kwale Towns, it acts as a major 'pull' factor to potential migrants.

Table 4.3. Combined Net Rural-urban Migration Rates by Age and District - Coast Province.

District	Age							Total NMR
	10-19	20-29	30-39	40-49	50-59	60-69	70+	
Kilifi	0.63453	1.16409	0.05391	0.03838	-0.01813	0.04848	0.09865	0.45417
Kwale	0.87339	0.74122	0.00970	0.35226	0.24716	0.37967	0.49773	0.50759
Lamu	-0.21975	0.03357	-0.46403	-0.44358	-0.45940	0.11273	0.06307	-0.27333
Mombasa	0.08761	0.84369	-0.14852	-0.18396	-0.30590	-0.41155	-0.26610	0.09252
T/Taveta	0.40294	0.87968	0.17594	0.01904	-0.06874	-0.05534	0.64576	0.36965
T/River	0.54202	0.74835	-0.00634	-0.01420	-0.10682	-0.03475	0.68844	0.33494
Coast	1.04955	1.50835	0.17274	0.11869	-0.08757	-0.11551	-0.16588	0.64645
NATIONAL	0.27047	1.06766	-0.04904	-0.09535	-0.21483	-0.24368	0.62017	0.21681

Source: LTSR Method Computational Results.

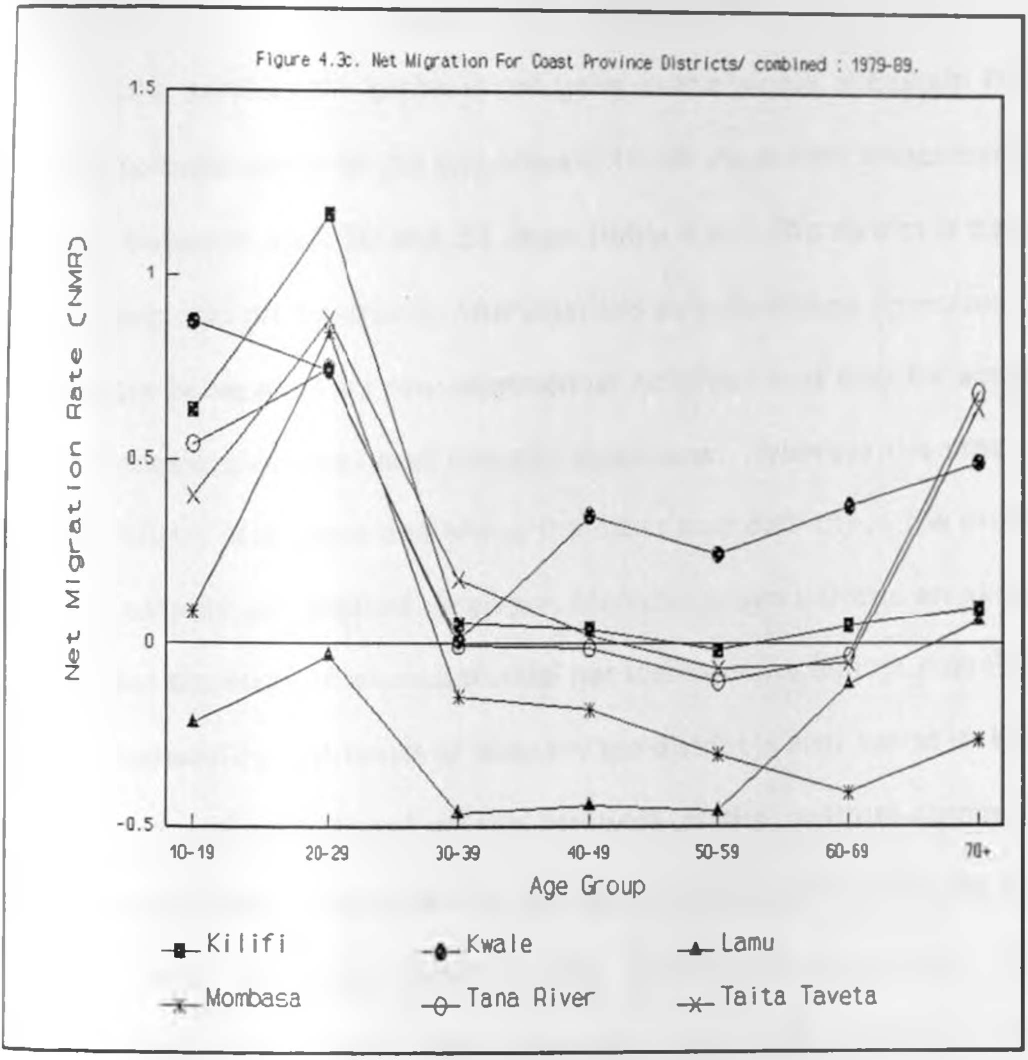


Figure 4.3c. Net Migration For Coast Province Districts/ combined : 1979-89.
1.5
1
0.5
0
-0.5
Net Migration Rate (NMR)
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age Group
Kilifi
Kwale
Lamu
Mombasa
Tana River
Taita Taveta

(c) Eastern Province Districts

Kitui exhibits the greatest net gains in the whole of Eastern Province that widely spreads well over the age bracket 10-59 years with a spectacular peak net in-flow between ages 20 and 29 years (table 4.4). The district is basically semi-arid to arid and predominantly characterised by subsistence agriculture. Its towns only host comparatively few commercial activities that may be acting as major 'pull' factors given its harsh climatic conditions. Whereas the urban centres of Embu, Isiolo, Machakos and Meru, the other four districts in the province, stand out as notable net migrant receivers, Marsabit urban exhibits an exclusively out-migration situation where substantial net losses occur almost entirely at all ages. Characterised by high levels of illiteracy the district is also worst hit by low school enrolment rates attributed to the lifestyles of the pastoral communities. Sex preference is also highly practised and parents prefer early marriages to their young girls. The foregoing together with movements associated with pastoral communities then most likely serve to explain the observed net out-flows. Appendix II shows that this province loses population to the neighbouring Nairobi and Rift Valley Provinces.

However, all urban centres of the districts except Marsabit experience net in-flows of young male adults that peaks at age bracket 20-29 years (figures 4.4m & 4.4f - Appendix VI). A similar pattern is observed among females although Marsabit urban remains predominantly a net loser of females at the rest of the ages. After age 40, Embu urban experience massive female out-migration that tends to suggest that they accompany their male counterparts to areas such as rice schemes in the nearby Kirinyaga's Mwea-Tabere Irrigation Scheme.

However, the emerging general pattern in the province is consistent with urbanward labour drifts (figure 4.4c). Figure 4.4f (Appendix VI) indicates that female migration is not markedly different from males'. It is also apparent that in Eastern Province Kitui urban exemplifies a situation of exposure to equal opportunities for both the sexes since the pattern and pace of migration of the females rate those of their male counterparts; an indication that female migration has been increasingly steady in this province.

Table 4.4. Combined Net Rural-urban Migration Rates by Age and District - Eastern Province.

District	Age							Total NMR
	10-19	20-29	30-39	40-49	50-59	60-69	70+	
Embu	0.14568	1.44163	0.15627	-0.15104	-0.43239	-0.52229	-0.26814	0.30095
Isiolo	0.16988	0.73249	-0.02017	-0.19414	-0.26009	-0.34539	-0.12504	0.15302
Kitui	0.55780	2.07635	0.17712	0.11900	0.03750	-0.08020	-0.09214	0.60997
Machakos	0.22223	0.29328	-0.16335	-0.23886	-0.34812	-0.20829	-0.07578	0.03316
Marsabit	-0.01999	-0.02708	-0.13255	-0.04812	-0.19637	-0.08736	0.17444	-0.05314
Meru	0.17528	0.29724	-0.20151	-0.25565	-0.33421	-0.20661	0.02151	0.01586
Eastern	0.18356	0.39526	-0.12844	-0.20592	-0.32072	-0.22422	-0.05396	0.05807
NATIONAL	0.27047	1.06766	-0.04904	-0.09535	-0.21483	-0.24368	0.62017	0.21681

Source: LTSR Method ComputationaL Results.

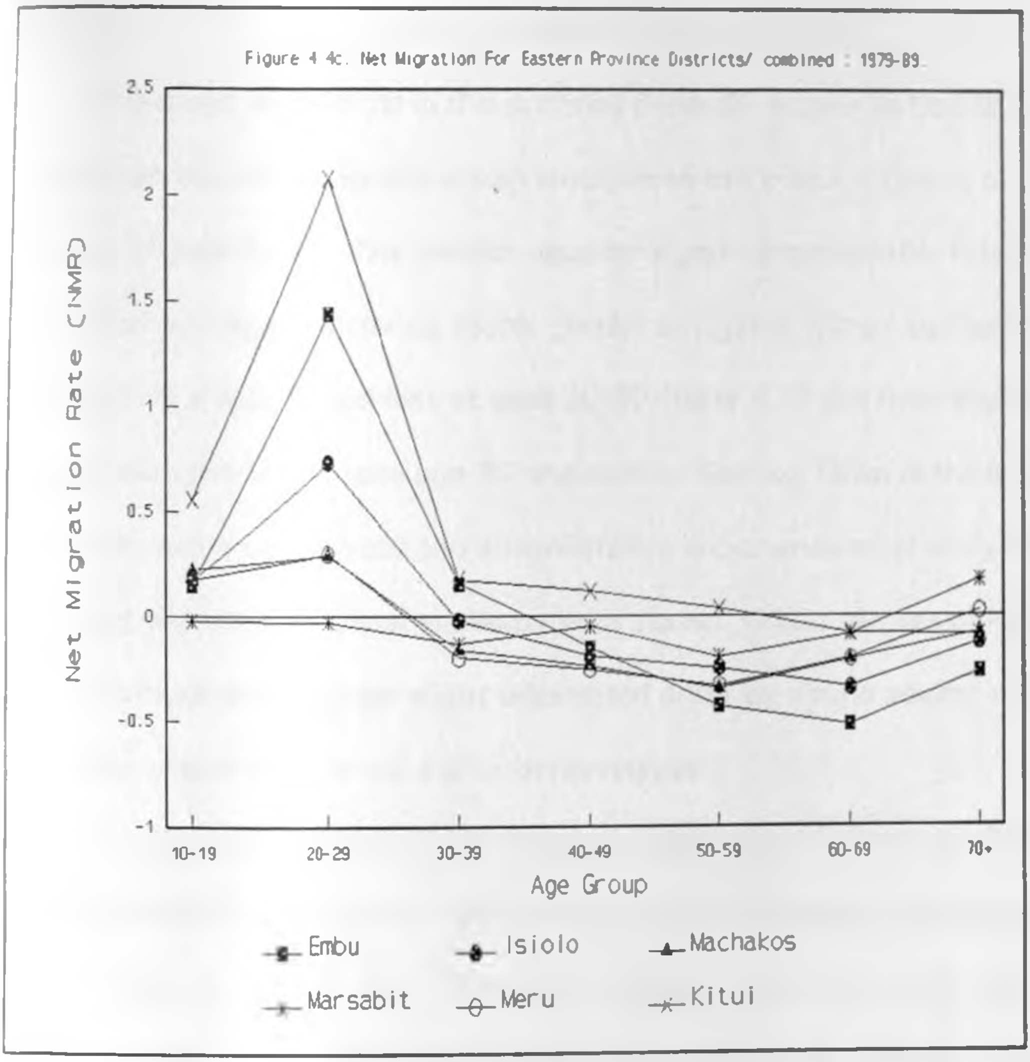


Figure 4 4c. Net Migration For Eastern Province Districts/ combined : 1979-89
2.5
2
1.5
1
0.5
0
-0.5
-1
Net Migration Rate (NMR)
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age Group
Embu
Isiolo
Machakos
Marsabit
Meru
Kitui

(d) North Eastern Province Districts

Although all districts in the province generally appear to be net receivers of rural-urban migrants, Garissa urban emerges as the major recipient of urbanward streams (figure 4.5c). The district records significant migration rates above the provincial average registering much greater net gains within age bracket 10-29 followed by a substantial loss at ages 30-69 (table 4.5) and then experiences net in-migration thereafter until age 70 and above. Garissa Town is the largest in the province and its commercial and administrative importance most likely explains the apparent net in-flows experienced by both sexes. Urban centres of Mandera and Wajir districts only register slight urbanward drifts by young adults; an indication that their urban sectors are still underdeveloped.

Net losses of females from Mandera urban extends from age 30 to 49 and of male spreads upto age 69. On the other hand, age pattern of migration in Wajir urban tend to reflect that females dominate rural-urban migration streams (Appendix VI). This is observable through net gains in age brackets 10-19, 30-39 and between ages 50 and 70 plus with the trend changing rapidly with increasing female age after age 49. Children and young adults (10-19) appear to accompany their mothers aged 30-39 years to the urban centres. Wajir urban therefore enjoys net in-flows at the ages when urban sectors of Garissa and Mandera count heavy net out-flows. This observation tends to support the assertion that female movements from Mandera and Garissa are mainly directed towards Wajir Towns. Compared to female urbanward drifts in Garissa and Mandera, this pattern is unique presumably because it heavily affects the 20-29 age group which in this study prominently features to be highly migration prone. This tends to reflect traditional culture that places heavy responsibility to women (like early marriage in the district) most likely driving members of this age group towards rural areas. Low literacy levels among this sex is rampant and girls drop out from schools due to culture and lack of motivation.

Peak net in-flows in the urban centres substantially register at younger ages (10-19). Although males just like their female counterparts record net gains in the above age bracket and 20-29, they are worst hit by out-migration that is not only heavy loss but also persistent within age groups 30-69 with heaviest losses within age group 60-69; an indication of retirement transition. However, net gains in the urban population are apparently experienced by people who are either too young or too old to undertake long distance movements associated with lifestyles of nomadic and pastoral communities. The general age pattern of rural-urban migration is the same with a distinctively defined U-shape. Unique to this pattern is net gains occurring at much younger (10-19) and much older (70+) ages. Outward movements from the province are mainly directed further south to Nairobi and Eastern provinces (Appendix II).

Table 4.5. Combined Net Rural-urban Migration Rates by Age and District - North Eastern Province.

District	Age							Total NMR
	10-19	20-29	30-39	40-49	50-59	60-69	70+	
Garissa	0.74693	0.62455	-0.08510	-0.08943	-0.13215	-0.09776	0.56989	0.31917
Mandera	0.38573	0.05032	-0.25620	-0.26508	-0.21941	-0.25047	0.82168	0.03192
Wajir	0.35246	-0.01274	-0.04066	-0.03421	0.12959	-0.01670	0.76146	0.12377
N/Eastern	0.47697	0.21271	-0.14048	-0.14406	-0.09922	-0.13648	0.75344	0.15034
NATIONAL	0.27047	1.06766	-0.04904	-0.09535	-0.21483	-0.24368	0.62017	0.21681

Source: LTSR Method Computational Results.

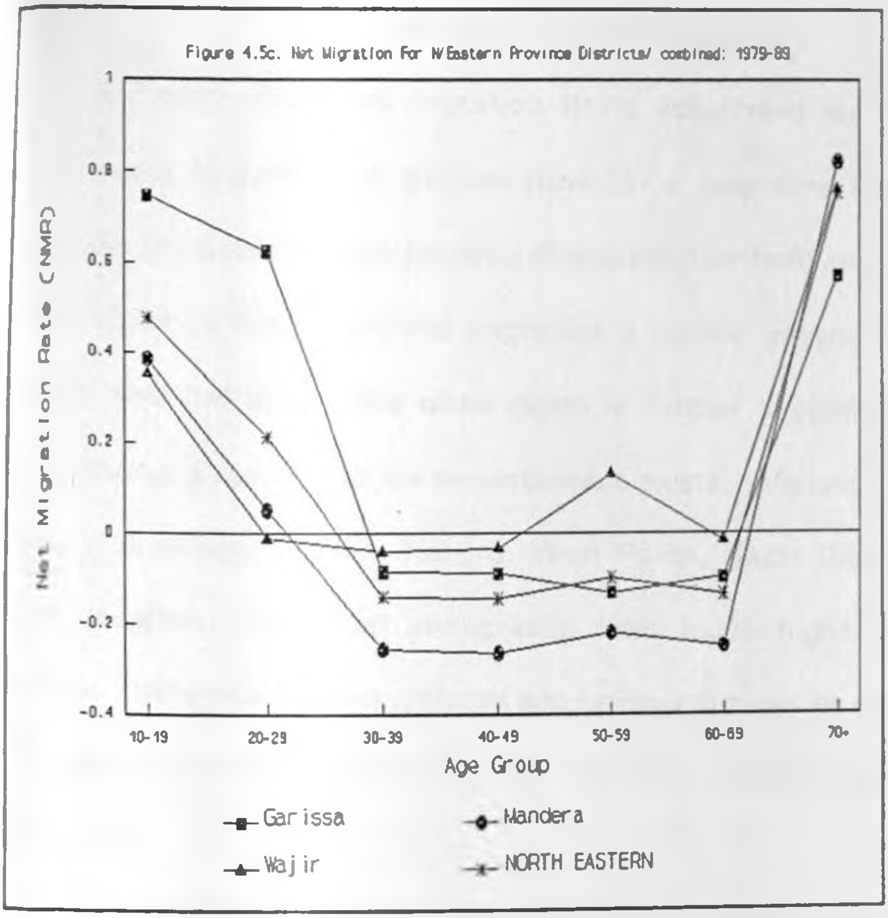


Figure 4.5c. Net Migration For N/Eastern Province Districts/ combined: 1979-89
Net Migration Rate (NMR)
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age Group
Garissa
Mandera
Wajir
NORTH EASTERN

(e) Rift Valley Province Districts

Although rural-rural migration flows associated with post-independence government re-settlement policies have for a long time been dominant in the province, the emergent age patterns of migration for both sexes suggest that rural-urban share in total provincial migration is rapidly gaining prominence (figures 4.6.1c and 4.6.2c). This observation is further supported by the fact that currently no surplus land for re-settlement exists. Viewed on account of total urban population, Kajiado, Nakuru, West Pokot, Uasin Gishu, Trans Nzoia and Nandi districts exhibit net in-migration rates much higher than the provincial average. Whereas Samburu, Narok and Laikipia turn out as potential net losers in the urban population, Nandi emerges with the highest mobility in the province (table 4.6).

Urbanward flows appear rampant in urban centres of Nandi and Kajiado as evidenced in heavy influx noticeable at almost all ages. Nandi district enjoys the presence of seven educational divisions with Kapsabet municipality alone being endowed with more education facilities. Child labour is also rampant and children retail milk in Kapsabet Town. Being agriculturally endowed domestic trade in this district forms an indispensable link in the flow of goods from the producer to the consumer thus attracting many people from the neighbouring districts.

In many instances migration is caused by either economic, ecological or social factors or a combination of both . In Kajiado district these two factors have for a long time played an important role in determining migration patterns both at the regional and intra-district levels. For instance, weather conditions determine seasonal migrations within this semi-nomadic pastoralist district as stock owners move with their animals in search of pasture. However, as table 4.5 and figures 4.6 show this pattern of migration is gradually dying out as more and more people take to sedentary living. Thus, a more dominant rural-urban migration pattern that mirrors increasing urbanward drifts across ages emerges. It is then possible that there is localised urbanward drifts from the rural areas directed towards industrial towns such as Magadi. The growth of Kajiado town as the district headquarters, Namanga, Ngong and Magadi towns appear to have motivated in-migration from other parts as well as business people who are now domiciled in the district. This most likely explains the observed net gains that span age group 10-49 years among males and 10-29 years among females. Spill-over of Nairobi's population into the nearby Ngong Township, the growth of settlement schemes at Loitokitok and thriving business at Namanga border post on the Kenya-tanzania border further corroborates the observed population movements into the district's urban sector. however, outward flows directed to the neighbouring industrial towns of Nairobi and Athi River (Appendix II) cannot be ruled out as this mirrors in limited but small net out-migration suffered within age group 30-39 among females and 50-59 among males.

Samburu, Narok and Laikipia districts turn out as notable net losers of the urban population. Samburu district then suffers heaviest out-migration that covers all ages for both sexes. This is a reflection of a migration pattern characteristic of nomadic pastoralism since for a long time Samburu people have been known to lead nomadic way of life marked with migration that takes the rural-rural format. Figures 4.6.1c and 4.6.2c tend to suggest that majority of these people still prefer to limit their migration to within their clan land. Despite the significant growth in urban population of Maralal Town since 1979, Baragoi Town has been losing population thus giving the entire district an overall picture of no noticeable increase in the number of people entering the towns. This mirrors in the extensive outflows experienced at all the ages. Migration patterns of the other two net losers differ from Samburu's only at ages 20-29 years where they characteristically register substantial net gains among males and females alike. Thus, the observed net in-flows may be attributed to the growth of Nanyuki, Narok and Nairagie Enkare Towns.

Except for females of Kajiado, males and females of Nandi and West Pokot register peak net in-flows at older ages (70+) when the other remaining 9 districts reecord substantial peak in-migration heavily concentrated within age group 20-29 years (Appendix VI). Net loss in male and female populations then takes its heaviest toll within age bracket 30-69 years. This tend to signify return migration of unsuccessful job-seekers and those who have attained retirement ages from the urban fabric and inter-urban flows.

