A Geographical Study on the HIV/AIDS Pandemic in Kenya

A Dissertation Submitted to
the Graduate School of Life and Environmental Sciences,
the University of Tsukuba
in Partial Fulfilment of the Requirements
for the Degree of Doctor of Philosophy in Science
(Doctoral Program in Geoenvironmental Sciences)

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Abstract

The global HIV/AIDS epidemic has displayed heterogeneous geographical patterns at the various scales of analysis and perspective. Using the case of Kenya, the spatial patterns of the HIV/AIDS epidemic were examined at three levels, the regional, the local, and the individual level. HIV prevalence data on pregnant women from 1990 to 2004 from sentinel sites with continuous surveillance data since the early 1990s were aggregated at the provincial administrative level. Trend curves for each of Kenya's eight provinces were derived, from which spatial-temporal maps using geographical information systems indicated an epidemic that had diffused in Kenya from provinces located in the west to the rest of the country. The prevalence trends over the surveillance period showed an epidemic that was spatially heterogeneous as the provinces exhibited different infection rates which reached the optimum levels at different times starting from as early as the early 1990s until 2000. Bivariate analysis of the provincial prevalence against socioeconomic and demographic characteristics of the country in 1990, when the HIV surveillance started, and in 2000, when the prevalence reached its highest level, showed that ethnic groups distribution as the strongest factor influencing the spatial patterns at the provincial level. Poverty and income inequality showed positive relationship with the provincial HIV prevalence rates, with the relationship more pronounced in provinces characterised by high income inequality. Migration and urbanization on the other hand showed only moderately low correlation with the HIV prevalence.

Mapping the distribution of people living with HIV/AIDS (PLWHA) in Nairobi showed that the epidemic is also spatially heterogeneous at a lower level of perspective. There is higher concentration of PLWHA in areas that are characterised by high population density and high concentration of poor population. Higher infection rates in these regions, coupled with relocation diffusion by PLWHA from outside the city as well as internal residential shift, are contributing to the spatial patterns of the epidemic within the city of Nairobi. Lower cost of basic living conditions is the main contributing factor in the concentration of vulnerable population in the

deprived residential areas, which is in turn impacting on the spatial pattern of the HIV/AIDS epidemic at the local level. The availability of support organizations, easy access to treatment, and low level of stigma and discrimination against PLWHA are other major factors that are influencing the spatial pattern of the epidemic in Kenya. High rate of circular migration between the rural home and the urban areas is a very probable contributing factor in constant diffusion of HIV between the home provinces and the city of Nairobi, as migrants maintain continued link with their home origins through frequent visits through out the year.

An insight into the life course of the PLWHA revealed a complex scenario that places one on the HIV/AIDS risk pathway. Early entry into sexual relationships reveals a society strongly influenced by contemporary culture, especially among the urban dwellers. Parent's ethnic and socio-economic status determines the locality of upbringing; low socio-economic levels increase migration to environs that place individuals at increased risk of contracting HIV.

The life course qualitative exploration found that interplay among urbanization, migration, poverty (income levels) and culture (both ethnic and contemporary) at both the societal and individual level is influencing the diffusion dynamics of the epidemic in Kenya. In mitigation, there is need to address the factors that have contributed to regional disparities in the levels of HIV prevalence, such as cultural practices that have contributed to higher spread in some areas while others are quite low. There is also need to have regional balance in economic strengths in order to reduce migration, especially to the urban areas, which raises infection risk. Addressing income inequality, education and continued awareness campaigns on consistent use of protective means during sexual intercourse, and the proper use of antiretroviral treatment will also contribute immensely in controlling the spread of the epidemic as well as its effects on the society.

Key words: HIV/AIDS, spatial pattern, urbanization, migration, poverty, culture, life course, PLWHA, Kenya, Nairobi

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Abbreviations

AIDS	acquired immunodeficiency syndrome
ARV	antiretroviral drug
ART	antiretroviral therapy
CBO	community-based organization
HIV	human immunodeficiency virus
NACC	National AIDS Control Council
NASCOP	National AIDS and STD Control Programme
PLWHA	people (persons) living with HIV and AIDS
NEPHAK	National Empowerment Network of People Living with HIV/AIDS in Kenya
NGO	non-governmental organizations
STD	sexually transmitted diseases
STI	sexually transmitted infections
UNAIDS	Joint United Nations Programme for HIV and AIDS

Chapter One

Introduction

1.1 Background and Problem Statement

There is now a wealth of compelling evidence from a wide range of settings across the world and at various scales to suggest that location and place shape our health, our exposure to environmental features that impact on our health and our access to those goods and services that either promote health or treat episodes of diseases that we encounter (Gatrell and Rigby, 2004). People and the factors that cause diseases are dispersed, often unevenly, across communities and regions, and the processes that bring the people and the disease-causing agents into contact are geographically variable too (Cromley and McLafferty, 2002). The environment, be it physical, social, or economic, affects people's health. People's behaviour too cannot be divorced from the environment and social context it occurs, as much of it is not under the individual control. The role of geography and its advances in geographical information systems in understanding health related issues cannot be underrated.

From as early as the nineteenth century when John Snow used simple maps to identify contamination sources in the spread of cholera, geography has contributed immensely in many fields in exploring the role of space and place in epidemiology and public health (Koch, 2005). Striking advances in data collection methods, geographic visualization techniques, exploratory spatial data analysis, and geographic modelling, have contributed a lot in understanding spatial patterns and identifying disease probability spread; crucial for mitigation efforts. These advances however offer only a partial picture, and calls for geographers to turn to other methodological perspectives –including qualitative methods– to gain a fuller understanding of ill health,

especially in the wake of re-emerging epidemics. The Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) epidemic, one of the worst epidemics the world has ever experienced, presents a big challenge to these technological advancements.

Since 1981 when the first cases of AIDS were reported, infection with HIV has grown to pandemic proportions, resulting in an estimated 65 million infections and over 25 million deaths globally. In 2006 alone, an estimated 2.9 million persons died from AIDS, 4.3 million were newly infected with HIV, and 39.5 million were living with HIV (UNAIDS, 2006). The number of people living with HIV/AIDS (PLWHA) has also risen every year despite the global efforts in fighting the epidemic. Sub-Saharan Africa, with just over 10% of the world's population, has been the worst affected, accounting for almost two-thirds of the global number of people living with HIV/AIDS.

From the geographical point of view, the HIV/AIDS epidemics in the various continents and countries as well, appear to have developed in different ways (Arbona and Löytönen 1997; Löytönen, 2003; Wood, 1988). During the first decade of the epidemic, it was common to characterise the HIV/AIDS epidemic in terms of three distinct geographical patterns of HIV transmission: Pattern I, where AIDS had been recognised since late 1970s, with low seroprevalence in general population, and homosexual and bisexual intercourse the predominant forms of transmission, was recognised principally in industrialized nations, including the United States and Western Europe; Pattern II, where HIV was present since mid-1970s, and transmission occurred among large risk groups, with prevalence in general population over 1%, and heterosexual transmission as the major mode of transmission, which was recognised mainly in sub-Saharan Africa and Haiti; and Pattern III, where HIV infection was introduced in early to mid-1980s, with prevalence levels insignificant, and homosexual and heterosexual transmissions just being documented, and blood transfusion from imported products as main source of known transmissions, which was principally recognised in Middle East and Asia (Von Reyn and Mann, 1987).

