"ESTIMATION OF INTER-CENSAL NET MIGRATION IN KENYA: COUNTY LEVEL ANALYSIS"

BY

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A **project submitted in partial fulfillment of the requirements for the degree of Master of Arts in Population Studies, University of Nairobi.**

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DECLARATION

This project is my original work and to the best of my knowledge has not been presented for a degree in any other University.

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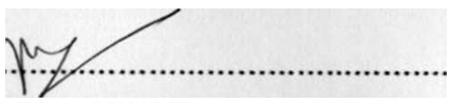
This project has been submitted for examination with our approval as University Supervisors:

SIGNED 

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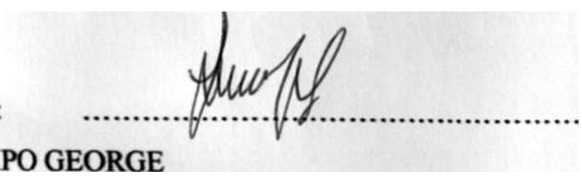

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DEDICATION

I dedicate this work to my beloved wife Maureen Matianyi Mulomi and my son Adrian.

ACKNOWLEDGEMENT

First and foremost my sincere gratitude goes to the Almighty God who has given me wisdom throughout this journey. I salute my family members especially my mother Rose, who really encouraged and supported me.

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ABBREVIATIONS

CSRM.....Census Survival Ratio Method

GR.....Gross migration Rate

IDPs.....Internally Displacement Persons

IR.....In- migration Rate

LTSRM.....Life Table Survival Ratio Method

NMR.....Net migration Rate

OR.....Out-migration Rate

PSRI.....Population Studies and Research Institute

ABSTRACT

This study entitled "Estimation of Inter-censal net migration in Kenya: County Level Analysis" applied a non- stable population model - the Age Specific Growth Rate Technique to generate inter-censal age-specific net migration rates in all Counties of Kenya. The study utilized 1999 and 2009 Population and Housing censuses data. The model was devised by Preston and Coale (1982). The empirical data was first graduated to reduce the errors associated with age reporting and then the adjusted data was used to generate the migration rates in case it had age-reporting error. The study utilized pasex computer package to compute the UN joint score and data appraisal.

The main objective of the study was to estimate net inter-censal migration rates by use of Age - Specific Growth Rate Technique in Kenya focusing on all Counties. The specific objectives were to establish the levels and patterns of internal migration in Kenya.

The study found out that migration in the metropolitan areas; Nairobi and Mombasa reflected the same age-specific migration patterns, suggesting that major forces attracting the people into and/or repelling them from these two regions are nearly similar. In-migrants in these regions that were experienced were in the age groups 5-34 for both sexes whereas out-migrants were in ages 35 years and above. In addition, the number of areas resembling metropolitan zones have is on rise examples are Lamu, Nakuru and Uasin Gishu. Migration in re-settlement areas was found to have reduced significantly where some re-settlements being senders of the population in nearly all age groups. The migration at the border areas along the international boundaries were found to register net gains in population in all ages except Counties bordering Uganda in Western Kenya. The migration pattern in agricultural areas have changed significantly from net in-flow to net out-flow of population in almost all ages such as Kericho and in some of central Counties. The net flow of young children aged 5-9 years looking for education is observed in almost all Counties accompanied by their mothers.

In the conclusion, the study computed commendable inter-censal migration rates in Kenya by establishing the patterns and levels of migration and the general knowledge of migration patterns and typology was sound established in each and every County. The technique distinguished net in-migration from net out-migration of different areas. However, the technique could not show which of the County was losing or gaining population to which other County.

The study recommended the following: 1) a more demographic study of migration using some of modem developed technique that is vital statistics method requires to be carried out in Kenya; 2) the directional flows of population during the inter-censal period need to be revealed through development of County migration matrix. Similarly, case studies need to be intensively carried out to reveal intra-County migration by showing the patterns of migration in each and every County; 3) Motivational forces of migration in Kenya need to be investigated through both qualitative and quantitative research.

CHAPTER ONE
GENERAL INTRODUCTION

1.0 BACKGROUND TO THE STUDY

Kenya is assorted in economically, culturally, socially, linguistically and geographically organized in Counties as per the new constitution. Population change in a given area is an important aspect of demographic study which relates to physical and human phenomena (Oucho 1988). Ideally, it embraces the three population dynamics namely; fertility, mortality and migration. The study seeks to dwell on migration as an element of population change which influence both its structure and change. Migration is a form of geographic or spatial mobility involving a change of usual residence between clearly defined geographic units. Thus, migration entails a change in place of "usual" residence- a taking-up life in a new different place (UN 1970). Migration is categorized into two major classes namely; internal and international. The study will focus on the internal movement of people in Kenya.

Different methods have been used to estimate inter-censal net migration both in the developed and developing countries. These vary from those based on data derived from vital registration system or continuous population registers, to those which depend on sample surveys or census counts of the population of component areas that is births, deaths and movement of people at two successive censuses (Wakajummah 1986). The choice and / or application of each method is determined by the availability and nature of data as well as by the kind of information required from subsequent migration estimates.

Cross-tabulation of the place of birth with place of enumeration statistics has been the most commonly method used in estimating net migration, especially in developing countries where very few censuses have been undertaken (Wakajummah 1986; Odipo 1995; Otieno 1999; Ominde 1968; Rempel 1974:1977; Oucho 1988). Ominde (1968); Rempel (1977); Beskok (1981) and Oucho (1988) used direct measures by cross classifying place of birth and place of enumeration to study migration flows in Kenya by using Kenya's censuses data sets in their studies. Detailed cross-tabulation of districts of origin with districts of destination provides an interesting picture of

primary, secondary, tertiary, and other destinations (Oucho 1988). Direct measures of net migration underpin the effects of migration flows especially internal as it focuses mainly on those migrants who survived prior to enumeration (UN 1970). Cross- tabulation of birth and usual residence or place of enumeration vis-a-vis place of current residence functionally gives a crude index of migration in Kenya (Ominde 1968; Rempel 1977).

However, as more and more countries began to have regular censuses, new methods of migration estimates have been devised. The new techniques such as vital statistics have been used in developed world to estimate inter-censal net migration (Siegel 1952; 2002; Siegel and Swanson 2004; 2007; Hamilton 1967). Most of the migration estimation techniques devised in developed countries have relied on the stable population for very long period of time. Preston and Coale (1982) devised Age-Specific Growth Rate Technique of estimating migration rates for non stable populations. Wakajummah (1986) applied the Age-Specific Growth Rate Technique to Kenyan data of 1969 and 1979 censuses to estimate net inter-censal migration. This study presents the second attempt of application of the Age-Specific Growth Rate Technique to recent Kenyan data to generate net inter-censal migration by County, to establish the alteration if any, the levels and patterns of migration.

Odipo's (1995) study applied the National Growth Rate method to Kenya census data of 1969, 1979, and 1989 censuses to estimate net inter-censal migration of the two decades by district level analysis. Otieno's (1999) study used Life Table Survival Ratio Approach to estimate inter-censal net urban migration by focusing on forty one districts between 1979- 1989, using two consecutive censuses data of 1979 and 1989.

The study analysed the inter-censal net migration in Kenya to illustrate the out- and in- migration rates of all Counties in Kenya. In the first place, it set the analytical framework as well as levels and patterns of migration in Kenya and basic relevant literature to that effect was reviewed. Second, it shed some light on the internal migration by County. This text consists of five major sections. This introductory section gives the general overview in terms of the nature and scope of the study, background to the study area, problem statement, objectives, rationale, data sources, and limitations. Section two defines the concept of migration analysis using both the direct and indirect- modern

techniques. Section three presents the analytical framework and the supporting models that were used in the study. Section four, the analyses, presentations and discussions of migration estimates are presented and finally the study summarises findings, draw conclusion and make recommendations.

1.1 PROBLEM STATEMENT

The most recent migration data sets in Kenya have been analysed mainly through direct measures such as place of birth, placc of residence at fixed prior date before census date and duration of residence to reveal migratory flows (Wakajummah 1986; Odipo 1995; Otieno 1999). Wakajummah (1986); Odipo (1995) and Otieno (1999) in their studies used indirect measures to study migration in Kenya using varied censuses data. Other than those studies, very little efforts have been devoted in estimating net migration using modern techniques that involve indirect measures to the recent data.

Wakajummah (1986) used Age-Specific Growth Rate Technique to estimate net inter-censal migration by district using 1969 and 1979 census data sets and found out that, major urban areas experienced net gains in the population of the young adults aged between 10 and 24 years. Moreover, most of the rural districts experienced net out- flow of the population in similar age cohorts. This technique was affected by age misreporting, census coverage and inter-censal boundary changes. The trends and patterns of migration remained almost the same through 1989 from 1969 (Odipo 1995). (Odipo 1995) applied the National Growth Rate Method to estimate net inter-censal migration and confirmed that the trends and patterns of migration from 1969- 1979 period were almost similar to the 1979-1989, 10 year interval. He revealed that the findings were similar to those found by Wakajummah in 1986. However, Otieno (1999) estimated net inter-censal urban migration in forty districts using Life table Survival Ratio Method and censuses data sets of 1979 and 1989.

In the recent past, no one has applied the Age-Specific Growth Rate Technique to estimate net inter-censal migration by County in Kenya, by use of the current census data sets to reveal the levels and patterns of migration. The study by Wakajummah is nearly 25 years ago though; it has been updated in bits and pieces by other scholars such as Oucho's (1988) study.Ideally, the various indirect

techniques of estimating inter-censal net migration need to be applied regularly to show the trends and patterns of migration since migratory flows are influenced by numerous factors and do change over-time. From the foregoing review, this study aimed at estimating net inter-censal migration using the Age-Specific Growth Rate Technique devised by Preston and Coale **(1982)** and first applied to Kenyan empirical data sets by Wakajummah **(1986)** which is based on the assumption that population growth rates change from one age group to another, to find out whether the levels and patterns of migration have remained the same, by comparing with Wakajummah's study findings. The study focused on all Counties in Kenya using **1999** and **2009** census data sets.

1.2 STUDY OBJECTIVES

1.2.1 GENERAL OBJECTIVES

The study estimated net inter-censal migration rates by use of Age - Specific Growth Rate Technique in Kenya.

1.2.2 SPECIFIC OBJECTIVES

Specifically, the study aimed to:

1. Establish the levels of internal migration in Kenya
2. Determine the patterns of internal migration in Kenya

1J RESEARCH QUESTIONS

From the outgoing objectives the study answered the following research questions:

- What is the internal migration rate among specific age group and by sex in every County?
- Do levels and patterns of internal migration remained the same as compared to 1969-1979 inter-censal period?

1.4 RATIONALE OF THE STUDY

Migration is an important element in the growth of the population and the labour force of an area. Knowledge about the number of persons entering or leaving an area is required. Thus, this study analysed inter-censal migration between the period **1999** and **2009** to reveal the migration rates for each age group.

The measurement and analysis of migration data are crucial in the preparation of population estimates and projections for a nation or a County. Data on factors such as the sex, age, duration of residence, occupation, and education of the out-migrant or in- migrant facilitate an understanding of the nature and magnitude of the problem of social and cultural integration that occurs in areas affected by heavy out-migration and in- migration in any given nation such as Kenya.

Migration determines the population change such as population structure, size, density and distribution of a given area, this study analysed migration data to find out which Counties are gaining or losing population to other Counties in the period between 1999 and 2009.

The study applied the Age-Specific Growth Rate Technique to the current censuses data because of the following reasons:

a) To assess the utility of its application on the current data and make comparisons with the results found by Wakajummah's (1986) study to check whether the levels and patterns of migration have remained the same.

b) Due to errors associated with direct measures such as misreporting, age preference and avoidance have denied the utilization of direct measures of the estimation of migration in Kenya. In addition, they do not capture the return and diseased migrants as opposed to modern methods. Thus, Age-Specific Growth Rate Technique becomes more important to reduce those errors.

c) The other indirect methods have limitations; such as Survival Ratio Method only capture survived migrants whereas, National Growth Rate Method assumes that migration is less affected by mortality as well as the natural increase and of net immigration from abroad are the same for all parts of the country which is unrealistic situation. The vital statistics requires complete vital data which is not available in Kenya. Thus, Age-Specific Growth Rate Technique which assumes; population growth rates change from one age group to another becomes realistic to Kenya data.

d) This technique does not assume constant mortality and fertility schedules as opposed to other techniques. The mortality and fertility situations in different parts of the country are varying from one another. Thus, the Age-Specific Growth Rate Technique was used to estimate net out-migration rates for each County due to its utility of obtaining estimates of unstable population parameters such as net migration rates.

e) The availability and nature of data and not forgetting the kind of information required from subsequent migration estimates.

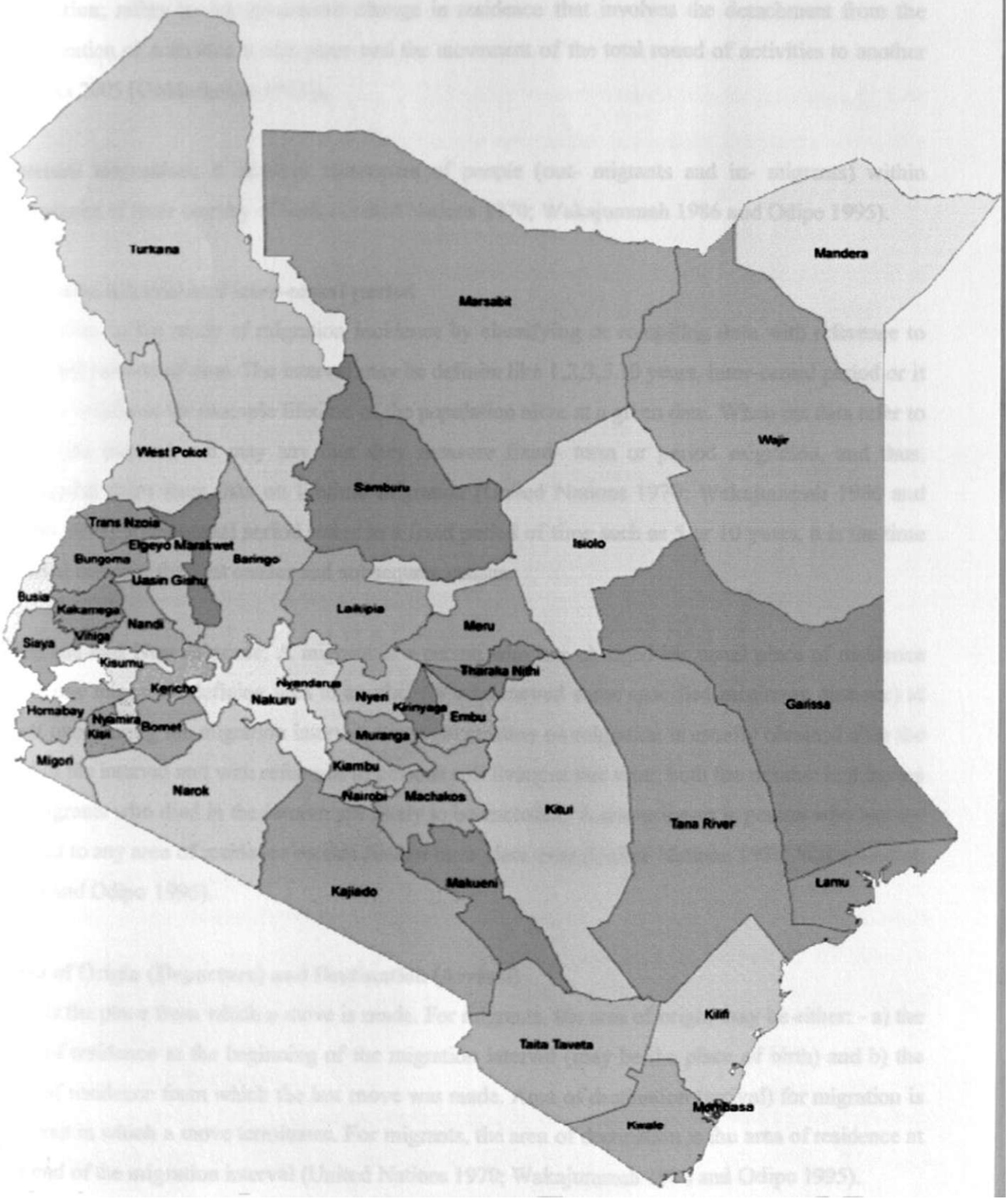
The recommendations from the findings of the study will be utilised by legislator and political scientist who are concerned with the formulation of policies and laws regarding migration and, to a lesser extent, internal migration and the enfranchisement and voting behavior of migrants. The policy makers and implementers of each and every County can utilize the data by planning well by retaining or attracting the skilled labour to drive the economy of their Counties. This is because the planning has been shifted from the national to County level.

1.5 SCOPE AND LIMITATIONS OF THE STUDY

The delimitation of the study was in all Counties in Kenya, using the census data of 1999 and 2009. The geographical map of Kenya is presented below in figure 1 showing forty seven Counties where inter-censal net migration rates were generated. The figure represents the administrative boundaries by County as per 2009 to which the data refer. These forty seven Counties are where the study was based on to reveal the migration typologies of every county in the country.

The limitation of the Age-Specific Growth Rate Technique is that it does not give the direction of the migrants within the nation. The data of 1999 and 2009 censuses could not reveal the trends of migration in Kenya. The data was affected by age misreporting therefore, the study applied the United Nations Age-Sex Accuracy Index to evaluate the data and then smooth it using pasex computer package before subjecting to the technique.

Figure 1: A map of Kenya showing 47 Counties in Kenya



1.6 OPERATIONAL DEFINITIONS OF CONCEPTS

Migration; refers to any permanent change in residence that involves the detachment from the organization of activities at one place and the movement of the total round of activities to another (Weeks 2005 [Goldscheider 1971]).

Internal **migration;** it involves movement of people (out- migrants and in- migrants) within boundaries of their country of birth (United Nations 1970; Wakajummah 1986 and Odipo 1995).

Migration interval and inter-censal period

This refers to the study of migration incidence by classifying or compiling data with reference to specified periods of time. The interval may be definite like 1,23,5.10 years, inter-censal period or it may be indefinite for example lifetime of the population alive at a given date. When the data refer to a definite interval, we may say that they measure fixed- term or period migration, and thus, distinguish them from data on lifetime migration (United Nations 1970; Wakajummah 1986 and Odipo 1995). Inter-censal period refers to a fixed period of time such as 5 or 10 years, it is the time interval between the first census and subsequent census.

Migrant **and Non migrant;** A migrant is a person who has changed his usual place of residence from one migration-defining area to another (or who moved some specified minimum distance) at least once during the migration interval. Since information on migration is usually obtained after the end of the interval and with reference to persons still living at that time, both the number and moves of migrants who died in the interim are likely to be excluded. A non-migrant is person who has not moved to any area of residence outside his/her birth place area (United Nations 1970; Wakajummah 1986 and Odipo 1995).

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

This is the place from which a move is made. For migrants, the area of origin may be either - a) the area of residence at the beginning of the migration interval (may be the place of birth) and b) the area of residence from which the last move was made. Area of destination (arrival) for migration is the area in which a move terminates. For migrants, the area of destination is the area of residence at the end of the migration interval (United Nations 1970; Wakajummah 1986 and Odipo 1995).

Migration **Streams;** this is the total number of moves made during a given migration interval that have common area of origin and of destination. In practice it is usually a body of migrants having a common area of origin and a common area of destination. Data on migrations, or migrants, can be cross-classified by area of origin and area of destination to form a matrix of n (n-1) streams, or a set of - pairs of streams, each pair representing movements in opposite directions. Thus, if a migration stream from area i to area j is represented by the symbol My, the opposing stream is represented by the symbol Mjj. When one is larger, another is smaller. The counter stream or reverse stream is associated negatively with opposite stream. The sum of the two members of a pair of streams is called gross interchange (United Nations 1970; Wakajummah 1986 and Odipo 1995).

Lifetime migrant and Lifetime migration

A person, whose area of residence at the census or survey date differs from his or her area of birth, is a lifetime migrant. The number of such moves in a population is commonly referred to as "lifetime migration."

Recent migrant and recent migration

A person whose area of residence at the census or survey date differs from his or her area of residence at a fixed prior date is a recent migrant In Kenya, the recent migrant refers to a person whose area of enumeration at census differs from his or her residence area at exact one year prior to census date. The number of such moves in a population is universally referred to as "recent migration".

In- migrant and in- migration

An in-migrant is a person who enters a migration-defining area by crossing its boundary from some point outside the area, but within the same country. In-migration refers to movement that involves change of residence into migration-defining area by crossing the boundary outside the area within the same nation.

Out-migrant and Oat-migration

A person, who departs from a migration- defining area by crossing its boundary to a point outside it, but within the same country, is an out-migrant. Out-migration refers to movement that entails

change of residence from migration-defining area by crossing the territory outside the area within the same nation.

Gross **and Net migration**

Gross migration concerns with data that refer to all moves or all migrants, within the specific definition of migration that is being applied. Sometimes it is referred to as migration turnover. Migration Turnover = In-migrants plus Out-migrants or In-migration plus Out-migration. Net migration refers to the balance of movements in opposing directions thus, it the difference between in-migration and out-migration. Net migration = In-migration minus out-migration or in-migrants minus out-migrants. If in-migration exceeds out-migration, then the net gain to the area is classifiable as net in-migration and takes a positive sign. In the opposite case, is the net out-migration that takes a negative sign. Net migration is equal to the net number of migrants because the difference between in-migrants and in-migration is equal to the difference between out-migrants and out-migration (United Nations 1970; Wakajummah 1986 and Odipo 1995).

CHAPTER TWO
LITERATURE REVIEW

2.0 INTRODUCTION

This chapter presents literature on methods of estimating migration; both direct and indirect measures and make comparisons. The chapter gives insight on application of the two methods of analysing migration in developing nations especially Kenya. It also gives studies that have utilised the methods of analyzing migration.

2.1 DIRECT MEASURES OF INTERNAL MIGRATION

Basically there are three main forms of methods of analysing internal migration through direct way namely:- a) Place-Of-Birth (POB) statistics b) place of last previous residence and c) duration of residence statistics. The discussions about them are given in detail below;

a) Place-of-Birth (POB) statistics

Cross-tabulation of place-of-birth with place-of-enumeration statistics has been the most common method used in estimating lifetime net migration. Place of birth is the traditional item that represents a direct question relating to migration. This question has long been included in the national censuses, and it is occasionally found in sample surveys. The first national census to contain such an item was that of England and Wales in 1841 (Siegel and Swanson 2007). The answer to this question may be recorded in a number of ways depending on the degree of detail (with respect to areal units) desired in the migration data. The place of birth may be recorded as the village, town, district in which the person was born or perhaps a larger unit such as a state, province, County or governorate. Those born in other countries, separately recorded, can then be singled out as international migrants, not to be included in the study of internal migration.

On the basis of the answer to the place of birth question, it is possible to classify the population enumerated into two groups: - 1) Lifetime migrants, defined as persons who were enumerated in a place different from the place where they were bom and 2) Non-migrants, defined as persons who were enumerated in the same place where they were born, represented in diagonally cells in the matrix table. From the table, we can get lifetime in-migrants, lifetime out-migrants, lifetime gross-migrants, and lifetime net migrants of a given territory for a governorate, County or state.

Strengths: 1) Unlike the estimates of migration derived from residual method, which are limited to net migration movements, POB data can represent in-migrants, out-migrants, and specific streams (net losses or net gains) of a given area. 2) These statistics also reveal the immigrants from other countries. 3) It gives a clear volume and direction of internal lifetime migrants as opposed to other methods. 4) Finally, it is possible to present migration balances/streams cartographically with the place-of- birth statistics provided the number of areal units is not very large for feasibility purposes.

Limitations: The main limitation of migration information obtained from data on place of birth is that we get the number of migrants but not the number of migrations. In addition, the data do not take into account immediate movements between the time of birth and the time of the census, and persons who have returned to live in there are of birth appear as non-migrants, hence not all migrants are included; return migrants are ignored. Furthermore, it necessarily takes no account of the migration of persons who died before the census date that is deceased migrants are excluded completely. Unfortunately, it may take into account the moves which are generally visits, tournament, or short vocations as lifetime migrations, since the migrants have changed the place of birth. The statistics do not indicate the total number of persons who have moved from the area in which they were born to other areas, or to any specific area, during any given period of time. It often reveals nothing about intrastate migration, and even when secondary subdivisions are specified in the recording of birth place, intra-area mobility (short-distance movement) is not covered, for example rural to rural within one County, similarly, urban-urban migration in the same County. The internal migration of the Foreign-bom population subsequent to its immigration is not included, since the birth places are limited to the native population of the country. The accuracy of the statistics is not guaranteed due to memory lapses of the respondents who give information about migrants, thus, mis-reporting the place of birth. Statistics on place of birth are subject to the types of errors of reporting and data processing that affect the generality of demographic characteristics; in addition, they have some sources of errors that are *sui generis.* These include uncertainties about area boundaries at the time of birth and about the reporting of birth place for babies who were not bom at the usual residence of their parents. Lastly, most children in developed world are bom in hospitals, because most hospitals are located in urban areas, a bias would be introduced toward urban birth places unless the parents' usual residence was reported. Similarly, in the developing

world, the endeavour to identify the area of birth can also introduce a bias in terms of the urban or rural origin of a migrant. A person bom in a little-known rural place may prefer to state the name of a better-known nearby town or city, so as to specify his geographic origin more clearly.

b) **Place of Last Previous Residence**

In order to get information on direct moves, it is necessary to ask for place of last residence rather than for birth-place, gives the recent migratory flows. The data will then permit identification of persons as migrants whenever their place of last residence and place of present residence differ. The category "migrants" will thus include all lifetime migrants plus return migrants; that is, all persons who have ever lived outside the area of birth.