Unlike in any urbanizing region, internal rural-urban migration in Rift Valley is significantly weighted by both population in-flows and out-flows with the former heavily affecting the youthful age structure and the latter the old age structure. In 1979, the province had 30 urban centres, the largest number in any one single province, with over six of the country's major urban centres. This large number of towns appear to have accelerated population movements into its towns both from within it and outside as far as Central, Nyanza and Western Provinces (Appendix II).

Table 4.6. Combined Net Rural-urban Migration Rates by Age and District - Rift Valley Province.

District	Age							Total NMR
	10-19	20-29	30-39	40-49	50-59	60-69	70+	
Baringo	0.30351	0.85388	-0.01974	-0.11896	-0.17872	-0.16595	0.34368	0.27012
Kajado	0.53191	1.52371	0.14295	0.12852	0.00760	0.02566	1.13261	0.56341
Kericho	0.12202	0.60121	0.02079	-0.05613	-0.29124	-0.43348	-0.16088	0.14287
Nakuru	0.32526	1.30932	-0.00797	-0.08595	-0.18129	-0.21408	0.31090	0.36259
Samburu	-0.41568	-0.25618	-0.43640	-0.48565	-0.63476	-0.67283	-0.71720	-0.42140
Narok	-0.48886	0.24642	-0.28222	-0.51468	-0.66098	-0.78487	-1.12456	-0.31839
W/Pokot	0.48960	1.27183	0.18174	-0.08793	-0.27863	-0.15522	2.60157	0.47831
U/Gishu	0.67306	2.05666	0.11976	0.03537	-0.19541	-0.16430	0.40899	0.65377
Turkana	0.22118	0.64502	-0.01391	-0.31184	-0.59110	-0.75487	-0.78816	0.08055
T/Nzoia	0.50397	1.26583	0.19076	-0.00454	-0.11470	-0.07804	0.30844	0.47999
Nandi	1.76714	2.97627	0.76093	0.67131	0.72251	1.29237	12.88597	1.61526
Laikipia	-0.18698	0.85448	-0.25570	-0.33176	-0.39727	-0.49875	-0.34926	-0.03390
R/Valley	0.29783	1.17232	0.01540	-0.09297	-0.24593	-0.29636	0.07910	0.32292
NATIONAL	0.27047	1.06766	-0.04904	-0.09535	-0.21483	-0.24368	0.62017	0.21681

Source: LTSR Method Computational Results.

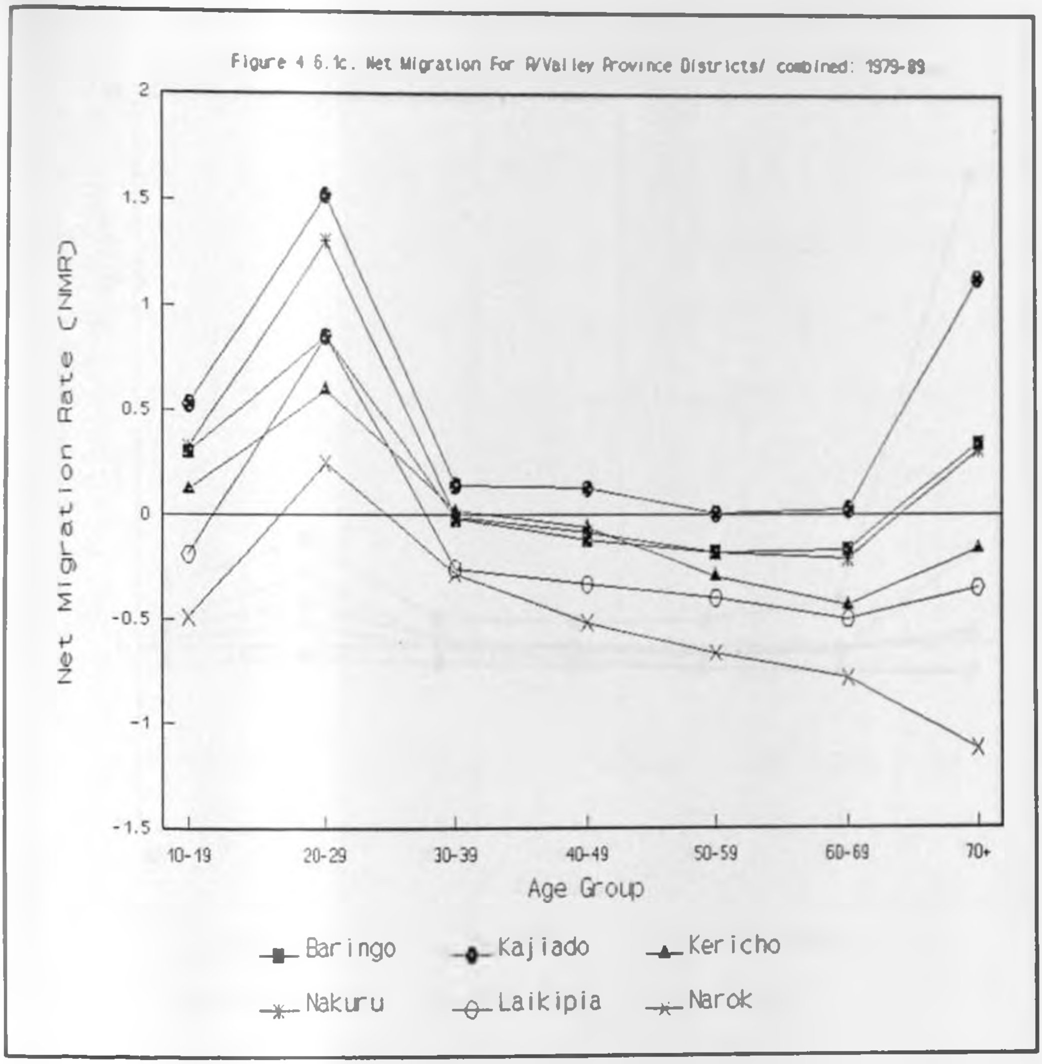
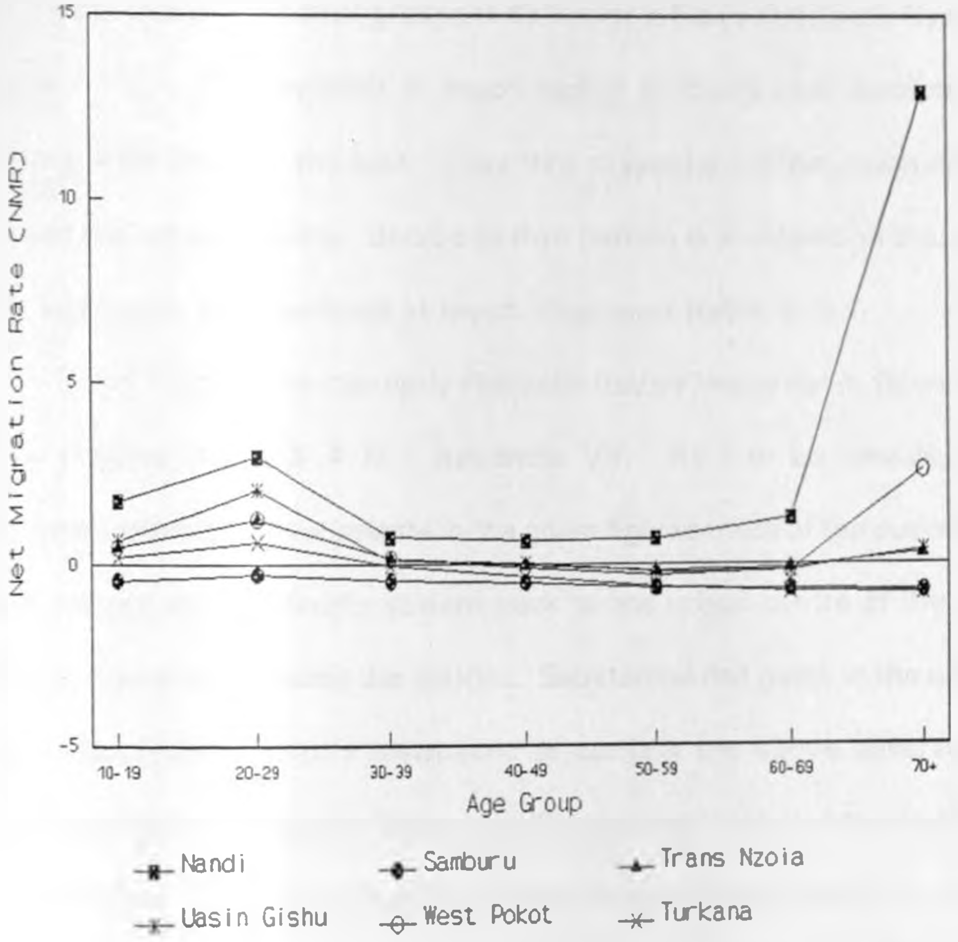


Figure 4 6.1c. Net Migration For R/Valley Province Districts/ combined: 1979-89
Net Migration Rate (NMR)
2
1.5
1
0.5
0
-0.5
-1
-1.5
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age Group
Baringo
Kajiado
Kericho
Nakuru
Laikipia
Narok

Figure 4.6.2c. Net Migration For R/Valley Province Districts/combined : 1979-89.



(f) Nyanza Province Districts

Internal rural-urban migration is dominant in Siaya and South Nyanza districts (figure 4.7c). This mobility is much higher in these two districts of Nyanza Province with Siaya in the lead. They thus present a pattern much different from those of the other districts. Unique to their pattern is in-migration that is persistent at all ages with peak in-flows at much older ages (table 4.7).

Siaya Town is spectacularly characterized by heavy net in-flows among both sexes (figures 4.7m & 4.7f - Appendix VI). As can be visualized from the structural population movements in the given figures most of the out-migrants from Siaya district tend to finally stream back to the urban centre at the end of their migratory missions outside the district. Substantial net gains in the old population structures of this district's town tend to confirm the above observation. Inter-urban movements between Siaya and Kisumu also feature (Appendix II). On the other hand the growth of Homa Bay, Kendu Bay and Migori towns in South Nyanza district may be the major source of urbanward motivation. Given that South Nyanza is among major migrant contributors to Nairobi, Mombasa, Kisumu, Kericho and Nakuru (Appendix II) net gains of children aged between 10 and 19 years most likely suggest that parents of South Nyanza origin found in these major towns send their children back home mainly due to shortage of enrolment opportunities in institutions in their host centres. As the seat of the district headquarters, Homa Bay is also endowed with fish farming. Migori the other important town located on the main international road and close to Tanzania border is the busiest centre in the district due to inter-border activities and is a hub of business activities such as cattle auctioning beside being host to a number of industrial plants for fishfilleting and wheat milling. All these manifest in the observed net gains realised even at older ages. The observed peak net gains at older ages (70 +) then tend to support the observation that return migration following retirement from Nairobi, Kisumu and Mombasa (notable receivers of South Nyanza out-migrants - Appendix III) terminate in South Nyanza urban sector.

All districts however experience, for both sexes, net gains in children aged between 10 and 19 years. Unlike Siaya and South Nyanza, the other two districts enjoy substantially peaked net in-flows at ages between 20 and 29 years thereby sharply contrasting that of the former two. Kisii and Kisumu thus present the same general age-specific migration pattern; one in which they enjoy substantial net gains spread across age bracket 10-29 years and thereafter languish in net out-migration after age 29 years to the old ages. Such extensively persistent net out-flows most likely mirror temporary out-migration by job-seekers who mostly end-up in other major urban centres in the country, family type migration for permanent settlement elsewhere and/or retirement transition by retirees headed for their birth-place districts or rural homes.

Table 4.7. Combined Net Rural-urban Migration Rates by Age and District - Nyanza Province.

District	Age							Total NMR
	10-19	20-29	30-39	40-49	50-59	60-69	70+	
Kisii	0.25098	0.25418	-0.16367	-0.17909	-0.28671	-0.15739	0.00652	0.07705
Kisumu	0.19917	0.39017	-0.12179	-0.17102	-0.35345	-0.49272	-0.50287	0.05903
Siaya	2.74761	2.31017	1.27409	1.29156	2.44297	2.44297	7.45852	2.16167
S/Nyanza	2.32989	2.41085	1.03130	0.86271	0.82316	1.04738	3.49900	1.76408
Nyanza	0.39927	0.56031	-0.00422	-0.06283	-0.23324	-0.33270	-0.12663	0.22537
NATIONAL	0.27047	1.06766	-0.04904	-0.09535	-0.21483	-0.24368	0.62017	0.21681

Source: LTSR Method Computational Results.

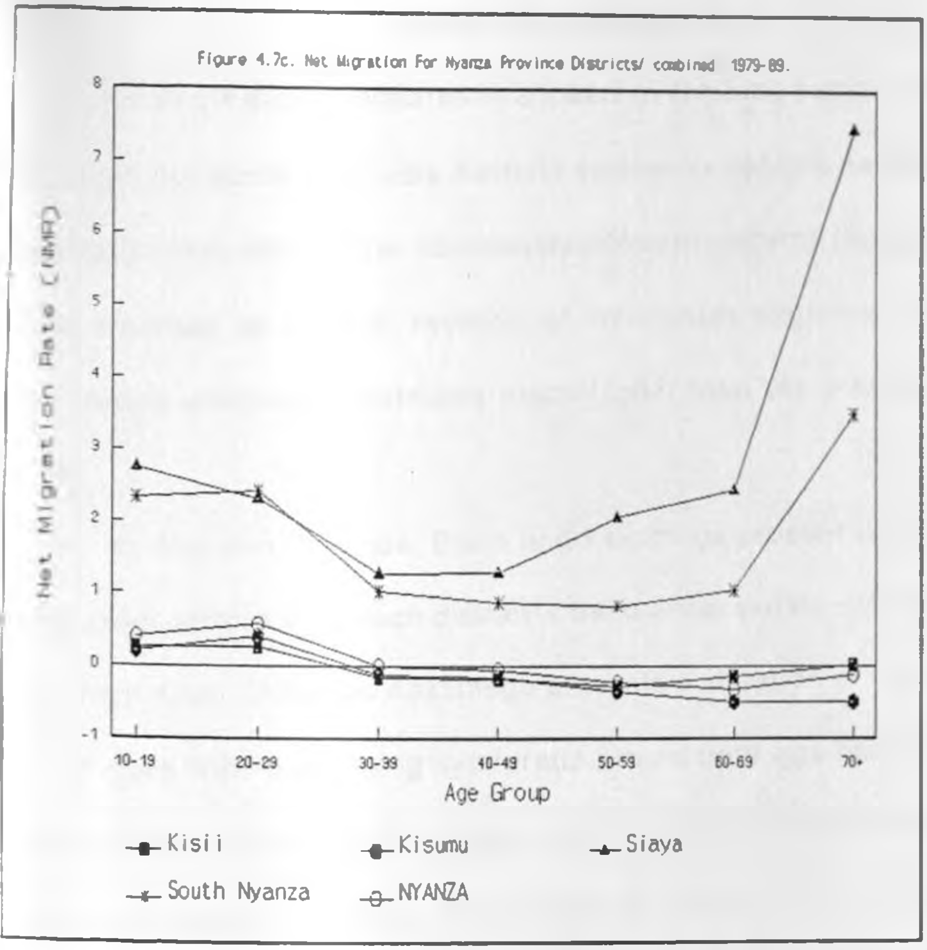


Figure 4.7c. Net Migration For Nyanza Province Districts/ combined 1979-89.
Net Migration Rate (NMR)
8
7
6
5
4
3
2
1
0
-1
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age Group
Kisii
Kisumu
Siaya
South Nyanza
NYANZA

(g) Western Province Districts

No single district apparently appears to exhibit a pattern similar to the other. Although Bungoma and Busia districts emerge as notable net losers of their urban population they still portray completely different patterns (figure 4.8c). Kakamega then emerges as a major receiver of rural-urban migrants in the province and registering urbanward mobilities much higher than the province's average (table 4.8).

In Western Province, Busia and Kakamega present unique age-specific net migration pattern with each district's trend either purely defined in in-migration or out-migration. Whereas Kakamega presents a situation of net in-flows persistent at all ages with a declining in-migration trend upto age bracket 60-69 years and thereafter picking up at older ages, Busia remains spectacularly a net loser of urban population across all ages. Particularly impressive to their patterns is the peaked net in-migration characterizing age bracket 10-19 years and the declining in-flows with age in Kakamega and increasingly extensive out-migration with age in Busia. These features become even more distinct in male and female patterns. Unlike these two districts, Bungoma gravitates between in-migration and out-migration enjoying notable net gains among females aged within 10-19 and 20-29 age groups. Thereafter it notably remains a net loser at the rest of the ages for both sexes. This district is endowed with large commercial and industrial concerns such as Pan Paper Mills in Webuye Town which act as major migrant magnets.

Kakamega Town remains the largest trading centre in the province and together with its important central position as both the seat of the district and provincial headquarters serves to explain the observed net gains persistent at all ages. Most likely also is the fact that most urban out-migrants from Busia and Bungoma Towns find their destinations in Kakamega Town. However, Bungoma urban apparently appears to moderate the emergent urbanward pattern in the province by compensating for the heavy net losses suffered by Busia urban.

Table 4.8. Combined Net Rural-urban Migration Rates by Age and District - Western Province.

District	Age							Total NMR
	10-19	20-29	30-39	40-49	50-59	60-69	70+	
Bungoma	0.00038	0.15794	-0.18864	-0.24195	-0.34346	-0.45484	-0.26239	-0.06378
Kakamega	0.82944	0.58833	0.28552	0.28629	0.11740	0.12753	0.50838	0.52980
Busia	-0.34416	-0.29826	-0.46237	-0.55388	-0.65907	-0.71905	-0.98175	-0.41992
Western	0.15530	0.23884	-0.09347	-0.14525	-0.26958	-0.31535	-0.07875	0.05000
NATIONAL	0.27047	1.06766	-0.04904	-0.09535	-0.21483	-0.24368	0.62017	0.21681

Source: LTSR Method Computational Results.

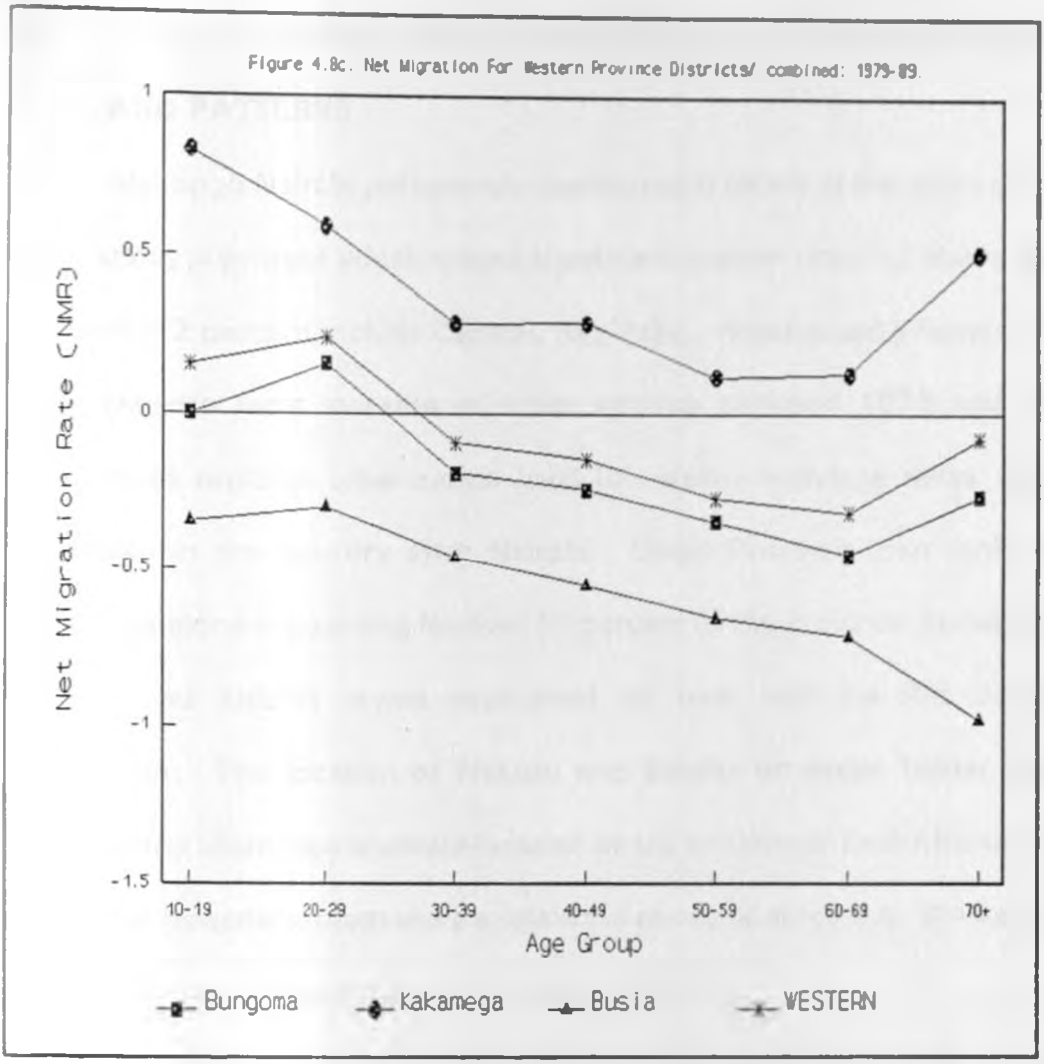


Figure 4.8c. Net Migration For Western Province Districts/ combined: 1979-89.
Net Migration Rate (NMR)
1
0.5
0
-0.5
-1
-1.5
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age Group
Bungoma
Kakamega
Busia
WESTERN

4.4 EFFECT OF RURAL-URBAN MIGRATION ON THE URBANIZATION PROCESS AND PATTERNS

Although Nairobi persistently dominates in terms of the share of total urban population, provinces which record significant growth rates (r_u) above the national value of 5.2 percent include Central, Rift Valley, Nyanza and Western. This most likely reflects rapid increase in urban centres between 1979 and 1989. On account of regional urbanization level Rift Valley Province ranks second most urbanized in the country after Nairobi. Coast Province then ranks third with Mombasa alone accounting for over 80 percent of the province's urban population. Nakuru and Eldoret towns accounted for over half the Rift Valley's urban population. The location of Nakuru and Eldoret on major feeder roads in the country and Mombasa's unique location as the only major East African Port serving the richer hinterland most likely explain the above observation. Western and North Eastern Provinces turn out as the least urbanized.