The rapid changes in the epidemiological patterns of the AIDS epidemic such as in India and South East Asia shows that the classification can no longer hold as true (De Cock and Weiss, 2000; Löytönen, 2003). Recent view of the pandemic emphasizes the multiple patterns of HIV epidemic even in neighbouring countries (Stoneburner *et al*. 1994; Mertens and Low-Beer 1996). Disproportionate HIV infection levels in certain high-risk groups have resulted in dramatic differences even within a country or region. Significant differences in prevalence between rural and urban populations and even between two contiguous areas have been observed (Lam and Liu, 1994; Van de Perre, 1995; Löytönen, 2003).

The geographical patterns and spatial diffusion characteristic of the HIV/AIDS epidemics has been of interest in the investigation of the factors influencing the heterogeneity of the pandemic. Different perspective levels have suggested variation in the factors influencing the patterns, right from the global to the local areas. The great disparity between the industrialised and developing regions suggested the role of existing differences in medical care, where lack of early diagnoses in sexually transmitted infections (STIs) in the developing countries may have caused the high rise in number of reported AIDS cases.

Of great importance is the state of the pandemic in sub-Saharan Africa, where almost two-thirds (64%) of the estimated HIV/AIDS population lives. The HIV prevalence varies considerably across the region, with driving forces of the epidemic being varied and diverse. The heterogeneity in the HIV patterns has been thought to be a product of local social and economic determinants. Among the factors are human migration patterns, relative gender distribution in the communities, culture, poverty, war and religion. Other factors are biological and sexual behaviour that directly affect the risk of infection, and include various sub-types of the virus, stage of infection and presence of STIs. A review of literature below summarises how these factors have produced heterogeneous geographic and spatial diffusion patterns across sub-Saharan countries and within countries.

Biological factors

Three major issues dominate: different strains of HIV, the biological disposition of men and women, and sexually transmitted infections. Different sub-types of the virus have significant implications for the transmission of HIV and progression to AIDS. The dominance of HIV-1 type of virus in East and South Africa compared to HIV-2, commonly found in West Africa, explains why there is a major difference in the epidemic patterns between the two regions. West African countries have always had lower number of HIV/AIDS cases compared to East and Southern Africa.

Women are biologically more susceptible to infection than men. However, significant variations observed across the continent in the ratio between men and women over time in the early stages:1 male to 1 female in Zaire, 7 males to 1 female in Cote d'Ivoire, show that the condition may not have been universal. The most recent UNAIDS(Joint United Nations Programme for HIV and AIDS) updates notes that in sub-Saharan Africa, the infection gap between men and women has widened, with a ratio of 13 infected women to every 10 infected men (UNAIDS, 2004).

Sexually transmitted infections (STIs) play an important role in the spread of HIV/AIDS. The presence of ulcerative STIs such as syphilis and herpes significantly increase susceptibility to HIV. The presence of untreated STIs in Africa could have increased the rate of infections. However, the transmission rates did not follow the STIs infection levels, as it would have, logically (Hrdy, 1987).

Sexual behaviour

On a regional scale, differences between epidemiology of HIV/AIDS in Africa and the West fuelled the speculation of risk factors that may be unique to Africa. Hrdy (1987) argued that traditional African societies were promiscuous, both pre-maritally and post-maritally, with Caldwell and Caldwell (1993) stressing that the African societies neither placed aspects of sexual

behaviour at the centre of their moral and social systems nor sanctified chastity. However, some of the assertions have been debunked in recent reviews (Oppong and Kalipeni, 2004); most traditional societies in Africa did sanction sexual impropriety through rules that regulated sexual misconduct.

Additionally, the assumption that homosexuality did not occur in traditional African society, and that it was only heterosexual transmissions that played role in the HIV transmission patterns may be downplaying the spread of the epidemic through other pathways (UNAIDS, 2004).There has been research findings that have shown that homosexuality was present in some African societies, and that the practice is present among prisoners in Zambia, Nigeria and Ghana (Agyei-Mensah, 2005). Sexual behaviour among women across the continent is also different because of the underlying factors that influence women to enter into commercial or multi-partner sexual relationships.

Urbanization and the risk of HIV/AIDS

Levels of urbanization and interaction between urban and rural areas are factors that also contribute to the differential patterns and diffusion of HIV/AIDS (Dyson, 2003). In and out-migration of infected and susceptible persons to the urban areas, and higher concentration of vulnerable populations are important variables contributing to the dynamics of the epidemic. Throughout sub Saharan Africa in general, urban areas have been the HIV/AIDS pandemic in comparison to the rural areas. However, this may not be true in each country as seen in Ghana where regions of low urbanization had the highest HIV prevalence (Oppong, 1998).

Urban areas also constitute regions of anonymity where prostitution thrives. Major towns and certain centres of economic activity such as mining towns, port towns, agro estates, refugee camps, and border towns constitute places that are most vulnerable to prostitution, which contributes immensely to the spatial diffusion of HIV. Countries also present different urban systems and interaction patterns between the population and the urban centres. It is therefore

important to know the relationship between the individual country's HIV prevalence and urbanization pattern.

Population mobility and transportation networks

One of the key factors influencing the spread of HIV/AIDS in sub-Saharan Africa is population mobility. Through population movements, HIV/AIDS has reached areas previously unaffected by the disease (Agyei-Mensah, 2005). Six groups of migrants identified to have influenced the spread of the HIV/AIDS epidemic in sub-Saharan Africa include migrant labourers, female itinerant traders, truck drivers, commercial sex workers, refugee populations and military personnel. Studies on the influence of migration on the HIV/AIDS pandemic have fallen into two classes: studies of the spread of HIV along transportation corridors, and studies of the migration process that increases vulnerability to HIV/AIDS. Studies have shown the contribution of long distant truck driving in the spread of HIV in Africa, India and South America. In addition, studies have identified the importance of migrant labour in the creation of markets for prostitution. Migration acts to increase the extent of sexual networking, and has heightened HIV risk as encounters with casual partners increase. The circular nature of migration and the maintenance of links with home origins through frequent visits put people at both ends of the migratory path at increased risk of contacting HIV (Anarfi, 1993; Brockerhoff and Biddlecom, 1999).

Historical patterns of migration were different with respect to Southern and East Africa, on the one hand, and West Africa on the other hand. Laws in East and Southern Africa That suppressed migration from rural to urban areas during the colonial period ending with independence and end of apartheid, could have influenced the spatial diffusion of the HIV/AIDS epidemic in the 1980s to 1990s.Migration in sub-Saharan Africa countries has varying also varying trends; migration in East Africa is mainly rural-urban, while that in the Southern Africa was to South Africa. Migration in the West Africa was also economic, but was notably by

commercial sex workers. In Kenya, rural to urban migration has been dominant, with continued link from rural origin maintained by circular migration. Studies have found too that mobile populations experience higher HIV infection rates than non-mobile populations, regardless of HIV prevalence in the origin or destination location (Brockerhoff and Biddlecom, 1999; Lyons, 2004).