Place of residence at a fixed prior date before census item reveal migration at specified period of time. The question on the place of the last one-year before the census normally reveals the recent migrants as well as return migrants. Return migrants are regarded as surviving migrants for a single fixed period of time.

Strength. A very important advantage of the place-of-last-residence approach over the place-of-birth approach is that the former reflected direct movement between places, while the latter ignores intervening moves between departure from the first residence and arrival at the last residence.

Limitations: Like those based on POB data, Place-of-last-previous-residence data suffer from the absence of a definite time reference. Persons who migrated fifty years ago or earlier and persons who moved only a few days ago will be grouped together as recent migrants. Place of residence at a fixed prior date understate the number of return migrants since it does not count migrants who moved out of an area during the interval and returned to it before the end of the interval.

c) **Duration of Residence.**

Another approach of direct measurement of migration is made possible by including in the census the single question; "How long have you been living in this place?" Persons who have lived in the place of enumeration all their lives would be treated as non-migrants, others as in-migrants. With this approach, persons who were bom in a given area but who subsequently moved out and then

returned to it would be treated as in-migrants, the duration of time being taken as the length of time elapsed since they returned to the place of birth. Thus, migrants by the duration-of-residence definition would include all who had ever migrated: a) those born outside the area of enumeration, and b) those bom in the area of enumeration, who had at some time lived outside it (return migrants). Their number must therefore be more than, though very rarely it may be equal to, the number of lifetime migrants by the birth-place definition.

Strengths: The duration of residence approach can count return migrants, fill a gap inherent in the ordinary birth-place approach. Second, this approach furnishes a distribution of lifetime in-migrants by time of last arrival, or a classification by migration cohorts. Third, it can be expressed in time periods.

Limitations: Duration of residence data alone cannot distinguish migrants from non-migrants, POB statistics are required to reveal the type of migrants (lifetime or recent migrants) as well as the direction of migration flows. It is also influenced with the quality, accuracy, and adequacy of data that is misreporting of the duration by the respondents who do not know the duration of all household members or reported as unknown (United Nations 1970).

2.1.1 APPLICABILITY OF THE DIRECT MEASURES OF MIGRATION

In Kenya, analysis of migration data was pioneered by Ominde's (1968) study entitled land and population movement in Kenya. The study analysed the interrelationships between population and a wide range of both physical and human geographical phenomena. The study was based on 1962 census data. As a study of land and internal migration, it covered several important issues: the evolution of Kenya's boundaries since the onset of the colonial administration; the land and development of the economy; major resource development; urbanization; distribution and types of manufacturing industries; spatial population distribution and redistribution; and the implications of migration for development planning. The study laid the foundation for researchers in the field of migration in Kenya.

Ominde (1968) in his study cross- classified place of birth vis-a-vis place of enumeration statistics to reveal the population flows in Kenya by provinces and districts. The study revealed that the

major spatial flows of population were economically motivated and that the establishment of commercial farming in various parts of Kenya formed the main factor influencing the direction of flow. The major flows included:- the Rift Valley Stream; the Coast Province Stream; the Nairobi Stream; the Other Stream and finally the Mombasa Stream. The Rift Valley, the Coast, the Nairobi and the Mombasa streams reported to have net gainers of the population whereas; the other streams consist of Central, Nyanza, Eastern and Western provinces experienced net loss of the population (Ominde 1968). It is very clear from the review that the direction of internal migration was well established in Kenya, indicating the provinces and districts that gained or lost population. It is published work therefore, easily accessible to readers.

However, this pioneering study is over four decades old, although it has been reviewed in bits and pieces by subsequent students of migration. This study which used enumeration areas that have substantially changed due to boundary modification utilised direct measures to analyse migration data. Moreover, this technique never estimated migration by age and sex. Other techniques that are modern ought to have been used to analyse the migration data by age and sex such as Age-Specific Growth Rate method. Survival Ratio method, and National Growth Rate method.

Other studies have utilised direct measures using later censuses data to interpret internal migration. Rempel (1977) in his study entitled analysis of the information on inter-district migration provide in the 1969 Kenya census, cross-tabulated with age and sex. It is unpublished and therefore, not easily accessible to readers. Similar study was carried out in by Beskok (1981), though using 1979 census data. Like Rempel's study, it is not easily accessible to readers since it is unpublished. Moreover, the study failed to determine the factors associated with migration.

Oucho (1988) in his study entitled "Spatial Population Change in Kenya: A District - Level Analysis", continued with analysis using direct method. The study was based on 1979 census data. In Kenya, analysis of spatial population change was central to development planning following a shift in planning strategy. This shift of planning from the national to the district in 1983 energised Oucho's study. The study focused on the district as the unit of planning, thereby localizing not only planning but also the analysis of population change. Although the study revealed 1979 migration patterns, it was complemented with Wakajummah's findings in his study of Age-Specific Growth

Rate method and indicated the age and sex of the migrants. The study focused mainly on the direction flows of population. Moreover, the study concentrated mainly on lifetime migrants leaving out recent, diseased and return migrants. Finally, it is nearly two decades after the study was carried out though it has been updated by subsequent students such as Odipo (1995).

Other studies that have used direct measures to analyse migration in Kenya include Analytical Reports on Migration and Urbanization in Kenya. These analytical reports have been done by Central Bureau of Statistics in different volumes. (CBS 2004) analytical report showed the levels, trends, and patterns of internal migration both recent and lifetime migrants as well as the demographic and socio-economic characteristics of lifetime migrants.

2.2 METHODS OF ESTIMATING NET INTER-CENSAL MIGRATION

The population increment between any two dates for any given geographic area is the result of natural increase and net migratory movement (UN, 1970). If the country is closed, the assumptions of closed population is taken into account that is there is no migration between the given country and other countries, then the net migratory movement for a given geographical area must be as a result of internal migration. However, where the population is open, problems arise in measuring the net migratory flows.

Given the population of an area at two points in time and an estimate of natural increase during the interval, we can calculate the number that would be expected at the end of the interval in the absence of migration. The difference between the observed and expected numbers at the end of the interval, or the difference between the observed and the expected change, gives an estimate of net change due to migration. This section outlines and discusses the various methods of estimating net inter-censal migration. There are five techniques of estimating net inter-censal migration, namely:-

2.3.1 Vital Statistics Method

2.3.2 National Growth Rate Method

2.3.3 Survival Ratio Method; a) Census Survival Ratio and b). Life Table Survival Ratio

2.3.4 Age-Specific Growth Rate Technique

2.3.5 Estimation of Inter-censal Net Migration from Birth-Place and Place of Residence Statistics.

2.2.1 VITAL STATISTICS METHOD

This is also called the balancing equation method. It relies on credible and complete vital statistics. Where, reliable statistics of births and deaths to the residents of each component area of a country are available, it is possible to estimate the natural increase between two census dates or between any two dates which the population is known. The estimate of net migration is then obtained by subtracting the natural increase from the total population change (Siegel and Hamilton 1952; UN 1970). Requirements: The method requires Total births and deaths in inter-censal period as well as the native population of state or County at first and second censuses as input data. Procedure: the procedure for estimating net inter-censal migration by this method is symbolically given as:

$M= (Pt-P_0) - (B-D)$ 2.1

Where, P, and P<0>, represent the population at the second and first censuses, respectively. B and D are births and deaths occurred during the inter-censal period respectively thus, the deviance gives the natural change of population and M, is the net inter-censal migrants of a given area.

Assumptions: This formula assumes that if an increase in population size of any given area is not attributed to natural increase then migration explains that deviance. It also assumes that reliable vital statistics; births and deaths to the residents of each component area of a country are available and complete as well as two successive censuses which are about equally complete, for estimation of net migration. It also assumes that population is closed to migration, only internal migration explains the deviance between the expected and observed population change that is international migration is either nil or negligence. Finally, that the rate of natural increase is the same throughout the country and constant for the inter-censal period.

Strengths: The net migrants obtained from stated formula reflected both the in-migrants and out-migrants that returned and died. It can also estimate net migration for a sex, race, nativity group, or any other group defined by a characteristic that is invariant over time, provided that the population and vital statistics are available for that characteristic (Siegel and Hamilton 1952; UN, 1970). The vital statistics handles the problem of timing of migration, since the vital registration is a continuous

Limitations: This is a crude method of estimating net migration as it assumes the constant rate of natural increase and being similar throughout the country. It cannot estimate net migration among age cohorts since it is tedious to obtain data showing the number of deaths that occur to aging cohorts over a decade (Hamilton 1967). It does not reveal the direction of the out-migrants from each region or state or County within nation and in addition, it is silent on the levels and patterns of migration.

Although, this method has been successfully used in developed world and its value in detecting under-enumeration or over-enumeration errors in the census is widely recognised, it has hardly been applied in developing countries. The vital statistics in many parts of the world are not often available in the kind of details required by this method. In Kenya, this method has never been applied due to incomplete data in the Civil Registration Department since the data that is available do not permit any meaningful analysis (Otieno 1999). It is subject to errors associated with incomplete coverage and of misreporting of age in both the census and the death statistics. The errors may be due to changes in boundaries within the country. Again, vital statistics are unlikely to be available in the kind of detail required for the cohort approach. Deaths are usually tabulated by age at death rather than by age at fixed date.

2.2.2 THE NATIONAL GROWTH RATE METHOD

This technique requires only population size at different times. Here the rate of growth of an area is compared with the national average and the difference is assumed to be net migration. Obviously such a figure is only useful if the vital rates are similar, a, most unlikely occurrences.

The estimated net migration, M,, for a given area is given by the formula:-

$$A/,= \frac{f(/\,\text{»}\,'-0}{pO} \quad \frac{(!>'-/*)'}{nO} \; *K \qquad 2.2$$

Where, *P,'* and *P,°* represent the national population at the end and the beginning of the inter-censal period, respectively. Prepresents the populations of the geographic subdivisions at the beginning of the period and P/ represents their populations at the end of the inter-censal period. This rate is customarily multiplied by a constant, such as 100 or 1000. Thus, for a geographic division, a rate of growth greater than the national average is interpreted as net in-migration and a rate less than the

national average as net out-migration. The same procedure can be applied to specific age-sex groups to derive estimates of net migration for birth cohorts.

Requirements: Native national population, both first and second censuses, Native subdivisions populations either by County, province, or state, both first and second censuses.
Assumptions: The method yields an estimate of the rate of internal migration for geographic subdivisions on the assumption that rates of natural increase and of net immigration from abroad are the same for all parts of the country.
Strengths: It does not require vital statistics such as births and deaths, thus, a country with no detailed or comprehensive vital statistics can apply this technique to estimate net inter-censal migration.
Disadvantage: It does not reveal the direction of migratory flows within the country (Shryock and Siegel, 1976).

In application of this technique, the Directorate of National Sample Survey of India used the National Growth Rate Method with much success to study migration in India (India 1962). Zachariah (1964) applied the National Growth Rate Technique to study migration in the Indian sub-continent. Odipo's (1995) study applied similar method to Kenya data of 1969, 1979, and 1989 censuses to estimate net inter-censal migration of the two decades by district level analysis. The study found out that the push and pull factors of migration remained almost uniform as well as migration patterns for the period 1969-1989. The study focused on inter-district migration in Kenya. Moreover, the technique applied released the same results as of that Wakajummah's (1986), Age-Specific Growth Rate Method and concluded that modem methods of estimating net inter-censal net migration almost yield the same results, though with varying assumptions and input data. The study succeeded to compute migration rate of unstable population using National Growth Rate method just as other modem indirect methods such as Age-Specific Growth Rate method and demonstrated the utility of the technique. The findings of the study corroborated with earlier findings based on direct measurement of internal migration rates.

However, the technique could not indicate the direction of the migrants in Kenya though; it was complemented with Oucho's study of 1988 to show the direction of migrants. The method remain to

be questionable on 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. In Kenya, rural and urban areas experienced different rate of natural increase and in some rural areas there is little international migration that exist In addition, the technique assumed the effect of mortality on migration thus, eliminating the dead and return migrants.

Odipo (1995) proposed that first; research to be carried out to establish the socio-economic determinants of the already established migration rates and patterns in Kenya, for the periods 1969-1979 and 1979-1989. Second; more researches on indirect techniques needed to be used in computing migration rates using Kenya data. Like Otieno's (1999) study, the study proposed the applicability of the vital statistics and place of birth statistics techniques to Kenya data.

2.2 J SURVIVAL RATIO METHOD

According to this method of estimating internal migration, the number of persons having the probability of survival is estimated on the basis of life tables between two censuses. For this, the required basic information is the age distribution by sex and survival ratios in two successive censuses. These are applied to the population of the first census for working out an estimate of the population expected to survive by the second census. The difference between the population registered at the end of the second census and the population expected shows the net internal migration.

The survival ratio method is simple because it does not require statistics of births and deaths. Moreover, it provides estimates of migration by age and sex of the people.

United Nations (1970) give the basic formula as:-

$$Net\ M^{l}\ fx)\text{-}P \quad \sim SP_{Xl} \qquad 2.3$$

Where $M^{1}(\chi)$ is the net migration of survivors among persons aged x at the first census in a given area (they will be aged x+n at the second census), P_{xl} is the population aged x in that area at the first census, P_{Itni} ^ is the population aged x +n years in the same area at the second census

separated from the first census by n years, and 5 is the survival ratio or survivorship probability. It yields an estimate of net change due to the migration of persons who survived to the second census.

An alternative to estimating the expected number of persons at the second census by thus applying "forward survival ratios" that is to estimate the number of persons that would have been x, years of age at the earlier census from the number who are enumerated as x +n years old in the second census by applying "reverse survival ratio" (the reciprocals of forward survival ratios). The rationale here is that the number of persons x years old at the earlier census is equal to the number of persons at the second census who are n years older plus the deaths to this cohort. The resulting estimate of net migration thus, includes deaths to the migrant cohorts and is equivalent to an assumption that all migration occurred at the beginning of the interval.

Generally, there are two main types of survival ratios as mentioned above; those from life-tables and those from censuses.

2.2 J. 1 LIFE TABLE SURVIVAL RATIO (LTSR)

These are derived from two life table, if possible for the same geographic area and time period to which the estimate of net migration applies.

Requirements:

1) Life table survivorship probabilities
2) Two consecutive censuses population data aggregated by age, 5 years age group, and sex.

The procedure is evidence from the formula given below:

,o 2.3a

Where, x is age interval as 1,5, 10,15....,

ioS,, is the 10 year survival ratio from age group x to x+10 and $L_{x+|0}$ and $_5L$, are the numbers of person in the age groups x+10 to x +14 and x to x + 4 respectively.

If there is an open -end interval, say 85 years and over, then the 5-year Survival ratio for Sjo* is obtained as:

S«h = $\frac{T}{}$, and the 10 year Survival ratio for $S_{75+} = \frac{T}{}$ 2.3b

Applications of the survival ratio method frequently omit the cohorts bom during the inter-censal period, even when adequate statistics on registered births are available. The survival ratios for children bom during the inter-censal period are of a different form from those for the older ages. Babies bom during the first quinquennium of a 10 - year inter-censal period will be 5-9 years old at the end of the period, and those bom during the second quinquennium will be under 5 years old. Births can be represented by the radix, lo, of the life table so that;

L 1

s^o vo

If a life table is not available for the area, but the average mortality level of the period is approximately known, model life tables can be used to calculate the survival ratios. If an appropriate life table is available and if the census age data are free from error, the life table survival ratio method should give fairly accurate estimates of net migration for persons who were still alive at the time of the second census.

Assumptions: It assumes only one type of migration to be estimated at ago, for example internal or international migration. It also assumes that deaths and migrations are evenly distributed over the decade or that all migration occurred at the middle of the interval.

Strengths: It is preferred if the national population is not sufficiently closed and no satisfactory adjustment can be made to international migration. Moreover, if migration estimates are required for only one or two small areas in a country like a city, and the mortality level is known to be different from that of the country as a whole, then it is required.

Limitations: When the age data are defective, the migration estimates will be also defective unless the age data are smoothened first. Incompatibility between life table survival ratios and census age data will show itself in an irregular pattern of migration estimates by age and in the failure of the sum of net migration balances for all areal units to add to zero, which it must do in each age group. Life table survival ratios are smooth, and when a set of smooth survival ratios is applied to a distorted or irregular age distribution, the resulting expected populations and net migration estimates are also distorted; and the sum of net balances for gaining areas probably will not be equal to the sum of net balance for losing areas. The discrepancy may be eliminated or overcome by

smoothing the census age data before applying the estimating formula. It mainly focuses on estimating survived migrants at the end of the inter-censal period. It leaves out those who died during the inter-censal time interval. Finally, no direction of migrants is shown, it should be complemented by birth place status.

2.23.2 CENSUS SURVIVAL RATIO METHOD (CSRM)

The census survival ratio is computed as the quotient of the population aged x + n at the second census to the population aged x at the first census, where the censuses are taken n years apart.

Assumptions: It is closed to international migration thus, limited only to births and deaths in the nation. It also assumes that the survival ratios are the same for the geographic subdivisions as for the nation. Again, the pattern of relative errors in the census age data is the same from area to area and that the level of mortality of the foreign bom is the same as that of native population.

The survival ratio, S is given as:- $S'^{m} = (p^{\wedge}) + P'_{x}$ 2.3d

A ratio that reflected mortality but not migration is desired. Hence, census survival ratios have to be based on national population statistics; and if there is appreciable external migration, it is preferable to base them on the native population as counted in the two national censuses. Once survival ratios based on a closed population are secured, however, it is permissible to apply them to the total population figures for local areas therefore, to include the net migration of the former in-migrants in the estimates. The census survival ratios are intended to measure mortality plus relative coverage and reporting errors in the two censuses. Because of the coverage and age reporting errors in the census, or because of net immigration from abroad, a national census survival ratio will sometimes exceed unity (1). This is an impossible value of course, as far as survival itself is concerned, but for the purpose of estimating net migration, this is the value of the ratio that should be used. This fact has to be allowed for when estimating the expected population 10-to-14 years old over a 10-year inter-censal period.

The estimate of net migration in a given area of sub-division of the country is obtained as:

Net $Mi_{w} \ll P^{p}_{-ij} \tilde{-} S^{*}P_{mj} {}^{*}{}_{m} S^{*}P_{w,J}$ 2.3e

W h e r e , f o r all x
i

Population data are usually compiled by five-year age groups and the inter-censal interval is usually fire or ten years. In this situation, no adjustment of the basis age data is required.

2.2JJ NET **MIGRATION OF CHILDREN**

Estimation of net migration of children bom during the inter-censal period when adequate birth statistics are not available is problem given that the census survival ratio method cannot give estimates of net migration for persons bom during the inter-censal interval (United Nations 1970). This gap may be filled by various methods. If the birth registration is considered to be complete and numbers of births are available by areal units, these can be used to calculate survival ratios and for computing estimates of net migration. Thus, if data by quinquennial age groups are available from a census taken on census date, after an inter-censal interval of ten years, survival ratios for quinquennial age groups are given by:-

$$S^{\wedge} \quad \frac{\textit{National population 0-4 years old on census date}}{\textit{National births during the second quinquennial period}} \qquad 2\ 3f$$

$$S \quad \frac{\textit{National population 5-9 years old on census date}}{\textit{National births during the first quinquennial period}} \qquad -> \wedge$$

An estimate of net migration for persons 0-4 years old in the i^{h} area is given by:-

Net 5M0, i = $_{5}P_{o}$. i = Si x Bj «m)

That, for persons aged 5-9 is given by:

Net$5M_{5}$.i=5P5.i=S2XBj$_{(}$v9)

These estimates, like those for the older cohorts, have the property that their total for all areas of an entire nation will automatically be zero.

If reliable birth statistics are not available the following approximate method, which uses area-specific child-woman ratios, derived from the second census may be applied (UN 1970). If the ratios of children aged 0-4 to women aged 15-44 and of children aged 5-9 to women aged 20-49 are denoted by CWRo and CWR_{S} respectively, then estimates of net migration for the age groups 0-4 (denoted by Net $_{5}$Moj) and 5-9 (denoted by Net $_{5}M_{5}$j) are given by:

$$\text{Net}_{5}\text{Mo.}\,i = \text{CWRo.}\,\text{Net}_{M} \qquad 2.3i$$

$$\text{Net}\ {}_{5}\text{M}_{5}\text{.}\ s = Y_a\,\text{CWR}_5 \bullet \text{Net}\ 30 \qquad 2.3j$$

Where, Net yoM\Q and Net 30 , represent the area estimates of net migration for females aged 15-44 and 20-49, respectively.

If we assume that the flow of migration was even and fertility ratios constant, then one fourth of the younger and three fourths of the older children would have been bom before their mothers migrated. The sum of these net migration estimates for all areas will not necessarily be zero.

Assumptions: First, the national population is assumed to be closed that is entered only by births and left only by deaths, thus, not affected by external migration. Second, that the specific mortality rates are the same for each areal unit as for the nation. Lastly, that the ratio of the degree of "completeness" of enumeration in any age-sex group in each areal unit to that of the nation is the same for the same cohort.

Strengths of CSRM: The CSR method is such that it tends to correct for systematic errors in the age data and thus to compensate for some of the effects of such errors. The age group 0-4 years, for example, may be disproportionately under -enumerated. It often happens that the cohort is better remunerated in a later census; say 10 years later and the number is found to be larger in the same cohort, than would be expected on the basis of any reasonable estimate of change due to mortality. Such ratios do not give accurate measures of survivorship, but they do not tend to incorporate net census error in the expected population and to that extent give a better estimate of net migration than would a life table ratio which "expects" no change except that of mortality give. These differentials in the completeness of enumeration of a cohort at successive censuses cause CSRs to fluctuate somewhat rather than to follow the smoothly descending age-pattern characteristic of LTSRs.

Limitations:

1) Where the country is not closed to international migration, estimates are likely to be over obtained due to influence of immigration. Thus, the assumption of the closed national population is violated in countries that experienced international migration.
2) In countries where the general mortality level is high, that is likely to be considerable variation in the mortality of component areas. The assumption of mortality equality may be violated; and if migration estimates are not corrected for regional differences in mortality, errors will be introduced.
3) The assumption that the ratio of the degree of'completeness" of enumeration in any age-sex group in each areal unit to that of the nation is the same for the same cohort in both censuses is unachievable. Normally, there is a variation in the relative undercount or over count of age cohorts thus, the estimates of net migration are affected in (me way or the other.
4) Like vital statistics method, survival ratio method is affected by changes in area boundaries.
5) Like other methods, census survival ratio method does not show the direction of migrants that is their origin and destination areas.
6) As the name suggests, the census survival ratio method only captures the survived migrants during the inter-censal period.

The applicability of this technique to Kenya data has been limited to only one study in Kenya. Otieno (1999) in his study of estimation of net inter-censal rural-urban migration in Kenya, used Life Table Survival Ratio method to determine patterns of migration from the estimated migration rates in Kenya. The study was based on censuses data of 1979 and 1989 and focused on urban centres which had a population of 2000 and above as per 1979 census report and which were enumerated as urban centres in the subsequent census of 1989.

The study revealed that urban ward migration was dominated by the age bracket 20-29 years; whereas, urban out-migration was marked by the age 30 and above who may be had come for higher education and go back for rural employment or had been given retrenchment or retirement. The rural -urban migrants constituted school drop-outs, school leavers, the unemployed, those seeking for education and training that apparently appear guided by the notion that such centres offer solutions to their social and economic demands. The LTSR method used confirmed that a

cohort analysis of migration across age cohorts presents a broader insight into male and female migration differentials.

However, the study had some shortfalls; it failed to reveal mobility histories by region or districts by not showing the place of their origin and destination. Moreover, the study failed to indicate the patterns of return and diseased migrants as it focused only on survived migrants. It also left out the Elgeyo Marakwet district since it had no an urban centre as per 1979 census report.

2.3.4 AGE-SPECIFIC GROWTH RATE TECHNIQUE

Preston and Coale (1982) developed a technique which could be used to estimate mortality, fertility, and migration for non-stable populations. See the formula (2.4) below;

$$\frac{-1}{\Gamma} \quad \frac{N_{(a*5)}}{N_{(o)}} \quad t\text{-}Sa \qquad 2.4$$

Where, e(x) is the net out-migration rate, r is the growth rate within the same cohort between ages "a" and "a+5", P(a) is the probability of survival up to age 'a' from birth, $P_{(a+5)}$ is the survivorship probability up to age "a+5" from age "a" and $N_{(t+5)}$ and $N_{(1)}$ are the average number of persons in the two censuses age- wise in the adjacent 5- years age groups.

The above formula expresses the out- migration rate between age 'a' and 'a+5' in terms of: - (i). Probability of survival at age 'a' and 'a+5' and (ii) Age-specific growth rate between age 'a' and 'a+5'.

Assumptions: The technique assumes that population growth rates change from one age group to another. Moreover, population growth is attributed to changing fertility and mortality schedules as well as to varying migration rates.

This study used the age-specific growth rate technique to estimate inter-censal net migration by County level analysis using Kenyan census data sets of 1999 and 2009.

Requirements: First the technique required the appropriate life tables from which the probability of survival can be obtained and second two consecutive population censuses computed by five-year

age groups. These two sets of data gave way for calculation the age-specific growth rates required by this technique.