Within provinces most urbanized districts are Kiambu in Central with 40 and 38 percent respectively of the provincial urban population in the consecutive censuses of 1979 and 1989, Mombasa in Coast with 84 and 78 percent in 1979 and 1989 respectively, Machakos in Eastern with 44 percent (1979) and 42 percent (1989), Kisumu in Nyanza with 80 percent (1979) and 61 percent (1989), Mandera in North Eastern with 39 percent (1979 and 1989), Nakuru in Rift Valley with 39 percent (1979) and 37 percent (1989) and Kakamega in Western with 34 percent (1979) and 51 percent (1989). This confirms that districts which dominated in terms of the share of total urban population in 1979 persistently continued the same trend in 1989. However, Lamu and Samburu record negative urban growth. Kenya's levels of urbanization confirms a steady growth - 15 percent (1979) and 16 percent (1989).

The more interesting question is how much additional urbanization a unit increment in urbanward migration would be expected to produce; the equations suggest, albeit in a very preliminary and tentative way, that the answer lies in the order of urban rate of net in-migration divided by rate of urbanization. Appendix IV provides regional values of this index (NMRR). As shown by this index, the proportionate rural-urban migration contribution to urbanization is overwhelmingly over unity in practically all districts where the process seems rapid enough. This suggests that the urban natural increase falls short of the national population growth rate.

However, in absence of urbanward migration the foregoing case would make the urban proportion typically steady or show a slight tendency for slow decline (the effects of urban mortality). This latter situation is however offset by the apparently heavy urbanward flows as depicted by the higher than unity NMRR values (appendix IV). This observation corroborates the widespread supposition that the causes of rapid urban growth in developing countries are inextricably interwoven with the causes of rapid natural increase (UN, 1980). For instance, in Muranga and Turkana rural-urban flows contribute 75 percent and 99 percent respectively to the urbanization process compared with only 25 percent and 1 percent attributed to their respective natural increases. Among provinces, Nairobi enjoys relatively the highest contribution of urbanward influx to its urbanization whereas within provinces Kericho's urbanization appear heavily attributed to rural-urban migration. It is thus confirmed by the results in appendix IV that though

Kenya is still overwhelmingly rural because of its relatively low proportion of the urbanised population, rural-urban migration contributes immensely to the urbanization process.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY OF MAJOR FINDINGS

The main objective of this study was to estimate intercensal rural-urban migration in Kenya for the period 1979-89. Data used in the estimation was therefore obtained from the 1979 and 1989 censuses. Analysis was then undertaken using an indirect estimation technique, the Life Table Survival Ratio model.

The findings of the study presented in chapter four revealed that Urbanward migration was dominated by the age bracket 20-29 years. This most likely implies that urbanward stream flows mainly constitute school drop-outs, school-leavers, the unemployed, those seeking for education and training who apparently appear guided by the notion that such centres offer solutions to their social and economic demands. On account of urban out-migration it was established that for almost nearly all provinces and districts alike age 30 marked the threshold for urban out-migration. In fact from age 30 the percentage of migrants in rural to urban stream flows dropped suggesting that population mobility toward the urban place of destination occurred steadily up to the 40s. This was then surmised to depict the extent of interurban mobilities which appeared to be on the increase as the number of urban centres rose. The results further implied that rural to urban stream flows transformed, with time, into migration moves between former destinations (host centres) and other urban centres by high economic potential of the latter. This mirrored in the extensive urban out-migration concentrated in the middle adult working years (39-49).

Given the rural orientation of majority of Kenyans, urban-rural movement in the context of return migration and rural labour drifts prominently featured through substantially heavy net losses of middle and old adults within age brackets 40-69. The early and late retirement age groups 50-59 and 60-69 then notably turned out as peak out-migration ages. This corroborates the findings of almost all of other surveys carried out in Kenya which provide evidence showing that urban migrants at the end of their sojourns do eventually return to their rural origins.

Kwale, Nandi, Kakamega, Nyeri, South Nyanza and Siaya districts were notably urban net in-migration areas at all ages thus suggesting that major forces attracting people into their urban fringes were nearly similar. On the other hand Busia, Lamu and Samburu presented a purely urban net out-migration situation persistent at all ages. Bungoma, Nyandarua, Laikipia and Narok districts then experienced urban out-migration among children and women aged 10-19 and 30-39 respectively. This most likely indicated migration flows with the possibility of the latter being the formers' mothers. On the whole, urban centres in North Eastern Province Districts presented a pattern rather unique to those of others in the country and one in which urban gains occurred at much younger (10-19) and much older (70+) ages.

5.2 CONCLUSION

This study has demonstrated the utility of indirect estimation of internal, rural-urban migration. Results of the Life Table Survival Ratio technique used in this study concur with previous research work reported elsewhere as indicated in the literature section of this work. They corroborate earlier findings based either on direct or indirect measurement of internal migration. Therefore, just as other several studies of migrant characteristics have noted, this study confirms higher propensities to migrate to be associated with age selectivity.

In-coming migrants to the urban centres were highly selective by sex and age. These variables, as confirmed by this study, remain by far the most consistent migration differentials in both districts and provinces. It was established that most migration streams were predominantly made up of males concentrated in the young adult working years. Likewise, potential returnees were found to be concentrated in old adult retirement ages.

On the whole the working hypotheses set have to a great extent been confirmed by the results of the study. For instance, as postulated in our hypotheses, the study reveals substantial net gains in population at younger ages and heavy losses at much older ages. The age brackets 20-29 and 50-69 years then dominate as the peaks of urban in-migration and out-migration respectively thereby confirming return migrants to be older than migrants to urban centres. The study also reveals considerable regional variations in net migration rates. For instance, 10-19 and 70 plus age brackets also feature prominently as other notable urban net in-migrational ages. While the latter most likely indicates perpetuity of urban residence by the retired class, the former tends to imply continuation of schooling and further training within the urban educational institutions.

Although majority of the migrants are males, in some districts females dominate urbanward stream flows as is the case in Nyeri, Siaya, South Nyanza, Kwale, Nandi and Kakamega. Furthermore, regional males' age patterns of rural-urban migration are not markedly different from females' as evidence from previous studies (Ominde 1968a, Rempel 1977) would make us believe. Recent research in Africa has shown that female migration has been increasingly steady (Makinwa-Adebusoye, 1990; Findley and Williams, 1991), a phenomenon very much noticeable by the results of this study. It can then be concluded that there is no convincing reason why in an independent country like Kenya with equal opportunity exposure to both males and females the rate and pattern of migration should not be identical.

As depicted in the figures and tables of this study, sex and age remain the most consistent and salient demographic characteristics that cannot be ignored in any study of net migration since analysis of migration across sex and age cohorts provides a better insight into male vis-a-vis female migration in Kenya. It then suffices to conclude that the LTSR method just as other modern indirect methods can successfully be used to compute migration rates in an unstable population.

5.3 RECOMMENDATIONS

The results of this study are instructive for researchers, planners and policy makers in Kenya. For instance, Kenya's national planning adopted in 1983 requires among other things district migration flows, a step further from the regional levels which this study has addressed. The results may thus be utilised in both macroeconomic, microeconomic and sectoral planning in Kenya's urban settlement system.

(a) Recommendations for Policy Makers

The seemingly endless flow of population from rural areas acts as a major constraint to investment rate and hence the capacity of a country to create new job opportunities. It is therefore recommended that in attempting to solve the problems associated rural-urban population movement and reduction of the menace, the government should intensify generation of more comprehensive integrated development strategies to deal with what the destinations and origins concede are the major catalyzing agents.

Disparities in socioeconomic development between urban destinations and rural origins are among major causes of the exacerbated rural outward drifts. Great imbalances brought about by massive spatial mobility of population and urban influx then underlines the persistence of an increasing pool of urban poor. Development and massive investment appear much more concentrated in the urban centres to the neglect of rural areas. It becomes essential on account of discouraging town-ward flows to invoke strategies which would reduce regional imbalances in development and lead to retention of population in rural areas and perhaps also attract some urban residents back to rural areas. Urban centres have their environment beset with social and economic problems given their experience of heavy population influx. These problems are caused or at least intensified by the pressure of population on the resources of the urban environment. Admittedly, policy makers while recognizing the inevitability of rural to urban migration should consequently concentrate on policies that discourage excessive exodus into the urban areas by rural migrants. One such approach would be to decentralise the economic activities and social services mostly concentrated in the urban areas to rural areas so that an equitable allocation of activities discourages excessive rural to urban flows. This has been shown to be an area of priority by the Kenya Government which has set out to achieve maximum development of the rural areas by slowing down the rate of migration from these areas through introduction of District focused strategies (ROK, 1986: 9) that encourage promotion of production and employment opportunities. However, despite this goal of intended balanced development between rural and urban areas being an explicit part of Government Policy, at least since 1970, the rate of population growth and the threatened explosion of Kenya's major cities still require a more intensified concern and possibly new directions for this policy since if the urban population continues to grow at the same rate as during the decade, say between the censuses of 1969 and 1979, then the country would precipitate higher urban transformations resulting from the seemingly massive urbanward shifts. Such a policy approach besides slowing down the high rates of urbanward migration would also benefit the potential return migrants who either plan to return after unsuccessful employment missions elsewhere or wish to be re-united with their families in old age.

Age bracket 10-29 years is the most dominant in urbanward stream flows. Initial expansion of educational facilities in this country has meant proliferation of primary schools which continually creates a large army of educated rural youths - primary school leavers - who regard migration to towns as the only way to higher education or wage employment. Wage employment has then made urbanward migration attractive irrespective of overt and covert unemployment. This tends to suggest that training offered young adults tailor them for urban-oriented jobs. Urban tendencies by this age structure may be slowed down if agricultural component was accorded greater emphasis in the offered training. This would be helpful in motivating young aspiring farmers to realize the possibility of also generating wages from agricultural output rather than just flocking urban centres for gainful employment.

Heavy urban population concentration in the two metropolitan and economically favoured districts of Nairobi and Mombasa mirror urban bias in investment allocations. It is therefore recommended that such biased allocations should be corrected by slowing down Industrialization in these major centres and it be relegated to smaller, medium-sized towns and provincial capitals to reduce industrial dominance of Nairobi and Mombasa.

North Eastern districts are found to be experiencing extensive net losses in their productive labour force ages. This poses severe socioeconomic implications to the development of the region. This study recommends that industrial potential of the region should be exploited to help stem out the seemingly enormous urban outflows directed southwards to major urban centres. Oil and natural gas are the most likely major natural resources to be found in this region. However, such economic 'take off' ventures are not viable with the region's poorly developed infrastructure. This should be considered first.

Lamu, Marsabit, Samburu and Busia districts experience heavy net losses in their urban population. This presents development difficulties in their respective regions of location. They also pose heavy burdens to their neighbouring districts with the net effect of further deepening rural and urban unemployment problems. Such accelerated urban outflows threaten to undermine the government's well intentioned programmes of social, economic and political development. In this context, efforts aimed at migration control should form an important part of the government strategy. However, migration control is not the sole solution. This must be conceived as part of an overall strategy including development of the nation's spatial population distribution and the existing natural resources more fully.

(b) Recommendations for Further Research

Although the LTSR method dealt only with in this study confirms that a cohort analysis of migration across age cohorts presents a broader insight into male and female migration differentials, major knowledge gaps to be filled in the field of migration still exist. These include the following:

(i) Important feature of indirect methods is that they cannot measure in-(origin) or out-(destination) movement separately and as such the distinctions between local mobility and interregional migration made earlier become moot. This is one of the greatest weaknesses of the LTSR method used in this study. The study therefore recommends future use of methods that encompass a broader scope of a multiregional approach to life table analysis that would generate mobility histories by region.

(ii) The LTSR method does not establish determinants that define the 'push' and 'pull' factors associated with the origin and destinations of movers. Therefore, further development of this method should incorporate analytical methods which can clarify the determinants of this complicated phenomenon.

(iii) Since the available data in Kenya on migration do not allow application of other direct and indirect models, vital registration and place of birth statistics should be improved so that methods such as the Vital Statistics and Birth-Residence Statistics can be applied.

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APPENDIX I: SURVIVORSHIP PROBABILITIES BY PROVINCE AND DISTRICT, 1979-1989

			COMBINED				
Age	Kiambu	Kirinyaga	Muranga	Nyeri	Nyahururu	CENTRAL	Kilifi
0-9	0.95440	0.95573	0.96190	0.97113	0.96767	0.96128	0.88097
10-19	0.98468	0.98471	0.98581	0.98820	0.98782	0.98590	0.96711
20-29	0.97732	0.97712	0.97865	0.98164	0.98145	0.97880	0.95351
30-39	0.97123	0.97086	0.97223	0.97549	0.97568	0.97260	0.94439
40-49	0.95342	0.95245	0.95376	0.95774	0.95914	0.95458	0.91628
50-59	0.90546	0.90268	0.90268	0.90673	0.91236	0.90503	0.84841
60+	0.64971	0.64480	0.64246	0.64424	0.65570	0.64650	0.57718
CONT'D	Kwale	Lamu	Mombasa	T/Taveta	T/River	COAST	Embu
0-9	0.87133	0.89459	0.90755	0.91887	0.88106	0.88856	0.95101
10-19	0.96307	0.96906	0.97120	0.97366	0.96634	0.96801	0.98587
20-29	0.94756	0.95572	0.95822	0.96121	0.95217	0.95438	0.97963
30-39	0.93702	0.94613	0.94852	0.95163	0.94243	0.94490	0.97496
40-49	0.90509	0.91755	0.91991	0.92348	0.91298	0.91622	0.96071
50-59	0.82892	0.84746	0.84879	0.85235	0.84174	0.84637	0.92300
60+	0.55143	0.57458	0.57499	0.57789	0.56794	0.57336	0.67802
CONT'D	Isiolo	Kitui	Machakos	Marsabit	Meru	EASTERN	Garissa
0-9	0.89435	0.91231	0.94914	0.94537	0.95774	0.94557	0.88358
10-19	0.96981	0.97731	0.98476	0.97596	0.98608	0.98345	0.96482
20-29	0.95686	0.96797	0.97786	0.96255	0.97945	0.97599	0.94956
30-39	0.94777	0.96166	0.97265	0.94988	0.97407	0.97025	0.93852
40-49	0.92040	0.94184	0.95679	0.91502	0.95810	0.95305	0.90623
50-59	0.85312	0.89214	0.91498	0.82312	0.91463	0.90778	0.82838
60+	0.58198	0.63555	0.66584	0.52943	0.66322	0.65525	0.55085
CONT'D	Mandera	Wajir	N/EASTERN	Baringo	Kajiado	Kericho	Nakuru
0-9	0.88853	0.88561	0.89197	0.90624	0.94225	0.93827	0.94602
10-19	0.96540	0.96121	0.96421	0.97194	0.97897	0.98135	0.98301
20-29	0.95011	0.94314	0.94794	0.95944	0.96852	0.97291	0.97518
30-39	0.93883	0.92941	0.93557	0.95031	0.95967	0.96666	0.96909
40-49	0.90596	0.89044	0.90013	0.92316	0.93438	0.94768	0.95089

50-59	0.82687	0.79818	0.81475	0.85557	0.86792	0.89848	0.90292
60+	0.54863	0.51265	0.53226	0.58424	0.59609	0.64264	0.64769
CONT'D	Samburu	Narok	W/Pokot	U/Gishu	Turkana	T/Nzoia	Nandi
0-9	0.94610	0.93416	0.90062	0.93877	0.83444	0.91318	0.95928
10-19	0.97364	0.97815	0.94852	0.98168	0.93932	0.97613	0.97718
20-29	0.95779	0.96792	0.93450	0.97354	0.91147	0.96600	0.97027
30-39	0.94203	0.95982	0.91732	0.96744	0.89127	0.95891	0.96119
40-49	0.89972	0.93610	0.87058	0.94897	0.83578	0.93705	0.93553
50-59	0.79018	0.87513	0.76616	0.90099	0.71457	0.88210	0.86975
60+	0.48677	0.60911	0.25976	0.64604	0.41644	0.62107	0.31890
CONT'D	Laikipia	R/VALLEY	Kisii	Kisumu	Siaya	S/Nyanza	NYANZA
0-9	0.96798	0.92147	0.90614	0.82681	0.82011	0.82164	0.84828
10-19	0.98524	0.97632	0.97129	0.95512	0.95388	0.95602	0.95963
20-29	0.97788	0.96562	0.95840	0.93789	0.93637	0.93961	0.94354
30-39	0.97177	0.95766	0.94884	0.92748	0.92592	0.93006	0.93342
40-49	0.95365	0.93378	0.92077	0.89448	0.89262	0.89886	0.90190
50-59	0.90437	0.87323	0.85127	0.81803	0.81592	0.82682	0.82791
60+	0.64662	0.60734	0.57954	0.53929	0.53675	0.55054	0.55208
CONT'D	Bungoma	Kakamega	Busia	WESTERN	NATIONAL		
0-9	0.88667	0.87182	0.85245	0.89863	0.97441		
10-19	0.97396	0.96896	0.96234	0.94087	0.96470		
20-29	0.96400	0.95706	0.94763	0.95738	0.95797		
30-39	0.95800	0.94971	0.93853	0.95014	0.94287		
40-49	0.93799	0.92584	0.90945	0.92635	0.90291		
50-59	0.88908	0.86804	0.84068	0.86916	0.80567		
60+	0.63214	0.60361	0.56737	0.60492	0.43651		
			MALES				
Age	Kiambu	Kirinyaga	Muranga	Nyeri	Nyahururu	CENTRAL	Kilifi
0-9	0.95218	0.95359	0.96026	0.97001	0.96670	0.95961	0.87489
10-19	0.98349	0.98374	0.98508	0.98792	0.98791	0.98517	0.96406
20-29	0.97545	0.97551	0.97752	0.98131	0.98169	0.97761	0.94891
30-39	0.96866	0.96880	0.97078	0.97513	0.97625	0.97108	0.93869
40-49	0.94907	0.94898	0.95126	0.95734	0.96046	0.95198	0.90741
50-59	0.89646	0.89558	0.89765	0.90650	0.91616	0.89976	0.83258
60+	0.63592	0.63408	0.63497	0.64469	0.66247	0.63854	0.55592
CONT'D	Kwale	Lamu	Mombasa	T/Taveta	T/River	COAST	Embu
0-9	0.86673	0.89172	0.90299	0.91655	0.87792	0.88388	0.94933

10-19	0.96265	0.96994	0.96913	0.97390	0.96739	0.96683	0.98589
20-29	0.94713	0.95747	0.95520	0.96187	0.95421	0.95286	0.97976
30-39	0.93691	0.94879	0.94461	0.95280	0.94535	0.94315	0.97526
40-49	0.90538	0.92234	0.91386	0.92598	0.91822	0.91398	0.96149
50-59	0.83048	0.85764	0.83788	0.85820	0.85249	0.84301	0.92527
60+	0.55379	0.58848	0.56028	0.58656	0.58225	0.56919	0.68187
CONT'D	Isiolo	Kitui	Machakos	Marsabit	Meru	EASTERN	Garissa
0-9	0.89077	0.90858	0.94704	0.94345	0.95602	0.94323	0.88155
10-19	0.96978	0.97599	0.98384	0.97539	0.98599	0.98281	0.96747
20-29	0.95697	0.96611	0.97646	0.961182	0.97944	0.97507	0.95412
30-39	0.94829	0.95937	0.97081	0.94910	0.97425	0.96914	0.94497
40-49	0.92173	0.93842	0.95382	0.91421	0.95868	0.95141	0.91731
50-59	0.85651	0.88587	0.90897	0.82249	0.91676	0.90490	0.84989
60+	0.58691	0.62666	0.65690	0.52943	0.66714	0.65117	0.57854
CONT'D	Mandera	Wajir	N/EASTERN	Baringo	Kajiado	Kericho	Nakuru
0-9	0.88698	0.88456	0.88319	0.90329	0.93944	0.93500	0.94343
10-19	0.96830	0.96493	0.96579	0.97172	0.97708	0.97939	0.98173
20-29	0.95506	0.94959	0.95129	0.95935	0.96555	0.96987	0.97323
30-39	0.94588	0.93867	0.94107	0.95037	0.95554	0.96265	0.96650
40-49	0.91801	0.90621	0.91045	0.92375	0.92744	0.94096	0.94668
50-59	0.85028	0.82791	0.83649	0.85760	0.85363	0.88491	0.89445
60+	0.57878	0.54902	0.56055	0.58747	0.57545	0.62238	0.63496
CONT'D	Samburu	Narok	W/Pokot	U/Gishu	Turkana	T/Nzoia	Nandi
0-9	0.94271	0.93062	0.89742	0.93634	0.88573	0.90932	0.95680
10-19	0.97038	0.97548	0.94816	0.98080	0.92834	0.97517	0.97494
20-29	0.95186	0.96369	0.93444	0.97222	0.90614	0.96460	0.96713
30-39	0.93316	0.95404	0.91774	0.96581	0.87875	0.95733	0.95687
40-49	0.88339	0.92628	0.87192	0.94639	0.80912	0.93480	0.92802
50-59	0.75688	0.85521	0.77004	0.89621	0.66546	0.87841	0.85444
60+	0.44296	0.57996	0.26168	0.63913	0.20775	0.61611	0.30976
CONT'D	Laikipia	R/VALLEY	Kisii	Kisumu	Siaya	S/Nyanza	NYANZA
0-9	0.95601	0.91804	0.90047	0.81768	0.81063	0.81183	0.84002
10-19	0.98460	0.97491	0.96768	0.95103	0.94930	0.95099	0.95504
20-29	0.97693	0.96355	0.95282	0.93200	0.92978	0.93241	0.93683
30-39	0.97060	0.95501	0.94148	0.92043	0.91799	0.92129	0.92519
40-49	0.95184	0.92965	0.90877	0.88420	0.88108	0.88601	0.88943
50-59	0.90098	0.86552	0.82849	0.80105	0.79664	0.80511	0.80635
60+	0.64187	0.59672	0.54799	0.51768	0.51240	0.52258	0.52415