War and civil conflicts

War can increase HIV/AIDS risk indirectly and directly by disrupting normal social and risk networks, weakening or destroying medical infrastructure, and increasing poverty and social instability in conflict areas. The path of the HIV/AIDS epidemic in sub-Saharan Africa cannot be separate from the realities of conflict and civil strife. Evidence suggests that the early cases of the epidemic were all centred in conflict zones of Uganda, Burundi and Rwanda. For example, the warfare in Southwest Uganda in 1978/1979 and violence through much of the 1970s and early 1980s fit in well with the timing of the epidemic in that region (Caldwell and Caldwell, 1993). The paradox here is that there have also been occasions where the disease has swept through relatively peaceful areas, such Western Kenya, Western Tanzania, Zambia, and Malawi. In addition, war-prone areas such as Ethiopia and Angola strikingly do not exhibit high HIV prevalence (Caldwell and Caldwell, 1993).

Recent civil wars in West Africa have seen the deployment of peacekeeping operations in Sierra Leone, Liberia and Cote d'Ivoire. Sexual exploitation is frequently an element of persecution, particularly for refugee women. Military personnel also have an elevated risk of infection due to their long absences from home on postings (Oppong and Agyei-Mensah, 2004). These conflicts also have severe implications for the receiving countries. The return of refugees after conflict also has an implication in the diffusion of the epidemic.

Poverty and Wealth

The association between poverty and HIV/AIDS is a much debated research agenda by scientists and a subject of deep concern to government and donor agencies. Poverty has been found to be a causal factor influencing the spread of AIDS in Africa. It has been associated with risky behaviour, a prime factor for HIV infection in sub-Saharan Africa. Studies have revealed that in a number of African countries the lower social and economical status of many women has reduced their ability to negotiate safer sex, and, in some situations has led them to providing unsafe sex for money, lodging, food and other necessities (Agyei-Mensah, 2006). In Nigeria, for instance, poverty is a major factor in the explosion of prostitution at oil exploration sites, and in Nairobi, extreme economic deprivation is a major factor that provokes risky behaviour especially among the slum dwellers (Agyei-Mensah, 2005; Zulu *et al.,* 2004).

The link between poverty and HIV/AIDS however is not very direct; one paradox that arises is that countries with relatively high gross national product (GNP) per capita in sub-Saharan Africa are not necessarily the ones with low HIV prevalence. Botswana, for instance, with the highest GNP per capita in Africa, has one of the highest levels of HIV infection. Rapid economic growth brings its own problems - disruption, deprivation, disease and death. Explaining the paradox, Youde (2001) argues that quick economic growth disrupts traditional norms as cultures and people cannot adapt quickly to the changes. Additionally, economic growth skews income distribution and changes distribution pattern, a condition that could enhance HIV risks and eventually its spatial patterns. Poverty and income within countries are spatially disproportionate; their influences on the spatial patterns and diffusion characteristics calling for both quantitative and qualitative inquiry.

Cultural factors

Cultural factors related to customs and group-related habits may affect HIV/AIDS risk (Poundstone *et al*., 2004). Although culture is complex and multi-faceted, it is characterised by

distinct features which reinforce and perpetuate the spread of HIV/AIDS. These include religion, circumcision, and marriage. Studies have shown that Muslim Africa has generally lower HIV rates than the rest of Africa (Caldwell and Caldwell, 1993); the low prevalence in Senegal has also been attributed to the dominance of Islam (Oppong and Agyei-Mensah, 2004). Other evidence linking Islam to HIV is in Oppong's (1998) study in Ghana, where he attributes the low prevalence in Northern Ghana to the relatively high Muslim practice.

The absence of male circumcision has been found to enhance the risk of HIV infection (Caldwell and Caldwell 1993). Studies have suggested that circumcised penis is more resistant to disease, recommending it for men in the reduction of infection risks (Weiss *et al*., 2000). High HIV prevalence rates have been observed in the 'uncircumcising belt' running from East Africa down to the South (Caldwell and Caldwell, 1993).Other cultural practices relating to marriage, inheritance and rites of passage are equally important in the spread of the epidemic. These have been implicated in the spread of the disease in Central African Republic, Malawi, Zimbabwe, Kenya, and Swaziland. The practices take different meaning when examined within countries as the ethnic tribes exhibit distinct differences in theirs cultural practices.

The review of the factors influencing the geographical patterns of HIV/AIDS shows that they are heterogeneous across sub-Saharan Africa, and therefore the resulting patterns could not be homogeneous across the continent. Even within the same country, the factors are not homogeneous. Despite the global mitigation efforts in the spread of the epidemic, the implementation of the programs is at the country level, which implies that individual country analyses of the spatial characteristics of the HIV/AIDS epidemic at all feasible scales is important in seeking successful and sustainable results. The identification of the spatial distribution pattern, the spatial diffusion characteristics, and the magnitude of the affected population, forms the first step in identifying the regional epidemic impacts of the epidemic.

There is need to understand further the factors influencing the patterns at lower scales and

further at the individual level. The patterns are the product of what acts on the individuals usually throughout their life course. Life course approach proposes that the combination, accumulation, and/or interaction of social environments and biological insults experienced through out the life course impact current and future events, environments, and health conditions and thus ultimately impact adult health (Power and Hertzman, 1997; Pollit *et al*., 2005). In order to understand the pathway influencing one to get HIV and/or play a role in the diffusion process of the epidemic, it is important to look into the life course of the individuals since birth, through their growing period, including the living with HIV/AIDS.

1.2 Research Objective

Understanding the geographical patterns of diseases is important in identifying the origin and the vectors causing the spread of the diseases. In the case of HIV/AIDS, the main objective would be to identify the factors that influence the differences in the intensity of spatial patterns observed in the epidemic; the identification of spatial diffusion patterns is also important in the control of its spread.

The objective of the research is to examine the spatial pattern and diffusion characteristics of the HIV/AIDS pandemic in Kenya. In particular, the research aims to elucidate the epidemic's geographic characteristic in the backdrop of regional demographic and socio-economic background. As the epidemic shows different patterns at different scales of analysis, the research first explores the spatial pattern at the country level by using HIV prevalence data of pregnant women attending selected sentinel surveillance clinics collected since 1990 by the National AIDS and STD Control Programme (NASCOP). An extension to the objective in order to understand the dynamics that influence the spatial patterns of the epidemic at the local level is achieved by exploring the spatial distribution characteristics of people living with HIV/AIDS (PLWHA) in the city of Nairobi.

1.3 Study Area: An overview

Kenya lies on the eastern part of Africa. It is bordered by Indian Ocean and Somalia in the east, Tanzania in the south, Ethiopia and Sudan in the north and Uganda in the east (Figure 1-1). Much of the country, especially in the north, is arid or semi-arid. From the Indian Ocean, the land rises gradually through dry bush and savannah, to fine arable land in the highlands. Kenya has eight provincial administrative units, which are further subdivided into sixty-nine districts. Its total area is 582,646 square kilometres.

In the 1999 population and housing census, the enumerated population was 28,660,534. Currently it is estimated to be about 34,000,000 (2006) varying considerably in density across the country. Nearly 25% of the total population is concentrated in the large urban areas of Nairobi, the capital city, Mombasa, the port city at the Indian Ocean, Kisumu, the third city on the shores of Lake Victoria, and in the large towns such as Nakuru and Eldoret, which lie along the main railway and road link connecting the port to the west of the country and to Uganda (Figure 1-1).