Strengths: Unlike the stable population model, the Age- Specific Growth Rate Technique does not assume constant mortality and fertility schedules. This makes it suitable for application in developing countries where both birth and death rates have been changing rapidly during recent times. Moreover, it does not require the census interval to be in 5 years or a multiple of five.

Weakness: Like the above discussed techniques, this method cannot give the direction of population movements from one region to another as well as within County that is both inter County and Intra County migration.

The application of Age-Specific Growth Rate technique to Kenya data was pioneered by Wakajummah (1986). Wakajummah (1986), in his study entitled "Inter-censal Net Migration in Kenya, District Level Analysis" estimated Inter-censal net migration rates for all the 41 districts of Kenya using the age-specific growth rate (ASGR) technique. The study was based on 1969 and 1979 censuses data. The Life Table of 1979 based on child mortality estimates developed by Kichamu (1986) was utilised, not forgetting the inter-district migration matrix which was extracted from Oucho's compilation of birth place statistics of 1979 census to reveal direction flows of the population. The method was suitable for Kenya data since it took into account changing fertility and mortality schedules experienced in the country in earlier years; this is due to its benefit of estimating unstable population dynamics.

The study found out that migration in the metropolitan areas; Nairobi and Mombasa reflected the same age-specific migration patterns, suggesting that major forces attracting the people into and/or repelling them from these two regions are nearly similar. In-migrants in these regions that were experienced in the age groups 10-24 for females and 10-29 for males whereas out-migrants were in ages 30-69 and 25-69 for males and females, respectively. Migration in re-settlement areas was found to have a similar migration patterns, they were marked by population net gains in all age groups and the migration at the border areas along the international boundaries were found to register net gains in population.

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The study computed excellent inter-censal migration rates in Kenya by establishing the patterns and levels of migration and the general knowledge of migration patterns and typology was well established in his study in each and every district The technique distinguished net in-migration from net out-migration of different areas. However, the technique could not show which of the district was losing or gaining population to which other district Thus, the study applied birthplace statistics, to ascertain the direction of migration stream flows. Moreover, the technique was affected by age misreporting, census coverage and inter-censal boundary changes. The study being the pioneer of applying this technique to Kenya empirical data, it is nearly 25 years old. Though, it has been reviewed by various studies such as Oucho's (1988) study which complemented Wakajummah's results.

The study recommended the following: 1) a more demographic study of migration using some of the newly developed techniques needed to be carried out in Kenya; 2) the research on the impact of migration on fertility and mortality ought to be done in Kenya; 3) the impact of migration on resource development in areas of origin and areas of destination needed to be researched on carefully and finally the relationship between migration, income distribution, population density and population growth rate remain highly speculative. Such relationships need to be investigated through extensive and intensive research.

2.3.5 BIRTH-PLACE AND PLACE OF RESIDENCE STATISTICS.

If place -of-birth statistics are available for the same set of areal units at two consecutive censuses, these data can be used to make an indirect estimate of period, or inter-censal net migration for each areal unit (UN 1970). Thus, if I, and $I_{,+n}$ are the numbers of lifetime in-migrants in a particular area at two censuses at times't' and 't+n\ respectively and if O, and 0,+, are the corresponding lifetime out-migrants, then an estimate of inter-censal net migration for that area, M is given by:

$M = (I^*. - O.+.) - (5, I_t - So\ O.)$ 2.5

Where, S| and So are the inter-censal survival ratios giving the proportions of I, and O, that will survive the inter-censal period. The same formula may be rewritten as:

$M = 0\,\hat{}\, - S\,|\,I\,\text{«}\,) + (\,\hat{}\,O\,, - C\,U\,) = M_l + M2$ 2.5a

Thus, the birth-place data at two censuses not only provide a means of estimating the balance of inter-censal migration but they also help to analyse that net balance into two components, namely, net migration among persons bom outside the area (Mi) and that among persons bom inside the area **(M2).**

In practice, the major difficulty in application of the method is the estimation of S| and *S^ A* considerable amount of data and computations are needed in order to derive accurate estimates of Si and Sa^ such data are not generally available. In brief. Si is a ratio of lifetime in-migrants at the second census to lifetime in- migrants at first census in a given area and So is a ratio of lifetime out-migrants at the second census to lifetime out-migrants at first census in a given areal unit. For more details see United Nations Manual VI (1970).

Assumption: The technique assumes that only lifetime migrants can be estimated.
Strengths: Where, regional mortality differences are large and age data are seriously defective, place-of-birth data give more valid estimates of net migration. If the birth-place data are available also by age for each lifetime stream, the possibility of eliminating the error due to mortality differences is an important consideration operating in favour of the POB method.

Weakness: Due to memory lapses, the respondent may not be able to state the exact birth-place of each person who resides with him or her at the time of enumeration. If a person has live in one place for a long time, there may be a tendency to report it as his birth-place. Unintentional mis-statement of place of birth is, therefore, quite possible. There may also be deliberate misreporting of birth-place for political or prestige reasons. The endeavour to identify the area of birth can also introduce a bias in terms of the urban or rural origin of a migrant. A person bom in a little-known rural place may prefer to state the name of a better-known nearby town or city, so as to specify his geographic origin more clearly. As a result, more urban-bom migrants may be reported in comparison to rural-bom. Boundary changes of geographic units may affect the POB data; people are not likely to be aware of such changes, and through ignorance of them may report birth-places incorrectly. The POB statistics lack timing of migrations; it reflected migrations which may have taken place at any time since birth and the category of migrants includes; those who came to the place of enumeration just a few days before the census date as well as those who arrived a half-century or more earlier.

2 J SUMMARY AND CONCLUSION

The foregoing section has reviewed computational steps of modem methods (indirect measures), direct measures and studies that have used the methods. The strengths and limitations of the selected internal migration estimation techniques have been discussed. Although, Age- Specific Growth Rate method has been applied to Kenyan empirical data by Wakajummah (1986) in his study, there is knowledge gap to be filled still flourish as to the utility and applicability of the same method to the recent data.

CHAPTER THREE
METHODOLOGY

3.0 INTRODUCTION

In this section, sources and quality of migration data, the analytical framework that the study used and supporting models are presented. The supporting models include: data quality appraisal model (the UN joint score) and the modem life table based on child estimates.

3.1 SOURCES AND QUALITY OF MIGRATION DATA

Information on internal migration is available from two main sources: first, data derived from direct or indirect questions about mobility related to birth place, last place of residence at a fixed past date and the duration of such residence. Second type, consists of estimate of net migration derived from total counts of population by age and sex at two consecutive censuses. The study used the census data sets of 1999 and 2009, in response to the above asked questions to give the migration levels and patterns of migrants in Kenya.

The quality of data was checked by the UN joint score, thereafter being smoothed where possible. For example; when the score was above 20 for any given County, the data was smoothed to address age data errors such as age preference and avoidance. A section of this data appraisal was provided in the Appendix 1. In addition, to limit some errors inherent in the census, the non-stated responses were excluded from the computed figures in this study.

3.2 ANALYTICAL FRAMEWORK

This study adopted the analytical approach that Preston and Coale (1982) devised to estimate mortality, fertility, and migration for unstable population. Wakajummah (1986) used the same technique that is Age-Specific Growth Rate, to estimate inter-censal net migration in Kenya by district level analysis. The analytical approach taken in this study and the associated computations are explained in some detail, in what follows (Preston and Coale 1982; Wakajummah 1986):

In the stable population, the age distribution at age 'a' is given by:-

$C_{(,)}=b*exp(-ra)*P_{(.)}$ (3.1)

Where, b is the birth rate, r is the growth rate and $P_{(1)}$ is the probability of survival up to age 'a' from birth.

In the above stable population equation the growth rate r is assumed to be constant through all ages, which is unlikely situation in unstable population. If the equation is modified to assume constant growth rate just within specific- age groups, but for all ages, the equation is modified to:

$$^{c}<\!\!>\!\!>= \quad * * / V e x p \quad {}^{m}$$

The foregoing formula assumes population growth occurs only due to natural increase. However, population growth is accounted for both by natural increase and net migration. To take care of migration, the formula may be re-written as follows:-

$$^{C}<\!\!>\!\!>= \ * * / V e x p \ [-|\{r(x)+e(x)\}A] \quad {}^{m}$$

Where, *e(x)* is the net out-migration rate.

C (,) and ***b*** can be replaced by ^{N}™ and $^{S}{}_{v}{}^{\circ)}$, respectively. The formula therefore becomes:-

$$^{N}io> \quad = \ N,0, *P_{M} * \mathbf{e\,x\,p}\ [-\int_{o}^{a}\{(r(x)+e(x)\}]$$

$$\frac{N(a)}{N_{(0)}*P_{(a)}} = \exp\left[-\int_{0}^{a}\{r(x)+e(x)\}dx\right]$$

$$\ln\left(\frac{N(a)}{N_{(0)}*P_{(a)}}\right) = \left|-\int_{0}^{a}\left\{r(x)+e(x)\right\}dx\right| = -\int_{0}^{a}r(x)dx - \int_{0}^{a}e(x)dx$$

Therefore,

$$\int_{0}^{a}e(x)dx = -\ln\left(\frac{N(a)}{N_{(0)}*P_{(a)}}\right) - \int_{0}^{a}r(x)dx$$

o o Jr{a*s) 0

=> "\e(x)dx -]e(x)dx = - In ^ + in - * Jr(x*fr + Jr(x>fc

u 0 ™<0) * "a*5) (•) * "(a) a 0

Therefore.

a+5 N P

/ = l n - ^ * ^ - \r(xXbc

Af P

W(•+5) P(a) 3.1a

-1, N ifL» P ifL

,e r= ~5 /N(®+S) P(«+5)

. 5 ^ = " I, y l n Nlo+S) ^ ^g) I M ' j (2.4)

The above formula expresses the out- migration rate between age 'a' and 'a+5' in terms of:-

i). Probability of survival at age 'a' and 'a+5'

ii). Age-Specific Growth Rate between age 'a' and 'a+5'.

Assumptions: The technique assumes that population growth rates change from one age group to another. Moreover, population growth is attributed to changing fertility and mortality schedules as well as to varying migration rates.

Requirements:

1. The appropriate life tables from which the probability of survival can be obtained.
2. Two consecutive population censuses computed by five-year age groups.

These two sets of data enabled us to calculate the age-specific growth rates required by this technique. If implemented from age 0, this technique also requires inter-censal births. If cannot be

obtained, then the estimation should begin at age 5, with $N_{(a)}$ estimated by averaging numbers in the adjacent 5 - years age groups. The study effected from age 5.

The computational steps:

1. To obtain the age specific growth rate, the following formula was used:

$$1 \cdot \ln$$

Where, $_s$ and $_5A^{\wedge}$, are the number of persons between ages "a" and "a+5" at times to and ti, respectively, when the two censuses were taken. In this case, is the reciprocal of 10.

2. To estimate the number of persons at exact age "a" denoted by ($N_{(l)}$), we first average the number of persons in the two censuses age-wise:-

$$\frac{\hat{} \quad - \quad \underline{5}}{5 \quad " \qquad 2}$$

The obtained result is further averaged in the adjacent 5 years age group as shown below:-

$$N<_a>= \frac{{}_sNa+sN(a-5)}{10}$$

Given the above formula, the inter-censal net migration rate can be obtained by the formula (2.4)

$$5 \quad a \text{ — } - h \quad \frac{N_{(o+J)}}{N} \; t \; \frac{P_{Jo)}}{P} \quad S^r a \qquad \textbf{(2.4)}$$

Note: e(x) is not the life expectancy at age x but it is rather net out migration rate.

To compute inter-censal net migration rate by Age- Specific Growth Rate Technique , this study used the arithmetic mean for 1999 and 2009 census data sets for two consecutive time interval as well as the life table of 1999 based on child mortality estimates computed in analytical report on mortality using 1999 census data (CBS 2002). The Life Tables by Sex and District attached in appendix 10 of volume V in the analytical report on mortality was used in this study.

33 SUPPORTING MODELS

As mentioned earlier in this section, this study employed the Life Tables for different districts based on child mortality estimates of 1999; Migration streams to depict the direction of migrants presented in-migration matrix and Data Quality Appraisal model that is the UN joint score. Below is a brief description of how Modem Life Table is constructed.

3J. I THE LIFE TABLE CONSTRUCTION

The study used the current Life Table based on child-mortality estimates of the 1999 census data. It assumes a hypothetical cohort that is subject to the age-specific death rates observed in the particular period. In this case, the period observed was 1989-1999.

This section shows how to derive a life table from estimates of child mortality. To estimate child mortality, the Coale-Trussell technique which requires the information on children ever bom (CEB) and children surviving (CS) or children dead (CD) classified by mother's age is used. The Female population (FP) classified by five-year age groups is required (UN 1983).

Given these requirements the probability of dying at age x is given by the formula:

q_x - k(i)• $D_{(i)}$, where, x = 1,2,3,4,5,10,15 and 20 and i = age group representing 15-19, — 45-49, the multiplier k<j) is meant to adjust for non-mortality factors determining the value of $D_{(j)}$ and it is derived as; k^ = a<j) + $\frac{bP_L}{-J-} + c \quad P_{2)}$ where, a<j), b^o and $q_{,-}$, are Trussell's coefficients for estimating child mortality, $P_{(i)}$ is the average parity for age group i while $D_{(i)}$ is the proportion of children dead for age group i.

(3)

Thus, $P_{0>} = \frac{CEB}{rp}$ for age group i and £\i>= $\frac{CJ)}{\wedge}$ for age group i

It should be noted that the probability of dying q_x as used here is for both sexes. To obtain the q_x for females or males the sex ratio of 102 males per 100 females was used. Hence, the q_x for females = q_x for both sexes divided by 1.02 while q_x for males = q_x for both sexes multiplied by 1.02.

For each sex, mortality levels was estimated from the Coale-Demeny Life Table using l_{2x} $l(3)$ and l_5, calculated from q_x above. To estimate the mortality levels, interpolation was applied. Likewise, estimates of $P_{(x)}$ for all ages were obtained by interpolation (Shryock and Siegel 1976).

The mortality levels obtained were used to construct a life table. Each $P_{(x)}$ was multiplied by the radix l_0 to obtain the number of survivors at age x that is l_x. The other Life Table functions were generated as follows:-

i). $_nP_x$, the probability of surviving between age x and x+n is given by the formula:

$$_nP_x = \frac{l_{(x+n)}}{l_x}$$

ii). $_nq_x$, the probability of dying between age (x) and (x+n) is given by the formula:

$$_nq_x = 1 - {}_np_x$$

iii). $_nd_x$, the number of persons dying between age (x) and (x+n) is given by:

$$_nd_x = l_x - l_{x+n}$$

iv). $_nL_x$, the number of person years lived between age (x) and (x+n) where:

$_1L_0 = 0.3 * l(0) + 0.7 * l(1)$

$_4L_1 = 1J * l(1) + 2.7 * l_5)$

$_5L_5 = 2.5 * [l(5) + * l(10)]$

$_\infty L_{75+} = {}_\infty d_{75+}$. since everyone will eventually die and 00 means infinite.

v). $T_{(x)}$. the total population from age (x), is given by:

$T_{(x)} = T_{(x+1)} + {}_iL_x$

vi). e_x, the expectation of life at age (x), is given by:

3-3.2 **DATA QUALITY APPRAISAL MODEL**

The study utilised the UN Age-Sex Accuracy Index to check the accuracy of age reporting in the data. This is an index devised by UN to evaluate the age reporting in a survey or census. The U.N. age-sex accuracy index combines the sum of: a) the mean deviation of the age ratios for males from 100.0; b) mean deviation of the age ratios for females from 100.0 and c) three times the mean of the age-to-age differences in reported sex ratios (UN 1952; Shryock and Siegel 1976).

In the U.N procedure, an age ratio is defined as the ratio of the population in a given age group **($_5P_a$)** to one-half the sum of the populations in the preceding **(sPa-s)** and following **(sP^+s),** groups, see the age ratio formula below.

$$\text{Age Ratio} = \frac{-77}{y2\{5\wedge 5+5\wedge 5)} * 100$$

The sex ratio is defined as the ratio of males to females per 100, in each age group.

$$\text{Sex Ratio} = \frac{\text{MaleS}}{Females} * 100$$

Computational steps:

- Get the sex ratios for all age groups from age group 10-14.....65-69.
- Obtain the successive differences to compute the mean of the age-to-age differences in reported sex ratios.
- Analyse age ratios, males and females differently.
- Obtain the deviations of age ratio for males and females separately from 100.
- Compute the mean deviations of the age ratios separately, again for males and females.
- Obtain the index by adding the following; 3 times mean difference in sex ratios, mean deviations of male and female age ratios.

Table 1: **Interpretation**

Scale	Description
Below 20	Accurate
20-40	Inaccurate
Above 40	Highly inaccurate

In this case, if the index of certain County age data is above 20 as indicated in table 1 above, then the Pasex computer programme will be used to graduate the age data to reduce the age misreporting.

3.4 LIMITATIONS OF THE STUDY TECHNIQUE

Even though this technique has been found to produce good results it should be noted that it has its own limitations. The technique is affected by age -misreporting which has been resolved by

graduating age data as indicated elsewhere in this study. The technique applied in this study cannot reveal the direction of migration flows. It can only show the counties that are losing or gaining the population but neither can it show the origin nor the destination of the population. Therefore the direction of migration flow of the population in birth place statistics matrix table was not part and parcel of this project. Moreover, census coverage and inter-censal boundary changes affect the stated technique. Although the migration patterns have been shown in terms of net in-migration and net out-migration rates, it is very difficult to generate possible reasons of such observed spatial population movement

CHAPTER FOUR
INTER-CENSAL MIGRATION RATES

4.0 INTRODUCTION

In the previous chapter, the computational steps of the analytical framework and its supporting models have been discussed fully. Taking Nairobi as a case study, this chapter presents a practical application of the Age-Specific Growth Rate technique in estimating net inter-censal migration rates in section 4.1. The modem life table constructed by Kenya National Bureau of Statistics was used.

4.1 ESTIMATION OF NET INTER-CENSAL MIGRATION RATES OF NAIROBI

To calculate the net migration rate, formula (2.4) given in chapter two was applied:-

$$S^{e}a = \text{-1.} \qquad \text{^<o>} \qquad \text{5) J}$$

In this formula the following parameters were required:-

i) P(a) - the probability of survival up to age "a" from birth. This value was derived by taking qx value from 1. For example, the $P_{(5}$^) value for males is 1-0.0215 = 0.9785 extracted from the analytical mortality report of 1999 Population and Housing Census.

ii) sr, - the age specific growth rate which is obtained by the formula:-

$$1\,0 \qquad [_{s}N\,\hat{}_{t})$$

iii) N(,)- the estimated number of persons at age "a", using the arithmetic mean.

$$N_{(a)} = \qquad \text{where } {}_{S}\sim N. =$$

All the values are shown in table 2a for males and 2b for female population. In these tables, the obtained migration rates are presented in column 4 and column 6.

It should be noted that in our obtained results, net in-migration at any specific age group is denoted by a negative sign (-) whereas, net out-migration rate at a given age group is denoted by a positive sign.

4.1.1 THE INTER-CENSAL NET MIGRATION RATES FOR NAIROBI

These are net migration rates for Nairobi County.

Table 2a: Net Migration Rates for Nairobi (Males)

Aje-Group	POP 1999	POP 2009	AVPOP	N<»)	P(x)	K*)	
0-4	116011	183.565	149888		0.9320	0.0457	
5-9	111.57!	166,879	139221J	28911.65	0.97*5	0.0403	-0.0243
10-14	10S.717	153.641	131178.92	27040.74	0.9912	0.0346	-0.0336
15-19	114.713	157.637	136175	26735.39	0.9849	0.0318	-0.0512
20-24	133.209	179.900	156554.6	29272.96	0.97*5	0.0300	-0.0422
25-29	128,378	174,939	151658.5	30*2131	0.9697	0.0309	-0.0235
10-34	117.102	164.888	I40995_23	2926537	0.9557	0.0342	-0.0116
35-39	96.419	138.407	117413	25840.82	0.9447	0.0361	0.0135
40-44	66.162	98,484	82322.724	19973.57	0.9361	0.0398	0.0266
45-49	47.289	71,693	59491	141*137	0.9261	0.0416	0.0299
50-54	30.3*7	45.841	38113.667	9760.47	0.9112	0.0411	0.0406
55-59	19.861	30.147	25007.5	6312.12	0 8866	0.0417	0.0395
60-64	11,821	18,255	15037.86	4004.54	0.8441	0.0435	0.0429
65-69	6,918	10,664	8791	23*2.89	0.7736	0.0433	0.0462
70-74	3.502	5,160	4331	131200	0.6663	0.0388	0.0683
75 +	1,573	1,743	1658	598.90	0.5194	0.0103	

Table 2b: **Net Migration Rates for Nairobi (Females)**

ACE-GROIT	POP 1999	POP 20*9	AVPOP	N(.)	*m*		
0-4	114.279	177.674	145976.50		0.9100	0.0441	
5-9	117,196	174,361	145778.50	29175J	0.9*44	0.0397	-0.0378
10-14	119.644	172026	145934.61	29171.31	0.993*	0.0364	-0.0389
15-19	119.735	175.978	147856.50	29379.11	0.9*87	0.03*5	-0.0498
20-24	124.95*	I94J70	159663.82	30752.03	0.9779	0.0442	-0.0439
25-29	111.023	17*069	144646.00	30430.98	0.9692	0.0474	-0.0190
30 - 34	87,852	148.662	11*257.24	2629032	0.964*	0.0526	-0.0072
35-39	66.223	115,157	90690.00	20894.72	0.9624	0.0553	0.0164
40-44	39.560	70,477	5501143	14570.84	0.9604	0.0577	0.0352
45-49	25,6*7	46.724	36205.50	9122393	0.956*	0.059*	0.0261
50-54	16.126	29,270	22698.14	5890364	0.9495	0.0596	0.0292
55-59	10095	18.726	14510.50	3720.864	0.9350	0.059*	0.0240
60-64	6-583	11.911	9247.26	2375.776	0.90*0	0.0593	0.0208
65-69	4068	7.429	5848JO	1509.576	0.S6l l	0.0554	0.0210
70-74	2,741	40**	3514 JO	9363	0.7*2*	0.0447	0.0177
75 +	2,002	2,4*8	2245.00	575.95	0.6579	0.0217	

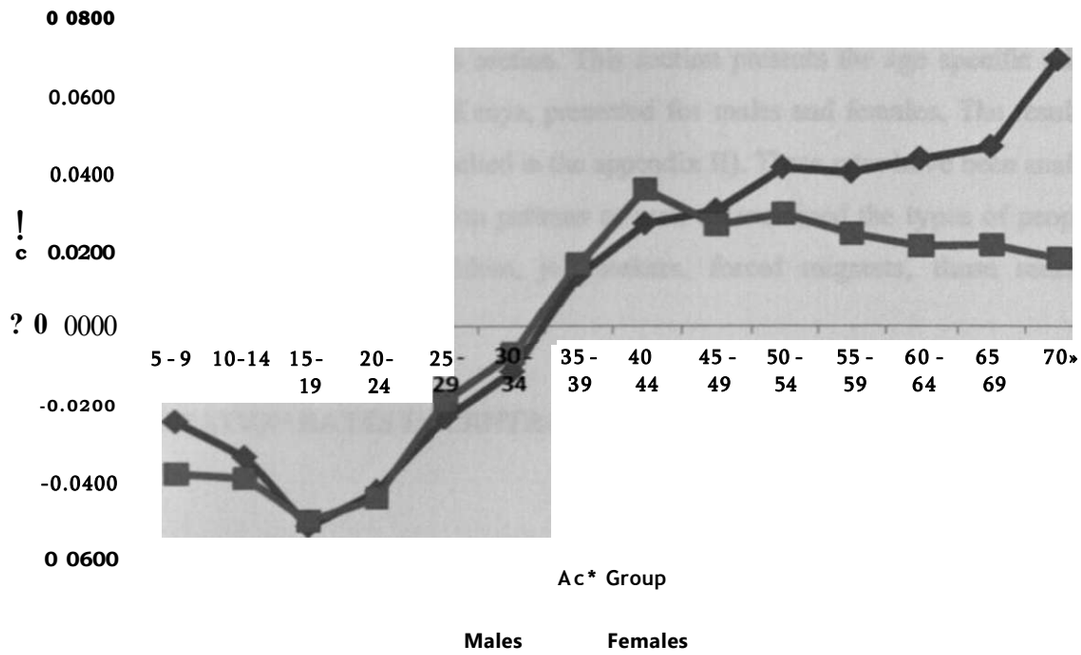
Nairobi

The generated rates for Nairobi reflected a migration pattern typical of most urban centres in developing nations. Unlike the migration patterns observed in 1969-1979 period, where the city experienced net loss of children aged 5-9 years and net gain of young people aged between 10 to 29 years for males and 10-24 years for their female counterparts, the city was characterized by net gain of population between 5-34 years for both sexes in the period 1999 to 2009 and net loss of population at all remaining age groups.

The migration rates reflected rural - urban and return urban - rural migration typologies. The rural - urban migration was observed when the city received population from age 5-34 years, whereas urban - rural migration was observed when the city recorded net loss of population from age 35 years and above. Female in-migrants dominated in the age groups 5-9, 10-14 and 20-24 whereas males outweighed their female counterparts in the age groups 15-19, 25-29 and 30-34. This implies that the ratio of male to female in-migration rate to Nairobi was almost one (see figure two below). The in-flow of young population aged between 5-34 years in such migration flows was consistent with education and job seeking behaviour. The attraction of children aged 5-14 in Nairobi for education purposes was due to the fact that the city had opened up for primary and secondary education centres in addition to colleges and Universities that provide vast training opportunities for the youth. Other than education services, the city formed a major super macro-economic region dominating the national formal, informal and tertiary manufacturing industrial sectors. Moreover, Nairobi was noted for the high level of standard and human infrastructures such as rail-road network, communication, insurance, electricity network and water supply facilities (Wakajummah 1986).