CONT'D	Bungoma	Kakamega	Busia	WESTERN	NATIONAL		
0-9	0.88189	0.86580	0.84791	0.92014	0.97194		
10-19	0.97276	0.96708	0.96299	0.91162	0.96052		
20-29	0.96237	0.95444	0.94900	0.95518	0.95276		
30-39	0.95610	0.94660	0.94057	0.94755	0.93497		
40-49	0.93531	0.92133	0.91315	0.92262	0.88981		
50-59	0.88460	0.86041	0.84820	0.86299	0.77941		
60+	0.62586	0.59327	0.57713	0.59653	0.41558		
			FEMALES				
Age	Kiambu	Kirinyaga	Muranga	Nyeri	Nyahururu	CENTRAL	Kilifi
0-9	0.95657	0.95782	0.96351	0.97223	0.96862	0.96291	0.88690
10-19	0.98584	0.98566	0.98653	0.98848	0.98774	0.98662	0.97005
20-29	0.97914	0.97869	0.97976	0.98119	0.98121	0.97995	0.95792
30-39	0.97371	0.97286	0.97365	0.97584	0.97512	0.97407	0.94980
40-49	0.95759	0.95580	0.95616	0.95813	0.95785	0.95709	0.92459
50-59	0.91405	0.90948	0.90752	0.90696	0.90863	0.91010	0.86295
60+	0.66260	0.65490	0.64959	0.64381	0.64900	0.65409	0.59604
CONT'D	Kwale	Lamu	Mombasa	T/Taveta	T/River	COAST	Embu
0-9	0.87583	0.89739	0.91200	0.92110	0.88412	0.89312	0.96266
10-19	0.96346	0.96821	0.97319	0.97343	0.96532	0.96914	0.98586
20-29	0.94797	0.95403	0.96114	0.96058	0.95019	0.95585	0.97949
30-39	0.93712	0.94354	0.95226	0.95049	0.93958	0.94658	0.97466
40-49	0.90481	0.91286	0.92566	0.92104	0.90783	0.91836	0.95995
50-59	0.82742	0.83738	0.85902	0.84660	0.83107	0.84957	0.92078
60+	0.54913	0.56046	0.58843	0.56927	0.55337	0.57730	0.67425
CONT'D	Isiolo	Kitui	Machakos	Marsabit	Meru	EASTERN	Garissa
0-9	0.89785	0.91595	0.95120	0.94725	0.95942	0.94785	0.88556
10-19	0.96985	0.97859	0.98566	0.97651	0.98617	0.98407	0.96224
20-29	0.95676	0.96977	0.97922	0.96325	0.97945	0.97688	0.94509
30-39	0.94726	0.96386	0.97443	0.95063	0.97390	0.97132	0.93217
40-49	0.91911	0.94512	0.95966	0.91581	0.95754	0.95463	0.89515
50-59	0.84983	0.89812	0.92076	0.82374	0.91255	0.91054	0.80635
60+	0.57715	0.64390	0.67431	0.52942	0.65939	0.65916	0.52097
CONT'D	Mandera	Wajir	N/EASTERN	Baringo	Kajiado	Kericho	Nakuru
0-9	0.89005	0.88664	0.90053	0.90912	0.94500	0.94146	0.94856
10-19	0.96258	0.95758	0.96269	0.97216	0.98081	0.98325	0.98425
20-29	0.94527	0.93680	0.94472	0.95952	0.97139	0.97584	0.97708

30-39	0.93187	0.92021	0.93027	0.95026	0.96364	0.97061	0.97159
40-49	0.89387	0.87445	0.89004	0.92258	0.94101	0.95410	0.95495
50-59	0.80274	0.76692	0.79300	0.85360	0.88136	0.91123	0.91098
60 +	0.51571	0.47136	0.50240	0.58109	0.61489	0.66113	0.65960
CONT'D	Samburu	Narok	W/Pokot	U/Gishu	Turkana	T/Nzoia	Nandi
0-9	0.94942	0.93762	0.90354	0.94115	0.89325	0.91695	0.96169
10-19	0.97681	0.98074	0.94885	0.98254	0.93159	0.97705	0.97935
20-29	0.96350	0.97200	0.93466	0.97481	0.90961	0.96735	0.97330
30-39	0.95049	0.96536	0.91692	0.96902	0.88196	0.96043	0.96632
40-49	0.91499	0.94539	0.86929	0.95145	0.81228	0.93921	0.94267
50-59	0.82024	0.89359	0.76243	0.90557	0.66718	0.88563	0.88405
60 +	0.52327	0.63496	0.25790	0.65261	0.20866	0.62578	0.32726
CONT'D	Laikipia	R/VALLEY	Kisii	Kisumu	Siaya	S/Nyanza	NYANZA
0-9	0.95992	0.92483	0.91168	0.83569	0.82934	0.83118	0.85632
10-19	0.98587	0.97768	0.97476	0.95902	0.95824	0.96081	0.96383
20 29	0.97882	0.96762	0.96374	0 94345	0.94257	0.94638	0.94990
30-39	0.97291	0.96021	0.95581	0.93405	0.93329	0.93818	0.94111
40-49	0.95540	0.93775	0.93196	0.90392	0.90316	0.91056	0.91336
50-59	0.90764	0.88056	0.87199	0.83329	0.83312	0.84604	0.84719
60 +	0.65116	0.61724	0.60679	0.55797	0.55752	0.57411	0.57585
CONT'D	Bungoma	Kakamega	Busia	WESTERN	NATIONAL		
0-9	0.89134	0.87770	0.85688	0.87764	0.97681		
10-19	0.97512	0.97077	0.96171	0.97077	0.96873		
20-29	0.96557	0.95957	0.94631	0.95950	0.96294		
30-39	0.95982	0.95267	0.93655	0.95261	0.95034		
40-49	0.94055	0.93012	0.90585	0.92990	0.91509		
50-59	0.89333	0.87519	0.83331	0.87499	0.82941		
60 +	0.63805	0.61315	0.55763	0.61273	0.45497		

Source: LTSR Method Computations

APPENDIX II: TOTAL NET GAIN IN MIGRATION BY DISTRICT 1989

ORIGIN	<---------- RANKED DESTINATION ---------->				
	(1)	(2)	(3)	(4)	(5)
NAIROBI	Machakos (17731)	Kiambu (16815)	Kakamega (13760)	Nakuru (13355)	Siaya (10766)
KIAMBU	Nairobi (71615)	Nakuru (63343)	Nyandarua (23457)	Kajiado (17560)	Narok (12242)
KIRINYAGA	Nairobi (13021)	Embu (5343)	Nyeri (3353)	Nakuru (3052)	Mombasa (2927)
MURANGA	Nairobi (95797)	Kiambu (31229)	Nakuru (28237)	Nyandarua (15955)	Nyeri (6756)
NYANDARUA	Nakuru (19842)	Laikipia (10288)	Nairobi (9300)	Kiambu (4632)	Nyeri (3106)
NYERI	Nairobi (56734)	Laikipia (41378)	Nyandarua (27578)	Nakuru (22895)	Kiambu (9094)
KILIFI	Mombasa (39121)	Kwale (5410)	Nairobi (2790)	TanaRiver (1858)	Lamu (1549)
KWALE	Mombasa (25016)	Kilifi (5101)	T/Taveta (3870)	Nairobi (1860)	Muranga (1053)
LAMU	Mombasa (4790)	Kilifi (3162)	Nairobi (930)	TanaRiver (885)	Kwale (541)
MOMBASA	Nairobi (14881)	Kilifi (7463)	Kitui (6324)	T/Taveta (3724)	Kwale (3412)
TAITA TAVETA	Mombasa (22355)	Nairobi (7440)	Kilifi (2740)	Kwale (2455)	Machakos (1190)
TANA RIVER	Mombasa (2395)	Kilifi (1602)	Lamu (1513)	Nairobi (930)	Garissa (681)
EMBU	Nairobi (11160)	Kirinyaga (4529)	Meru (3266)	Kiambu (2745)	Machakos (2381)
ISIOLO	Nairobi (2790)	Meru (1214)	Nakuru (1144)	Laikipia (1130)	Kitui (803)
KITUI	Nairobi (38133)	Mombasa (25548)	Machakos (9725)	Kiambu (5833)	Meru (3699)
MACHAKOS	Nairobi (108818)	Mombasa (19427)	Kiambu (14928)	Kitui (12195)	Kwale (11527)
MARSABIT	Nairobi (3720)	Samburu (1854)	Isiolo (1757)	Meru (1069)	Laikipia (565)
MERU	Nairobi (17671)	Laikipia (7913)	Nyeri (4931)	Isiolo (4466)	Embu (4351)
GARISSA	TanaRiver (2814)	Isiolo (1364)	Nairobi (930)	Mombasa (532)	Kitui (419)
MANDERA	Nairobi (2790)	Wajir (2563)	Marsabit (1352)	Garissa (1002)	Isiolo (682)
WAJIR	Marsabit (4618)	Garissa (3809)	Isiolo (2626)	Nairobi (1860)	Mandera (1598)
KISII	Kericho (33021)	Nairobi (26972)	Nakuru (20605)	Narok (16256)	SouthNyanza (10942)
KISUMU	Nairobi (43713)	S/Nyanza (28321)	Siaya (16150)	Nakuru (12592)	Mombasa (12508)
SIAYA	Nairobi (82776)	Kisumu (45499)	Nakuru (21368)	Mombasa (18895)	South Nyanza (11402)
SOUTHNYANZA	Nairobi (40923)	Kisumu (33860)(	Kericho 26416)	Mombasa (10911)	Nakuru (8394)
KAJIADO	Nairobi (4650)	Nakuru (1907)	Kiambu (1544)	Narok (1505)	Machakos (1124)
KERICHO	Nakuru (43119)	Narok (31509)	Nandi (10730)	Nairobi (8370)	UasinGishu (3958)
LAIKIPIA	Nyandarua (4966)	Nakuru (4579)	Nyeri (4438)	Nairobi (2790)	Meru (1242)
NAKURU	Nairobi (16741)	Nyandarua (12362)	Kiambu (10638)	Narok (8830)	Laikipia (6783)
NANDI	U/Gishu (38451)	T/Nzoia (11675)	Nakuru (4960)	Nairobi (3720)	Kakamega (3689)
NAROK	Nakuru (4960)	Kericho (2004)	Nairobi (1860)	U/Gishu (1130)	Kajiado (1024)
BARINGO	Nakuru (20987)	U/Gishu (3769)	Laikipia (2826)	Nairobi (2790)	ElgeyoMarakwet (2492)
E/MARAKWET	U/Gishu (20733)	T/Nzoia (4640)	Nakuru (1907)	Nairobi (1860)	Baringo (1471)

SAMBURU	Laikipia (5765)	Isiolo (3536)	Nakuru (1907)	Nairobi (1860)	Marsabit (1395)
TRANSNZOIA	Bungoma (10363)	U/Gishu (8104)	Kakamega (4387)	Nakuru (4197)	WestPokot (3813)
TURKANA	T/Nzoia (10628)	U/Gishu (5843)	WestPokot (5075)	Nakuru (4579)	Laikipia (2034)
UASINGISHU	Nakuru (8776)	T/Nzoia (7484)	Nandi (5365)	Kakamega (5085)	ElgeyoMarakwet (4510)
WESTPOKOT	T/Nzoia (3742)	Marakwet (659)	Bungoma (486)	Turkana (388)	Kakamega (299)
BUNGOMA	T/Nzoia (45655)	Nairobi (40923)	Kakamega (14458)	U/Gishu (9612)	Busia (8207)
BUSIA	Nairobi (25111)	Kakamega (9074)	Mombasa (9048)	Bungoma (7233)	Nakuru (6868)
KAKAMEGA	Nairobi (108818)	Nandi (36258)	U/Gishu (34116)	Nakuru (32816)	Bungoma (24134)

SOURCE: Calculated from 1989 Census Data on Lifetime migrants.

APPENDIX III: NET RURAL-URBAN MIGRATION RATES BY PROVINCE AND DISTRICT, 1979-1989

COMBINED							
Age	Kiambu	Kirinyaga	Muranga	Nyeri	Nyahururu	CENTRAL	KBR
10-19	0.130053	0.445442	0.117158	1.133196	-0.102619	0.084620	0.634632
20-29	1.504558	1.983836	0.418749	1.782151	0.829843	0.346470	1.164091
30-39	0.207187	0.061616	-0.152155	0.198480	-0.304262	-0.286577	0.053906
40-49	-0.145213	-0.060713	-0.166987	0.431550	-0.358705	-0.228668	0.038380
50-59	-0.264110	-0.066393	-0.265243	0.549229	-0.410370	-0.249612	-0.018132
60-69	-0.350338	-0.008353	-0.207485	0.844342	-0.486254	-0.280033	0.048477
70+	-0.043380	0.272948	0.090268	2.102642	-0.023359	0.811688	0.098651
CONT'D	Kwale	Lamu	Mombasa	T/Taveta	T/River	COAST	Embu
10-19	0.873388	-0.219752	0.087605	0.402942	0.542017	1.049552	0.145679
20-29	0.741221	-0.033573	0.843690	0.879681	0.748348	1.508350	1.441634
30-39	0.009698	-0.464026	-0.148517	0.175939	-0.006343	0.172736	0.156272
40-49	0.352263	-0.443575	-0.183960	0.019039	-0.014195	0.118691	-0.151044
50-59	0.247155	-0.459402	-0.305900	0.068743	-0.106817	-0.087573	-0.432390
60-69	0.379669	-0.112731	-0.411546	0.055335	-0.034754	-0.115610	-0.522292
70+	0.497728	0.063067	-0.266098	0.645764	0.688440	-0.165883	-0.268140
CONT'D	Isiolo	Kitui	Machakos	Marsabit	Meru	EASTERN	Garissa
10-19	0.169881	0.557797	0.222228	-0.019988	0.175282	0.183560	0.746930
20-29	0.732493	2.076345	0.293281	0.027081	0.297237	0.395261	0.624548
30-39	-0.020174	0.177119	-0.163346	-0.132552	-0.201506	-0.128441	-0.086100
40-49	-0.194141	0.118999	-0.238855	0.048119	-0.265651	-0.205917	-0.089425
50-59	-0.250091	0.037496	-0.348115	-0.196367	-0.334214	-0.320716	-0.132152
60-69	-0.345389	-0.080196	-0.208286	-0.087358	-0.206610	-0.224216	-0.097761
70+	-0.125038	0.092142	-0.075780	0.174443	0.021514	-0.053958	0.569888
CONT'D	Mandera	Wajir	N/EASTERN	Baringo	Kajiado	Kericho	Nakuru
10-19	0.385725	0.352457	0.476965	0.303611	0.531912	0.122021	0.326258
20-29	0.050323	-0.012735	0.212708	0.853875	1.523714	0.601211	1.309318
30-39	-0.266195	-0.040660	-0.140476	-0.019744	0.142950	0.020792	-0.007969
40-49	-0.265082	-0.034205	-0.144063	-0.118959	0.128518	-0.056131	-0.085950
50-59	-0.219409	0.129591	-0.099219	-0.178718	0.007600	-0.291243	-0.181292
60-69	-0.250472	-0.016703	-0.136479	-0.165952	0.025660	-0.433482	-0.214079
70+	0.821677	0.761460	0.753441	0.343675	1.132613	-0.160878	0.301901
CONT'D	Samburu	Narok	W/Pokot	U/Gishu	Turkana	T/Nzoia	Nandi
10-19	-0.415875	-0.488855	0.489601	0.673062	0.221183	0.503969	1.767140
20-29	-0.266183	0.246421	1.271829	2.056658	0.645023	1.265827	2.976266
30-39	-0.436399	-0.282221	0.181744	0.119762	-0.013905	0.190763	0.760931
40-49	-0.485647	-0.514683	-0.087936	0.036372	-0.311836	0.004539	0.671306
50-59	-0.634759	-0.660976	-0.278628	-0.195412	-0.591101	-0.114696	0.722513
60-69	-0.672834	-0.784873	-0.155223	-0.164295	-0.754874	-0.078036	1.292373
70+	-0.717201	-1.124558	2.601567	0.408989	-0.788155	0.308441	12.885967
CONT'D	Laikipia	R/VALLEY	Kisii	Kisumu	Siaya	S/Nyanza	NYANZA
10-19	-0.186976	0.297831	0.250978	0.199174	2.747608	2.329894	0.399270
20-29	0.854481	1.172319	0.254184	0.390170	2.310169	2.410851	0.560313
30-39	-0.255695	0.015396	-0.163672	-0.121790	1.274091	1.031295	-0.004222
40-49	-0.331761	-0.092969	-0.179089	-0.171020	1.291563	0.862712	-0.062833
50-59	-0.397273	-0.245933	-0.286713	-0.353453	2.058303	0.823155	-0.233241
60-69	-0.498746	-0.296356	-0.157385	-0.492719	2.442973	1.047379	-0.332702
70+	-0.349264	0.079099	0.006523	-0.502867	7.458515	3.499000	-0.126633
CONT'D	Bungoma	Kakamega	Busia	WESTERN	NATIONAL		
10-19	0.000378	0.829443	-0.344164	0.156304	0.270471		
20-29	0.157943	0.588328	-0.298261	0.238843	1.067659		
30-39	-0.188638	0.285622	-0.462368	0.093465	-0.049037		
40-49	-0.241947	0.286293	-0.553883	-0.145254	-0.095348		
50-59	-0.343456	0.117396	-0.659073	0.269580	-0.214825		
60-69	-0.454835	0.127527	-0.719053	-0.315353	0.243682		
70+	-0.262389	0.508378	-0.981754	-0.078747	0.620166		

MALES

Age	Kiambu	Kirinyaga	Muranga	Nyeri	Nyahururu	CENTRAL	Kilifi
10-19	0.023951	0.341370	0.104195	1.068779	-0.199082	0.186532	0.668889
20-29	1.872970	2.491958	0.447872	1.888954	1.084446	-0.024957	1.360821
30-39	-0.155412	0.128282	-0.061710	0.146364	-0.278274	0.372063	0.099262
40-49	-0.152003	0.034154	-0.131000	0.286495	-0.379768	-0.358110	0.022399
50-59	-0.293547	0.010374	-0.317667	0.276900	-0.415583	-0.408556	-0.069780
60-69	-0.450748	-0.084291	-0.290730	0.359096	-0.584043	-0.542126	0.008760
70+	-0.317753	0.173975	-0.036525	1.508958	-0.231349	0.497674	0.060157

CONT'D	Kwale	Lamu	Mombasa	T/Taveta	T/River	COAST	Embu
10-19	0.949111	0.198480	0.073817	0.389952	0.519162	1.929479	0.034882
20-29	0.693143	-0.010373	1.124327	0.854529	0.823947	2.412640	1.486358
30-39	-0.051039	-0.423684	-0.071416	0.318922	0.032350	0.467303	0.279197
40-49	0.119668	-0.466691	-0.149210	0.043057	-0.000983	0.305999	-0.038269
50-59	0.028158	-0.579086	-0.310063	0.052800	-0.226043	-0.007593	-0.422812
60-69	0.099518	-0.262200	-0.490258	0.314748	0.046391	-0.058096	-0.591784
70+	0.623684	-0.228189	-0.319221	0.993744	0.728024	-0.229548	-0.428804

CONT'D	Isiolo	Kitui	Machakos	Marsabit	Meru	EASTERN	Garissa
10-19	0.206534	0.522231	0.216157	-0.030309	0.157730	0.167387	0.840695
20-29	0.837820	2.207035	0.286734	-0.097378	0.240705	0.377394	0.790853
30-39	0.075656	0.342077	-0.128530	-0.164052	-0.170168	-0.082643	-0.107721
40-49	-0.071702	0.136214	-0.196702	-0.097651	-0.246197	-0.172101	-0.115602
50-59	-0.247909	0.071008	-0.407882	0.286018	-0.405334	-0.375013	-0.223704
60-69	-0.385491	-0.209074	-0.349918	0.161926	-0.308164	-0.337147	-0.321542
70+	-0.301030	-0.255275	-0.066036	-0.054062	-0.100529	-0.126698	0.314023