Nairobi, Kenya's political, social, cultural, and economic capital, is located almost mid way on the Kenya-Uganda railway line between the coastal city of Mombasa and the lakeside city of Kisumu (Figure 1-1). It is bordered by the Central province in the north and northwest, Eastern province in the east, and Rift Valley province in the south. It is administratively divided into eight divisions, and further into forty nine locations (wards). The city area is approximately 690 square kilometres in area, 18% of which is occupied by the Nairobi national park.

Thirty-nine percent of Kenya's urban population resides in Nairobi. The population is mainly comprised of migrants from other provinces who have contributed much in the urban growth rate of the city. In the 1989-1999 intercensal period, Nairobi had the second highest intercensal urban population growth rate (4.5%); the highest in terms of absolute numbers. The high urban population growth rate, together with poor performing economy of the country has contributed to the growth of informal (slums) settlements. High insecurity levels, high morbidity

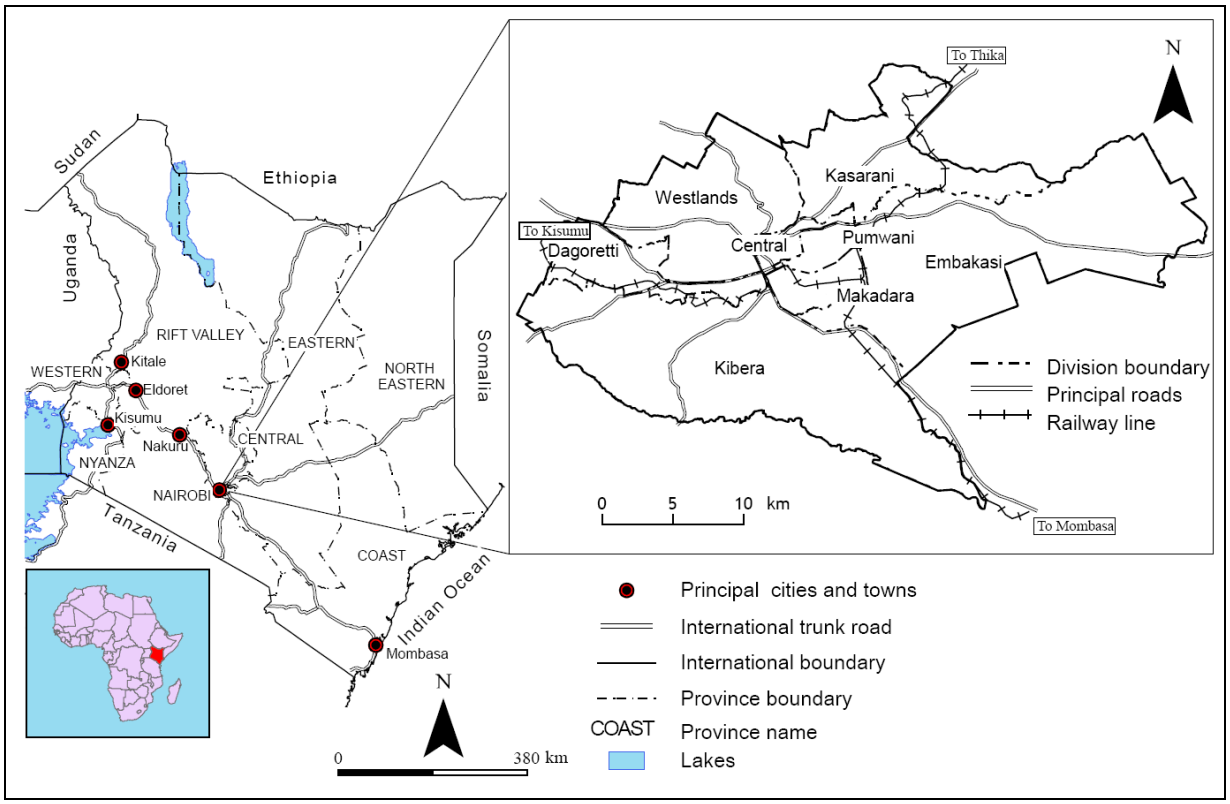

Figure 1-1: Location of Kenya showing provincial administrative boundaries and the principal urban centres. Inset on the right is Nairobi province, the capital of Kenya.

and mortality rates, environmental degradation, poor housing, and high levels of poverty characterize the slum settlements. Alder (1995) estimated that about 55% of the city's population resided in the slums in spite of the slums occupying only 5.84 % of the land used for residential purpose.

High population density, and being the highest in-migration destination in Kenya, makes Nairobi an important fulcrum in the spread of HIV though out the country. Better economic opportunities as compared to rest of the country, has contributed to the influx of a high number of job seekers, many of whom end up unemployed while others have to engage in odd jobs with very low incomes. The congregation of people from different cultures and background, coupled with vulnerability brought about by economic needs, makes the city a very fertile ground in the transmission and spread of the HIV/AIDS epidemic.

1.4 Research Methodology

This research explores the geographical characteristics of the HIV/AIDS epidemic in Kenya at the regional, local level and individual level. The regional level of consideration is the provincial administrative boundary while the local level analysis uses the location administrative boundary as the geographic unit; the location is the second smallest unit of administrative unit in Kenya.

HIV data used for the provincial scale analysis were sourced from, surveillance reports, publications and tabular data from the National AIDS and Sexually Transmitted Diseases Control Programme (NASCOP) and the National AIDS Control Council (NACC). Socio-economic and socio-demographic data used for both the provincial and local level analysis were obtained from the publications from the Central Bureau of Statistics of Kenya. Local and individual analysis data was gathered through a questionnaire survey and in-depth interviews conducted in January 2005 and January 2006, respectively. Figure 1-2 shows the research flow of the study.