The in-flow of young adults aged 10-19 years constituted a population of primary school leavers and secondary school drop-outs joining the city's numerous secondary private schools as well as those being absorbed in the ever-expanding urban informal sector like real estate industry. The in-flow of secondary school leavers seeking for jobs was noticeable in the ages 20-24. These age groups also consisted of population of the youth joining numerous training institutions in the city. The in-flow of adults aged 25-34 in the city entailed the population mainly for job-seekers, job transfers and a few for training opportunities in the city.

Figure 2: Net Migration Rates for Males and Females, Nairobi



Extensive out-migration experienced in the city after age 34 may be explained in terms of:
People who had failed to secure jobs in the city and were going back to their respective home County or to other towns such as Kisumu, Mombasa and others to try their luck; those who had accumulated enough capital and moving out to invest it elsewhere in the country or in their home County; people who had completed their education and/ or training; those who had been given job transfers; population attained retirement age and were moving out to settle in their respective Counties of birth and males moved out more than their female counterparts from Nairobi.

Based on the results as shown in figure 2 above, the in-migration level was similar among sexes in Nairobi between ages 15-34. The peak age group of migrating into Nairobi was 15-19 years meaning that at that age group more people flow into Nairobi. The peak age groups of outmigration are 40-44 and 70+ years for females and males, respectively. Although both migrated from Nairobi as from age 35 years, males' level of outmigration was lower.

4.2 NET MIGRATION RATES BY COUNTY

Having given detailed analysis of how the inter-censal net migration rates were obtained (using Nairobi as a case study) in the previous section. This section presents the age specific migration rates for all the remaining Counties in Kenya, presented for males and females. The results have been presented in figures and tables (attached in the appendix II). These rates have been analysed to determine the nature of internal migration patterns as well as examined the types of people who migrate. These are school going children, job seekers, forced migrants, those seeking for resettlement among others.

4.2.1 NET MIGRATION RATES IN CENTRAL PROVINCE

Nyandarua

As in the case of Nairobi, Nyandarua County recorded net gain of children aged between 5-9 years. Nyandarua being a rural County reflected the rural-urban migration typology as well as return urban - rural migration typology.

The County was characterized by net gain of population of young children aged 5-9 years; net loss of young adults aged between 10-29 years for males and 10-39 years for their female counterparts; net gain of adults in age groups 30-34, 40-49 and 55 years and above for males and 40-49 and 60 years and above for females; and net loss of the age group 35-39, 50-54 for the males and 50-59 for their female counterparts. Compared to Wakajummah's findings, the patterns of migration had changed slightly. This County by then gained population in age groups 10-14, 35-39 and 65-74 years for females and 10-14 and 65-74 years for males. From his results and this study results, it is concluded that this County received population that had been given early retirement and had come to settle permanently in their home County.

The in-flow of children aged 5-9 moved with their parents aged 40-49 years. This movement showed that these children were in need of primary education in rural areas. The out-flow of young adults aged between 10-39 years for females and 10-29 for males reflected the job-seeking behaviour and training opportunities in other Counties such as Nairobi. The out-flow of adults aged 50-54 years for males and 50-59 for females reflected rural - rural migration for permanent

settlements. The in-flow of population aged 60 years and above for females and 55 years and above for their male counterparts indicated the retired and come to settle permanently in their home County.

Nyeri

Like Nyandarua, Nyeri was marked by net gain of children aged between 5-9 years accompanied by their parents in the 40-44 and 45-49 age groups; net gain of old population aged 60 years and above; net loss of population aged between 10-39 and 50-59 years. Migration pattern have not changed much from early years to date in this County. Compared to net loss and net gain of population observed in this County, it is so evident that the County is a net loser of the population.

The in-flow of children aged 5-9 years demanded primary school places whereas, the in-flow of their parents aged between 40-49 years showed to resettle permanently in their home County. The out-flow of population aged 10-39 indicated that they were moving out of Nyeri due to employment, job transfers, training opportunities, schooling and some for permanent settlement in other Counties.

The out-flow of population aged between 50-59 years indicated migration flows from this County to others for permanent settlement, early retirement and/ or job transfers. The in-flow of population aged 60 years and above portrayed full retirement from their jobs and they had come to resettle permanently in their home County. Nyeri experienced rural-urban, rural-rural, return urban-rural migration typologies.

Kirinyaga

Like Nyandarua and Nyeri, Kirinyaga has gained population of young children aged between 5-9 years accompanied by their parents aged between 40-49 years. The County was therefore, characterized by net gain of population aged 5-9 years; net loss of population aged between 10-39, and 50-59 years for males and 50 years and above for their female counterparts; and net gain of adults in reproductive age groups 40-49 and net gain of males from age 60 years and above.

Unlike the other two Counties, Nyeri and Nyandania, Kirinyaga recorded net loss of females after age 50 years. This shows that either women in Kirinyaga have been married in other Counties and settle there or out-migrate to settle permanently in other Counties and / or after retirement thus, experiencing rural-rural migration. The Kirinyaga County experienced more net loss of female population than their male counterparts. This means that the pattern of migration is different from other Counties in Central province where females have out-weighed males in out-migration flow in this County. However, there is no much difference in terms of migration patterns for males with other Counties as well as obtained earlier by the study of Wakajummah (1986).

Murang**'a**

Like other Counties in central province, Murang'a recorded net gain of young children accompanied with their parents from age 25 years. The County being one of the busiest rural County in terms of agricultural activities, it is characterized by net gain of population aged between 5-9 and 25 years and above for males and 30 years and above for their female counterparts. It is also featured by net loss of population aged between 10-24 years for males and 10-29 for females. During the inter-censal period 1969-1979, males dominated in out-migration than their female counterparts. However, the migration pattern has changed in this County where majority are in-migrants in both sexes.

The out-flow of population aged between 10 to 19 years went to search for educational opportunities in other Counties whereas those aged between 20-29 years were energized for employment and training opportunities in urban centres, for the females another reason may be for marriage purposes.

The in-flow of population aged 25 years and above reflected the following groups: those who have been trained in other Counties' colleges and / or Universities and come back to practice their profession in their home County; the people who have been given job transfers; those involved in post-election violence during the inter-censal period in other Counties and had roots in this County; those who have retired and / or given early retirement or retrenchment and have come for investment or to settle permanent.

Kiambu

Unlike the other Counties in central province, Kiambu experienced different migration patterns. This was attributable to its proximity to Nairobi city. The County is characterized by net loss of children aged between 5-19 years for males and 5-14 for their female counterparts; net gain of young adults of 20-24 age group for males and 15-24 years for females; net loss of population from age 25 to 59 for males and 25-69 for their female counterparts; and net gain of population from age 65 years for males and 70 years for female counterparts.

The in-flow of the population aged 15-24 showed that most children who had left primary schools from Nairobi and other Counties find secondary and higher education opportunities in Kiambu. The in-flow of old population aged 65 years and above reflected permanent settlement after retirement in their rural homes.

The massive out-flow of population aged between 25-69 years reflected the similar migration patterns for Nairobi County. This shows that majority of Nairobi job seekers and workers live in Kiambu and that Kiambu has fewer opportunities for active population.

Figure 3a: Net Migration Rates for Males, Central

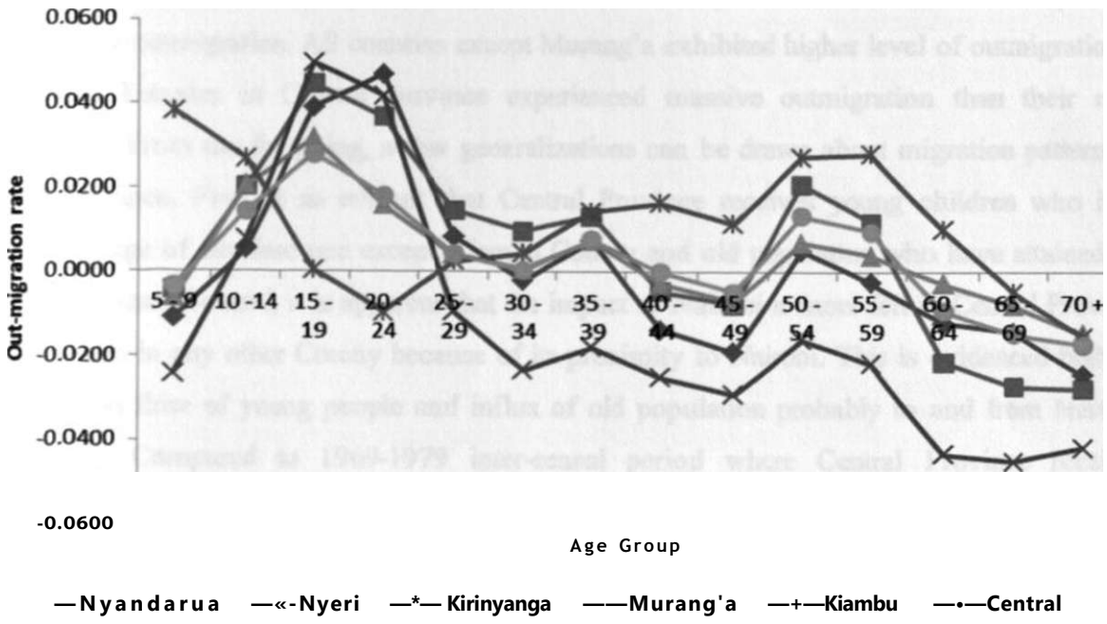
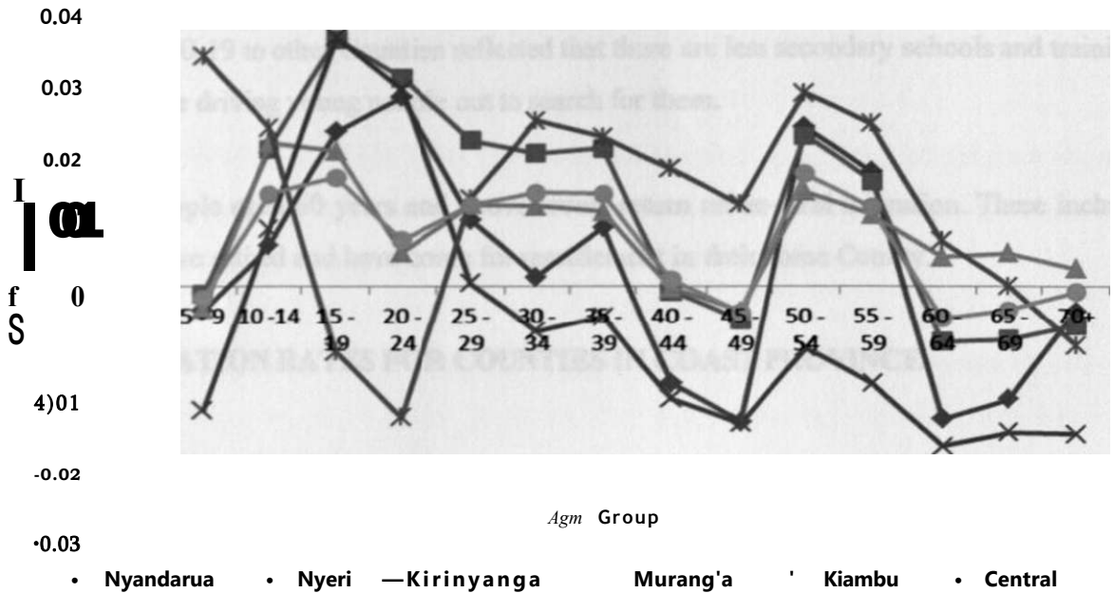


Figure 3b: Net Migration Rates for Females, Central



Summary

Figure 3 above clearly reveal the levels of migration in Central province. The peak ages for out-migration were between 15-24 years except in Kiambu County which had 5-9 and 50-60 years as peak ages for outmigration. All counties except Murang'a exhibited higher level of outmigration at older ages. Females in Central province experienced massive outmigration than their male counterparts. From the foregoing a few generalizations can be drawn about migration patterns in Central Province. First, it so evident that Central Province receives young children who have attained the age of standard one except Kiambu County and old population who have attained the age of retirement. Second, it is apparent that the impact of Nairobi is more felt in Central Province Counties than in any other County because of its proximity to Nairobi. This is evidenced both by out-migration flow of young people and influx of old population probably to and from Nairobi, respectively. Compared to 1969-1979 inter-censal period where Central Province received population in age groups 10-14, 30-34, 50-54 and 65-74 years, the migration pattern has changed slightly to age groups 5-9,45-49 and 60-74 years in the 1999-2009 inter-censal period.

Out-migration of population aged 50-59; clearly indicate that there is rural to rural migration typology for permanent settlement elsewhere in the County. Out- migration of young population aged 10-24 years 10-19 to other Counties reflected that there are less secondary schools and training opportunities hence driving young people out to search for them.

The in-flow of people aged 60 years and above reveal return urban-rural migration. These include population who have retired and have come for resettlement in their home County.

4.2.2 NET MIGRATION RATES FOR COUNTIES IN COAST PROVINCE

Mombasa

Mombasa being one of the cities in Kenya reflected the migration patterns of the Nairobi. The migration data for Mombasa County showed in-migration of population aged between 5-34 years and out-migration of population aged 35 years and above. The peak age for in-migration was 15-19 years both sexes, whereas the outmigration ages were 40-44 and 50 years females and males, respectively.

The in-migrants consist of young children aged between 5-9 years accompanied by their parents aged between 20-34 years. These children come for primary education opportunities probably from the nearby counties. The search for secondary education opportunities can be noticeable in the in-migration of population aged between 10-19 years. Similarly, these young adults might have migrated into Mombasa because of employment opportunities in informal sector like Go down in Container Freight Services departments and in the port of Mombasa, especially those who did not join secondary level of education.

The in-flow of population aged 20-34 years clearly reflected those searching for training opportunities in Mombasa, employment and job transfers from other countries. The early retirement and retrenchment can be observed in the migration data of Mombasa, where out-migrants from age 35 years and above emerged.

The investment opportunities cannot also be neglected in other Counties where some of the out-migrants who have accumulated enough fluids to move out of Mombasa mainly for investment purposes.

In Mombasa, males recorded high level of out-migration rate than their female counterparts. However, females registered high net gain of population than their male counterparts. The city experienced both rural -urban migration and return urban-rural migration.

Compared to previous years where it registered net gain of population aged 10-24 and 70-74 years for females and 10-29 and 70-74 years for males, this study's findings revealed that migration pattern has changed to already discussed.

Kwale

This County exhibited only net loss of population in all ages, indicating that it is an out-migration zone. This is a disastrous phenomenon that any County can experienced in this nation. This therefore indicated that the migration patterns for re-settlement areas have changed drastically to net out-flow of population in all ages. Kwale registered net gain of population aged between 15-24, 60-64 and 70-74 years for females and 20-34, 40-49, 60-64 and 70-74 years in 1970s (Wakajummah 1986).

Tana River

Like Kwale, Kilifi is an out migration zone as per the migration data of 1999 and 2009 censuses. As indicated earlier by Wakajummah's study, the areas registered net in-flow of population at almost all ages. Tana River experienced net gain of population at all ages except for females in age group 55-59 in 1970s (Wakajummah 1986).

The migration patterns have changed significantly indicating that these areas have ceased to be resettlement (receiving) zones to sending areas during the current inter-censal period. This out-migration flow of migration patterns can be attributed to: high mortality rates experienced in these areas associated with inaccessibility of limited social amenities such as medical, clean water, sanitation, education and above all, food. All these are caused by poverty, poor infrastructure such

as roads, communication network, medical and educational facilities. The role of civil wars being observed in Tana River and its environs is significant in changing the future migration pattern of Tana River County. Indeed, the situation may worsen more in this County if no intervention would be employed, where it will register more out-migrants than before.

Kilifi

Like Kwale and Tana River, Kilifi exhibited out-migration flows of population. However, it experienced net gain of population at certain age groups. For example, Kilifi County was characterized by net gain of young children aged between 5-9 years for males and net gain of female population aged between 10-19 years; and male population aged 30-34 years. In Kilifi, the influx of boys aged 5-9 years may be attributed to beaches at the coast, indicating that young boys flow to beaches to involve in search of economic activities.

The similar pattern was observed among girls aged between 10-19 years. These girls may be as a result of tourism industry around and within Kilifi County where these girls come to serve tourists. Kilifi comprises of Mtwapa and Malindi towns full of beaches around that attract tourists from within and abroad. In addition to that, probably they are sent by their parents to study in primary and secondary schools in their home County as they live with their grandparents.

It is evident from the Kilifi migration data that the County has limited training opportunities for the youths who have finished secondary education hence triggering out-migration. Similarly, the County has little secondary schools for boys mainly.

Taita Taveta

The in-flow of boys aged 5-9 years not accompanied by their mothers revealed that those boys come to live with their fathers who move with them and grandparents or are neglected by their mothers or they come to study in private boarding schools in the area. Other than ages 5-9, 25-34 and 70-74 years, Taita Taveta County experienced out-flow of the rest of the population to other Counties. In Taita Taveta, it is clear that the County has limited educational opportunities including primary schools.

In terms of socio-economic activities, Kilifi and Taita Taveta have very little for their population. Thus, out-migration rate of the economically active population is very alarming. The in-flow of older male population aged 70 years and above in Taita Taveta may indicate retirees, return rural-urban migrants and return rural-rural migrants who come to settle permanent in their home County.

It can be noted that extensive out-migration involving people from age 35 years from both Counties reveal rural -rural migrants who have acquired land elsewhere and wish to settle permanently here.

Lamu

The migration pattern of Lamu County is almost similar to Mombasa's migration pattern. This is observed when young population aged between 5-39 years for males and 5-24 for females moved to Lamu County and older population leaving the County except males aged 60-69 years.

There is correlation between migration patterns for males and females in this County where by young ladies aged 15-24 tend to join their husbands aged 20-39 years in Lamu with their children. In other words males migrate first to a place and then invite their wives. The County is featured by net gain of young population aged between 5-39 years for males and 5-24 years for their female counterparts; net loss of population aged between 40-59 years for males and 25 years onwards for females; net gain of male population in the age groups 60-64 and 65-69; and net loss of male population aged 70 years and above.

The in-flow of population aged 5-39 years reflected the following groups of people:-

i. Those children who moved with their parents to learn in Lamu County.
ii. Those young children involved in economic activities in the beaches especially boys.
iii. Young adults including Expatriates searching for jobs in the proposed Lamu sea port.
iv. Investors from other Counties who have accumulated capital and wish to invest in Lamu County around the proposed sea port.
v. Women who get married and/ or follow their husbands to Lamu County.
vi. Staff who get job transfers from other Counties.
vii. The tourists from abroad and within.

The out-flow of the population aged **25** years and above reflected the following:-

i. Those youth especially ladies who seek for training facilities and opportunities in urban centres.
ii. Those who failed to secure jobs in the port and/ or other sectors in the Counties.
iii. Given job transfers, retrenchment and retirement and moved to their County of birth or elsewhere to try their luck.
iv. The return tourists.

The in-flow of male population aged 60-69 years included the retired from other Counties and need to settle permanently in their home County.

Figure 4a: Net Migration Rates for Males, Coast

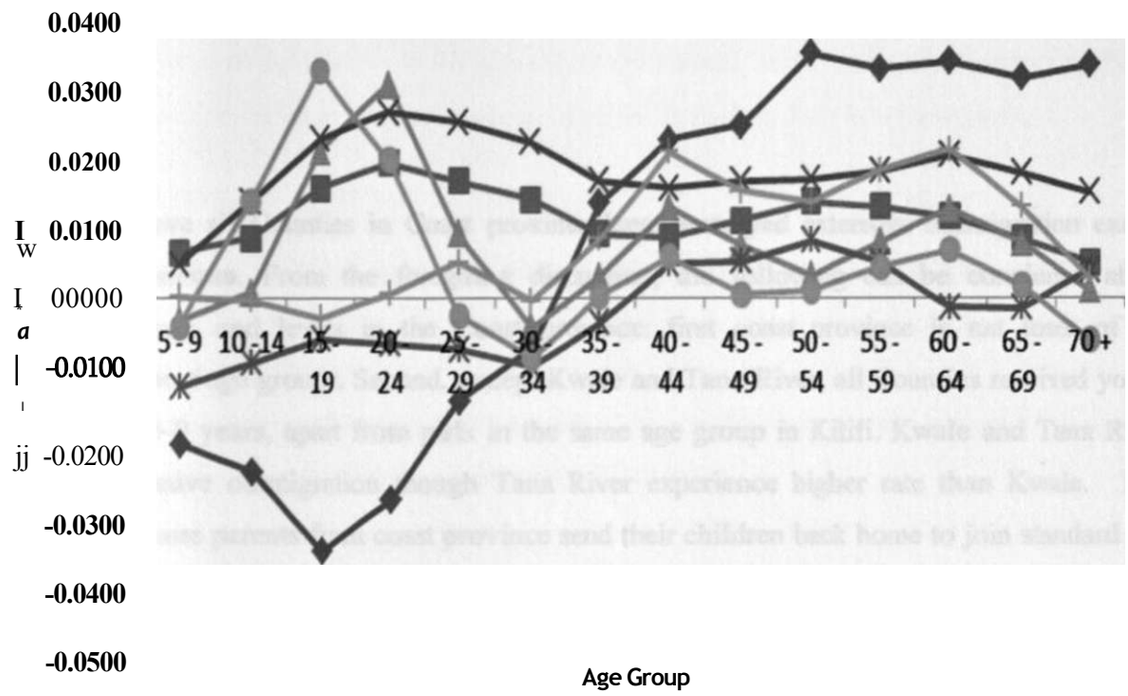
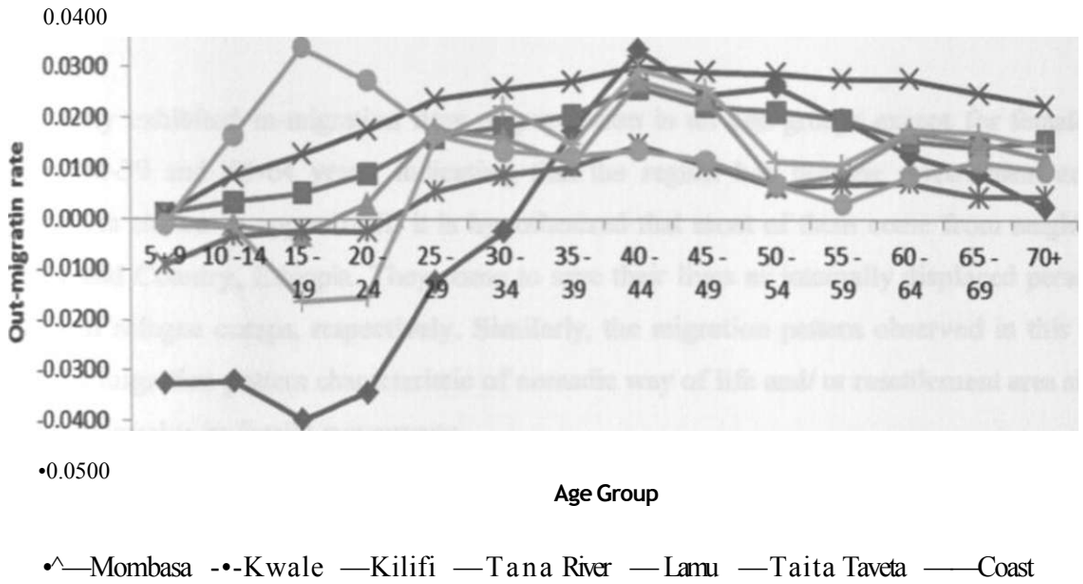


Figure 4b: Net Migration Rates for Females, Coast



Summary

In figure 4 above all Counties in Coast province have portrayed extensive outmigration except Lamu and Mombasa. From the foregoing discussion, the following can be concluded about migration patterns and levels in the Coast province: first coast province is net loser of the population at most age groups. Second, except Kwale and Tana River, all Counties received young children aged 5-9 years, apart from girls in the same age group in Kilifi. Kwale and Tana River experience massive outmigration though Tana River experience higher rate than Kwale. This indicates that more parents from coast province send their children back home to join standard one class. Mombasa and Lamu tend to exhibited similar migration patterns, they both gained young population aged 5-34 for Mombasa and 5-39 years for males and 5-24 years for females in Lamu. This means that factors triggering movement flows in these two Counties are almost the same. Other than in ages 60-69 years for males in Lamu, both Counties registered net loss of old population. All the Counties apart from Mombasa and Lamu have registered net loss of population in almost all ages.

423 NET MIGRATION RATES IN EASTERN PROVINCE

Marsabit

This County exhibited in-migration flow of population in all age groups except for females aged between 30-39 and 45-64 years, indicating that the region has become resettlement areas for migrants. As shown in appendix II, it is hypothesized that most of them come from neighbouring Counties and Country, Ethiopia. They come to save their lives as internally displaced persons and refugees in refugee camps, respectively. Similarly, the migration pattern observed in this County reflected a migration pattern characteristic of nomadic way of life and/ or resettlement area since the inhabitants involve in family movements.