CONT'D	Mandera	Wajir	N/EASTERN	Baringo	Kajiado	Kericho	Nakuru
10-19	0.456474	0.356893	0.547758	0.264343	0.400084	0.093104	0.245512
20-29	0.035066	0.010020	0.268371	1.020455	1.681849	0.773405	1.645175
30-39	-0.364713	-0.132226	-0.210116	0.125843	0.262403	0.110249	0.059349
40-49	-0.299849	-0.061369	-0.170455	-0.148047	0.169163	0.063042	-0.090613
50-59	-0.410635	-0.057690	-0.253914	-0.197142	-0.106030	-0.216815	-0.229225
60-69	-0.493411	-0.292927	-0.383292	-0.381833	-0.081877	-0.458811	-0.376457
70+	0.050010	0.171456	0.184832	0.141185	0.734841	-0.266114	0.160603

CONT'D	Samburu	Narok	W/Pokot	U/Gishu	Turkana	T/Nzoia	Nandi
10-19	-0.424932	-0.550309	0.354828	0.533621	0.134238	0.416719	1.619668
20-29	-0.241922	0.305741	1.548761	2.806380	0.565621	1.761613	3.775243
30-39	-0.315530	-0.085910	0.420641	0.209499	0.301813	0.320611	1.008241
40-49	-0.443371	-0.388861	-0.029952	0.050569	-0.190628	0.004756	0.661980
50-59	-0.569556	-0.603460	-0.314253	-0.236726	-0.624048	-0.157950	0.304437
60-69	-0.689084	-0.743498	-0.303540	-0.292992	-0.838401	-0.204236	0.369598
70+	-0.719545	-1.164766	2.143682	0.130077	-1.561399	0.091490	8.805888

CONT'D	Laikipia	R/VALLEY	Kisii	Kisumu	Siaya	S/Nyanza	NYANZA
10-19	-0.224017	0.219866	0.237142	0.121854	2.620306	2.150033	0.320219
20-29	1.128367	1.482462	0.296237	0.553047	2.620433	2.778937	0.696926
30-39	-0.159088	0.120992	-0.080299	0.036534	1.856481	1.311419	0.154947
40-49	-0.295596	-0.059067	-0.114686	-0.060993	1.137239	0.957239	0.041561
50-59	-0.401156	-0.255857	-0.354194	-0.280301	1.278320	0.600973	-0.192521
60-69	-0.565409	-0.397814	-0.332087	-0.527317	1.833994	0.678134	-0.397302
70+	-0.450379	-0.066243	-0.030698	-0.903660	6.980912	3.410433	-0.212747

CONT'D	Bungoma	Kakamega	Busia	WESTERN	NATIONAL		
10-19	-0.053371	0.754490	-0.443387	0.053440	0.318052		
20-29	0.233846	0.598182	-0.294040	0.335701	1.340433		
30-39	-0.141292	0.354962	-0.355694	-0.021166	0.043019		
40-49	-0.191605	0.299200	-0.525692	-0.109636	-0.048750		
50-59	-0.370176	0.038779	-0.648369	-0.301408	-0.219988		
60-69	-0.453631	-0.010114	-0.734600	-0.366610	-0.323098		
70+	-0.349831	0.280864	-1.026029	-0.211422	0.450713		

FEMALES

Age	Kiambu	Kirinyaga	Muranga	Nyeri	Nyahururu	CENTRAL	Kilifi
10-19	0.235104	0.544362	0.130027	1.196784	-0.010119	0.533894	0.600845
20-29	1.196027	1.589078	0.391437	1.683453	0.640644	1.217291	0.968923
30-39	-0.287601	-0.021963	-0.243385	0.269107	-0.342017	-0.105968	-0.001318
40-49	-0.127919	-0.103000	-0.210716	0.657363	-0.319000	0.114314	0.063022
50-59	-0.198617	-0.156010	-0.191832	1.050898	-0.398231	0.199419	0.035848
60-69	-0.152742	0.115696	-0.101423	1.582913	-0.303763	0.479277	0.100475
70+	0.332741	0.390174	0.184909	2.635249	0.310653	1.155921	0.148637

CONT'D	Kwale	Lamu	Mombasa	T/Taveta	T/River	COAST	Embu
10-19	0.804068	-0.240269	0.101370	0.415539	0.564500	0.183720	0.262668
20-29	0.788667	-0.067912	0.565008	0.905048	0.671094	0.601783	1.398858
30-39	0.076417	-0.510241	0.252400	0.008223	-0.055249	-0.221446	0.011117
40-49	0.708928	0.411631	0.240762	0.019740	-0.033861	-0.191580	-0.307504
50-59	0.632745	-0.276906	-0.294309	0.101363	0.125049	-0.232662	-0.447686
60-69	0.837960	0.114610	-0.282453	0.440092	-0.136284	-0.193455	-0.437469
70+	0.309160	0.485928	-0.198398	0.324101	0.577984	-0.087373	-0.091446

CONT'D	Isiolo	Kitui	Machakos	Marsabit	Meru	EASTERN	Garissa
10-19	0.134654	0.691844	0.228310	-0.008909	0.192908	0.199763	0.661846
20-29	0.629437	1.901941	0.299830	0.044700	0.353979	0.413109	0.456306
30-39	-0.127053	-0.047268	-0.200899	-0.100748	0.236931	-0.178637	-0.062866
40-49	-0.336693	0.088878	-0.286119	0.001195	-0.267712	-0.244642	-0.063737
50-59	-0.253402	-0.028159	0.267368	-0.081166	-0.236222	-0.245644	0.010361
60-69	-0.297183	0.092933	-0.037238	-0.011191	-0.086133	-0.090387	0.282696
70+	0.065655	0.114698	-0.084633	0.380079	0.142066	0.014863	0.875266

CONT'D	Mandera	Wajir	N/EASTERN	Baringo	Kajiado	Kericho	Nakuru
10-19	0.308198	0.347916	0.405122	0.341046	0.668489	0.160127	0.402960
20-29	0.065657	-0.036732	0.156554	0.702612	1.367360	0.438471	1.012617
30-39	-0.110521	0.064923	-0.046966	-0.204786	0.007643	-0.100979	-0.101692
40-49	-0.227721	0.006888	-0.114002	-0.067293	0.066135	-0.263227	-0.074123
50-59	0.034728	0.384922	0.117805	-0.145362	0.322260	-0.436182	-0.046029
60-69	0.143572	0.404878	0.257447	0.218175	0.186526	-0.393280	0.189160
70+	1.887915	1.551407	1.465979	0.603881	1.692636	-0.054404	0.492616

CONT'D	Samburu	Narok	W.Pokot	U/Gishu	Turkana	T/Nzoia	Nandi
10-19	-0.406409	-0.426594	0.628867	0.805967	0.135797	0.588454	1.901912
20-29	-0.270489	0.186642	1.025741	1.421792	0.772476	0.836294	2.463607
30-39	-0.540672	-0.491508	-0.102937	-0.026769	-0.283775	0.015759	0.468783
40-49	-0.528021	-0.678653	-0.187610	0.000382	-0.415254	-0.021659	0.921297
50-59	-0.894032	-0.744246	-0.204164	-0.088054	-0.538665	0.011866	2.381324
60-69	-0.653026	-0.838825	0.136477	0.189585	-0.651567	0.260623	4.433751
70+	-0.712669	-1.090678	3.557787	0.855649	2.560804	0.618887	23.200017

CONT'D	Laikipia	R/VALLEY	Kisii	Kisumu	Siaya	S/Nyanza	NYANZA
10-19	-0.151934	0.373911	0.263624	0.271792	2.850974	2.492688	0.473122
20-29	0.589458	0.891068	0.216720	0.247670	2.121714	2.147436	0.443230
30-39	-0.397221	-0.128057	-0.254332	-0.289684	0.831855	0.741719	-0.171691
40-49	-0.401191	-0.154049	-0.262701	-0.316783	1.556133	0.730899	-0.200513
50-59	-0.387935	-0.219838	-0.194514	-0.443311	4.109575	1.329657	-0.282438
60-69	-0.383665	-0.096672	0.090230	-0.447699	3.282866	1.747766	-0.246000
70+	-0.235764	0.251464	0.059380	-0.375656	8.330032	3.779064	0.006742

CONT'D	Bungoma	Kakamega	Busia	WESTERN	NATIONAL		
10-19	0.049892	0.899370	-0.251114	0.259981	0.219069		
20-29	0.092477	0.579612	-0.301143	0.158304	0.777873		
30-39	-0.240397	0.217269	-0.551233	-0.165156	-0.182282		
40-49	-0.306869	0.272044	0.585741	-0.188018	-0.175844		
50-59	-0.301867	0.229719	-0.673067	-0.223502	-0.190521		
60-69	-0.455949	0.303394	-0.695675	-0.250385	-0.068936		
70+	-0.171852	0.796291	-0.924082	0.074207	0.834160		

SOURCE: LTSR Method Computations

APPENDIX IV: URBAN GROWTH RATES AND URBANIZATION INDICES, 1979-89

REGION	POPULATION		NET MIGRATION RATE (NMR)	URBAN GROWTH RATE (r_u)	ROLE OF MIGRATION (NMRR)
	1979	1989			
NAIROBI	827775	1324570	0.27822	0.04701	85.65418
Kiambu	51471	118053	0.25354	0.08301	8.45970
Kirinyaga	7874	15224	0.53376	0.06593	24.07675
Muranga	17418	65188	0.05431	0.11532	0.76892
Nyandarua	11277	17375	-0.01641	0.04323	•
Nyeri	40892	103981	1.08631	0.09333	21.91671
CENTRAL	128932	309821	0.00308	0.08767	0.07017
Kilifi	34095	81604	0.45417	0.06916	29.49998
Kwale	8317	17116	0.50759	0.07217	17.86709
Lamu	10682	8959	0.27333	-0.01759	•
Mombasa	341148	461763	0.09252	0.03027	+
TaitaTaveta	7397	26344	0.36865	0.12702	4.43999
TanaRiver	5352	12694	0.33494	0.08637	7.86172
COAST	406991	588470	0.64645	0.03687	+
Embu	15986	26525	0.30095	0.05064	43.77120
Isiolo	14032	23791	0.15302	0.05280	16.93694
Kitui	6705	13470	0.60997	0.06976	23.46131
Machakos	101856	149380	0.03316	0.03829	+
Marsabit	21784	33980	0.05314	0.04446	•
Meru	72953	108518	0.01586	0.03971	+
EASTERN	233316	355664	0.05807	0.04216	+
Garissa	20103	33699	0.31917	0.05166	40.41170
Mandera	24517	35500	0.03162	0.03702	+
Wajir	18866	21975	0.12377	0.01525	+
NORTH EASTERN	63486	91174	0.15034	0.03620	+
Kisii	29661	52808	0.07705	0.05768	5.53496
Kisumu	158095	214699	0.05903	0.03060	+
Siaya	4022	16103	2.16167	0.13872'	22.76383
SouthNyanza	15979	37830	1.76408	0.08618	41.58533
NYANZA	197757	352527	0.22537	0.05781	16.04427
Baringo	13643	29983	0.27012	0.07874	7.72251
Kajiado	14179	46160	0.56341	0.11804	7.58566
Kericho	37729	58543	0.14287	0.04393	834.30197
Laikipia	18986	26504	0.03390	0.03336	•
Nakuru	133299	245023	0.36259	0.06088	21.18707
Nandi	2945	10537	1.61526	0.12748	19.29444
Narok	15690	16688	-0.31839	0.00617	•
Samburu	15078	12493	-0.42140	-0.01881	•
TransNzoia	28327	56218	0.47999	0.06854	19.37005
Turkana	6444	22479	0.08055	0.12494	0.99224
UasinGishu	50503	129280	0.65377	0.09399	13.01487
WestPokot	4873	13863	0.47831	0.10455	7.86837
RIFT VALLEY	341696	667771	0.32292	0.06700	13.89495
Bungoma	45267	64784	-0.06378	0.03585	•
Kakamega	35619	95466	0.52980	0.09859	9.66314
Busia	24857	25799	0.41992	0.00372	•
WESTERN	105743	186049	0.05000	0.05650	3.92555
KENYA	2305696	3876046	0.27386	0.05194	33.47391
r_r = 0.043762					

SOURCE: Calculated from 1979 and 1989 Cenuses.

• - The rate of migration is not urbanward hence negatively affecting urbanization.
+ - Rate of urbanization less than 0.044 giving unstable base for calculating proportion attributable to net migration.
' - Rate of urban growth is high due to extended boundaries after 1979 census.

APPENDIX V : DISTRIBUTION OF URBAN CENTRES WITH POPULATION 2000 AND OVER BY PROVINCE AND DISTRICT, 1979

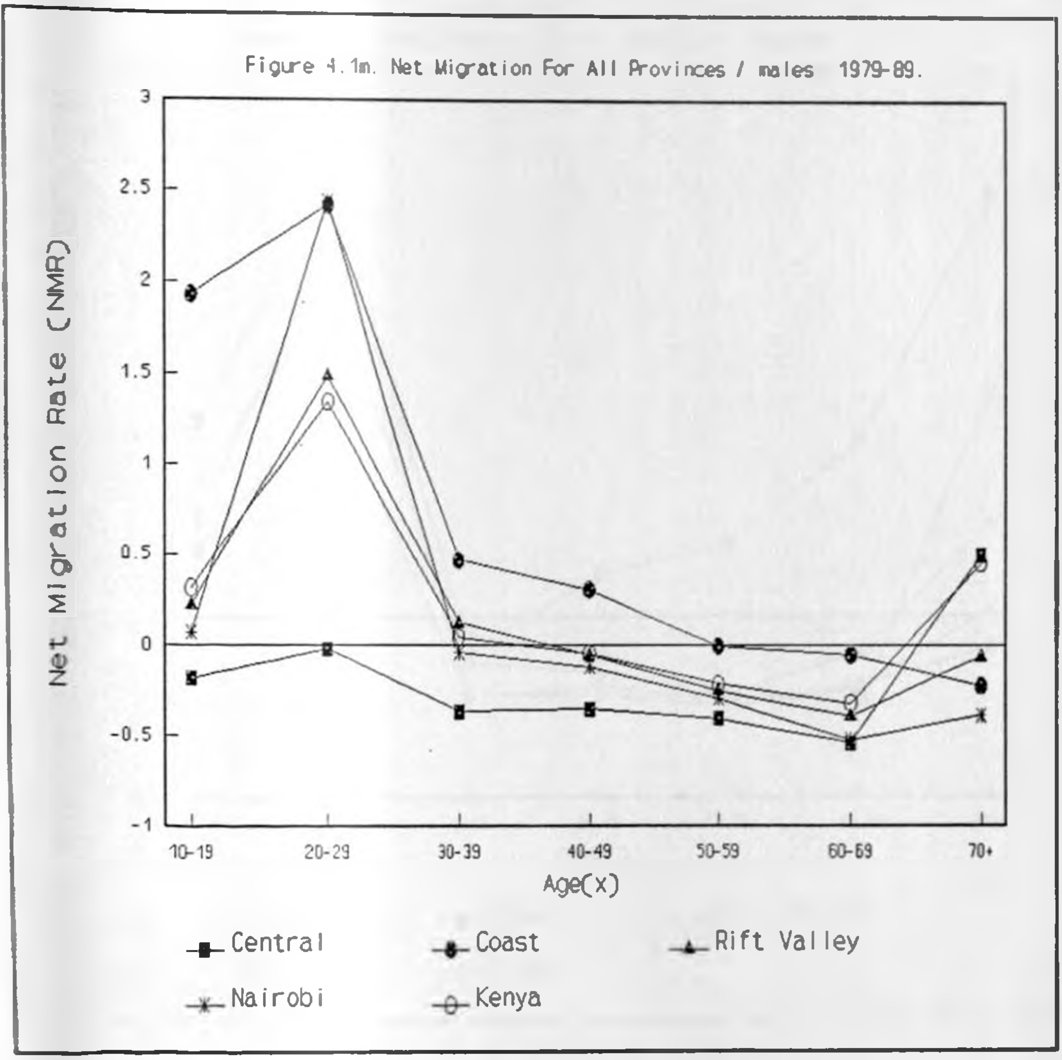
PROVINCE	DISTRICT	URBAN CENTRE	TOTAL URBAN POPULATION
NAIROBI	NAIROBI	Nairobi	827775
CENTRAL	KIAMBU	Thika	41324
		Kikuyu	3961
		Kiambu	3669
		Githunguri	2517
		District Total	*51471*
	KIRINYAGA	Kerugoya	3552
		Kutus	2224
		Sagana	2098
		District Total	*7874*
	MURANGA	Muranga	15290
		Makuyu	2128
		District Total	*17418*
	NYANDARUA	Nyahururu	11277
	NYERI	Nyeri	35753
		Karatina	2980
		Othaya	2159
		District Total	*40892*
PROVINCIAL TOTAL			**[illegible]**
COAST	KILIFI	Malindi	23275
		Kilifi	5866
		Mariakani	2766
		Watamu	2188
		District Total	*34095*
	KWALE	Msambweni	6117
		Kwale	2200
		District Total	*8317*
	LAMU	Lamu	8394
		Witu	2288
		District Total	*10682*
	MOMBASA	Mombasa	431148
	TAITA TAVETA	Voi	7397
	TANA RIVER	Hola	5352
PROVINCIAL TOTAL			**[illegible]**
EASTERN	EMBU	Embu	15986
	ISIOLO	Isiolo	11331
		Oldonyiro	2701
		District Total	*14032*
	KITUI	Kitui	4402
		Mwingi	2303
		District Total	*6705*
	MACHAKOS	Machakos	84320
		Athi River	9760

		Kangundo	5709
		Mtito Andei	2087
		District Total	*101866*
	MARSABIT	Marsabit	8739
		Moyale	7478
		Sololo	3507
		Kargi	2060
		District Total	*21784*
	MERU	Meru	70439
		Nkubu	2514
		District Total	72953
PROVINCIAL TOTAL			[illegible]
NORTH EASTERN	GARISSA	Garissa	14076
		Mudo Gashe	6027
		District Total	*20103*
	MANDERA	Mandera	13126
		El Wak	8044
		Rhamu	3347
		District Total	*24617*
	WAJIR	Bute	8646
		Wajir	6384
		Buna	3836
		District Total	*18866*
PROVINCIAL TOTAL			[illegible]
NYANZA	KISII	Kisii	29661
	KISUMU	Kisumu	152643
		Muhoroni	5452
		District Total	*158095*
	SIAYA	Siaya	4022
	SOUTH NYANZA	Home Bay	7489
		Migori	6236
		Kendu Bay	2254
		District Total	*16979*
PROVINCIAL TOTAL			[illegible]
RIFT VALLEY	BARINGO	Eldama Ravine	3941
		Mau Mazuri	3865
		Kabarnet	3621
		Mogotio	2216
		District Total	*13643*
	KAJIADO	Ngong	4004
		Kajiado	3524
		Magadi	2563
		Oloitokitok	2071
		Namanga	2017
		District Total	*14179*
	KERICHO	Kericho	29603
		Londiani	4414
		Kipkelion	3712

		District Total	17728
	LAIKIPIA	Nanyuki	[illegible]
	NAKURU	Nakuru	92851
		Naivasha	11491
		Gilgil	8103
		Elburgon	8701
		Njoro	5803
		Molo	5350
		District Total	[illegible]
	NANDI	Kapsabet	2945
	NAROK	Nairagie Enkare	[illegible]
		Narok	5690
		District Total	[illegible]
	SAMBURU	Maralal	[illegible]
		Baragoi	2592
		Wamba	2256
		District Total	16078
	TRANS NZOIA	Kitale	28327
	TURKANA	Lodwar	6444
	UASIN GISHU	Eldoret	50503
	WEST POKOT	Kapenguria	2752
		Makutano	2121
		District Total	4873
PROVINCIAL TOTAL			341696
WESTERN	BUNGOMA	Bungoma	25161
		Webuye	17963
		Kimilili	2143
		District Total	45267
	BUSIA	Busia	24857
	KAKAMEGA	Kakamega	[illegible]
		Luanda	3594
		District Total	[illegible]
PROVINCIAL TOTAL			[illegible]
NATIONAL TOTAL			2307824

SOURCE: ROK(1988), pp. 11-17.