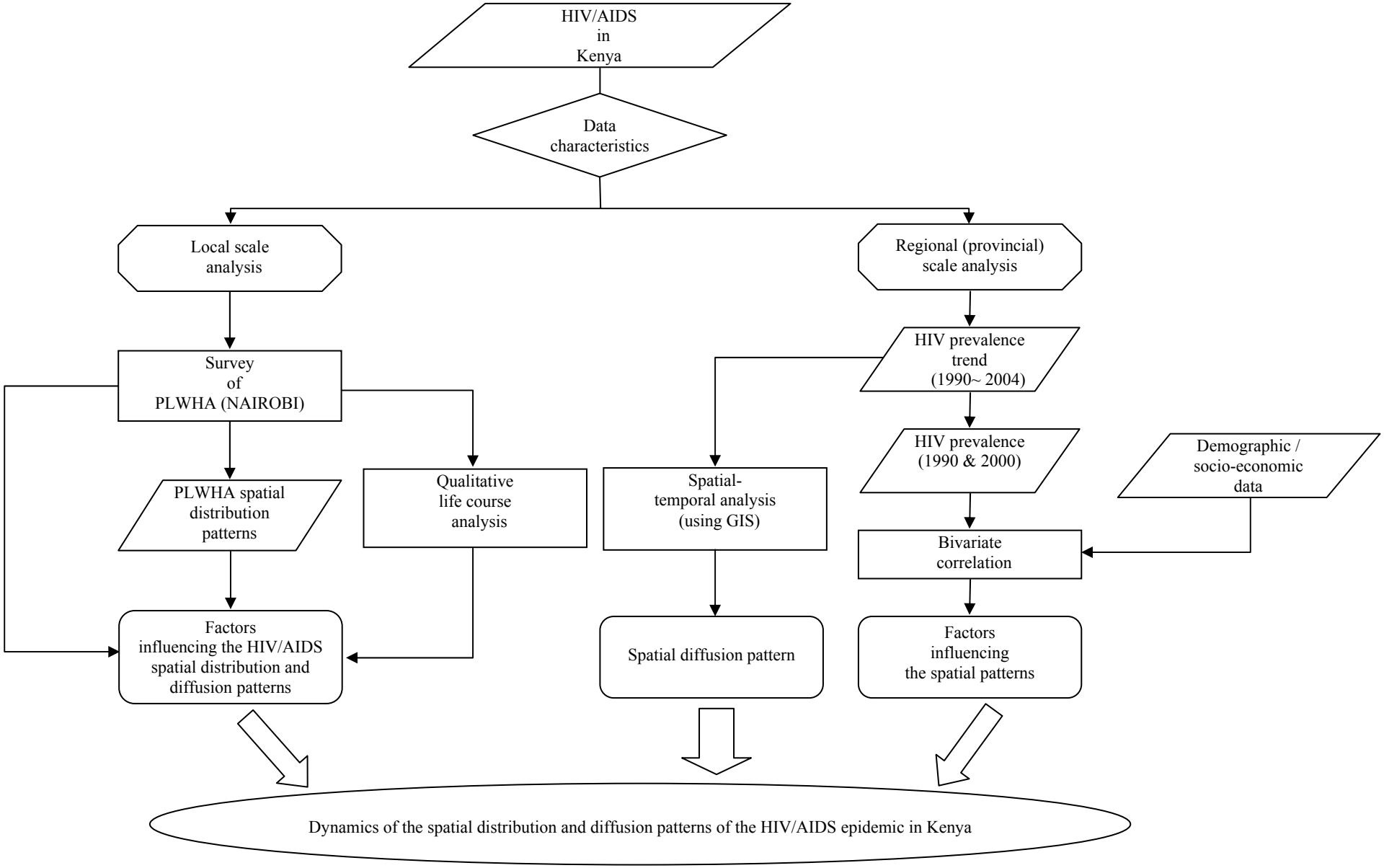

Figure 1-2: General research flow

The National AIDS and Sexually Transmitted Diseases Programme (NASCOP) has been undertaking country-wide sentinel surveillance for HIV infections since 1990 through anonymous testing of pregnant women attending selected antenatal clinics(ANC) that are located in major hospitals and health centres throughout the country. In 2004, the number of the HIV sentinel sites was 44, having risen from 13 in 1990. Twenty-three of the sentinel sites that had consistent surveillance data since 1996 provided the data that were used for the provincial level analysis (Appendix I and Figure 1-3). Data from the 23 sites were examined for completeness and consistency. Missing prevalence values were estimated by linear interpolation between the years with available data. Provincial HIV prevalence was then estimated by averaging the prevalence data of the ANC sites that were located within each provincial border. Best fitting polynomial curves were later fitted to the provincial HIV prevalence values to produce the epidemics trend between 1990 and 2004, the period of surveillance. Values read from the trend curves, rather than the previously estimated prevalence values for each province, were later used in bivariate correlation analysis against the socio-economic and socio-demographic variables from the census data.

The geographical coverage and available attributive information of the data from NASCOP could not allow for examination of the HIV/AIDS epidemic at a scale lower than the provincial administrative boundary level. Surveillance sites since the early 1990s are too few for local level analysis, and recently increased sites do not have enough time-coverage for a trend analysis of the epidemic. For the local level analysis, Nairobi province was selected as the study area due to its cosmopolitan nature and its ethnic composition. The nature in which HIV is transmitted and the stigma associated with HIV/AIDS, called for a methodology in which a good sample could be obtained for good spatial representation of the epidemic at the chosen area of study. A networking association of people living with HIV/AIDS (PLWHA), the National Empowerment Network of People Living with HIV and AIDS in Kenya (NEPHAK) was identified (Photo 1-1), through which the survey and interviews on PLWHA were undertaken.