The out-flow of women aged 30-39 and 45-64 years may be attributable to persistent drought which triggers them to search for water. In addition, the movement can also be explained to the fact that not all movement into the County is for permanent settlement, some make short migration flows. We can conclude that males in-migrate more to Marsabit than their female counterparts.

Isiolo

The migration patterns observed in Isiolo County depict an urban centre with a rural area like Uasin Gishu. This shows that both rural-urban migration and return urban- rural migration typologies do prevail in Isiolo County. The County recorded net gain of population aged between 5-24 years with only males extending to age 29 years and later gained in population at old age groups 50-59 and 65 years and above for males and 70 years and above for females.

The peak age of outmigration is 30-34 years for female and 30-34 and 60-64 for males. The out-flow of population aged 30-49 and 55-64 years for males and 25 -69 years for females is attributable to few employment opportunities for the youth and limited land for resettlement. The in-flow of young population aged 5-29 emerged as a result of good learning institutions opened up for children and/or employment opportunities brought about Chinese construction firms for example an oil-drilling company in Isiolo. The in-flow of older population reflected permanent settlement after retirement The out-flow of population aged 25-69 years reflected those in search of further

education, jobs and those who move out for resettlement who come for employment after retirement or moved in as pastoralists.

Mem

The County was characterized by net loss of population in almost all ages. It experienced net gain of young children aged 5-9 years and old male population aged 70 years and above. Except for age groups 5-9, 30-34, 70-74 years for males; and 5-9 and 55-59 for females, exhibited net loss in all ages.

Embu

In Embu apart from age groups 5-9, 45-49, 65-69 and 70-74 years for males and 5-9 years for females exhibited net loss in all ages. The net in-flow of young children without accompaniment of their parents indicates children come to seek for primary education in their home County. The out-flow of population aged between 10 years and above includes:

- S Young adults seeking for secondary education elsewhere in the country especially in the urban centres.
- S Standard eight leavers who seek for employment in urban centres and rural areas where cash crop plantations are grown.
- ^ Those who have finished form four and move out to search for training opportunities and / or jobs in urban centres.
- ^ Those who have acquired land elsewhere and wish to settle their permanently as shown in movement of ages 40 years and above.
- ^ Women who get marital status in other Counties.

These two Counties from its migration data exhibited rural-rural migration, rural-urban and return urban-rural migration in limited age groups. Meru and Embu are characterized by high population triggering extensive out-migration of the population to other Counties.

Tharaka

Like Other Counties in the province, Tharaka exhibited net in-flow of young children aged 5-9 years. Unlike Meru and Embu, it experienced extensive in-migration especially males aged 50 years and above and women in the age groups 55-59 and 70-74 years.

The massive out-migration of the population aged 10-49 years portrayed the rural-urban migrants who are in search of primary and secondary education, training opportunities, employment and permanent settlement. The out-flow of women aged 55-59 and 70-74 years shows that not all in-migrants are residents of Tharaka who do either move out to settle in their home County or those who acquire land elsewhere to settle permanently.

The in-flow of the population aged 50 years an above indicates early retirement or those who have accumulated enough funds for investment in their home County. It may also reveal those from other Counties who have acquired land in this County and would like to settle.

kitui

The County exhibited net gain of children aged 5-9 years accompanied by their fathers aged 30-34 years, indicating that most urbanites of Kitui origin tend to send their children back home for primary education and parental care. The massive out-flow of young population aged 10-44 years for males and 10-59 years for females is significant in shaping the migration patterns of this County. It comprises of out-migrants seeking for education elsewhere, employment in wage sectors and better living standards elsewhere.

The in-flow of the population aged 45 years and above reflected the return urban migration, involving those attained the age of retirement. From the migration data, it is clearly noted that Kitui experienced more out-migration at early ages and in-migration at old ages for males. The migration patterns reflected rural-urban and return urban-rural migration typologies.

Machakos

Like Kitui, Machakos exhibited similar migration patterns of out-migration of young adults aged 10-24 years and in-migration in old population. However, the County registered net gain of male population from age 25 years except for age group 40-44 years. This is the larger urban centre for ukambani region that attract more population from other Counties in the region.

The County was characterized with extensive loss of female population except for age groups 5-9, 50-55,65-69 and 70-74 years and massive net gain of male population other than in age groups 10-

24 and **40-44** years. The migration data indicated that the County had both urban and rural areas. Thus, Machakos experienced rural-rural, rural-urban and return urban migration typologies.

Makaeai

Like other Counties, Makueni exhibited net gain of children aged **5-9** years. The migration pattern among males in Makueni is similar to their counterparts in Kitui except for age group **45-49** years where Makueni lost to other Counties. Similarly, female migration patterns in both Machakos and Makueni are the same.

Figure 5a: Net Migration Rates for Males, Eastern

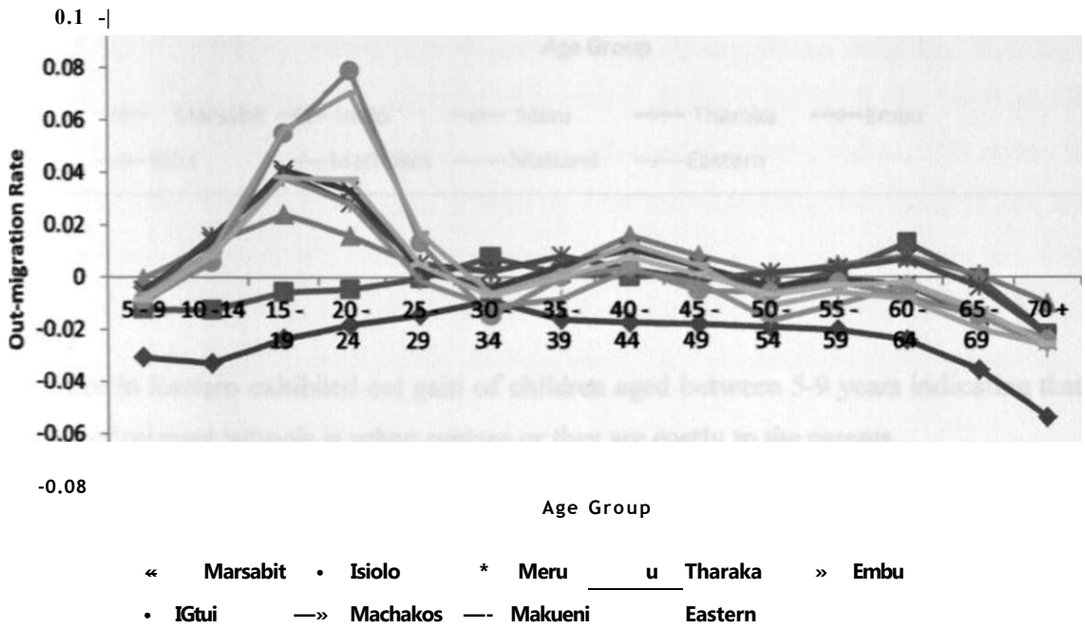
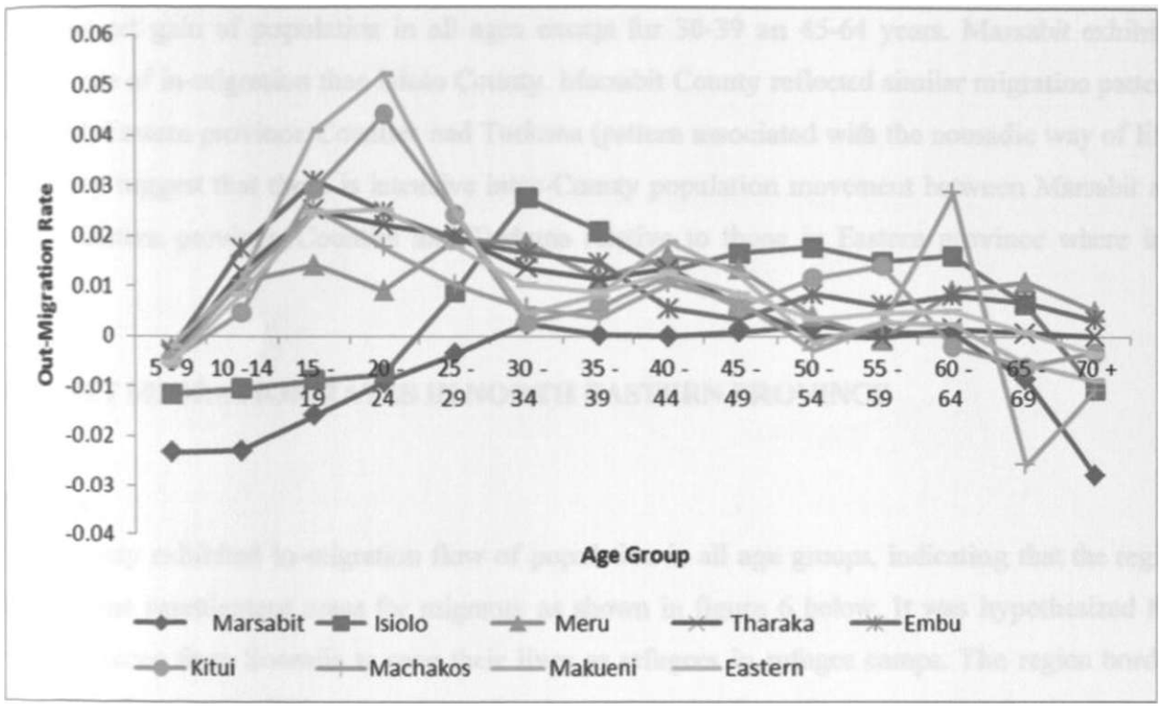


Figure **5b: Net Migration Rates for Females, Eastern**



Summary

All Counties in Eastern exhibited net gain of children aged between 5-9 years indicating that there is shortage of primary schools in urban centres or they are costly to the parents.

The province being a rural experienced rural-rural migration, return urban migration and rural-urban migration. More females experienced out-migration more than their female counterparts who experienced massive in-migration especially at older ages. This means that in other Counties, the significant number of female population moved out to seek for employment rarely do they come back probably because they acquire land elsewhere and settle permanently. As per the figure 5 the peak age of migration from Eastern Province was between 15-24 years while for in-migration was 50-74 years indicating return migrants. Makueni and Isiolo exhibited higher level of out-migration in those ages.

k

All Counties experienced almost similar migration patterns except in Marsabit County, where it registers net gain of population in all ages except for 30-39 an 45-64 years. Marsabit exhibited higher rate of in-migration than Isiolo County. Marsabit County reflected similar migration patterns of North Eastern province Counties and Turkana (pattern associated with the nomadic way of life). This may suggest that there is intensive inter-County population movement between Marsabit and North Eastern province Counties and Turkana relative to those in Eastern province where it is located.

4.2.4 NET MIGRATION RATES IN NORTH EASTERN PROVINCE

Garissa

This County exhibited in-migration flow of population in all age groups, indicating that the region has become resettlement areas for migrants as shown in figure 6 below. It was hypothesized that most do come from Somalia to save their lives as refugees in refugee camps. The region borders Somalia where the militia group have fought against the Somalia government in the last two decades, this has triggered the Somali people to seek refuge in Kenya. Similarly, the migration patterns observed in Garissa and Mandera reflected a migration pattern characteristic of nomadic way of life and/ or resettlement area since the movement involves the entire family members.

Mandera

Like Garissa, Mandera experienced massive in-migration. However, it received more population than Garissa as shown in figure 6 below.

Wtjir

Except for female population aged 55-64 years, Wajir County experienced net gain of population at all ages. Like Mandera and Garissa, the County is located at the Kenya-Somalia border. This has attracted immigrants from Somalia as refugees and from other Counties for resettlement. Out-flow of female population aged between 55-64 years may be attributable to the long persistent drought that drives away females to other Counties.

k

Figure **6a: Net Migration Rates for Males, North Eastern**

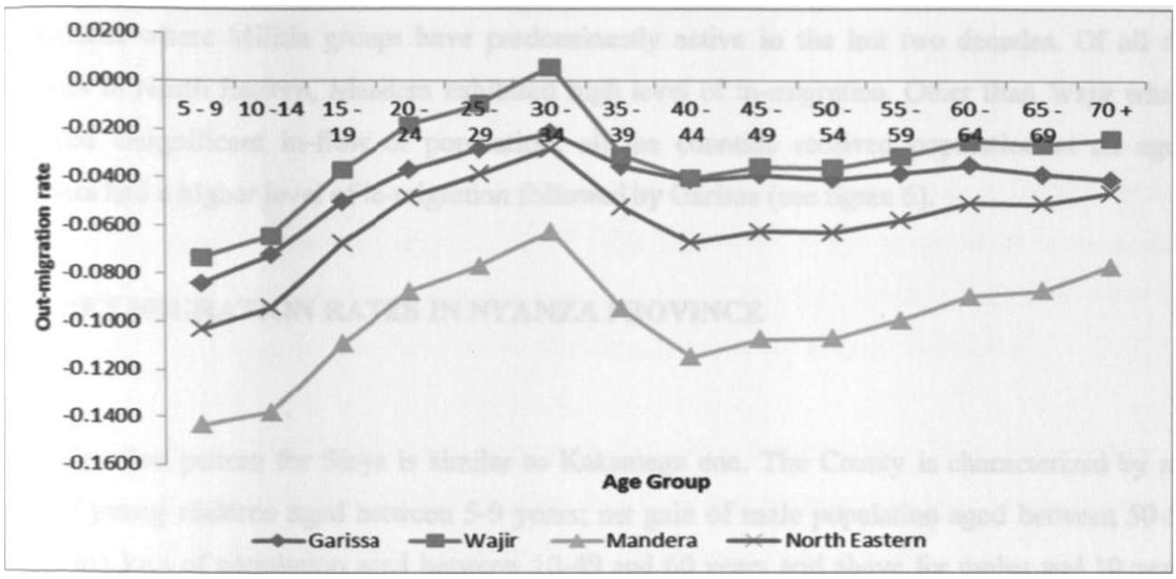
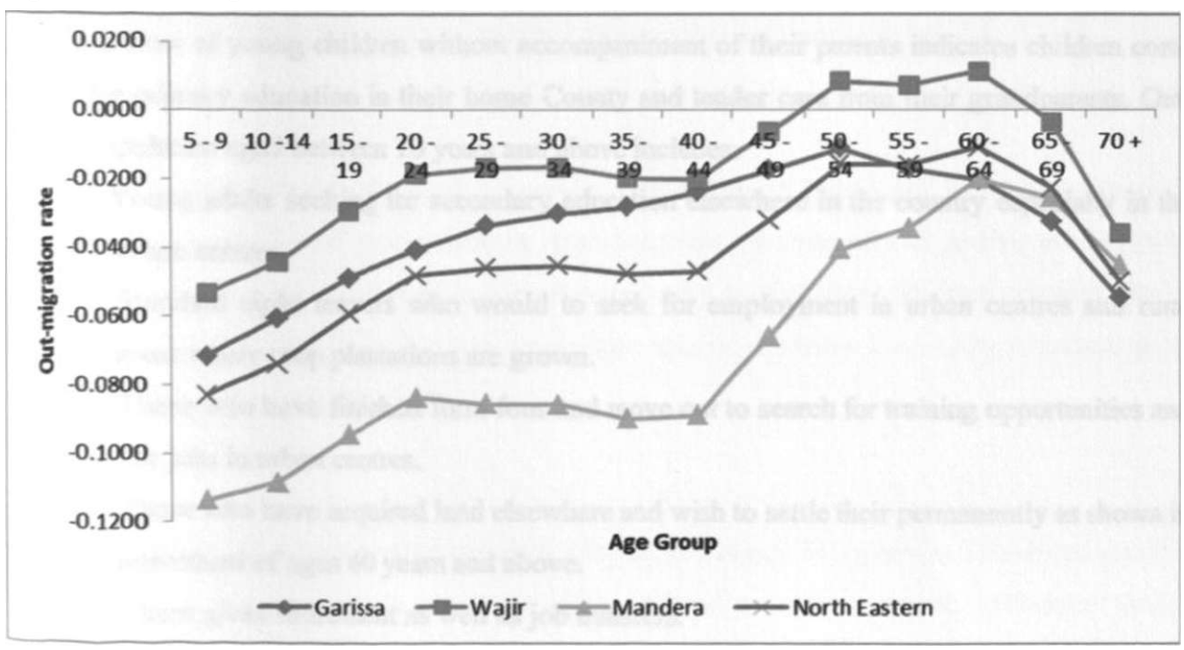


Figure 6b: Net Migration Rates for Females, North Eastern



Summary

North Eastern province exhibited net gain of population at all ages as shown figure 3 above in all Counties other than Wajir that loss women aged 55-64 years. This may be attributed to its proximity to Somalia where Militia groups have predominantly active in the last two decades. Of all the counties in North Eastern, Mandera exhibited high level of in-migration. Other than Wajir which recorded insignificant in-flow of population, all the counties received population at all ages. Mandera had a higher level of in-migration followed by Garissa (see figure 6).

4.2.5 NET MIGRATION RATES IN NYANZA PROVINCE

Siaya

The migration panern for Siaya is similar to Kakamega one. The County is characterized by net gain of young children aged between 5-9 years; net gain of male population aged between 50-59 years; net loss of population aged between 10-49 and 60 years and above for males and 10 years onwards for their female counterparts.

The net in-flow of young children without accompaniment of their parents indicates children come to seek for primary education in their home County and tender care from their grandparents. Out-flow of population aged between 10 years and above includes:

- S Young adults seeking for secondary education elsewhere in the country especially in the urban centres.
- S Standard eight leavers who would to seek for employment in urban centres and rural areas where crop plantations are grown.
- S Those who have finished form four and move out to search for training opportunities and / or jobs in urban centres.
- J Those who have acquired land elsewhere and wish to settle their permanently as shown in movement of ages 40 years and above.
- ^ Those given retirement as well as job transfers.
- s Women who get marital status in other Counties.

k

This County from its migration data exhibited rural-rural migration, rural-urban and return urban-rural migration. Return urban-rural migration is observed among only males in age groups 50-54 and 55-59 years. The in-flow of these males in this County reflected migration of people given early retirement and born in Siaya County.

Risumu

Like Siaya, Kisumu registered net gain of young children aged 5-9 years. It also exhibited net loss of population aged 10 years and above except female population in age group 20-24 years. Unlike Siaya, the County experienced female immigrants aged 20-24 years showing that they come for training opportunities as well as those ladies who form union with men in this County.

The migration patterns observed here disobey the migration patterns ought to be observed in the city. Thus, this massive out-migration of population from age 10 years can be explained in terms: limited opportunities for the youth and limited land for permanent settlement.
The movement of people from age 40 indicates those moving to settle permanently in either their home County or those who have acquired land elsewhere from their County, Kisumu. The County experienced rural-urban migration typology and rural-rural migration typology.

Homa Bay

Like Kisumu, Homa Bay County exhibited out-migration flows of population. Homa Bay County is characterized by net gain of young children aged 5-9 years, an indicative of parents sending their children to learn in primary schools in their home County as they live with their grandparents or leam in boarding schools. Except for male population aged 65-69 years, the County experienced net loss of population from age 10 years.

Migori

Migori registered only net gain of young population aged between 5-14 years and exhibited massive loss of the rest of the population to other Counties. Migori and Homa Bay do experience similar geographically and economic conditions.

i

The extensive out-migration observed in both Counties confirmed that Homa Bay and Migori formerly known as South Nyanza district exhibited rural-rural, rural-urban migration typologies mainly and low return urban migration. Being rural Counties, they send population probably to urban centres such as Nairobi, Mombasa, and Nakuru. The Counties experienced rural-rural migration for settlement, rural-urban for employment opportunities and urban rural movement for the young children seeking for primary and secondary education as well as male retired male population.

Kisii

Unlike in the other Counties, this County experienced net gain of old population from age 50 years. Like the other Counties, it exhibited net gain of population aged 5-9 years followed by extensive loss of population in the subsequent age groups. Except for age groups 5-9, 50-54, 55-59 and 70-74 years for males and 5-9, 55-59 years for females, Kisii experienced massive loss of population. The in-flow of males in age groups 50-54, 55-59 and 70-74 years in Kisii whereas, influx for males aged between 50-74 years and females in age groups 50-54, 55-59 and 70-74 years indicate early retirement and retirement, permanent settlement From migration data it is very clear that Kisii is a net loser of population probably because the County has limited opportunities for the youth in terms of economic and training facilities. This limited opportunities repel the youth from this County to others especially urban Counties.

Nyamira

Like Kisii, Nyamira experienced net gain of old population from age 50 years. Though, the in-migration of old population is pronounced among males in Nyamira County than in Kisii simply because Nyamira is more of rural.

Like Kisii, Nyamira experience similar climatic conditions with high rainfall leading to high food production. However, due to high population in this region, young and even old populations out-migrate to search for employment and settlement opportunities, respectively.

Like other counties the peak age of outmigration was between 15 and 24 years with female out-migrating more their male counterparts as shown in figure 7 below.

Figure 7a: Net Migration Rates for Males, Nyanza

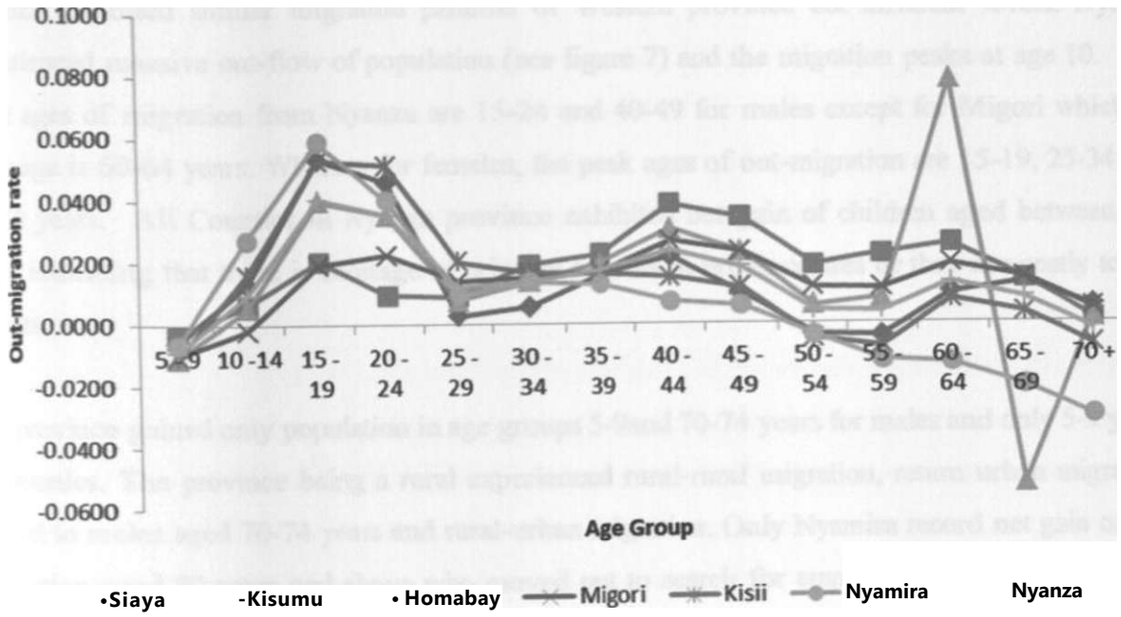
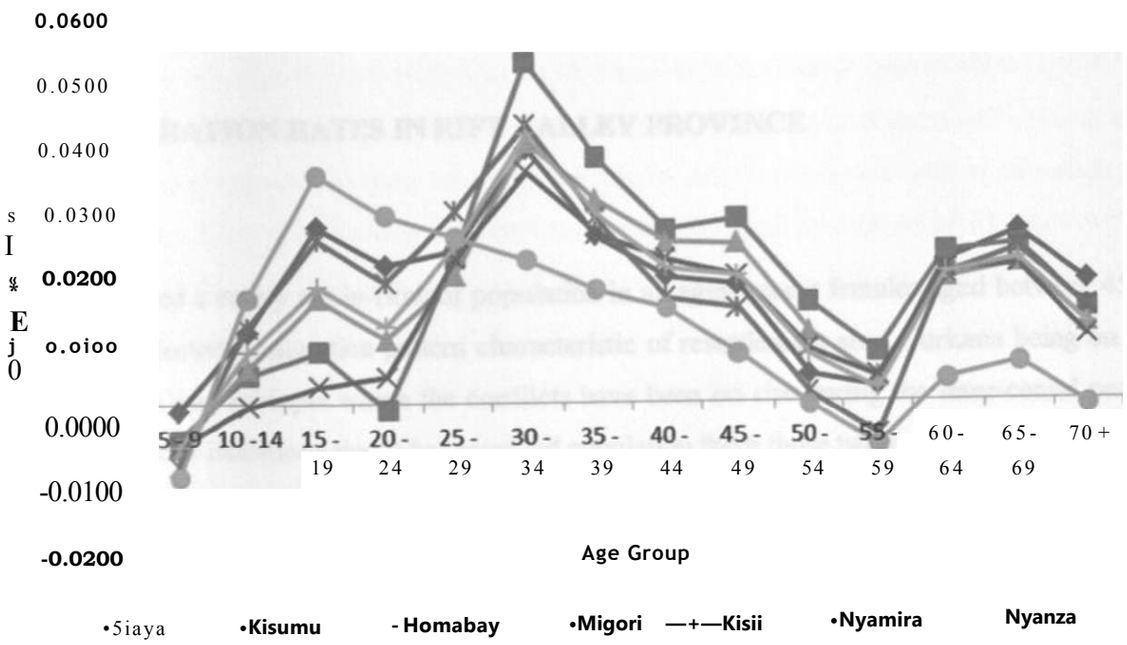


Figure 7b: Net Migration Rates for Females, Nyanza



Summary

Nyanza exhibited similar migration patterns of Western province but different levels. Nyanza experienced massive out-flow of population (see figure 7) and the migration peaks at age 10. The peak ages of migration from Nyanza are 15-24 and 40-49 for males except for Migori which its peak age is 60-64 years. Whereas for females, the peak ages of out-migration are 15-19, 25-34 and 45-50 years. All Counties in Nyanza province exhibited net gain of children aged between 5-9 years indicating that there is shortage of primary schools in urban centres or they are costly to the parents.