APPENDIX VI: REGIONAL NET RURAL-URBAN MIGRATION PATTERNS



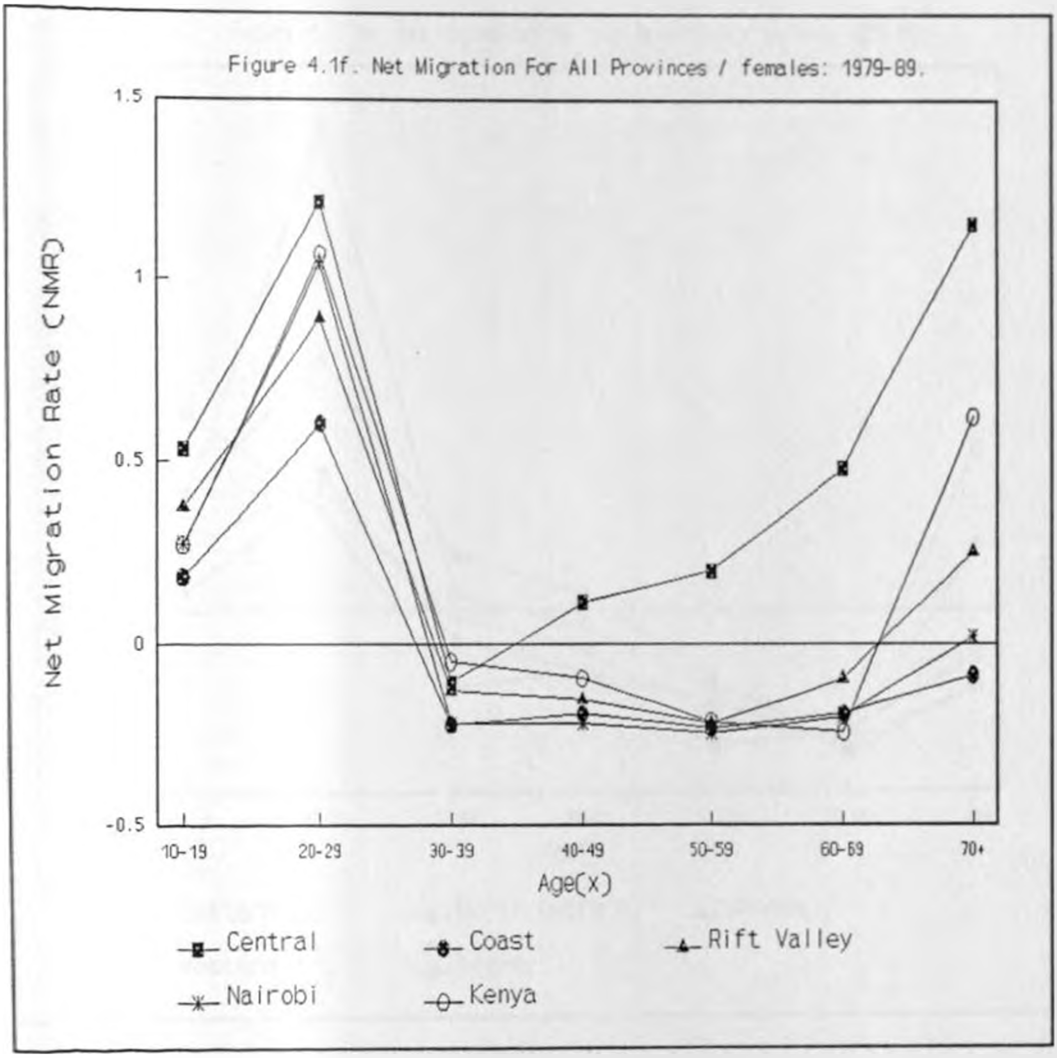


Figure 4.1f. Net Migration For All Provinces / females: 1979-89.
Net Migration Rate (NMR)
1.5
1
0.5
0
-0.5
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age(X)
Central
Coast
Rift Valley
Nairobi
Kenya

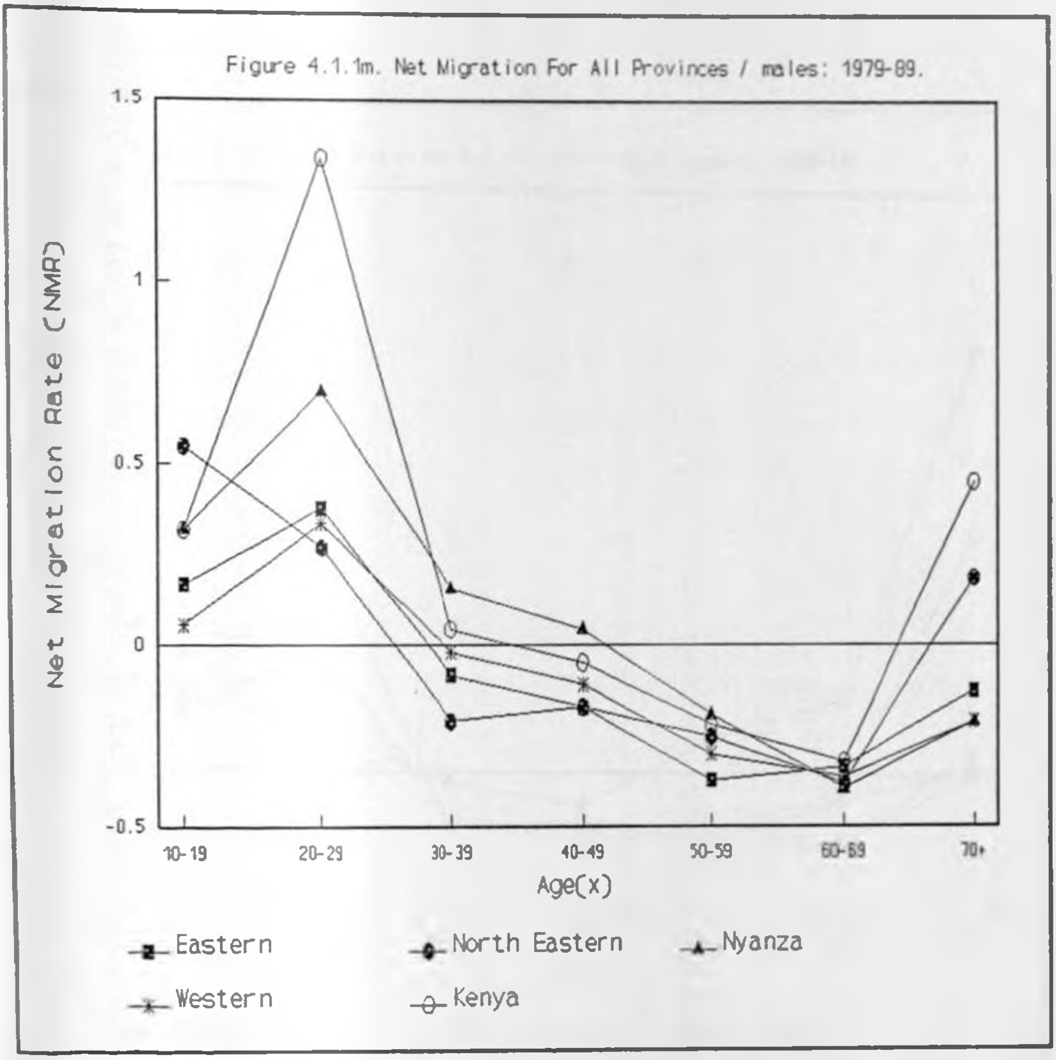


Figure 4.1.1m. Net Migration For All Provinces / males: 1979-89.
Net Migration Rate (NMR)
1.5
1
0.5
0
-0.5
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age(x)
Eastern
North Eastern
Nyanza
Western
Kenya

Figure 4.1.1f. Net Migration For All Provinces / females: 1979-89.

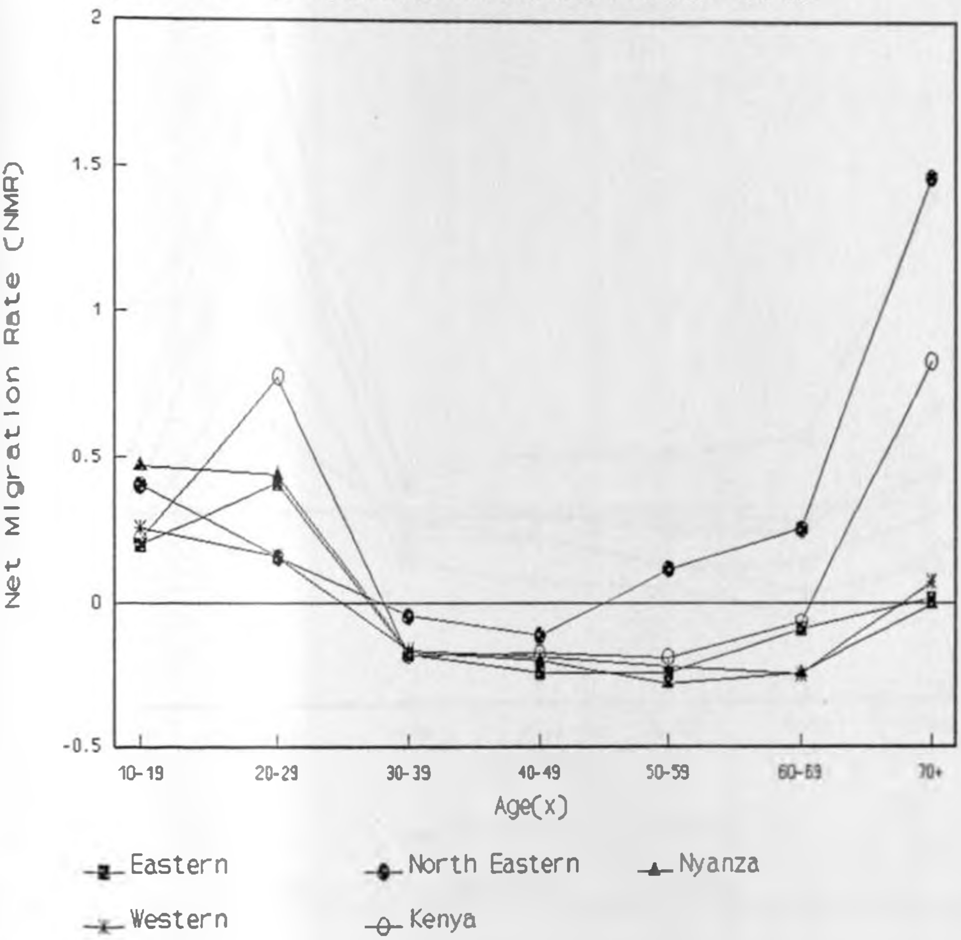


Figure 4.2m. Net Migration For Central Province / males : 1979-89

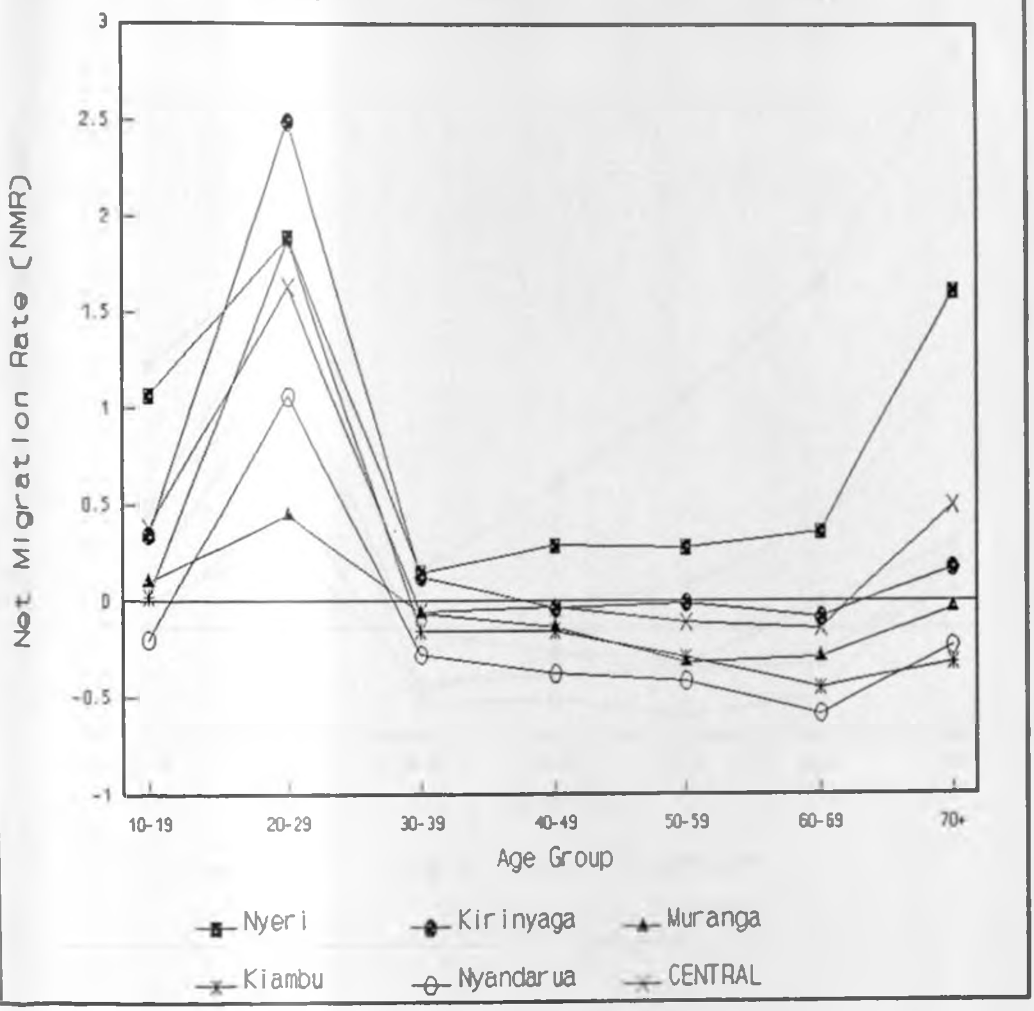
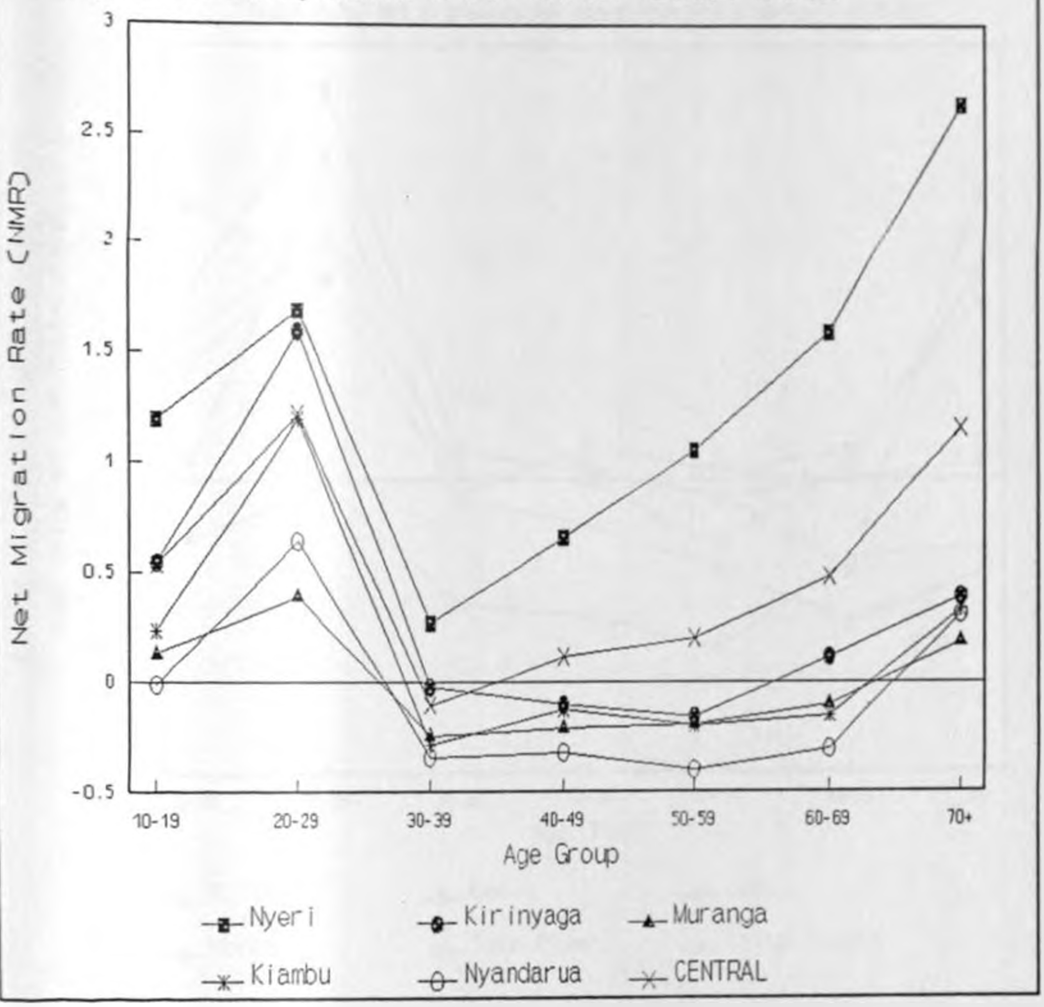


Figure 4.2f. Net Migration For Central Province / females : 1979-89.



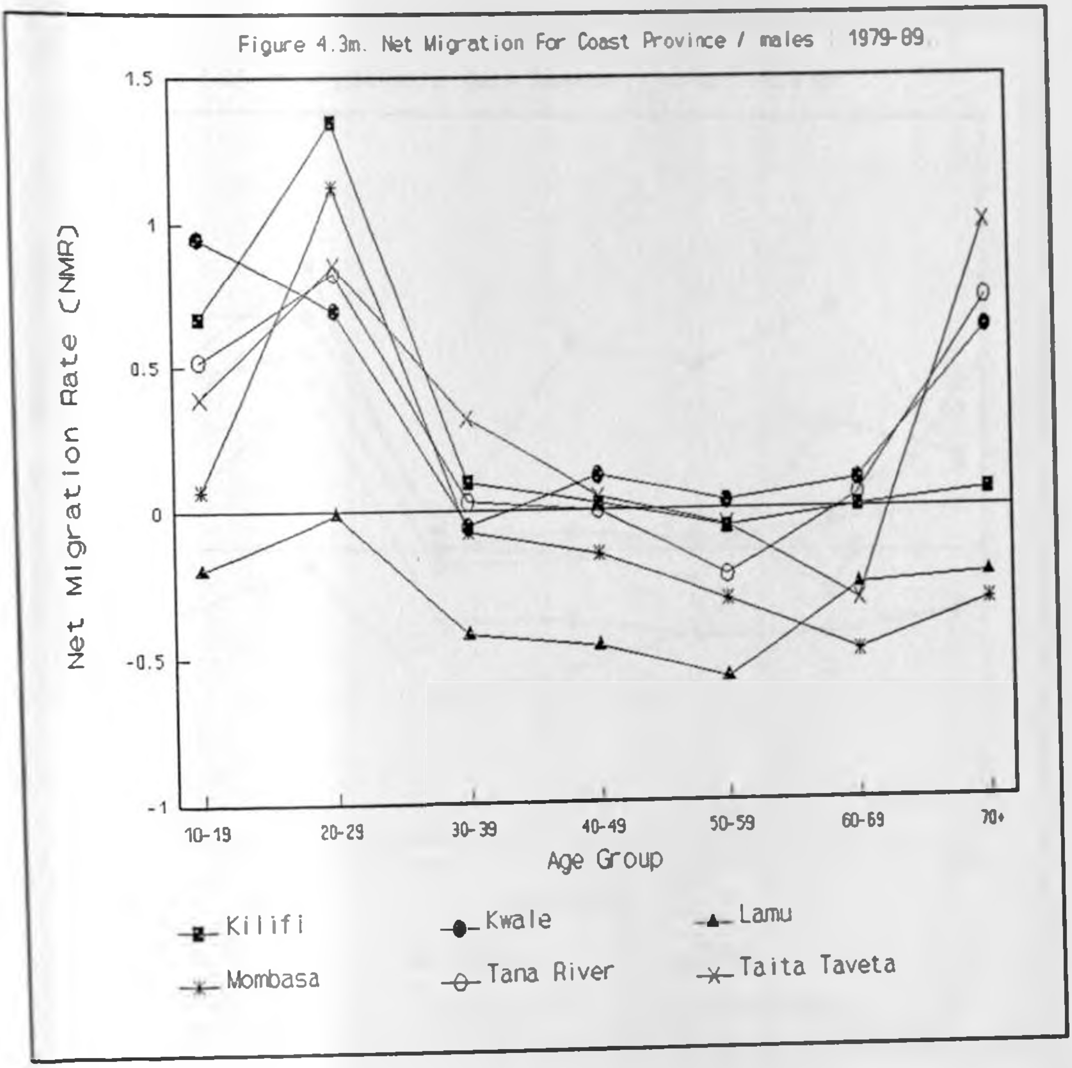


Figure 4.3m. Net Migration For Coast Province / males 1979-89
1.5
1
0.5
0
-0.5
-1
Net Migration Rate (NMR)
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age Group
Kilifi
Kwale
Lamu
Mombasa
Tana River
Taita Taveta