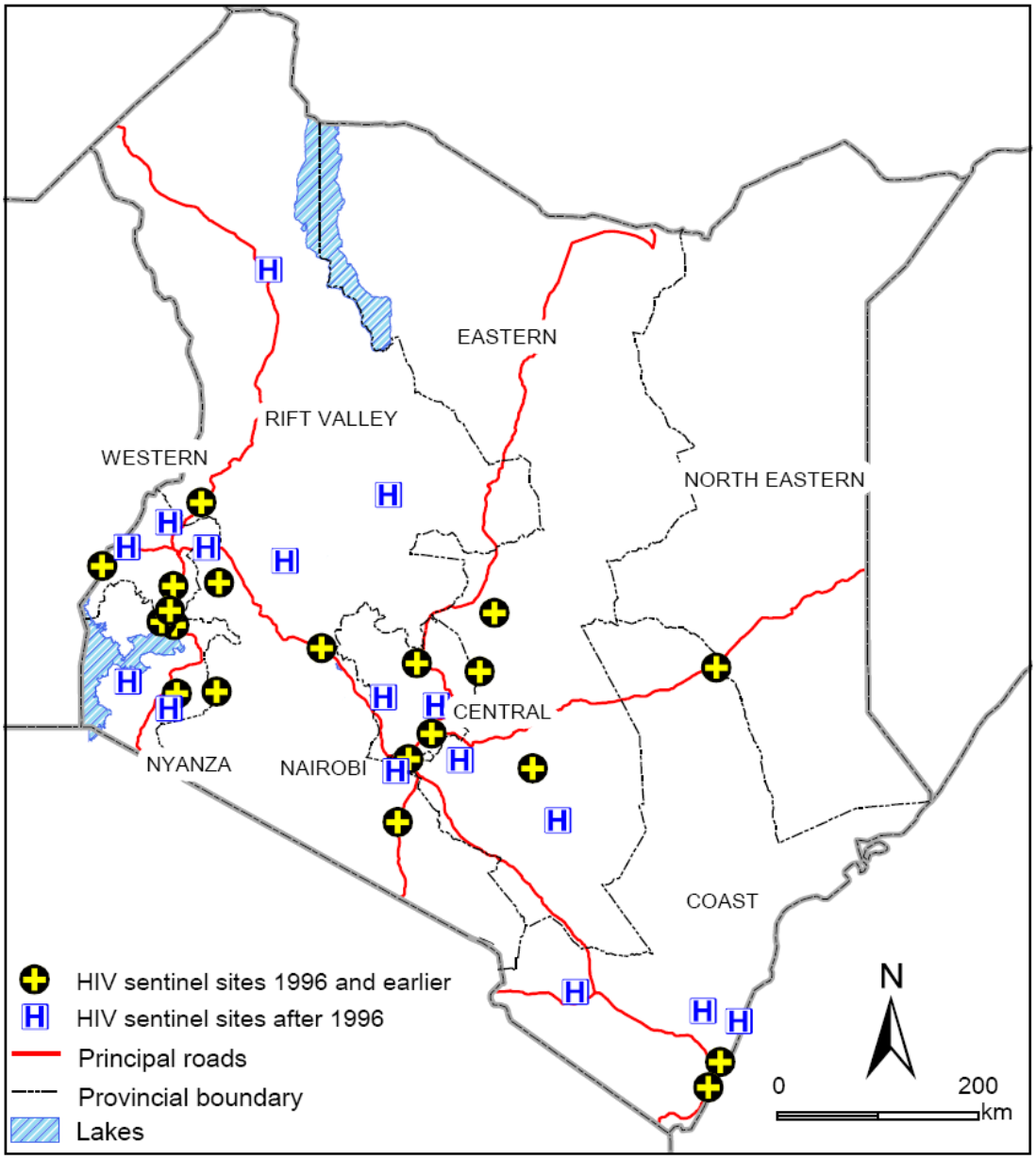

Figure 1-3: Spatial distribution of HIV sentinel surveillance sites, 2004.

Photo 1-1a: NEPHAK: The National Empowerment Network of People Living with HIV/AIDS in Kenya, a non-governmental organization that networks groups of PLWHA in Kenya.

Source: Taken by researcher in January, 2005

Photo 1-1b: A PLWHA self-help group, a member of the networking organization, NEPHAK, and one in which interviews were conducted.

Source: Taken by researcher in January, 2005

At the time of the survey, NEPHAK had forty-three 'fully–registered' PLWHA self-support group members. The number of members per group, at the time of registration with NEPHAK, ranged from ten to over three thousand. The actual number of members at the time of survey could not be ascertained as current information was unavailable; some of the group members had died and while other groups had enlisted new members. A semi-structured questionnaire was used for the survey (Appendix II). The method for administering the questionnaire varied from personal interviews by the researcher to drop-and- pick method in which the questionnaires were left with a contact person at the PLWHA groups. Two hundred and thirty-five questionnaires were distributed through thirteen of the sixteen fully-registered groups that were based in Nairobi (Table 1-1).

The decision to adopt a survey on PLWHA was due to several reasons. First, the existing systematically collected prevalence data had most of its attribute information stripped off. Spatially, residential origins of the surveillance site clients are categorised broadly as either rural or urban, rendering the data unsuitable for small area analysis. The second reason was on the assumption that the PLWHA groups drew membership from across the city, and therefore a survey of the PLWHA in these associations would offer a good representation of the spatial characteristic of the HIV/AIDS epidemic. The PLWHA associations also provided the best avenue for accessing the people already infected with HIV who could readily volunteer information.

Besides the demographic and socioeconomic characteristics of the PLWHA, the research delved into factors relating to their HIV infection. The factors included the number of sexual partners, mode through which one may have contracted HIV, the 'suspected' infector (if transmission was sexual), and duration elapsed since knowledge of one's HIV positive status. Aiming to characterise the HIV/AIDS pandemic spatially, the study inquired on the residence of the respondents at the time of the survey and at infection time, whether there had been any shift and factors influencing the shift. The study also sought for environmental, socio-economic as

Table 1-1: PLWHA associations/groups whose members were contacted for the survey

Association/Group	Membership at registration	Number of questionnaires submitted	Number of competed questionnaires
The Association of People With AIDS Kenya (TAPWAK)	3000	44	44
Kenya Network of Women with AIDS (KENWA)	3000	35	27
Genesis Club Members PLWHA	50	17	16
Bridgeway Centre Trust	100	40	37
Foundation of People Living with HIV/AIDS in Kenya (FOPHAK)	450	12	12
Movement of Men Against HIV/AIDS in Kenya (MMAAK)	2000	30	26
Kenya AIDS and Drugs Alliance (KADA)	580	8	5
Saku Disaster Forum(SADIF)	45	10	10
Youth Advocating Positive Behaviour Change in Kenya (YAPBECK)	100	7	6
Wakibe Community Support Project (WAGOSOP)	276	16	16
Christian AIDS Awareness Organization (CAAO)	126	5	0
Ladies Home Care Spiritual Fellowship	32	15	10
Women Fighting AIDS in Kenya (WOFAK)	3000	26	21
TOTAL		265	230

Note: All the above associations/groups were members of the umbrella networking organization, NEPHAK, at time of survey in January 2005

well as sociological factors characterizing the current residence of the interviewee.

The structured questionnaire was followed by in-depth interviews of ten PLWHA delving into their life-course since childhood up to the current period, including the period in which they got infected with HIV. These interviews wished to find more on the dynamics that had influenced their life-course, leading them into the HIV infection pathway. The interview also sought the opinions from the PLWHA on how they thought the spread of the epidemic could be effectively controlled.

1.5 Research Significance

The research wished to clarify the characteristics of HIV/AIDS in Kenya from a geographical point of view. In identifying the patterns and factors influencing them, the research hopes to augment the currently existing programs that are in place in the mitigation of the epidemic. The research, by utilizing the case of people already infected by the virus within an urban set up, will assist in identifying factors that influence residential 'choices' of the PLWHA as well as the factors that are influencing the spatial diffusion of the epidemic at the local scale.

Using the life course perspective, the research hopes to identify the influence of life events that lead to HIV infection. An intervention along the life course could be a useful way in changing the pathway leading to HIV/AIDS infection. Further, the findings of this study will be a reference tool for those involved in the mitigation efforts of HIV/AIDS and for further research by other scholars.

1.6 Thesis Structure

The dissertation is composed of five chapters. Chapter 1 introduces the research through a brief background on the HIV/AIDS pandemic from past literature, with emphasis on the epidemic's heterogeneity in sub-Saharan Africa. Chapter 2 delves into the HIV/AIDS epidemic in Kenya; regional HIV prevalence rates are analysed from a geographical point of view in the

backdrop of the demographic and socio-economic background. Chapter 3 analyses the spatial characteristics of the epidemic in the capital city of Kenya from the distribution patterns of persons living with HIV/AIDS (PLWHA). Individual characteristics as well as the spatial distribution of population is considered in the analysis while Chapter 4 presents the dynamics of the HIV/AIDS diffusion and consequent spatial patterns as explained through the life course of the PLWHA. Chapter 5 gives the concluding remarks from the analysis of the research, future research and policy recommendations.

Chapter Two

HIV/AIDS in Kenya: A Geographical Perspective

Early cases of reported HIV and AIDS made researchers (epidemiologists) to popularize several theories in the spread of HIV in Africa. The major theories included the "urban-disease model", which attributed the spread of the disease to the urban elite, and the "truck-driver model", in which the truck drivers were the main vectors of the virus (Lyons, 2004). As the "urban disease model" attributed the rich and middle-income professionals to the spread of the HIV from the urban to the rural areas, new patterns of infections drew the attention of the Trans-African highway and the truck drivers who moved between the port of Mombasa, Kigali (capital of Rwanda) and Kisangani (in Democratic Republic of Congo). These two theories are based on the premises that the movement of specific groups of people enhances the spread of sexually transmitted infections. However, while the movement of people is one important factor in the spread of the HIV/AIDS epidemic, equally important is the nature of sexual networking patterns within and between populations.