The province gained only population in age groups 5-9and 70-74 years for males and only 5-9 years for females. The province being a rural experienced rural-rural migration, return urban migration limited to males aged 70-74 years and rural-urban migration. Only Nyamira record net gain of old population aged 50 years and above who moved out to search for employment in other Counties. This means that in other Counties, the significant number of population moved out to seek for employment rarely do they come back probably because they acquire land and settle permanently. It is evidenced from migration data that Nyanza province is playing a dominant role in rural-urban migration.

4.2.6 NET MIGRATION RATES IN RIFT VALLEY PROVINCE

Turkana

Tuikana portrayed a solely net in-flow of population in all ages except females aged between 45 to 54 years. It reflected a migration pattern characteristic of resettlement area. Turkana being on the border of Sudan and Ethiopia where the conflicts have been on rise during the inter-censal period 1999-2009, there is likelihood that it has received population from those two nations.

The in-flow of the population may also be attributed to political instability experienced in Kenya -007/08 post-election violence which made majority of people to migrate from Uasin Gishu and Trans Nzoia Counties to Turkana for their safety. In addition, the opportunities availed during the

inter-censal period in the recent formed nation South Sudan to Kenyans, made Turkana County a transit centre for many Kenyans before moving to their final destination in South Sudan.

The female population out-flow aged between 45-54 years indicate that there are some females who search for permanent settlement in other Counties or in Sudan. The County is likely to gain in population in the recent future due to its richness of resources that is oil and its probability of portraying an urban centre migration pattern characteristic is very high.

West Pokot

This County depict a migration pattern of an urban centre with good educational facilities, where it receives school going children aged between 5 to 19 for males and 5 to 24 for females accompanied by their fathers aged between 30-39 years. Considering few learning vacancies in primary and secondary schools in the urban centres in Kenya, this may suggest that parents in urban centre come with their children to their home County for schooling. In addition the influx of young males aged between 15 to 19 years may indicate certain economic activities in West Pokot County, for example stone mining (quarry) that attract these young males.

However, the County experienced out-flows of population aged between 25 years and above for females and 20 to 64 years for their male counterparts and male population gain at older ages (65-74 years). This may suggest that those who have come to study in primary and secondary schools after finishing their education move urban centres to search for employment and further education and training. The extensive out-migration observed for population aged between 40 to 64 years may be attributed to the fact that West Pokot is arid and semi-arid land that its inhabitants find it difficult to practice food production activity hence migrating to nearby Counties to settle permanently. This may also be caused by the tribal war during the inter-censal period.

The net gain in male population aged between 65 to 74 years may indicate late retirement of males especially those from Trans Nzoia and Uasin Gishu in farming activities. In 1969-1979 period, the area received population at all age groups, suggesting that there had been intensive invasion of the area for permanent settlement. Being on the border, the area might have received population from

other areas because of the railway line constructed connecting to Uganda (Wakajummah 1986). From this study's finding the area has different migration pattern.

Sambani

Other than age-group 50-54, Samburu registered net gain of male population throughout the ages. The County recorded net gain of female population aged between 5 and 24 years and 70-74 year age -group. The influx of young males aged between 15-49 years may be attributable to the fact that Maralaal town which is the headquarters of Samburu County is hub of economic activities. They are accompanied by their children aged between 5-14 years. The number of in-migrants also account to those who come to search for employment in Maralaal Municipality and those working with non-governmental organizations.

The County also experienced net loss of population mainly females aged between 25 and 69 years and males 50-54 years. This may suggest that females bom in this County do migrate from Samburu to get mainly because of marriage and settle permanently elsewhere. It is very clear from the migration data that females in this County migrate more than their male counterparts. As indicated earlier Samburu experienced population out-flow involving people of all ages except the young and the aged during 1969-1979 inter-censal period.

Trans Nzoia

Trans Nzoia is one of the Counties that its migration pattern has changed drastically compared to findings found by Wakajummah's study where by then the district, reflected migration pattern characteristic of resettlement area, where it recorded net gain population at all ages. In the contrast, due to high population, political violence in the area during post-election and little training opportunities for the youth, Trans Nzoia County has lost population aged between 15-74 years except in the age groups 20-24 for males and 25-29,30-34 and 70-74 for females.

The County has attracted young population aged between 5 to 14 years accompanied by their fathers in the ages from 25-34 years. This migration flow is almost similar to West Pokot. The in-flow of young females in age group 20-24 reflected those who in-migrated to work in farm and industries and those who come for marriage.

The in-flow of males aged between 25-34 and 70 -74 years shows that men come for permanent settlement with their children and/ or after retirement respectively. In addition, this male population flew into this County to search for jobs.

Baringo

Baringo County has recorded net gain in population aged early years from 5-14 and old male population aged 65 years and above. However, the County lost the population at the rest of ages. The in-flow of young children not accompanied by either one of their parents is a clear indication that most parents send their children back to learn in their home County and these children end up living with their grandparents. The out-flow of population aged between 15 years and above is associated with the following factors: i) children who went to study in secondary schools and colleges in other Counties, ii) young adults who went in towns to search for jobs and iii) those adults who went out to settle permanently in other Counties.

The in-flow of males aged between 65 -74 years shows that women come after retirement for permanent settlement. The loss of population from the County is attributable to the unfavourable environmental conditions prevailing in the County. Except for limited gains in old population aged over 70 years and young women aged 15 to 19 years, Baringo experienced extensive net loss of population in most of the remaining age groups.

Uasin Gishu

The migration patterns observed in Uasin Gishu County depict an urban centre which is similar to Nairobi City. This shows that both rural-urban migration and return urban- rural migration typologies do prevail in Uasin Gishu County. However, the County has some areas which are rural thus; it is net gainer of the old population aged 65 years and above. The County recorded net gain of population aged between 5-24 years with only males extending to age 29 years and later gained in population at old ages from 65 years and above.

The in-flow of young children aged 5-14 constitute a population of school goers joining primary and secondary schools. The in-flow of young adults aged between 10-20 years constitute a Population of primary school leavers and secondary drop-outs joining the County's numerous

secondary private schools as well as those being absorbed in the ever-expanding urban informal sector like real estate industry. The influx of the ages from 20-29, can be concluded that job seekers invade in this town as well as those seeking higher education opportunities. Uasin Gishu is one of the Counties with full of colleges and one huge University nearer Eldoret town that have attracted these young children in this County. The in-flow of the old population reflected late retirement among old residents of this County who had worked elsewhere in the country.

The out-flow of population aged between 30-64 years for males and 25 -64 years for females is attributable to few employment opportunities for the youth and resettlement after retirement in their home Counties. The period between 1969 and 1979, the County experienced net gain of population except for 25-34 and 40-44 years for females and 30-39 and 45-49 and 55-59 age groups for males. This implies that migration patterns in Uasin Gishu have taken a different stage from net gain in population to net loss of the population. This is caused by violence experienced after general election in 2007/08 where earlier in-migrants moved out to rescue their life, leading to net loss of population.

Elgeyo **Marakwet**

The County is characterized by net loss of population in all ages except for children aged 5 years and old male population of 65 years and above, indicating those who come to seek for primary education and those who have attained retirement age. The extensive out-migration being experienced in this County may be attributable to limited schooling opportunities/ facilities, land for settlement and economic opportunities for the youth.

Nandi

Like Elgeyo Marakwet, Nandi experienced similar migration patterns of out-migration. The County registered net gain of children aged 5-9 years and old population aged 65-74 years for males and 70-74 years for females. Nandi is well known of tea plantations that attract labour migrants from all over the country. However, it experienced massive out-migration flow.

The out-migration observed during the inter-censal period, may include out-migrants who might have involved in post-election violence in the year 2007 and 2008 and were forced to move out to settle elsewhere permanently.

Nakara

Nakuru has acquired the migration pattern of urban centre in developing world. Like Nairobi, Mombasa and Uasin Gishu (Eldoret), Nakuru exhibited net in-flow of young population aged 5-24 years. In addition, it gained aged population of ages 60 years and above, indicating that the area has resettlement land. Nakuru has opened up for urban centres such as Molo, Naivasha, and Nakuru Township that have attracted young population for both employment and educational purposes. In contrast of Nakuru having opened up for training institutions, it still has more youth moving out. This youth normally move out due to limited economic opportunities available for them.

Laikipia

Laikipia exhibited extensive out-migration flow, it only registered net gains among male children aged 5-9 years; population aged 60 years and above and only female population 45-49 years. It experienced net loss of population aged 25-59 years.

Though Nakuru and Laikipia experienced post-election, both became the destination centre for Internally Displaced Persons (IDPs) from within and outside the region. Conversely, Laikipia registered net loss of IDPs to other Counties for resettlement.

Narok

Narok exhibited a unique migration pattern. It is a net gainer of male population and net loser of temale population except among limited ages. For instance, 50-59 years for males and 5-9 years and 25-59 years for females. The out-flow of female population aged 25-59 years is a clear indication that the women in this County form family union with other men from other Counties and settle there permanently. The out-flow of male population aged 50-59 years is a symbol of early retirement from temporary jobs in the wheat plantations.

The in-flow of young adults aged between 10-24 years and 60 years and reflected people who have come for education, employment opportunities in the plantations and retired from formal / informal jobs from urban centres.

Kajiede

This County is an extensive net gainer of population at all ages except for female population aged 65 years and above. Kajiado is next to Nairobi city thus, it is abundant with inhabitants who usually work in Nairobi, just like in Kiambu. The in-flow of population portrayed permanent settlement of Nairobi workers in Kajiado County who have acquired land in the outskirt of Nairobi County. The County comprises of commuter centres such as Ngong, Kiserian and Ongata Rongai which are proximity to the city of Nairobi thus, attracting the people to acquire land and settle permanently as they work in Nairobi.

Rericbo

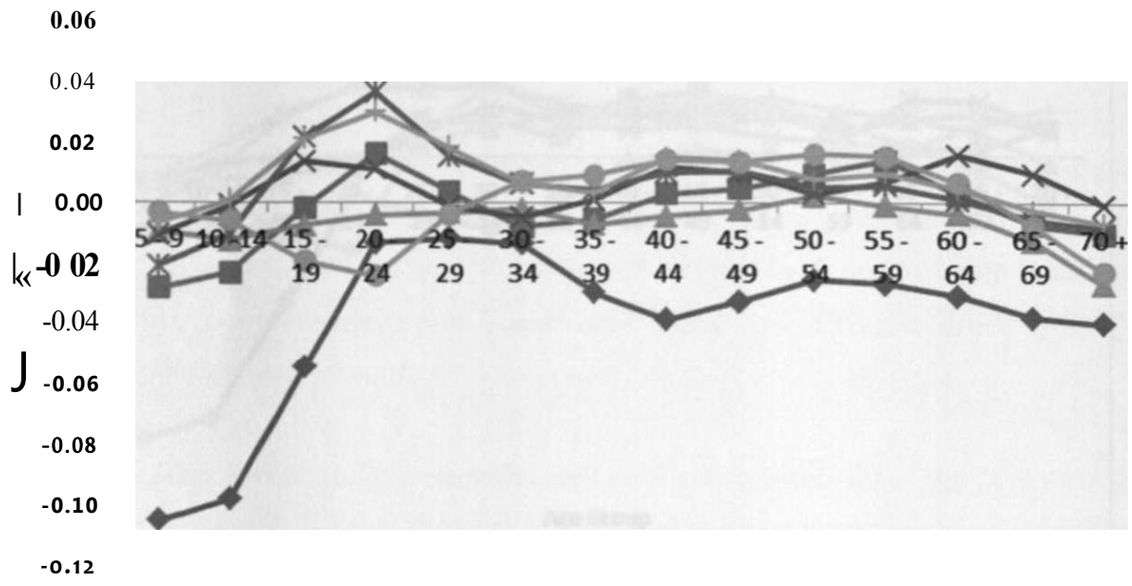
Unlike Kajiado and Bomet, Kericho is totally net loss of population at all ages.

Kericho initially was net gain of population from Western Kenya and acted as network town of many migrants from the same region. However, the migration patterns have changed significantly in Kericho from net gainer to net loser of population. This may be attributable to two main reasons: first, newly introduced tea picking machine by tea plantation owners leading to layoff of the tea workers have repelled workers; and second persistent violence erupted during the inter-censal period forced masses to out-migrate Kericho. These workers tend to move to sugar cane zones such as Kisumu and Kakamega Counties and other plantations areas such as Bomet, Narok and in Central Province.

Bomet

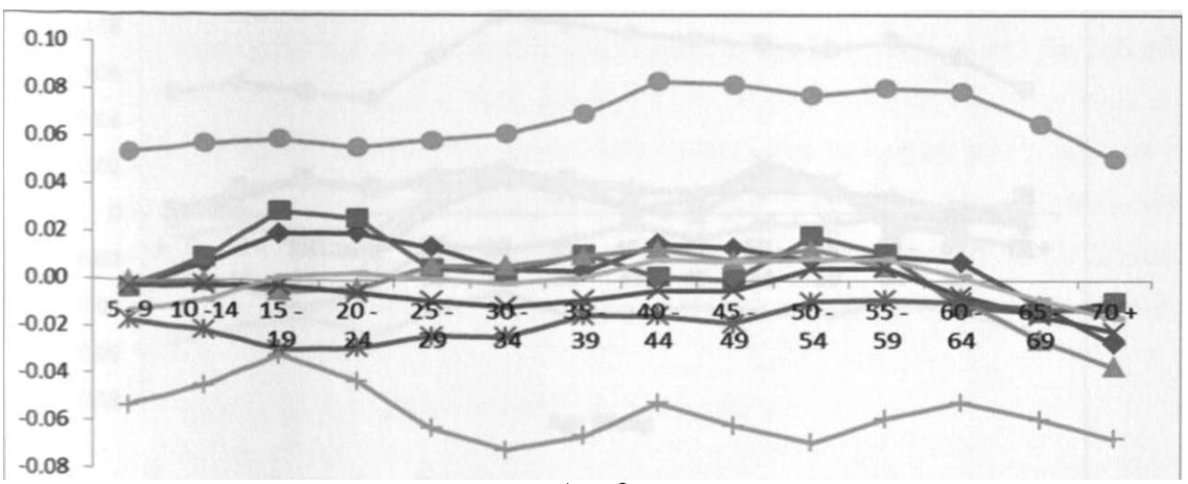
Bomet unlike Kericho exhibited net gain of population at all ages. This is an entirely net receiver of population. This can be explained by its potential rich land for agriculture and good climatic conditions. Comprising of Bomet and Bureti towns, it has attracted migrants from all over the country. The in-flow may also be attributable to its proximity to Kisii and Kericho Counties which exhibited net loss of population and where political violence erupted during the inter-censal period, respectively.

Figure 8a: Net Migration Rates for Males, R. Valley



•Turkana -West Pokot -Samburu •TransNzoia

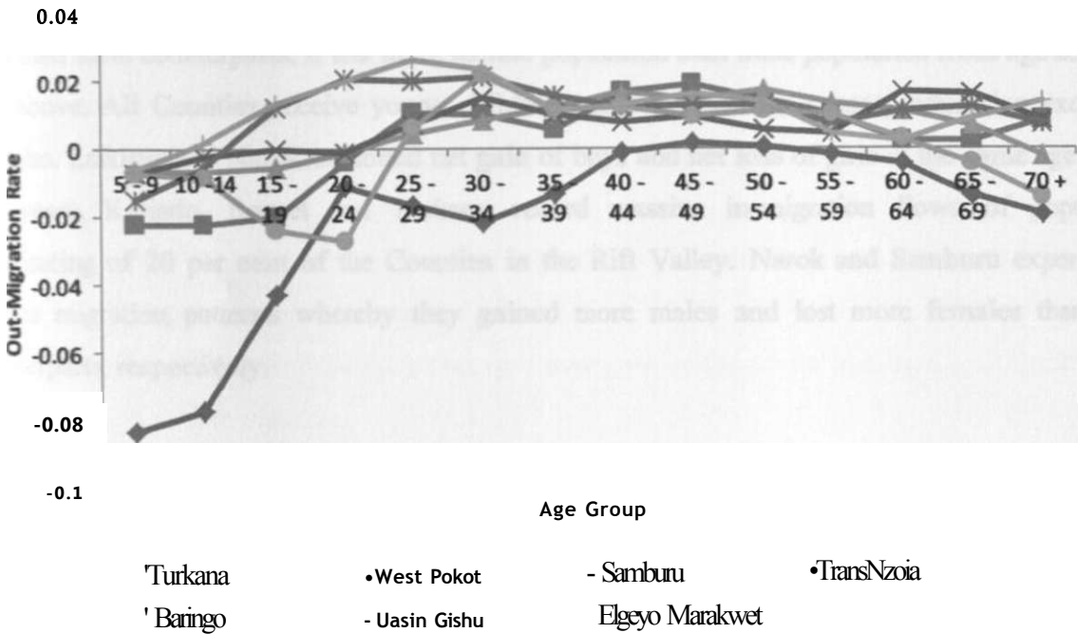
•Baringo -Uasin Gishu -E. Marakwet

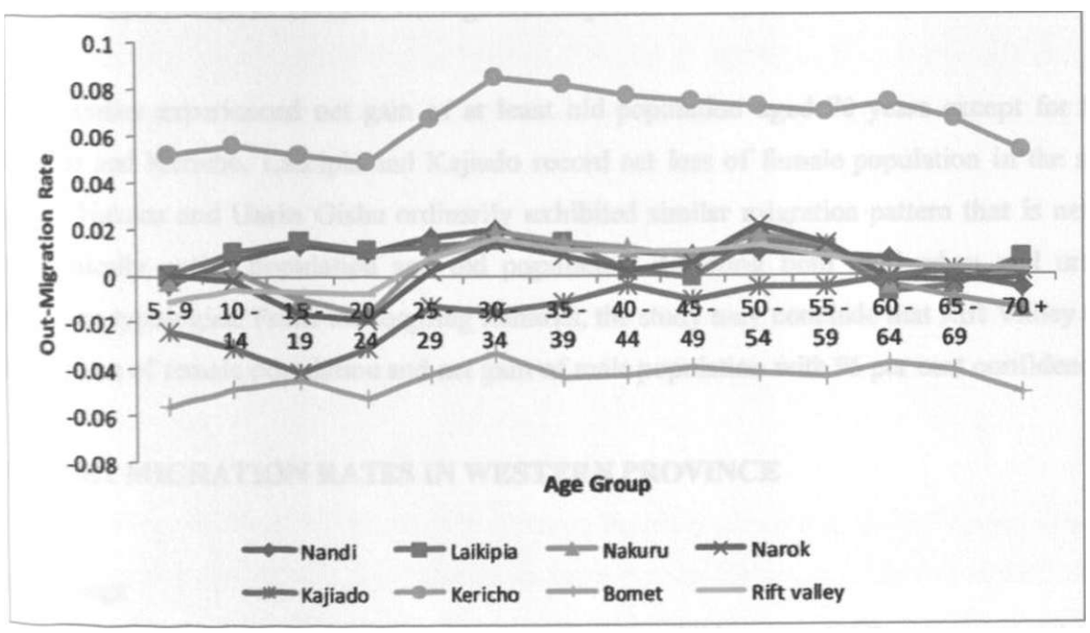


•Nandi -Laikipia Nakuru •Narok

•Kajiado - Kericho Bomet Rift valley

Fig **a re 8b: Net Migration Rates for Females, R. Valley**





Summary

Generally, Rift Valley province receives more young female population aged between 5-24 years than their male counterparts. It lost more female population than male population from age 25 years and above. All Counties receive young children age 5-9 years for primary education except in Kericho. Laikipia and Narok exhibited net gain of boys and net loss of girls in the same age group 5-9 years. Kajiado, Bomet and Turkana record massive in-migration flows of population constituting of 20 per cent of the Counties in the Rift Valley. Narok and Samburu experienced similar migration patterns whereby they gained more males and lost more females than their counterparts, respectively.

As shown in figure 8 Turkana recorded massive in-flow of young population of age 5-14 years than any other age group. Baringo, Trans- Nzoia and West Pokot had a peak age of male out-migration at age 15-29 years. Kajiado, Uasin Gishu, Narok, Turkana and Samburu gained male population at age group 15-24 although with varying levels. Bomet and Kericho had opposite direction in levels and patterns of migration. Majority of females experienced longitudinal kind of wave migration in most Counties except in Turkana, Baringo and Kajiado.

All Counties experienced net gain of at least old population aged 70 years except for Laikipia, Kajiado and Kericho. Laikipia and Kajiado record net loss of female population in the same age group. Nakuru and Uasin Gishu ordinarily exhibited similar migration pattern that is net gain of economically active population and old population; depicting both rural-urban and urban-rural migration typologies. From the forgoing remarks, the study may conclude that Rift Valley Counties are net loss of female population and net gain of male population with 95 per cent confidence level.

4.2.7 NET MIGRATION RATES IN WESTERN PROVINCE

Kakamega

The County was characterized by net gain of young children aged 5-9 years; net gain of male Population aged between 50-59 years; net loss of population aged between 10-49 and 60 years and above for males and 10 years onwards for their female counterparts. The net in-flow of young children without accompaniment of their parents indicated that children come to seek for primary

education in their home County and tender care from their grandparents. The native of Kakamega County tend to send their young children back home to learn in their home County.

The out-flow of population aged between 10 years and above included:

- S Young adults seeking for secondary education elsewhere in the country especially in the urban centres.
- ^ Standard eight leavers who would to seek for employment in urban centres and rural areas where crop plantations are grown.
- S Those who have finished form four and move out to search for training opportunities and / or jobs in urban centres.
- S Those who have acquired land from other Counties and wish to settle their permanently as shown in movement of ages 40 years and above.
- J Those given retirement as well as job transfers.
- J Women who get marital status in other Counties.

This County from its migration data exhibited rural-rural migration, rural-urban and return urban-rural migration. Return urban-rural migration is observed among only males in age groups 50-54 and 55-59 years. The in-flow of these males in this County reflected migration of people given early retirement, born in Kakamega County.

Vihiga

Like Kakamega, Vihiga registered net gain of young children aged 5-9 years. It also exhibited net loss of population aged between 10-29; 35-49 and 65-69 years for males and 10-49; and 60 years and above for females.

Unlike Kakamega, the County experienced return female population aged 50-59 years in addition to male population aged 30-35; 50-64 and 70 and above years. This may imply that significant number of women bom outside this County form union with men of this County but elsewhere from this County and come to settle permanently with their husbands. The migration patterns of Vihiga and Kakamega are almost the same indicating that the factors driving the movement are similar.

Bungoma

The County is characterized by net loss of boys' population aged 5-9 years and net gain of girls' population aged 5-9 years. It registered net loss of population aged between 10-74 years except for age groups 45-49 and 70-74 years for females; and 30-34,45-49, 55-59 and 70-74 years for males.

The girls were accompanied by their parents in age group 45-49 years. There is a close relationship between male and female migration in the age groups 45-49 and 70-74 years. This means migration in Bungoma involved family movement.

Similarly to other Counties, Bungoma exhibited rural-urban migration observed among the youths,; rural-rural migration experienced among population aged 40 years and; return urban-rural migration observed among old population aged 45-49 and 70-74 years with males aged 55-59 years who come to settle permanently in their home County.

Busia

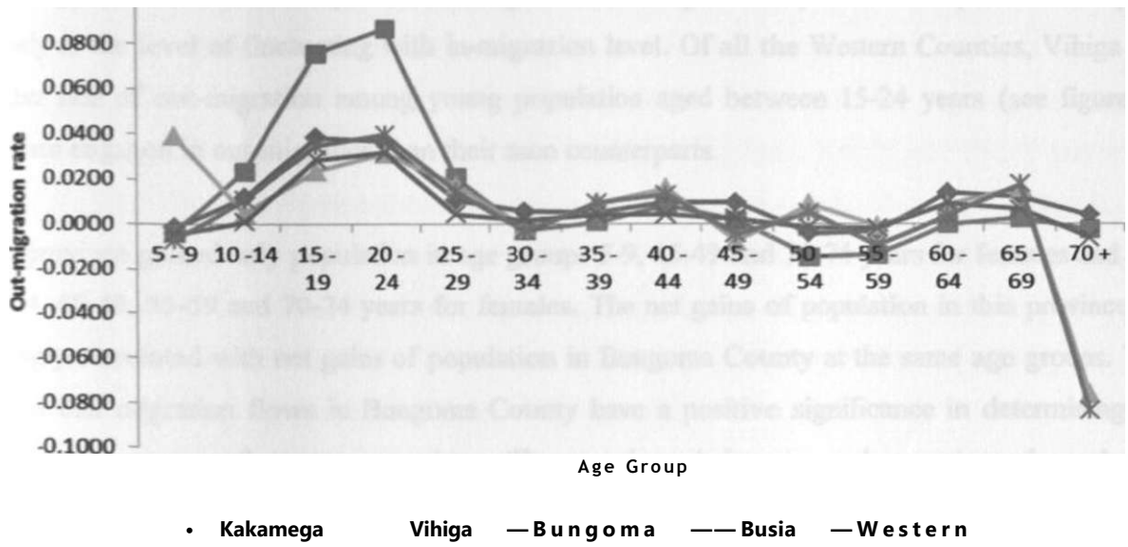
Unlike in the other Counties, Busia experienced net gain of female population aged 10-14 years. Its migration pattern is almost similar to Kakamega where all females migrated to other Counties other than the young population and limited in-migration of male population aged 50-59 and 70 years and above. In addition both Counties record net gain of male population in ages 50-59 years.