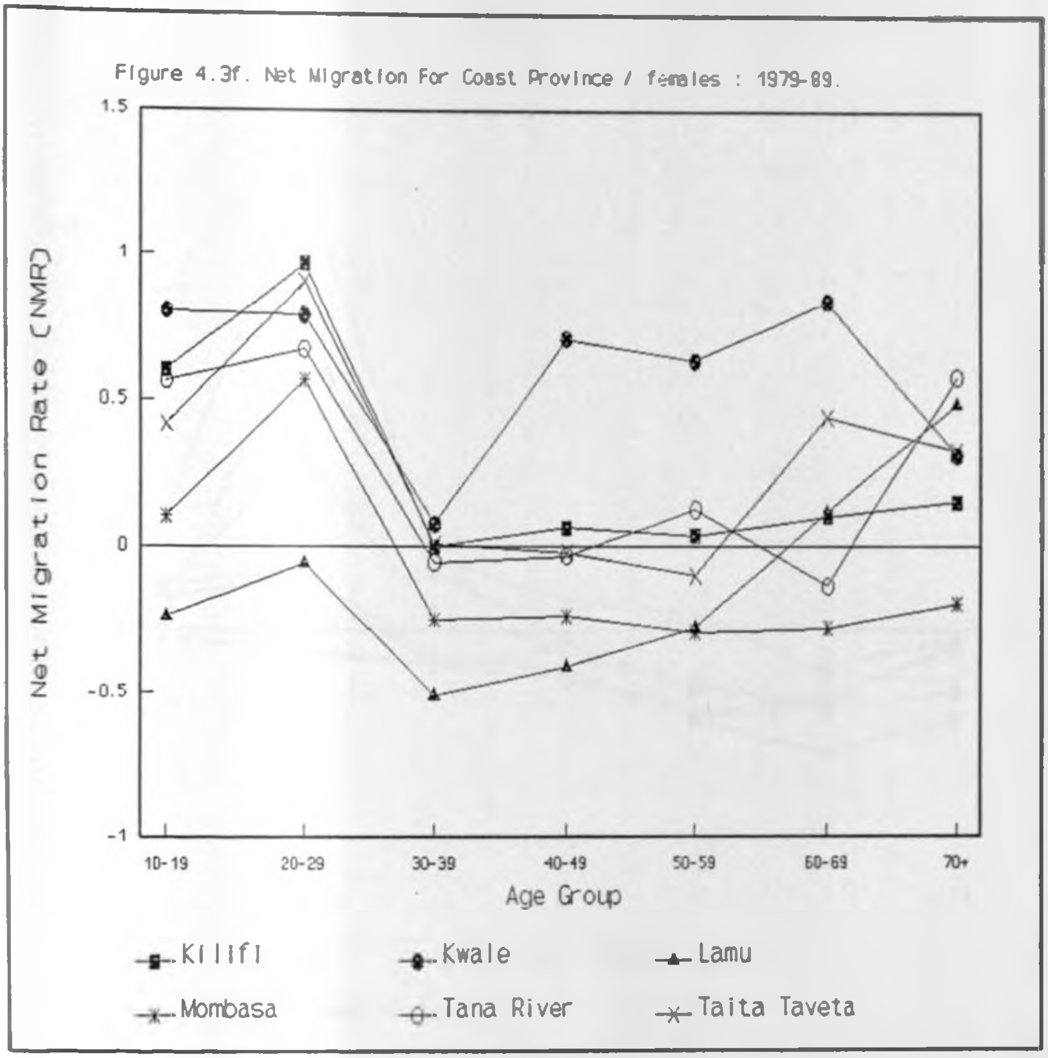
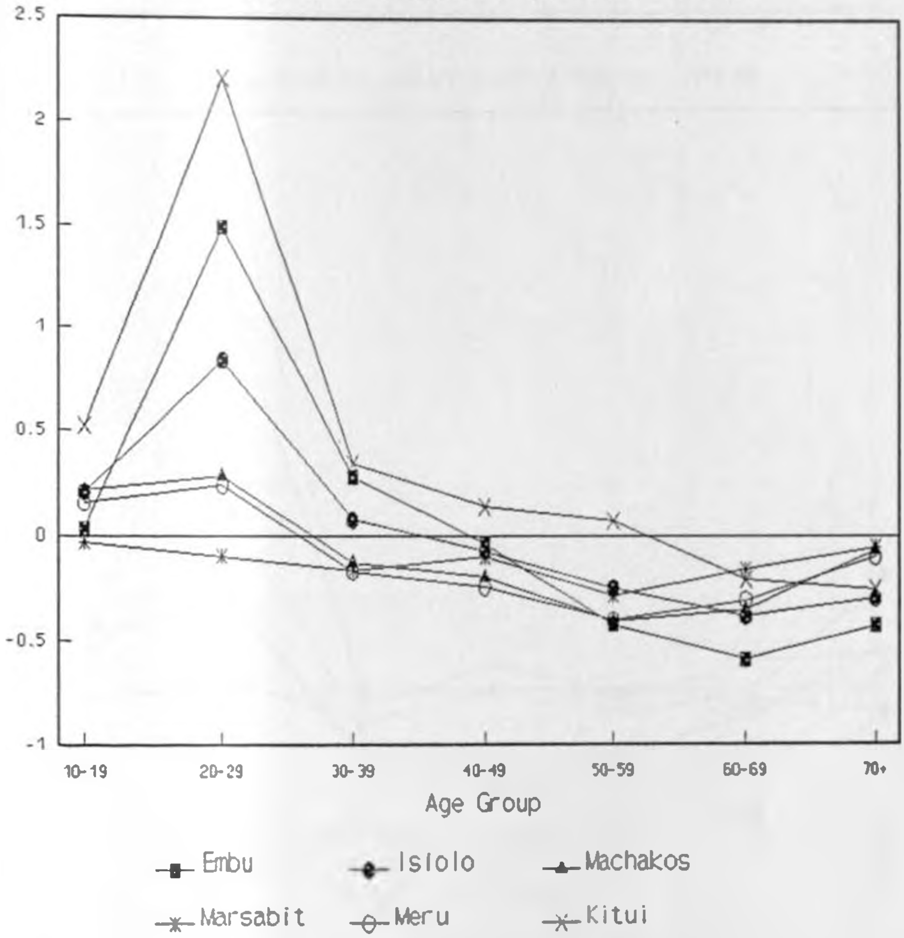


Figure 4.3f. Net Migration For Coast Province / females : 1979-89.
Net Migration Rate (NMR)
1.5
1
0.5
0
-0.5
-1
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age Group
Kilifi
Kwale
Lamu
Mombasa
Tana River
Taita Taveta

Figure 4.4m. Net Migration For Eastern Province / males : 1979-89.



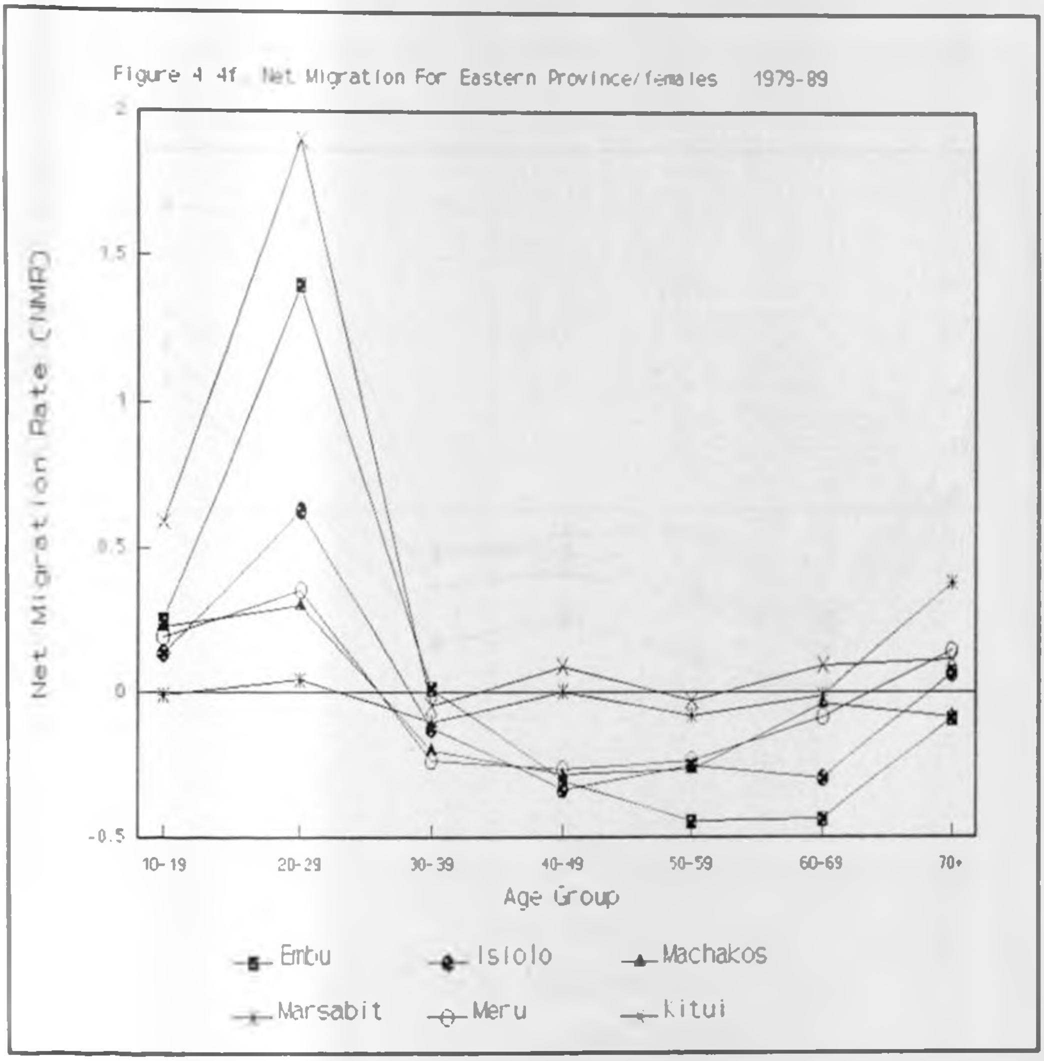


Figure 4.4f Net Migration For Eastern Province/females 1979-89
Net Migration Rate (NMR)
2
1.5
1
0.5
0
-0.5
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age Group
Embu
Isiolo
Machakos
Marsabit
Meru
Kitui

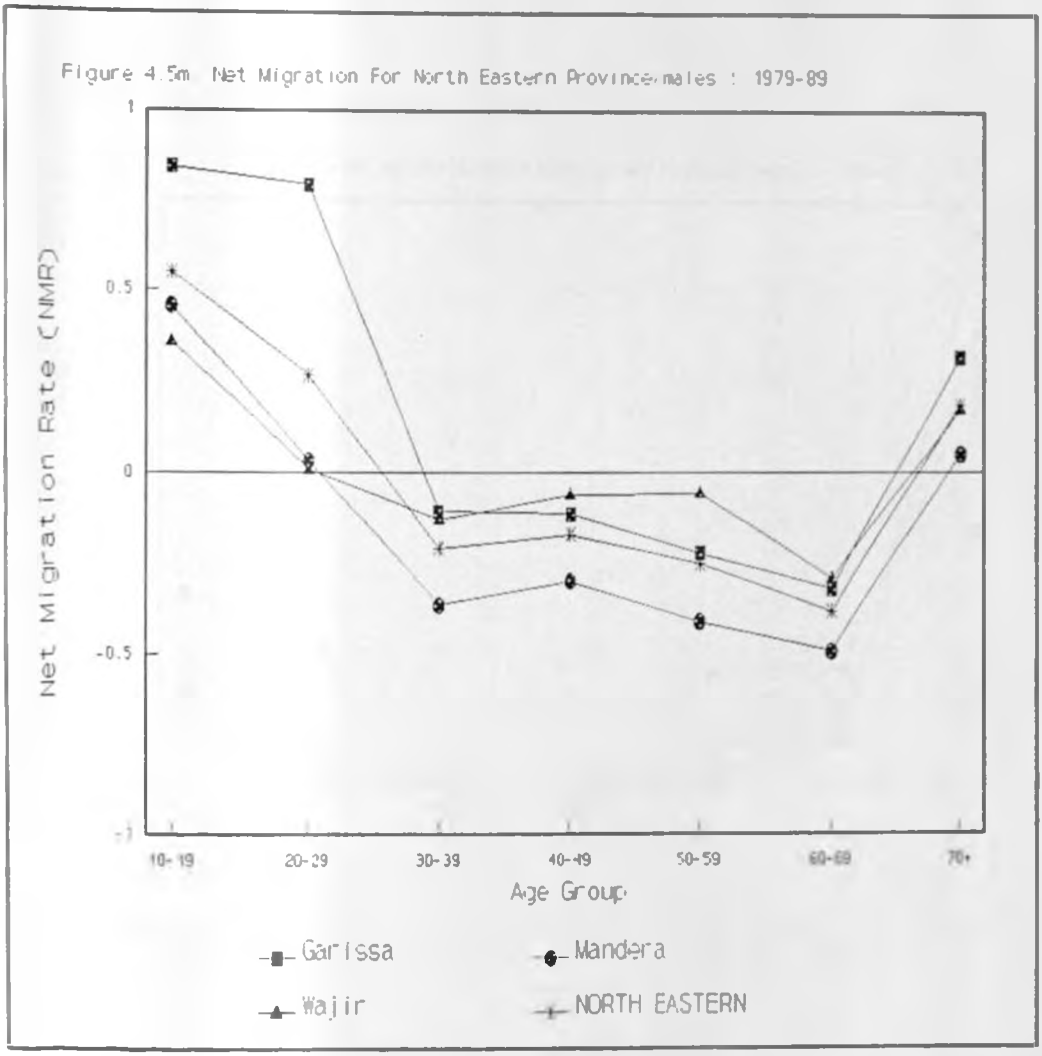


Figure 4.5m Net Migration For North Eastern Province/males : 1979-89
Net Migration Rate (NMR)
1
0.5
0
-0.5
-1
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age Group
Garissa
Mandera
Wajir
NORTH EASTERN

Figure 4.57 Net Migration For North Eastern Province/ Females 1979-89

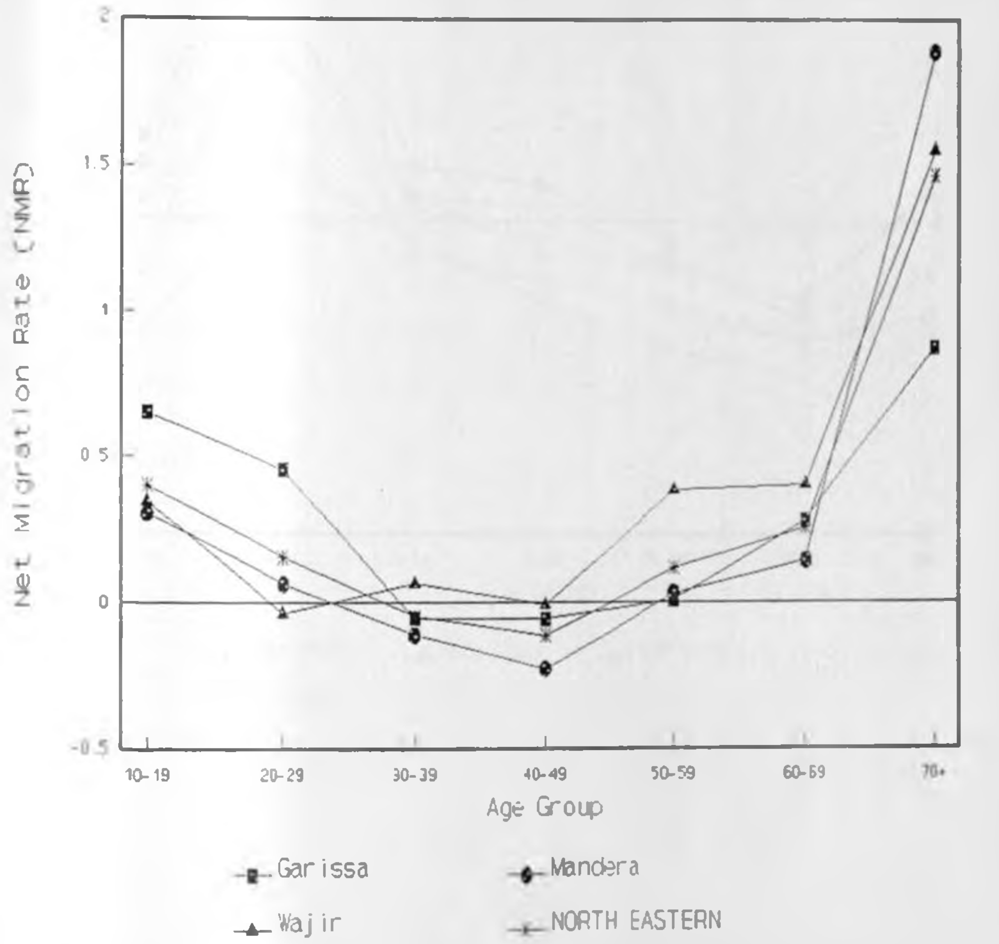


Figure 4.6.1m. Net Migration For Rift Valley Province/males : 1979-89.

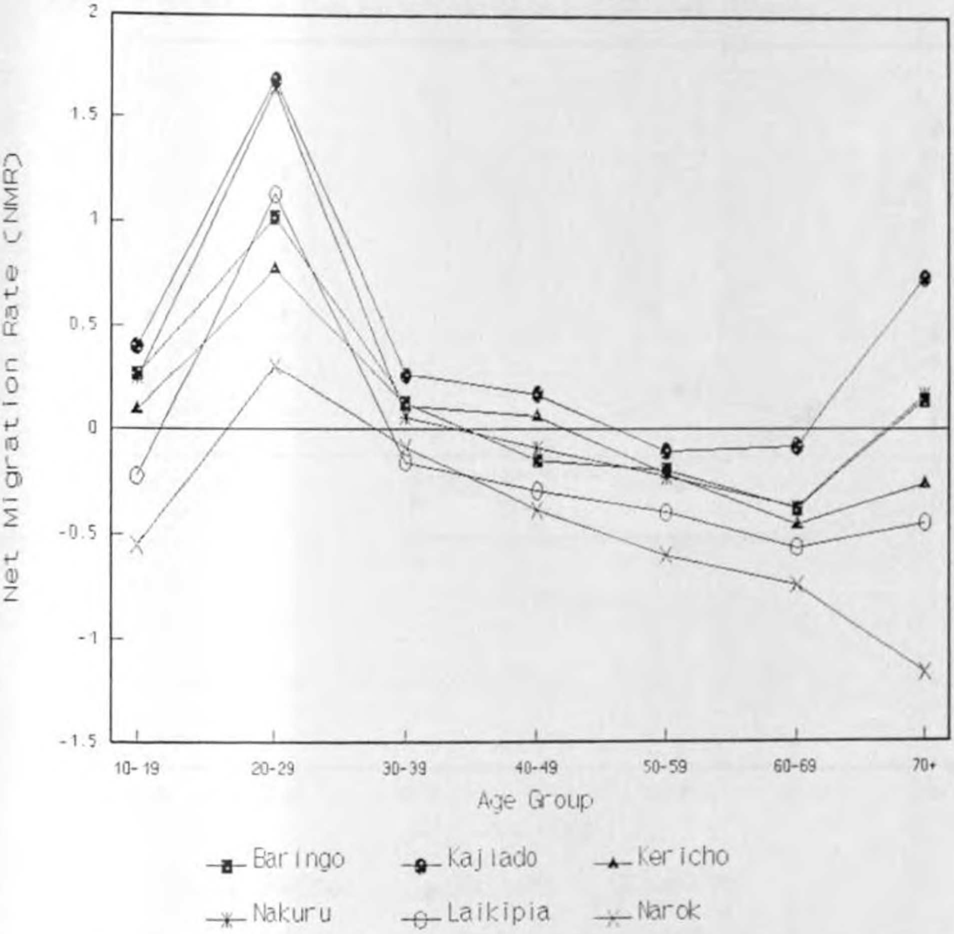
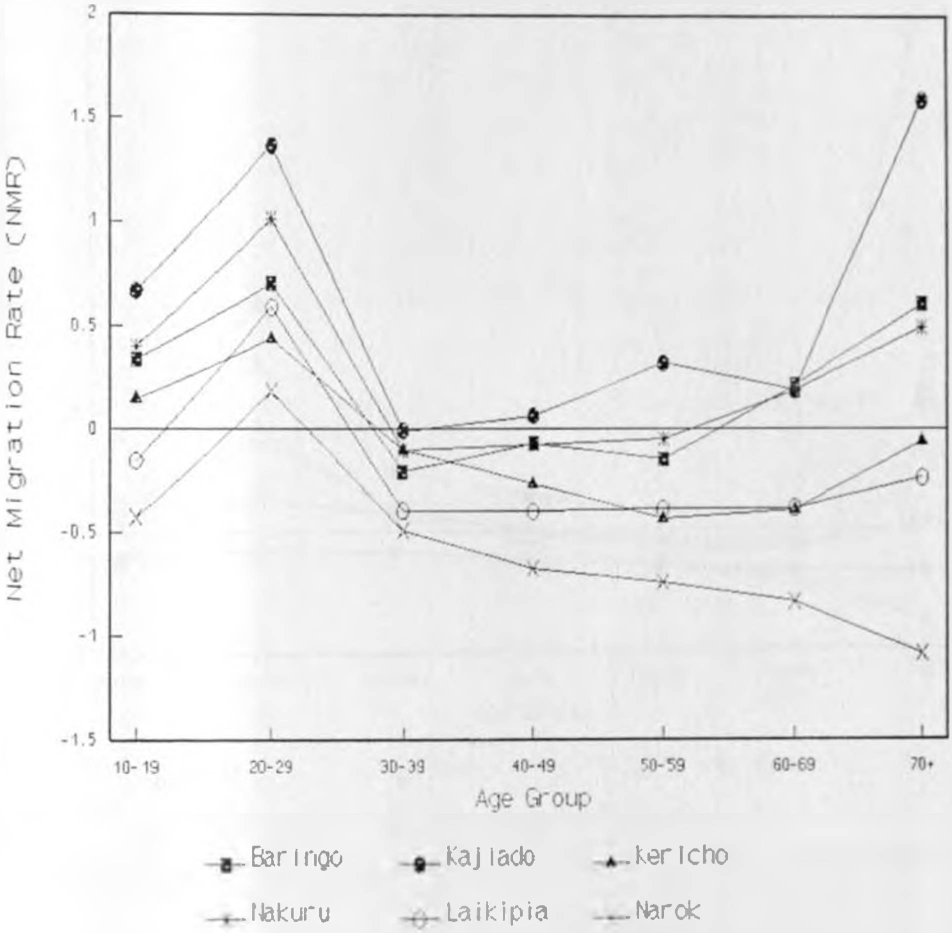