Intricate and complex patterns in social and geographical networks characterise the transmission of HIV. For instance, the first cases of AIDS in East Africa were not in urban centres but in remote rural villages along the shores of Lake Victoria, and not among the educated or professional middle classes but among the poor and disadvantaged rural traders and fishermen. Recent studies have not only shown differences between the urban and the rural infection levels but also between those living close or distant to transportation lines in the rural areas (Kalipeni *et al*., 2004; Bloom *et al*., 2002). A number of factors could explain the higher

rates of infections in urban areas in sub-Saharan Africa. The cities lack the capacity to absorb workers from impoverished rural areas and migrating to urban centres in search of employment; un- or underemployment in turn increases the vulnerability of migrants, especially women, who turn into commercial sex work in attempts to gain adequate incomes. In addition, there is greater chance of unchecked behaviour among migrant population away from home and families, rendering higher risks of infections in the urban areas. However, as the urban migrants maintain linkages with the rural areas, the levels of infection in the rural areas have also been rising (Brockerhoff and Biddlecom, 1999; Anarfi, 1993).

The levels of migration and rural-urban linkages, urbanization levels, and other modifying factors such as cultural practices may influence the regional patterns of HIV/AIDS. Understanding their influence in the spatial patterns is a major step towards finding solutions in the mitigation of the spread of the epidemic. This chapter explores Kenya's HIV/AIDS spatial patterns against demographic and socio-economic background of the country at the provincial administrative level.

2.1 HIV/AIDS Pandemic in Kenya: Overview and Spatial Patterns

2.1.1 National HIV Prevalence Trend

The most recent estimates state that about 1.3 million people were living with HIV/AIDS in Kenya at the end of 2004. This estimate comprises 1 million adults aged 15-49, almost 100,000 persons aged over 49 years, and 117,000 children (NACC, 2005). Broad categorization shows that the HIV prevalence was higher for women, 8.3%, when compared with the men, whose prevalence was 4.3%. Prevalence was also higher in the urban residents, 9.7%, compared with the rural 5.2%.

The presence of HIV was confirmed in Kenya with the first AIDS case diagnosis in 1984, in Nairobi. A study soon after established that the AIDS causing virus had extensively spread in the prostitute population in Nairobi; sexual exposure to men from Central Africa was cited as the

most significant contributing factor to the infections (Kreiss *et al*., 1986). Reported AIDS cases rose dramatically, reaching a peak high of over 80,000 by 1998. The exponential increase in the reported cases of AIDS depicted an epidemic that had, or was fast penetrating the population (Figure 2-1). The almost equal number of reported female and male AIDS cases suggested heterosexual contact as the main mode of transmission (NASCOP/Ministry of Health, 2001). The realisation that it took a while (from months to several years) before HIV infection progressed to fully blown AIDS called for the establishment of a systematic system to track HIV infection trends early enough before progressing to AIDS.

Two primary methods have used in monitoring the geographical patterns of the HIV/AIDS pandemic in Kenya. The first method, operational since 1990, is sentinel surveillance of HIV prevalence in pregnant women attending selected antenatal clinics (ANC). This method has been useful in providing information used to estimate the number of HIV infected adults and children, as well as in tracking the epidemic's trend over time. The second method, incorporated in the Kenya Demographic and Health Survey 2003 (KDHS 2003), was through a general population survey in which a carefully selected sample of the population was tested for HIV. This method has been used by NASCOP as a complementary data source to adjust the HIV prevalence estimates from the sentinel surveillance on pregnant women.

The HIV surveillance on pregnant women remains the only method from which the HIV/AID epidemic trend can be tracked. Initially the surveillance was at 13 ANC sites located primarily in urban areas; but to represent better the diverse regions and populations of Kenya, the surveillance programme was expanded to 22 sites by 1995 and further to 44 in 2004. The surveillance sites are at provincial general hospitals, districts or sub-district hospitals, mission hospitals, and at large government health centres. HIV prevalence from the sites varies greatly, with a range from 1% to 41% in 2003, and 1% to 30% in 2004 (NASCOP, 2005).

National HIV prevalence derived from the ANC sentinel sites show a steady rise from 5.1% to 13.4 % in the first decade of the surveillance, followed by a gradual drop from 2000

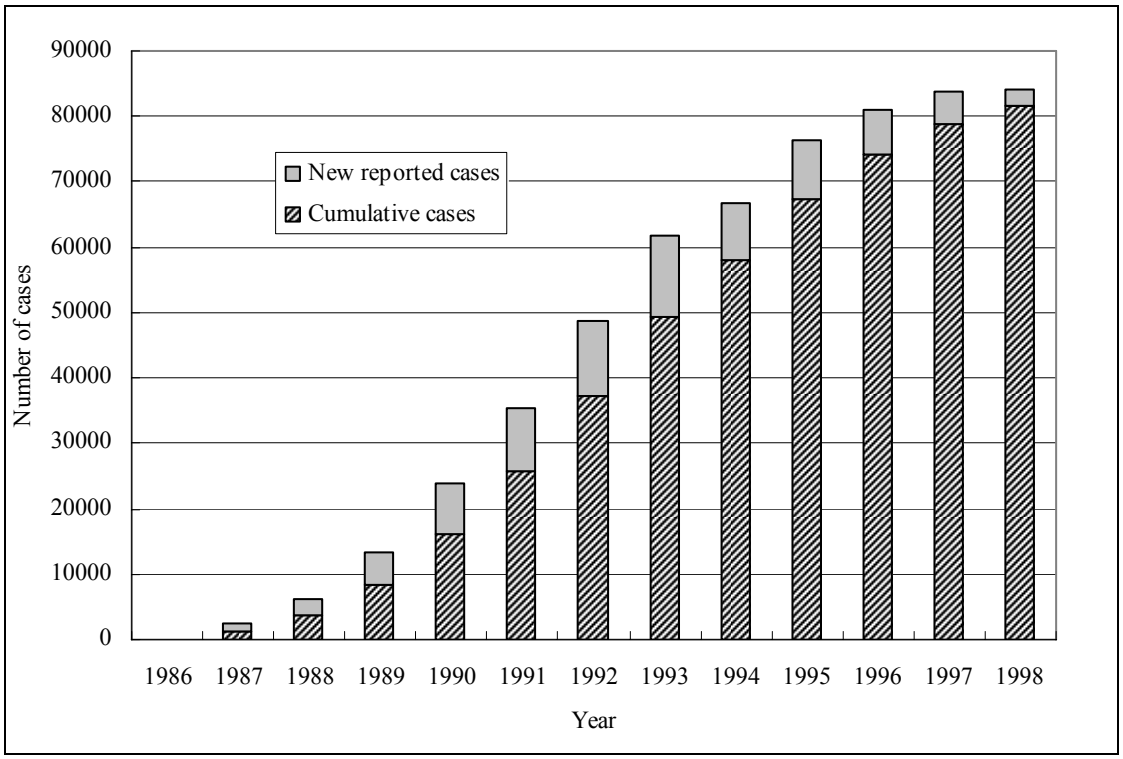

Figure 2-1: Reported AIDS cases in Kenya, 1986-1998.