The in-flow of female population in age group 5-14 shows that more girls are sent home to study in primary and secondary schools than boys by their parents. The in-flow of males in age groups 50-54, 55-59 and 70-74 years indicate early retirement, retirement and those who have come to invest or do business from other Counties since Busia is on Kenya-Uganda boarder effusive of economic activities.

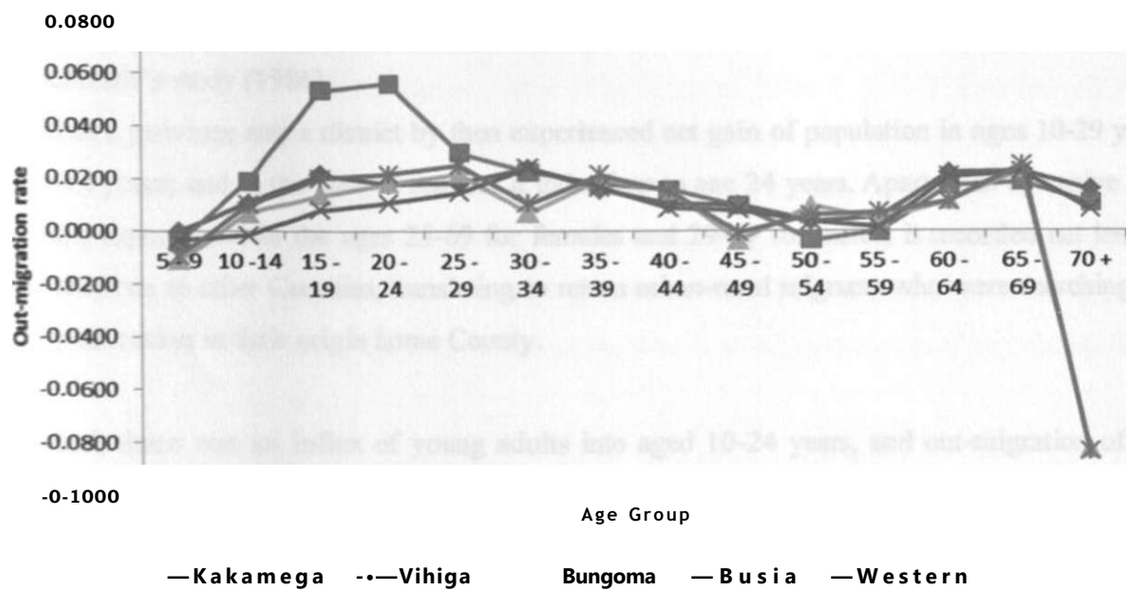
From migration data it is very clear that Busia is a net loser of population that is totally opposite with findings of Wakajummah' study (1986). This extensive out-migration can be explained by loss **ot** population to Uganda during post-election violence during the inter-censal that went to seek for refuge as well those who went back to their original home County. This means that post violence played a significant role in shaping the migration pattern of Busia County. However, the County has

limited opportunities for the youth in terms of economic and training facilities. This limited opportunities repel the youth from this County to others especially urban Counties.

Figure 9a: Net Migration Rates for Males, Western



Figire **9b: Net Migration Rates for Females, Western**



summary

All Counties in Western province exhibited net gain of children aged between 5-9 years other than Bungoma which lost boys of the age to other Counties.

The migration from Western peaked from age 10 and at age 20-24 years was at peak and dropped slowly to the level of fluctuating with in-migration level. Of all the Western Counties, Vihiga had higher rate of out-migration among young population aged between 15-24 years (see figure 9). Women engaged in out-migration than their men counterparts.

The province gained only population in age groups 5-9, 45-49 and 70-74 years for females and 5-9, 30-34, 45-49, 55-59 and 70-74 years for females. The net gains of population in this province are strongly correlated with net gains of population in Bungoma County at the same age groups. This means that migration flows in Bungoma County have a positive significance in determining the migration patterns of western province. The province being a rural experienced rural-rural migration, return urban migration and rural-urban migration.

4J NET MIGRATION RATES DURING THE INTER-CENSAL PERIOD 1969-1979.

The net migration in different provinces can be summarized as follows as per the findings of Wakajummah's study (1986):

Nairobi as a province and a district by then experienced net gain of population in ages 10-29 years and 70-74 years; and in the case of females it gained up to age 24 years. Apart from extensive out-migration experienced in the ages 25-69 for females and 29-69 for males, it recorded net loss of young children to other Counties, translating to return urban-rural migrants who were searching for primary education in their origin home County.

In Central, there was an influx of young adults into aged 10-24 years, and out-migration of old aduhs aged 25-64 years from Kiambu district. While in Nyandarua there was a net loss of population aged 40-64 years of both sexes. A net gain of population aged 65-74 years occurred in all the five districts of the province. The majority of the districts in the province had to contend with the problems imposed by return migrants who are past their economic productivity. Murang'a district exhibited massive in-migration stream at ail ages except in the ages 15-24 years. While

Kirin>anga registered a net loss of economically active population aged 20-49 years for both sexes, Nveri and Nyandama dominated in net loss of the population in ages 15-29 years. All districts except Murang'a exhibited net loss of young children in search of primary education.

Tbe Coast province had an interesting migration pattern. All the districts, except Taita-Taveta, exhibited a net in-migration of population in the age bracket 15-24 years; Mombasa and Kwale had a net loss of children aged 5-9 years; there was a correlation between the net migration of children 5-9 years old and females in the group 25-29 years in Mombasa, Kwale and Kilifi; and return migration from province are directed toward Taita-Taveta and the two provinces of Western Kenya, Nyanza and Western. Lamu and Tana River experienced net gain of population in all ages except in the age groups 65-69 and 55-59 years for females, respectively. As far as Mombasa registered net gain of young adults aged between 10-24 years, it exhibited a massive net loss of active population in terms of economic from age 25-69 years. Though, Kilifi, Kwale and Taita-Taveta experienced net in-flow of population in certain age groups, they portrayed extensive out-migration streams to the neighbouring districts such as Lamu, Mombasa.

In Nyanza province all districts experienced a net out-flow of children and young adults aged 10-29 years; and return migration after age 40 was more pronounced in Siaya and South Nyanza districts. Except Siaya and south Nyanza districts as well as Kisumu limited to only females, all other districts exhibited net loss of children aged 5-9 years. A net gain of males aged 40-59 years by south Nyanza district confirms the contribution of migration from Kisumu and Siaya Districts. All districts netted in-migration of population aged 65 years and above except for their females who were gained after age 70 years. While south Nyanza experienced net loss of population from age 10-39 years, Kisii exhibited extensive net loss of population in all ages except at age group 70-74 years.

All the three districts in Western province experienced a net gain of children aged 5-9 years (which in case of Busia and Bungoma, extended to age 14 years), largely attributed to children returning for primary' education; and net gain of population in ages 40-59 years. All the districts experienced net !°ss of male population aged between 15-24 years. Busia being on the Kenya-Uganda border exhibited massive in-migration of population in almost all ages reflecting a region of resettlement.

Both Kakamega and Bungoma districts experienced a net out-flow of population in ages 20-39 yean and a net in-flow from age 40. Western province bears the features of Nyanza province with which it shares contribution to all forms of internal, including long distance migration.

North Eastern was the only province where whether a district experienced net gain or net loss of population, movements tended to affect nearly all ages. The net gain of children in the ages 5-19 years with their mothers was attributable to the return migrants, following the end of the 'Ogaden War' in Wajir and Garissa districts. This was an area where the criss-crossing of population occurred between it, Somalia and Ethiopia (Oucho 1988). Wajir and Garissa experienced net in-flow of population at almost all ages while Mandera except in age groups 5-9, 60-64 and 70-74 years reflected out-migration zone.

In Eastern province, all districts except Meru and Embu experienced a net in-flow of children in the age bracket 5-14 years among males and 25-44 years among females. Marsabit exhibited net in-flow characteristics similar to North Eastern districts where in-flow of all population in all age groups was observed. Except for Meru and Isiolo districts, all other districts registered net in-flow for old population aged 65 years and above reflecting resettlement after retirement. Kitui, Meru and Machakos districts exhibited a net loss of economically active population in the ages 15-44 years.

The then thirteen districts of Rift Valley province covering diverse socio-cultural and ecological zones, exhibited varying patterns of migration. There were out-migration streams from the marginal districts (Baringo, Elgeyo-Marakwet, Samburu and Turkana) to high potential districts (Nakuru, Lasin Gishu, Laikipia and Trans-Nzoia); a net gain occurred in ages 15-24 years and net loss in ages 25-39 years, males lost even at ages 45-64 years. Nakuru, Kajiado and Narok districts exhibited a net in-migration of population in almost all ages. Laikipia, West Pokot and Trans Nzoia recorded net in-flow of population in all ages. Kericho, Uasin Gishu and Nandi exhibited both in-flow and out-flow of population. While Uasin Gishu received young population aged 5-24 as well as old population aged 65 years and above, Nandi experienced net in-flow of population aged 5-9, 15-24, 50-59 and 65-74 years and only 15-19 and 70-74 years for Kericho. Baringo, Elgeyo Marakwet, Samburu, and Turkana recorded massive out-migration of population at almost all ages. I he migration patterns for males were almost similar to their female counterparts. There was a

correlation between net flow of female population in specific ages and their male counterparts. This reflected family movement experienced in early 1970s in this province. For instance, in Trans Nzoia, both female and male population recorded net in-flow at all ages, and in Narok female population aged 60-69 years out-migrated correlating with their male counterparts who out-migrated too.

CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 INTRODUCTION

This chapter seeks to achieve three main objectives. First, it seeks to summarize the major findings of the study by outlining the significant migration features discussed in the preceding chapters. Second, it makes some fundamental recommendations that are important to policy making on either country or regional basis. Finally, it highlights opportunities for further research on both the actual problem under the study and other closely associated problems.

5.1 SUMMARY OF THE STUDY

The main objective of this study has been to apply the Age-Specific Growth Rate technique devised by Preston and Coale (1982) to estimate the net inter-censal migration rates for all the 47 Counties in Kenya utilizing census data of 1999 and 2009. This method was first applied to Kenya's empirical data by Wakajummah (1986) using 1969 and 1979 census data. The derivation of the formula used in this study has been explicitly shown in chapter three where the supporting models are reviewed. The other methods for estimating net inter-censal migration and their applications have been exhaustedly reviewed in chapter two. For the Age-Specific Growth technique to be used, age-wise population distribution for the two censuses and an appropriate life table were required. The study only required the probability of dying $q_{(1)}$ values from the extracted districts life tables of the analytical report on mortality for the 1999 Population and Housing census. The $q_{(a)}$ values were used to generate the survivorship probabilities (p(,j) values that were utilised. Taking Nairobi as a case study, section 4.1 shows how the inter-censal net migration rates were obtained. The findings and discussions of the obtained migration rates for the remaining 46 Counties were presented in subsequent sections of the chapter four. This chapter finalises the study by highlighting the key findings, making recommendations from the drawn conclusions.

5.2 SUMMARY OF THE MAJOR FINDINGS

MIGRATION IN URBAN CENTRES

he number of the metropolitan areas is on rise according to the migration patterns. Nairobi and Mombasa are the major metropolitan areas. Nakuru, Uasin Gishu, Lamu and Isiolo tend to reflected

nugraiKHi patterns for metropolitan areas. These areas are found to exhibited the same age-specific migration pattern, suggesting that major factors attracting into/ or repelling the people into and from these areas are nearly similar. Nakuru and Mombasa register net gain of population aged between 5-34 jears and net loss of population from age 35 years and above. In Uasin Gishu, the presence of ever expanding Eldoret town and well established Moi University are likely to have caused the massive in-migration of the young population thus, making the entire County a metropolitan area. There is a net in-migration of children aged between 5-9 years and parents in the 20-34 year age brackets. This indicates some positive correlation among population movements within these two age groups, with a possibility of the latter being the former parents. Population in-flow experienced within these two age brackets may be attributable to more expanding primary and secondary schools in major urban centres of the country.

The in-flow of young and youth population are mainly school-going children, school drop-outs, school-leavers, the unemployed and those seeking for training facilities, who move from rural to urban centres with purpose of improving their living standards in urban centres. Most counties exhibited peak out-flow of population in the ages 15-29 years. Thus, they include young people who move to urban centres with opinion of getting rid of poverty, looking for jobs, being trained in good institutions and living a better life that such centres are anticipated to provide. This belief is also observable in Nakuru, Isiolo and Lamu Counties where the influence of Nakuru and Isiolo municipalities and the proposed Lamu sea port are being felt, respectively.

As noted earlier, Mombasa and Nairobi have been found to experienced net loss of population from age 35 years and above. Population found to out-migrate are likely to be those who have failed to secure jobs in the urban areas; the business-oriented class who have accumulated enough capital in the urban areas and are moving out to invest it in land and /or business elsewhere in the country. People who have completed their education and /or training and need to practice their profession elsewhere like teachers; those in job transfers and those who have attained retirement ages. Thus, it ®ay be concluded that population flows into major urban centres of the country are mainly for Gaining and employment purposes and not for permanent settlement. The return migrants observed <n \akuni and Uasin Gishu at late ages as well as youth movements in and from the metropolitan [ar]«as portrayed the existence of inter-metropolitan migration flows in Kenya.

MIGRATION IN THE RE-SETTLEMENT AREAS

The current re-settlement areas in Kenya experienced a similar migration pattern. They are marked by population net gains in all age groups or nearly all age groups indicating that population flows into such areas involve movements for permanent settlement This pattern of migration largely is attributable to land pressure and conflicts in the adjacent Counties. It is observed in Bomet, Kajiado and Narok Counties. The former districts / Counties that were re-settlement areas such as Uasin Gishu, Laikipia, Nakuru, Trans-Nzoia, West Pokot and Tana River have recorded net loss of population in significant age groups. Tana River exhibited massive loss of population at all ages.

The migration pattern in Narok is however, influenced by wheat plantations, Maasai Mara National park and well established Narok Municipality. Thus, the County experienced net gain in the population of young adults aged between 10-24 years. It also experienced net loss of population who have attained early retirement ages (50-59 years) and this indicate people who migrate and settle in their home County. The population in-flow to re-settlement areas that is experienced in all ages reflected the migration that involves the family.

MIGRATION IN CENTRAL AND PART OF RIFT VALLEY

All Counties in Central Province exhibited net gain of population aged 40-49 years except for Kiambu, reflecting early retirement. These may be people who have accumulated money in the urban areas and are coming back to invest it in land and / or business in their home Counties. Kericho exhibited net loss of population in all ages whereas Nandi only registered net gain in age groups 5-9 and 65-74 years. This is a clear indication that the cash crop production especially tea has drastically declined and this has forced the population to seek for alternative in other Counties. Like Nandi, Embu registered net gain of young children aged between 5-9 years and net loss of population aged between 10-64 years except in age group 45-49 years. This reflected early retirement of people born in Meru and have come to settle permanently.

MIGRATION IN NOMADIC AREAS

Migration pattern in the Northern part of the country is found to be greatly influenced by the nomadic life style of the inhabitants. In addition the pattern of migration has been predisposed

greatly by major conflicts experienced in the bordering countries such as Somalia, Ethiopia and Sudan. Such life style is reflective of the migration pattern involving family movement associated with nomadic areas, which involve movements in almost all age groups. The pattern is clearly portrayed in Turkana, Marsabit, Samburu, Garissa and Wajir Counties.

MIGRATION AT THE BORDER AREAS

Counties located along the International boundaries are found to either portrayed net loss or net gains in population at almost all ages suggesting there exist both emigration and immigration flows amongst these Counties. This phenomenon is particularly observable at Busia and West Pokot in the Kenya-Uganda border, Kajiado, Narok, Kwale and Taita Taveta along the Kenya-Tanzania border; Garissa, Wajir and Mandera in the Kenya-Somalia border; Turkana and Marsabit along the Kenya-Sudan. Kenya-Uganda, and Kenya-Ethiopia borders.

The population net gain observed in these Counties is largely explained by the turbulent political conditions which prevailed in most of the neighbouring countries during the inter-censal period. Probably they are Turkana, all North Eastern Counties and Marsabit which experienced massive in-flow of the population at almost all ages. On contrast, the population net loss observed in Kwale, Taita Taveta, Busia, and West Pokot may be attributable to the post-election violence experienced in the country during the inter-censal period. Thus, the population might have emigrated to seek for rescue for their lives at the time when Kenya was experiencing political violence.

MIGRATION IN WESTERN AND EASTERN KENYA

All Counties in Nyanza, Western and Eastern Provinces experienced net gains in young children aged 5-9 years except Bungoma which only receives girls in the same age group. This means that there is an association between migrants and their family members. They send their children back home to study as they live with their grandparents. Thus, the level of remittances is high among these areas from urban areas. These are mainly rural districts which contribute a considerable Pinion of migrants to the metropolitan areas.

The Counties also exhibited massive net loss of population in most ages between age 10-59 years except for Marsabit, Isiolo and Machakos Counties. Nyamira and Vihiga register net gain in

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population aged 50-59 years with Nyamira extending to age 74 years; this reflected the retired populations who have come to settle permanently in their home Counties. Marsabit, Tharaka, Kitui, Machakos and Makueni exhibited similar migration pattern of males aged 50-74 years in Eastern province, which is net gain in male population in those ages. In all these Counties, females seem to out-migrate frequently to other Counties than their male counterparts and this is an indicative of females involving in-migration more than their male counterparts in these Counties.

Only Kisii and Nyamira register net gain of old female population aged between 55-59 years for both and 70-74 years for Nyamira only. Similar pattern is observed in Western province where only Yihiga and Bungoma experienced net gain of older female population, Bungoma (45-49 and 70-74 years) and Vihiga (50-59 years). However, the rest of the Counties exhibited massive out-migration of female population from age 10 years onwards. All Counties in Western and Nyanza provinces experienced net loss of population aged between 15-29 years, except for female population in Kisumu aged 20-24 years. Meru, Tharaka, Embu, Kitui and Makueni Counties exhibited similar migration pattern of net loss of young population aged between 15-29 years. Given that urban centres tend to exhibited net gains in population aged 15-29 years, it can be concluded that the majority of young population lost from these rural districts are mainly received in urban centres. These are mostly young adults flocking into towns due to good educational facilities, job opportunities, health and social welfare as well as other amenities available in such centres. Ironically, majority of young rural-urban migrants do not return as anticipated. Thus, the out-migration observed in metropolitan areas is likely to be directed towards other urban centres including unsuccessful job seekers promoting inter-urban distribution of the population. However, the return migration of the early retirement is observable in small numbers in Siaya, Kisii, Nyamira, Busia, Kakamega and Vihiga in the age group 50-59 years.

53 CONCLUSION

In the conclusion, the study computed excellent inter-censal migration rates in Kenya by establishing the patterns and levels of migration and the general knowledge of migration patterns and typology was well established in each and every County. The technique distinguished net in-migration from net out-migration of different areas. Based on the findings, the levels and patterns

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have changed significantly in some regions as compared to the findings of Wakajummah's study (1986). The following conclusions were drawn from the key findings:

Migration of young children aged between 5-9 years is prominent accompanied by their parents ±us; their impact in County planning is paramount especially in education and health sectors. There is correlation between remittances and migration of young children aged 5-9 years who come for primary education mainly in rural areas.

The number of major urban centres is increasing, implying that more people are moving to urban centres. These urban centres draw population from all over the country especially in rural areas since majority of rural-urban migration is reflected from migration data. Migration is the key implementing strategy considering how it aids young population to realize their potential thus; the young population is mostly affected in this movement. The most affected are Eastern and Western provinces which loss active population in economic development- There is a greater tendency for better educated youths to migrate to urban centres for both schooling and employment purposes as implied by migration patterns. There is a positive correlation between migration and age as well as education. However, because of underemployment and unemployment rate experienced in majority of urban centres, the youth migrants tend to out-migrate to rural areas or other urban centres to seek for employment related to their skills. Thus, the brain drain is observed in both metropolitan and other urban areas where they send young population to other areas with inclusive of international countries. This young population has been trained in good facilities in such urban centres and fails to secure jobs. This suggests as much as these urban centres provide good educational and social amenities; there is lack of employment capacity to all the youth.

The return urban-rural migration is observed among population aged 35 years and above in Mombasa and Nairobi. This means young population dominant in-migration to urban areas and aged population in return migration. Conversely, the level of the return migration in Kenya has reduced drastically. Most Counties have been observed to exhibit net out-migration of aged population for permanent settlement.

The well-known net gainer of population, their migration patterns have changed significantly. The >oidy therefore concludes that the majority of receiving areas have turned out to be sending x>puiarion to other areas. The dry or marginalized have registered massive in-flow of population in all ages except in a few age groups. This might be attributable to their proximity to vibrant Nations.

The level and pattern of female migrants have changed. There is higher females involved out-migration in some Counties than their male counterparts.

5.4 POLICY RECOMMENDATIONS

rrom the foregoing conclusions, this study makes forward recommendations that are important to policy making. The shift of planning strategy from the National to the County level of government has significant implications in terms of its relationships with County-level migration. The sending and receiving Counties both face social-economic challenges that need to be improved to cater for the stated change of the population movement.

The net in-flow of children aged 5-9 years in most rural Counties has a positive correlation with the urban-rural remittances. It can be established that remittances intended for household consumption, a substantial proportion is spent on children's education, which would enhance or directly facilitate further migration from the household. Thus, this study has good word to the government in controlling the remittances. There is need to formulate credible policies to effectively control the use of remittances that migrants remit to include construction of social amenities at rural areas.

This means that unless rural Counties are endowed with adequate resources and proper management to allow investment and educational opportunities for the young population, the tendency to sponsor roore migration from migrant's households is likely to persist.

W estern and Eastern province tend to be experiencing extensive net loss of population in the labour force. This scenario is not very healthy for current and future economic development of the regions. Thus, both manufacturing and agricultural industries need to be put in place in these regions to create employment opportunities for the youth. This will reduce rural-urban migration and encourage return migration for both unskilled and skilled personnel to develop the regions.

Migration is likely to be more in dry and marginalized areas such as North Eastern province, Turkana and Marsabit. This is attributable to land pressure and conflicts in the adjacent Counties and countries, respectively. However, the two issues call for larger inputs in terms of security, infrastructure and social amenities as well as investments in formerly neglected areas. The conflicts experienced in the neighbouring nations need to be reduced through international peace-making dialogue to reduce flow of refugees.

In relation to the brain drain experienced in the urban centres, the study therefore recommend that good employment policies to be formulated in line with courses on offer for training to discourage brain drain among skilled population.

The national migration survey need to be carried out annually or after three years to generate more convincing findings that planners and policy makers can utilise. This survey will be based on the household (micro) survey data which would be better focused on analyzing migration with independent variables identified. This will further reveal the motivational forces behind migration flows in Kenya.

The provision of more social services at both origin and destination need to be emphasized such as schools; health services and domestic water. This will assist in combating migration of young population seeking for education and health services.

The shift of planning to Counties is supported by Kenyans. However, if less emphasis is given to decentralization of industries proximity to their raw materials to reduce the time and cost of transport, improve quality and security of commodities then nothing would have been achieved other than retaining the status quo. This will provide both informal and formal employment.

5.6 RECOMMENDATIONS FOR FURTHER RESEARCH

Despite the fact that well established migration patterns of each County have been portrayed in Kenya using Age-Specific Growth Rate Method using the current census data, more need to be done in the spatial population change as the knowledge gaps still exist. These include the following:

Motivational forces of migration in Kenya need to be investigated through both quantitative and qualitative research.

The inter-County migration study has been carried in this study. However, the directional flows of population during the inter-censal period need to be revealed through development of County migration matrix. Similarly, case studies need to be intensively carried out to reveal within the Counties that is intra-County migration to show the patterns of migration in each and every County.

Other modem techniques in estimating migration should be utilised to reveal migration patterns and levels. To be particularly no study has utilised vital statistics method to estimate inter-censal migration rates.

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APPENDICES

APPENDIX I: Results for UN Age-Sex Accuracy Indices by County

Coanty	Census,!999	Census2009	Connty	Census, 1999	Ccnsu$_{sv}$2009
Nairobi	86.47	65.02	Nyanza	28.15	30.64
Central	24.67	24.%	Siaya	*3226*	30.51
Nyandarua	39.79	33.06	Kisumu	37.63	32.11
Nyeri	27.80	30.38	Homabay	33.79	29.64
ksnnvaga	32.30	31.35	Migori	25.64	25.55
Vlurang'a	34.69	30.76	Kisii	38.43	37.14
Kiarabu	30.83	33.23	Nyamira	42.17	40.91
Coast	40.32	41.00	R. Valley	25.47	26.71
Mombasa	61.62	57.93	Turkana	41.63	36.52
Kwale	50.95	46.50	WestPokot	34.84	29.23
Kilifi	41.61	38.73	Samburu	45.31	47.53
Tana River	64.85	42.69	Trans Nzoia	25.06	27.63
Lamu	56.70	30.47	Baringo	30.%	32.78
Taita Taveta	34.26	29.32	Uasin Gishu	3135	28.85
Eastern	27.66	24.52	E.Marakwet	27.%	30.24
Marsabit	*5927*	66.55	Nandi	23.38	26.76
Isiolo	58 J 1	43.00	Laikipia	27.58	25.62
Meru	33.09	36.81	Nakuru	32.67	29.76
fharaka	26.72	36.88	Narok	38.15	39.53
Embu	24.%	28.24	Kajiado	35.29	46.28
Kitui	39.81	39.45	Kericho	50.59	38.87
Machakos	28.69	35.03	Bomet	33.98	40.04
Makueni	35.24	36.11	Western	20.41	19.63
N Eastern	118.37	109.16	Kakamega	23.15	28.18
Garissa	93.46	103.73	Vihiga	26.93	27.31
Wajir	118.89	124.05	Bungoma	18.79	17.59
Mandera	127.25	132.57	Busia	22.59	22.42

Appendix II Net Migration Rates for all the counties.