Figure 4.6.1f. Net Migration For Rift Valley Province/females: 1979-89



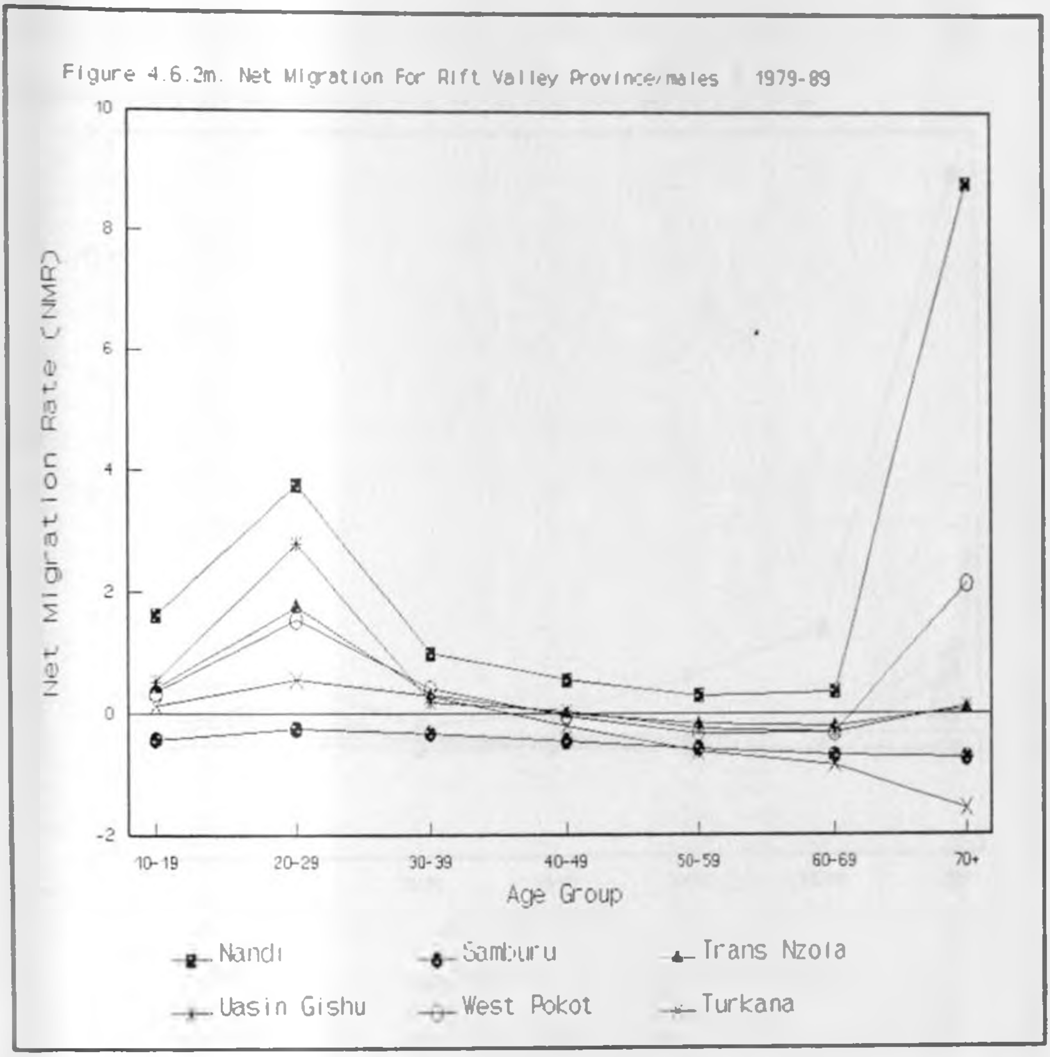
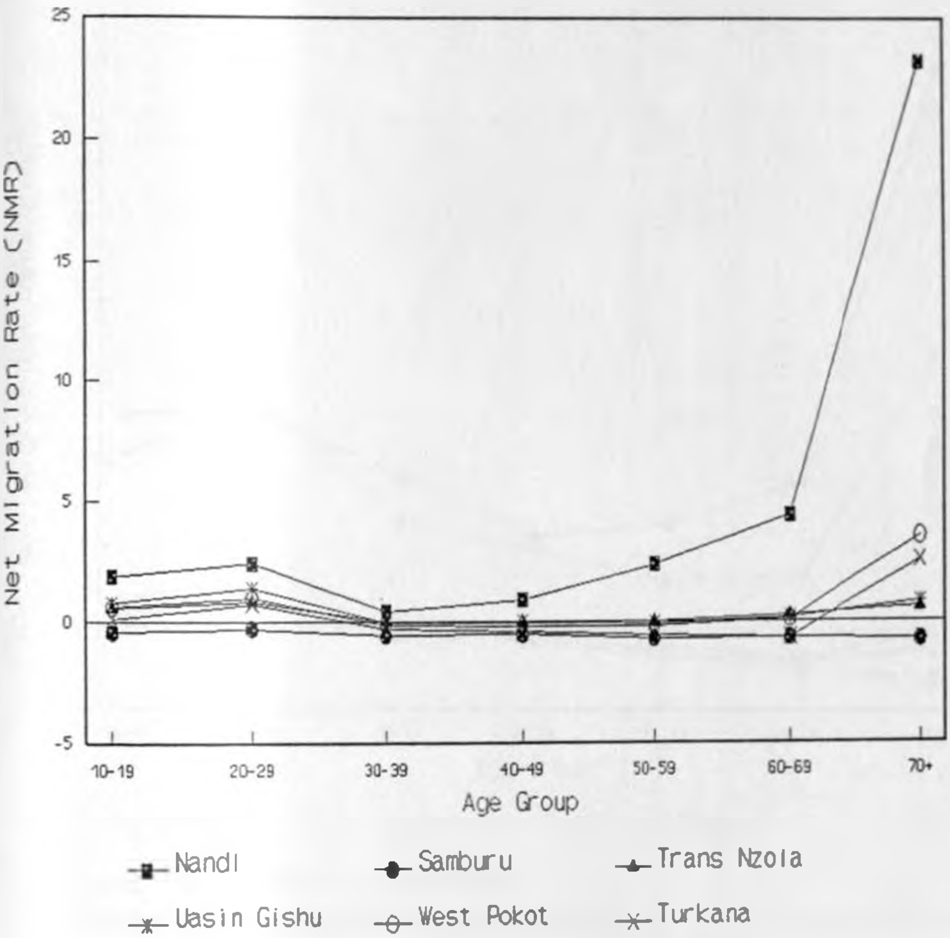


Figure 4.6.2m. Net Migration For Rift Valley Province/males 1979-89
Net Migration Rate (NMR)
10
8
6
4
2
0
-2
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age Group
Nandi
Samburu
Trans Nzoia
Uasin Gishu
West Pokot
Turkana

Figure 4.6.2f. Net Migration For Rift Valley Province/females : 1979-89.



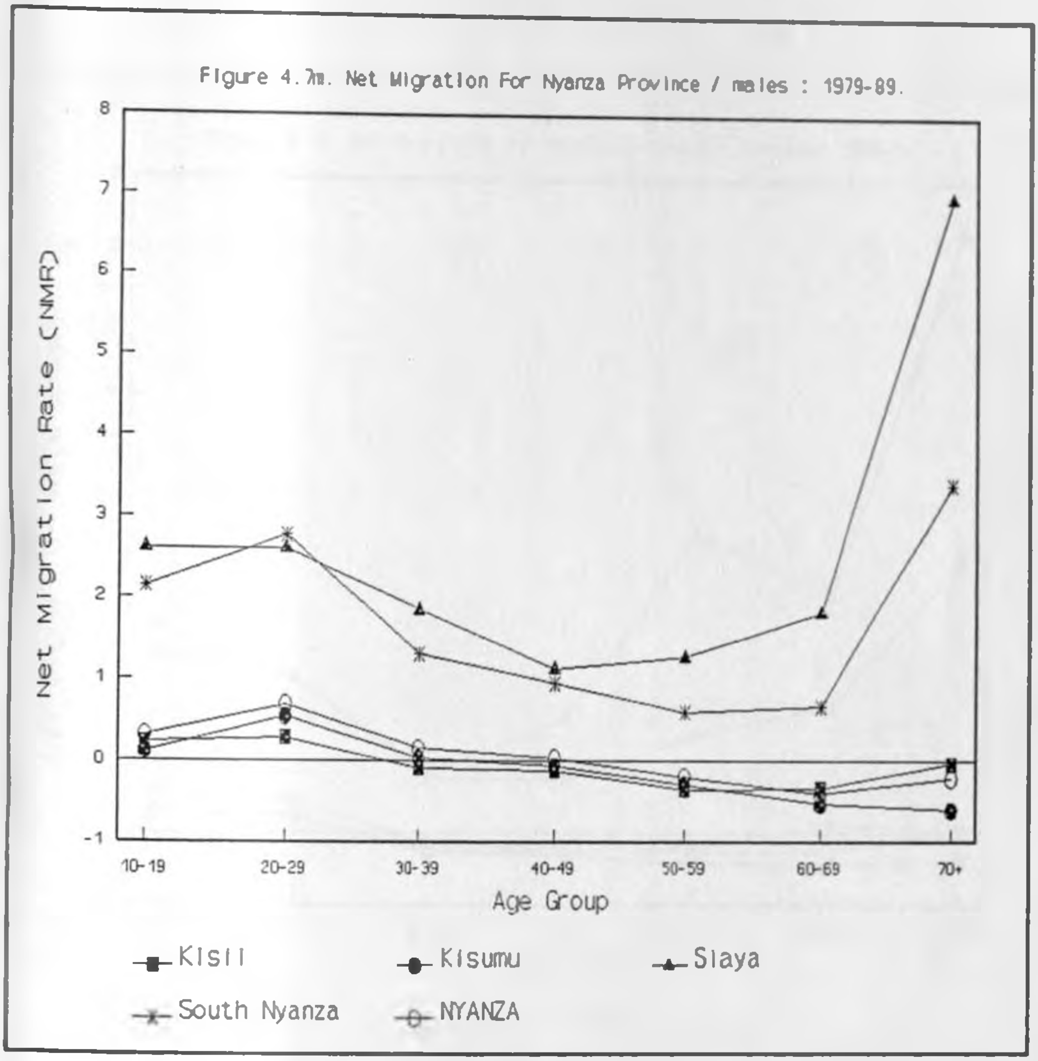
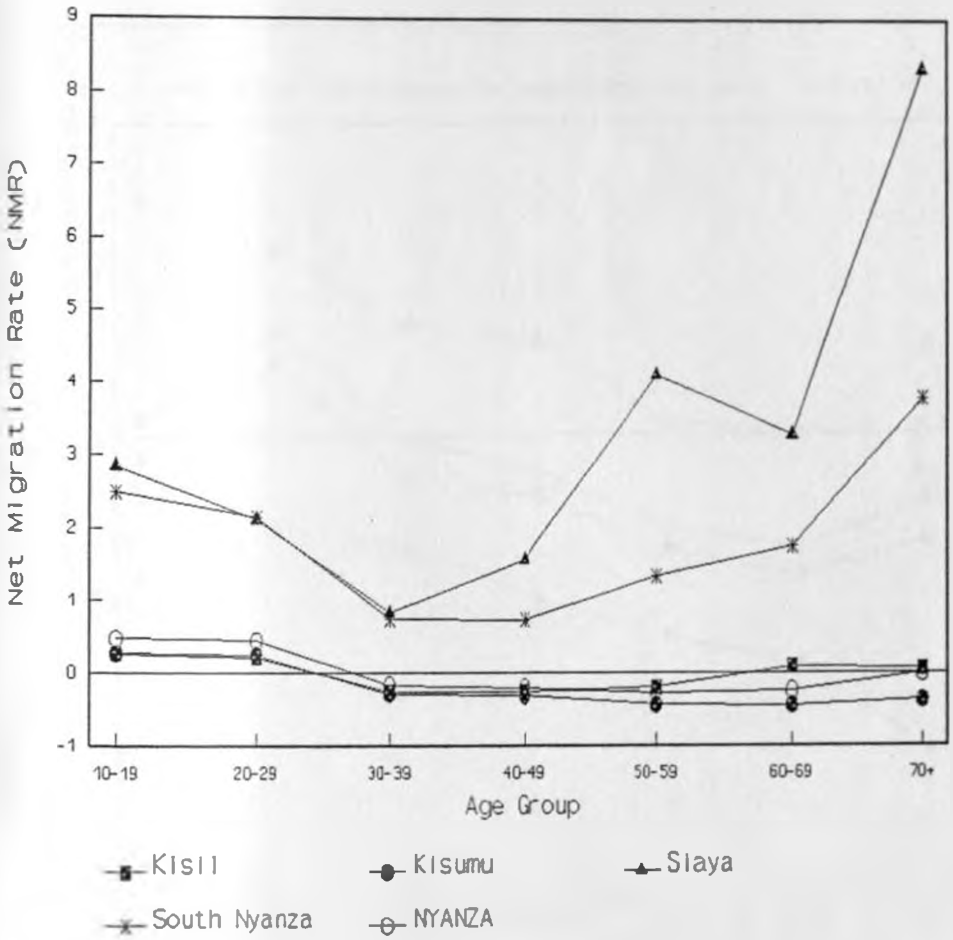


Figure 4.7m. Net Migration For Nyanza Province / males : 1979-89.
Net Migration Rate (NMR)
8
7
6
5
4
3
2
1
0
-1
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age Group
Kisii
Kisumu
Siaya
South Nyanza
NYANZA

Figure 4.7f. Net Migration For Nyanza Province / females: 1979-89.



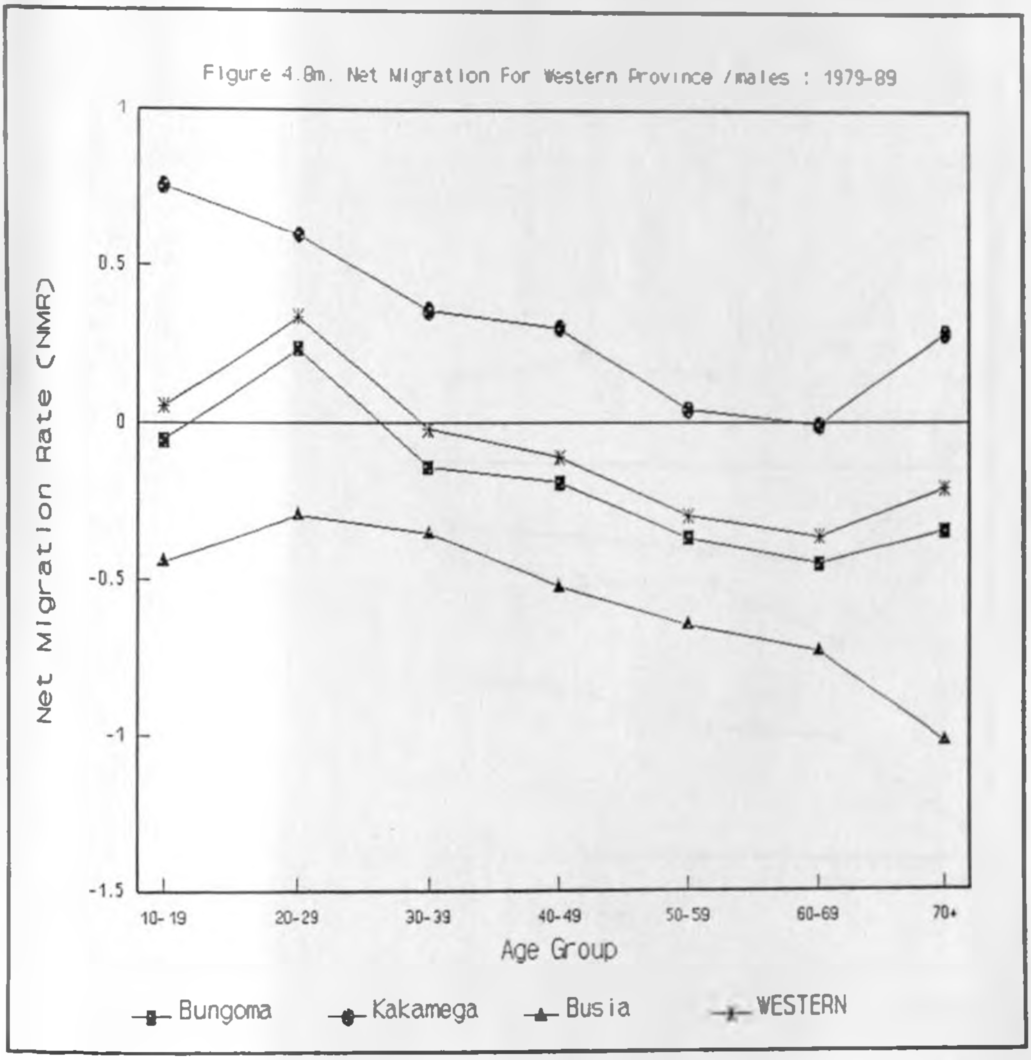


Figure 4.8m. Net Migration For Western Province / males : 1979-89
Net Migration Rate (NMR)
1
0.5
0
-0.5
-1
-1.5
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age Group
Bungoma
Kakamega
Busia
WESTERN

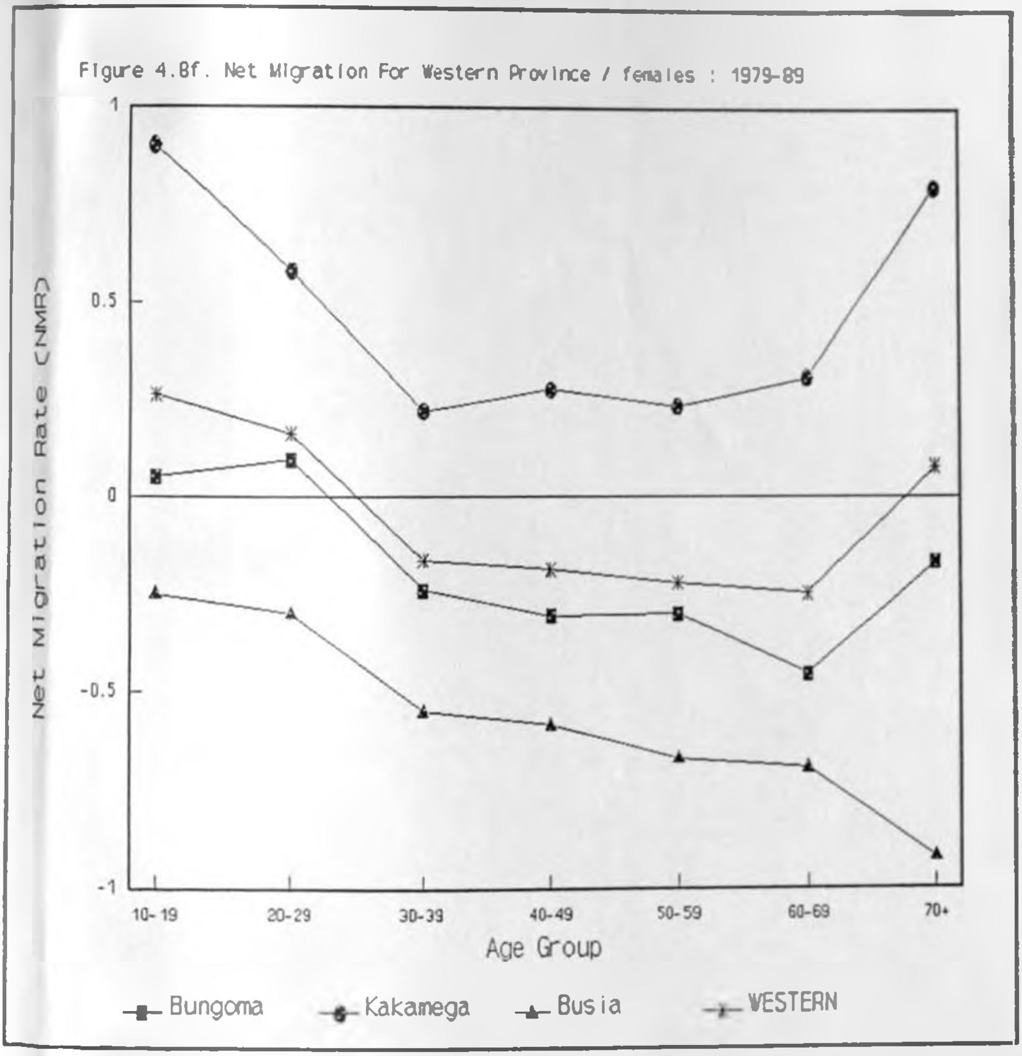


Figure 4.8f. Net Migration For Western Province / females : 1979-89
Net Migration Rate (NMR)
1
0.5
0
-0.5
-1
10-19
20-29
30-39
40-49
50-59
60-69
70+
Age Group
Bungoma
Kakamega
Busia
WESTERN