Male Out-Migration Rate, Central

Age Group	Nyandarua	Nyeri	Kirinyanga	Murang'a	Kiambu	Central
5 - 9	-0.0109	-0.0041	-0.0062	-0.0243	0.0382	-0.0033
10-14	0.0052	0.0202	0.0204	0.0077	0.0268	0.0143
15-19	0.0390	0.0447	0.0316	0.0496	0.0005	0.0279
20-24	0.0469	0.0367	0.0158	0.0418	-0.0096	0.0181
25-29	0.0084	0.0145	0.0042	-0.0095	0.0025	0.0042
30-34	-0.0021	0.0097	0.0007	-0.0232	0.0044	0.0003
35-39	0.0073	0.0132	0.0074	-0.0179	0.0144	0.0077
40-44	-0.0137	-0.0046	-0.0028	-0.0249	0.0163	0.0001
45-49	-0.0189	-0.0076	-0.0072	-0.0291	0.0115	-0.0046
50-54	0.0051	0.0208	0.0070	-0.0159	0.0273	0.0133
55-59	-0.0024	0.0119	0.0040	-0.0217	0.0280	0.0097
60-64	-0.0120	-0.0212	-0.0026	-0.0431	0.0101	-0.0092
65-69	-0.0142	-0.0271	-0.0078	-0.0449	-0.0046	-0.0147
70 +	-0.0244	-0.0277	-0.0146	-0.0416	-0.0152	-0.0172

Female, Out-Migration IRate, Central

Age Group	Nyandarua	Nyeri	Kirinyanga	Murang'a	Kiambu	Central
5 - 9	-0.0034	-0.0010	-0.0033	-0.0176	0.0324	-0.0016
10-14	0.0057	0.0194	0.0202	0.0081	0.0223	0.0130
15-19	0.0219	0.0348	0.0191	0.0351	-0.0093	0.0154
20-24	0.0266	0.0294	0.0048	0.0277	-0.0185	0.0066
25-29	0.0094	0.0206	0.0116	0.0005	0.0124	0.0115
30-34	0.0013	0.0187	0.0113	-0.0063	0.0233	0.0132
35-39	0.0083	0.0194	0.0105	-0.0043	0.0210	0.0130
40-44	-0.0137	-0.0007	-0.0002	-0.0159	0.0165	0.0010
45-49	-0.0191	-0.0048	-0.0035	-0.0193	0.0116	-0.0037
50-54	0.0223	0.0211	0.0132	-0.0087	0.0271	0.0157
55-59	0.0161	0.0147	0.0100	-0.0137	0.0228	0.0111
60-64	-0.0186	-0.0078	0.0041	-0.0225	0.0064	-0.0045
65-69	-0.0159	-0.0074	0.0047	-0.0206	0.0001	-0.0033
70+	-0.0035	-0.0055	0.0025	-0.0207	-0.0083	-0.0007

Coast Province Migration Rates

Male Migration Rate

Age Group	Mombasa	Kwale	Kilifi	Tana River	Lamu	Taita Taveta	Coast
5- 9	-0.0212	0.0066	-0.0033	0.0048	-0.0130	-0.0043	0.0001
10-•14	-0.0253	0.0087	0.0007	0.0139	-0.0095	0.0139	-0.0003
15- 19	-0.0367	0.0160	0.0213	0.0230	-0.0060	0.0329	-0.0029
20- 24	-0.0293	0.0195	0.0308	0.0269	-0.0066	0.0199	0.0006
25- 29	-0.0150	0.0170	0.0093	0.0255	-0.0074	-0.0026	0.0051
30- 34	-0.0073	0.0142	-0.0043	0.0225	-0.0099	-0.0087	-0.0005
35- 39	0.0136	0.0093	0.0030	0.0170	-0.0036	0.0003	0.0086
40- 44	0.0229	0.0087	0.0131	0.0159	0.0049	0.0059	0.0211
45- 49	0.0251	0.0112	0.0075	0.0169	0.0053	0.0005	0.0155
50- 54	0.0355	0.0139	0.0032	0.0172	0.0083	0.0010	0.0138
55- 59	0.0332	0.0133	0.0080	0.0183	0.0051	0.0044	0.0185
60- 64	0.0342	0.0118	0.0129	0.0207	-0.0014	0.0069	0.0215
65- 69	0.0320	0.0086	0.0080	0.0181	-0.0015	0.0018	0.0133
70 +	0.0337	0.0052	0.0010	0.0153	0.0040	-0.0061	0.0029

Female Migration Rate

Age Group	Mombasa	Kwale	Kilifi	Tana River	Lamu	Taita Taveta	Coast
5- 9	-0.0325	0.0010	0.0003	0.0010	-0.0090	-0.0012	-0.0011
10- 14	-0.0320	0.0035	-0.0011	0.0085	-0.0032	0.0166	-0.0014
15- 19	-0.0398	0.0051	-0.0032	0.0129	-0.0022	0.0340	-0.0163
20- 24	-0.0343	0.0089	0.0030	0.0177	-0.0024	0.0274	-0.0154
25- 29	-0.0124	0.0161	0.0178	0.0237	0.0054	0.0168	0.0155
30- 34	-0.0023	0.0182	0.0160	0.0258	0.0088	0.0136	0.0222
35- 39	0.0176	0.0207	0.0109	0.0273	0.0105	0.0124	0.0148
40- 44	0.0335	0.0260	0.0274	0.0303	0.0147	0.0137	0.0296
45- 49	0.0246	0.0224	0.0237	0.0292	0.0106	0.0117	0.0260
50- 54	0.0264	0.0215	0.0068	0.0290	0.0064	0.0070	0.0114
55- 59	0.0199	0.0199	0.0089	0.0280	0.0071	0.0030	0.0109
60- 64	0.0128	0.0157	0.0174	0.0279	0.0073	0.0086	0.0179
65- 69	0.0091	0.0145	0.0156	0.0252	0.0045	0.0116	0.0173
70 +	0.0023	0.0158	0.0121	0.0228	0.0047	0.0098	0.0148

Male Migration Rate, Eastern

Age Group	Marsabit	Isiolo	Meru	Tharaka	Embu	Kitui	Machakos	Makueni	Eastern
5-9	-0.0306	-0.0122	-0.0005	-0.0049	-0.0070	-0.0090	-0.0101	-0.0073	-0.0088
10-14	-0.0328	-0.0124	0.0131	0.0140	0.0158	0.0057	0.0094	0.0104	0.0080
15-19	-0.0234	-0.0055	0.0242	0.0412	0.0395	0.0549	0.0379	0.0568	0.0383
20-24	-0.0182	-0.0045	0.0159	0.0333	0.0286	0.0789	0.0282	0.0706	0.0374
25-29	-0.0144	-0.0003	0.0041	0.0027	0.0051	0.0133	-0.0013	0.0168	0.0048
30-34	-0.0090	0.0077	-0.0046	-0.0040	0.0023	-0.0147	-0.0110	-0.0060	-0.0068
35-39	-0.0160	0.0013	0.0034	0.0046	0.0083	0.0001	-0.0082	0.0017	0.0001
40-44	-0.0172	0 0002	0.0159	0.0107	0.0033	0.0039	0.0028	0.0127	0.0076
45-49	-0.0178	0.0012	0.0082	0.0042	-0.0010	-0.0051	-0.0022	0.0047	0.0012
50-54	-0.0189	-0.0044	0.0011	-0.0037	0.0020	-0.0057	-0.0164	-0.0107	-0.0067
55-59	-0.0200	0.0026	0.0046	-0.0005	0.0036	-0.0018	-0.0104	-0.0057	-0.0031
60-64	-0.0240	0.0133	0.0081	-0.0031	0.0072	-0.0072	-0.0027	-0.0082	-0.0018
65-69	-0.0354	-0.0005	0.0009	-0.0149	-0.0036	-0.0150	-0.0145	-0.0198	-0.0126
70+	-0.0536	-0.0218	-0.0099	-0.0243	-0.0225	-0.0238	-0.0273	-0.0264	-0.0257

Female Migration Rate, Eastern

Age Group	Marsabit	Isiolo	Meru	Tharaka	Embu	Kitui	Machakos	Makueni	Eastern
5-9	-0.0233	-0.0116	-0.0026	-0.0038	-0.0030	-0.0048	-0.0047	-0.0020	-0.0053
10-14	-0.0229	-0.0105	0.0105	0.0128	0.0174	0.0046	0.0109	0.0112	0.0083
15-19	-0.0159	-0.0089	0.0142	0.0251	0.0311	0.0294	0.0253	0.0410	0.0247
20-24	-0.0092	-0.0077	0.0090	0.0221	0.0248	0.0442	0.0177	0.0522	0.0252
25-29	-0.0036	0.0089	0.0193	0.0201	0.0192	0.0242	0.0102	0.0245	0.0178
30-34	0.0023	0.0276	0.0185	0.0136	0.0166	0.0029	0.0056	0.0046	0.0102
35-39	0.0002	0.0209	0.0114	0.0113	0.0146	0.0058	0.0037	0.0082	0.0088
40-44	-0.0001	0.0130	0.0160	0.0134	0.0055	0.0120	0.0104	0.0187	0.0126
45-49	0.0008	0.0166	0.0134	0.0062	0.0033	0.0057	0.0070	0.0123	0.0084
50-54	0.0021	0.0178	0.0039	0.0000	0.0084	0.0117	-0.0028	-0.0013	0.0035
55-59	0.0008	0.0149	-0.0008	-0.0003	0.0061	0.0141	0.0023	0.0027	0.0046
60-64	0.0007	0.0161	0.0091	0.0015	0.0081	-0.0021	0.0287	0.0023	0.0050
65-69	-0.0086	0.0063	0.0108	0.0007	0.0068	-0.0061	-0.0257	-0.0055	0.0008
70+	-0.0278	-0.0108	0.0050	-0.0001	0.0032	-0.0032	-0.0108	-0.0088	-0.0037

Male Migration Rate, North Eastern

Age group	Garissa	Wajir	Mandera	North Eastern
5-9	-0.0841	-0.0732	-0.1435	-0.1031
10-14	-0.0722	-0.0642	-0.1380	-0.0941
15-19	-0.0501	-0.0370	-0.1092	-0.0672
20-24	-0.0370	-0.0184	-0.0875	-0.0484
25-29	-0.0282	-0.0095	-0.0767	-0.0386
30-34	-0.0216	0.0058	-0.0626	-0.0281
35-39	-0.0354	-0.0308	-0.0945	-0.0523
40-44	-0.0412	-0 0404	-01147	-0.0671
45-49	-0.0391	-0.0356	-0.1074	-0.0624
50-54	-0.0407	-0.0361	-0.1070	-0.0630
55-59	-0.0385	-0.0314	-0.0995	-0.0579
60-64	-0.0352	-0.0251	-0.0897	-0.0510
65-69	-0.0389	-0.0264	-0.0873	-0.0512
70 +	-0.0411	-0.0241	-0.0770	-0.0467

Female Migration Rate

Age group	Garissa	Wajir	Mandera	North Eastern
5-9	-0.0714	-0.0532	-0.1136	-0.0829
10-14	-0 0606	-0.0442	-0.1083	-0.0739
15- 19	-0.0487	-0.0295	-0.0945	-0.0592
20- 24	-0.0406	-0.0187	-0.0835	-0.0481
25- 29	-0.0334	-0.0168	-0.0855	-0.0459
30- 34	-0.0301	-0.0165	-0.0856	-0.0453
35- 39	-0.0281	-0.0197	-0.0897	-0.0476
40- 44	-0.0238	-0.0201	-0.0888	-0.0470
45- 49	-0.0175	-0.0063	-0.0658	-0.0320
50- 54	-0.0110	0.0084	-0.0405	-0.0157
55- 59	-0.0171	0.0072	-0.0343	-0.0160
60- 64	-0.0203	0.0112	-0.0202	-0.0108
65- 69	-0.0323	-0.0035	-0.0254	-0.0225
70 +	-0.0545	-0.0358	-0.0451	-0.0497

Male Migration Rate, Nyanza

Age Group	Siaya	Kisumu	Homabay	Migori	Kisii	Nyamira	Nyanza
5-9	-0.0058	-0.0033	**-0.0108**	**-0.0100**	**-0.0102**	**-0.0062**	-0.0088
10-14	0.0131	0.0064	0.0054	-0.0019	**0.0161**	0.0276	0.0095
15-19	0.0533	0.0205	0.0399	0.0194	0.0531	0.0590	0.0404
20-24	0.0459	0.0096	0.0354	0.0224	0.0514	0.0402	0.0354
25-29	**0.0026**	0.0090	0.0076	0.0139	0.0203	0.0097	0.0119
30-34	0.0055	0.0194	0.0137	0.0149	0.0165	0.0137	0.0140
35-39	0.0159	**0.0226**	0.0199	0.0168	0.0164	0.0129	0.0174
40-44	0.0217	0.0387	0.0306	0.0267	0.0149	0.0072	0.0237
45-49	0.0099	0.0344	0.0233	0.0233	**0.0116**	0.0057	0.0183
50-54	-0.0038	0.0189	0.0059	0.0117	-0.0049	-0.0038	0.0040
55-59	-0.0041	0.0225	**0.0080**	0.0114	-0.0075	**-0.0120**	0.0038
60-64	0.0098	0.0258	0.0787	0.0192	0.0076	-0.0129	0.0130
65-69	0.0132	0.0142	-0.0522	0.0147	0.0033	-0.0205	**0.0082**
70+	0.0055	0.0014	**0.0021**	0.0047	-0.0071	-0.0301	**-0.0021**

Female Migration Rate, Nyanza

Age Group	Siaya	Kisumu	Homabay	Migori	Kisii	Nyamira	Nyanza
5-9	-0.0011	-0.0055	-0.0067	-0.0064	-0.0097	-0.0115	**-0.0068**
10-14	**0.0112**	0.0045	0.0055	-0.0004	0.0120	0.0164	0.0079
15-19	0.0274	**0.0082**	0.0163	0.0028	0.0253	0.0355	**0.0181**
20-24	0.0215	**-0.0008**	0.0100	0.0042	0.0187	0.0292	0.0119
25-29	0.0237	0.0227	0.0198	0.0223	0.0298	0.0258	0.0243
30-34	0.0393	0.0528	0.0403	0.0358	0.0430	**0.0222**	0.0416
35-39	0.0259	0.0380	0.0314	0.0262	0.0286	0.0175	0.0294
40-44	0.0194	0.0267	0.0248	0.0221	0.0161	0.0146	0.0209
45-49	**0.0181**	0.0284	0.0245	0.0195	0.0145	0.0075	0.0196
50-54	0.0042	0.0155	0.0108	0.0082	0.0014	-0.0004	0.0073
55-59	0.0024	0.0076	0.0037	0.0039	-0.0051	-0.0067	**0.0020**
60-64	0.0217	0.0232	0.0191	0.0202	0.0195	0.0034	0.0198
65-69	0.0263	0.0242	0.0212	0.0210	0.0235	**0.0060**	0.0219
70+	0.0185	0.0142	0.0119	0.0099	0.0144	**-0.0006**	**0.0118**

Male Migration Rate, R. Valley

Age Group	Turkana	West Pokot	Samburu	TransNzoia	Baringo	Uasin Gishu	E. Marakwet
5-9	-0.1054	-0.0282	-0.0096	-0.0105	-0.0208	-0.0032	-0.0066
10-14	-0.0982	-0.0231	-0.0124	-0.0010	-0.0107	-0.0060	0.0008
15-19	-0.0546	-0.0016	-0.0074	0.0135	0.0215	-0.0192	0.0212
20-24	-0.0132	0.0163	-0.0042	0.0111	0.0362	-0.0242	0.0297
25-29	-0.0118	0.0038	-0.0031	-0.0011	0.0153	-0.0038	0.0181
30-34	-0.0134	-0.0080	-0.0022	-0.0048	0.0061	0.0071	0.0063
35-39	-0.0294	-0.0054	-0.0071	0.0009	0.0044	0.0091	0.0034
40-44	-0.0384	0.0031	-0.0043	0.0120	0.0100	0.0143	0.0149
45-49	-0.0324	0.0049	-0.0023	0.0101	0.0104	0.0134	0.0139
50-54	-0.0254	0.0094	0.0023	0.0030	0.0049	0.0163	0.0077
55-59	-0.0267	0.0139	-0.0010	0.0070	0.0056	0.0154	0.0098
60-64	-0.0306	0.0028	-0.0037	0.0157	0.0010	0.0066	0.0046
65-69	-0.0379	-0.0073	-0.0125	0.0095	-0.0057	-0.0078	-0.0026
70 +	-0.0398	-0.0101	-0.0268	-0.0007	-0.0081	-0.0227	-0.0069

Age Group	Nandi	Laikipia	Nakuru	Narok	Kajiado	Kericho	Bomet	Rift valley
5-9	-0.0033	-0.0036	-0.0007	-0.0031	-0.0173	0.0533	-0.0533	-0.0135
10-14	0.0066	0.0094	-0.0009	-0.0022	-0.0214	0.0573	-0.0445	-0.0086
15-19	0.0194	0.0288	-0.0048	-0.0026	-0.0294	0.0592	-0.0318	0.0014
20-24	0.0196	0.0259	-0.0038	-0.0056	-0.0286	0.0558	-0.0425	0.0029
25-29	0.0139	0.0049	0.0060	-0.0086	-0.0235	0.0589	-0.0624	0.0004
30-34	0.0045	0.0028	0.0060	-0.0112	-0.0237	0.0617	-0.0715	-0.0014
35-39	0.0041	0.0110	0.0103	-0.0082	-0.0148	0.0699	-0.0651	0.0015
40-44	0.0154	0.0017	0.0133	-0.0042	-0.0149	0.0835	-0.0515	0.0086
45-49	0.0135	0.0002	0.0083	-0.0043	-0.0181	0.0823	-0.0611	0.0080
50-54	0.0084	0.0186	0.0132	0.0048	-0.0088	0.0776	-0.0683	0.0089
55-59	0.0105	0.0114	0.0055	0.0050	-0.0082	0.0807	-0.0581	0.0088
60-64	0.0077	-0.0111	-0.0078	-0.0064	-0.0092	0.0794	-0.0514	0.0017
65-69	-0.0108	-0.0135	-0.0252	-0.0150	-0.0122	0.0657	-0.0587	-0.0080
70 +	-0.0268	-0.0093	-0.0364	-0.0215	-0.0127	0.0509	-0.0668	-0.0160

Female Migration Rate, Rift Valley

Age Group	Turkana	West Pokot	Samburu	TransNzoia	Baringo	Uasin Gishu	Elgeyo Marakwet
5-9	-0.0836	-0.0220	-0.0068	-0.0074	-0.0151	-0.0073	-0.0061
10-14	-0.0771	-0.0221	-0.0068	-0.0021	-0.0056	-0.0082	0.0015
15-19	-0.0428	-0.0200	-0.0054	0.0001	0.0125	-0.0240	0.0136
20-24	-0.0108	-0.0040	-0.0011	-0.0009	0.0206	-0.0270	0.0203
25-29	-0.0166	0.0108	0.0043	0.0074	0.0202	0.0065	0.0263
30-34	-0.0217	0.0100	0.0086	0.0153	0.0213	0.0216	0.0237
35-39	-0.0130	0.0055	0.0123	0.0102	0.0157	0.0119	0.0115
40-44	-0.0008	0.0169	0.0166	0.0080	0.0123	0.0123	0.0130
45-49	0.0019	0.0190	0.0147	0.0094	0.0131	0.0095	0.0162
50-54	0.0004	0.0147	0.0172	0.0057	0.0128	0.0113	0.0139
55-59	-0.0014	0.0103	0.0135	0.0043	0.0072	0.0100	0.0045
60-64	-0.0043	0.0025	0.0112	0.0169	0.0111	0.0031	0.0025
65-69	-0.0136	0.0023	0.0068	0.0164	0.0122	-0.0045	0.0091
70*	-0.0193	0.0082	-0.0020	0.0086	0.0073	-0.0144	0.0140

Age Group	Nandi	Laikipia	Nakuru	Narok	Kajiado	Kericho	Bomet	Rift valley
5-9	-0.0034	0.0002	-0.0023	0.0004	-0.0234	0.0518	-0.0558	-0.0107
10-14	0.0065	0.0099	0.0019	-0.0020	-0.0308	0.0557	-0.0483	-0.0063
15-19	0.0135	0.0152	-0.0101	-0.0162	-0.0414	0.0522	-0.0449	-0.0069
20-24	0.0097	0.0112	-0.0165	-0.0187	-0.0313	0.0487	-0.0525	-0.0078
25-29	0.0164	0.0125	0.0081	0.0020	-0.0129	0.0671	-0.0423	0.0079
30-34	0.0197	0.0151	0.0190	0.0140	-0.0159	0.0847	-0.0337	0.0161
35-39	0.0119	0.0145	0.0141	0.0082	-0.0113	0.0821	-0.0442	0.0105
40-44	0.0097	0.0022	0.0115	0.0017	-0.0042	0.0773	-0.0428	0.0100
45-49	0.0087	-0.0012	0.0078	0.0051	-0.0108	0.0743	-0.0401	0.0101
50-54	0.0098	0.0153	0.0174	0.0210	-0.0053	0.0720	-0.0426	0.0121
55-59	0.0085	0.0107	0.0126	0.0135	-0.0053	0.0695	-0.0437	0.0074
60-64	0.0066	-0.0077	-0.0042	-0.0022	-0.0009	0.0735	-0.0382	0.0040
65-69	00000	-0.0052	-0.0102	-0.0028	0.0019	0.0665	-0.0418	0.0032
70 +	-0.0062	0.0071	-0.0145	-0.0016	0.0013	0.0524	-0.0514	0.0019

Male Migration Rate, Western Province

Age Group	Kakamega	Vihiga	Bungoma	Busia	Western
5-9	**-0.0015**	**-0.0037**	**0.0390**	**-0.0046**	**-0.0072**
10-14	**0.0119**	**0.0233**	**0.0047**	**0.0009**	**0.0107**
15-19	**0.0385**	**0.0757**	**0.0234**	**0.0286**	**0.0348**
20-24	**0.0367**	**0.0866**	**0.0314**	**0.0317**	**0.0397**
25-29	**0.0104**	**0.0207**	**0.0174**	**0.0043**	**0.0144**
30-34	**0.0057**	**-0.0028**	**-0.0017**	**0.0019**	**-0.0029**
35-39	**0.0054**	**0.0009**	**0.0092**	**0.0043**	**0.0095**
40-44	**0.0097**	**0.0080**	**0.0158**	**0.0042**	**0.0130**
45-49	**0.0096**	**0.0017**	**-0.0079**	**0.0025**	**-0 0046**
50-54	**-0.0040**	**-0.0148**	**0.0088**	**-0.0016**	**0.0050**
55-59	**-0.0032**	**-0.0138**	**-0.0009**	**-0.0020**	**-0.0094**
60-64	**0.0140**	**-0.0001**	**0.0084**	**0.0092**	**0.0037**
65-69	**0.0123**	**0.0026**	**0.0160**	**0.0065**	**0.0176**
70 +	**0.0039**	**-0.0025**	**-0.0765**	**-0.0062**	**-0.0838**

Female Migration Rate, Western Province

Age Group	Kakamega	Vihiga	Bungoma	Busia	Western
5-9	**-0.0002**	**-0.0040**	**-0.0114**	**-0.0034**	**-0.0094**
10-14	**0.0108**	**0.0192**	**0.0069**	**-0.0014**	**0.0100**
15-19	**0.0214**	**0.0533**	**0.0134**	**0.0081**	**0.0200**
20-24	**0.0178**	**0.0561**	**0.0181**	**0.0108**	**0.0216**
25-29	**0.0183**	**0.0298**	**0.0218**	**0.0148**	**0.0249**
30-34	**0.0237**	**0.0224**	**0.0069**	**0.0239**	**0.0106**
35-39	**0.0157**	**0.0178**	**0.0198**	**0.0166**	**0.0215**
40-44	**0.0103**	**0.0157**	**0.0152**	**0.0087**	**0.0150**
45-49	**0.0098**	**0.0097**	**-0.0035**	**0.0080**	**-0.0007**
50-54	**0.0039**	**-0.0034**	**0.0095**	**0.0036**	**0.0062**
55-59	**0.0053**	**-0.0003**	**0.0047**	**0.0014**	**0.0072**
60-64	**0.0220**	**0.0173**	**0.0113**	**0.0205**	**0.0111**
65-69	**0.0227**	**0.0185**	**0.0230**	**0.0222**	**0.0250**
70 +	**0.0156**	**0.0105**	**-0.0831**	**0.0081**	**-0.0838**