Source: UNAIDS/WHO/UNICEF, 2002

(Figure 2-2). These national estimates indicate that the HIV/AIDS epidemic in Kenya peaked in the late 1990s from when it started declining, either because of high death rates due to AIDS or decline in infection levels as a response to mitigation efforts that had accumulated since the early 1990s. The year 1999 also marked a turning point in the mitigation efforts when the political support in the war against AIDS climaxed with the declaration of the epidemic as a national disaster by the then president of Kenya.

The rates of HIV infection in pregnant women has often been criticised as not being a good representation of the infection levels in the general population (NASCOP, 2005). However, a comparison of estimated provincial HIV prevalence in 2004 from the ANC site surveillance with prevalence levels from KDHS 2003 indicates that the method depicts well the spatial trend of the HIV/AIDS epidemic of the general population in Kenya. Figure 2-3 shows this comparison. In both surveillance methods, Nyanza province has the highest prevalence followed by Nairobi; North Eastern province had the least prevalence. The similarity in the trends indicates that prevalence rates from surveillance on pregnant women are a good data source from which factors that influence the spatial disparities of the epidemic can be explored.

2.1.2 Provincial HIV Prevalence Trends

The HIV/AIDS epidemic had already spread to all the administrative provinces of Kenya by the start of the systematic surveillance programme in 1990. However, the prevalence levels were different, suggesting a difference in the times when the epidemic started in the provinces (Figures 2-4 and 2-5). Nyanza, Western and the Coast provinces' with prevalence levels above 10% suggest the entry point of the epidemic, spreading to the Rift Valley and Nairobi which had moderate levels of 5% and 6%, and later to Central, Eastern and North-Eastern provinces which showed the lowest prevalence levels in 1990.

Though the nationally aggregated values indicate that the HIV/AIDS epidemic in Kenya peaked in 2000, the prevalence levels at the province reveal a different picture. The epidemic

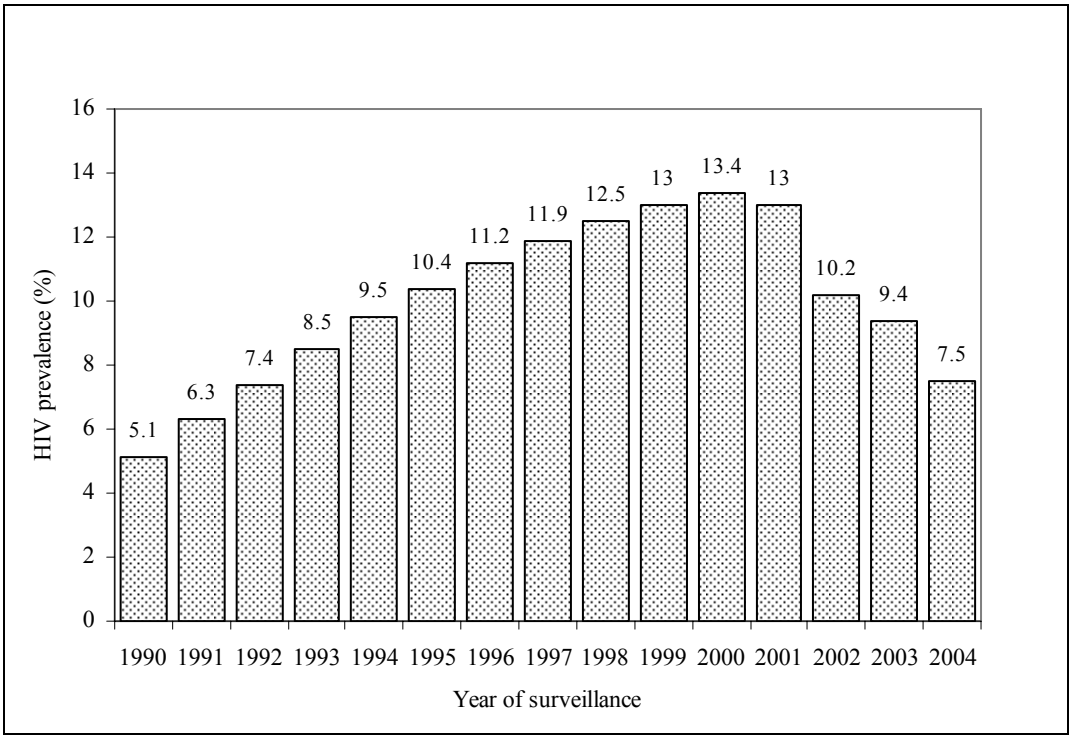

Figure 2-2: Estimated national HIV prevalence from sentinel surveillance on pregnant women, 1990 to 2004.

Source: Ministry of Health, NASCOP. Sentinel surveillance report of 2004

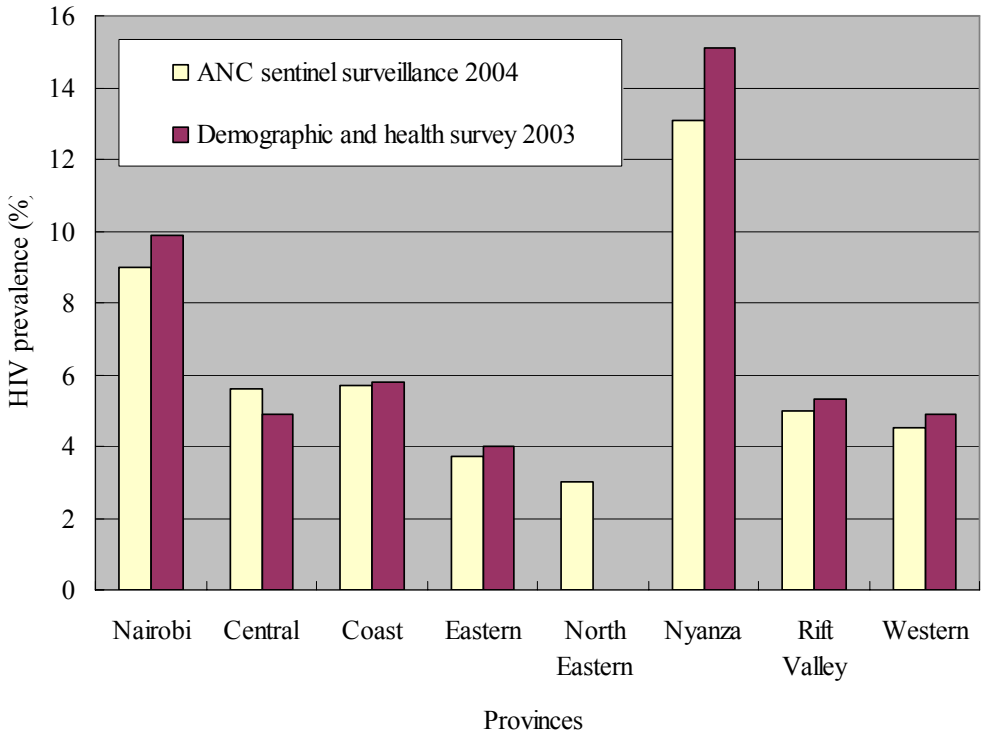

Figure 2-3: A comparison of the provincial HIV prevalence from ANC surveillance and from demographic health survey.

Source: National AIDS Control Council, 2005; NASCOP/Ministry of Health, 2005.

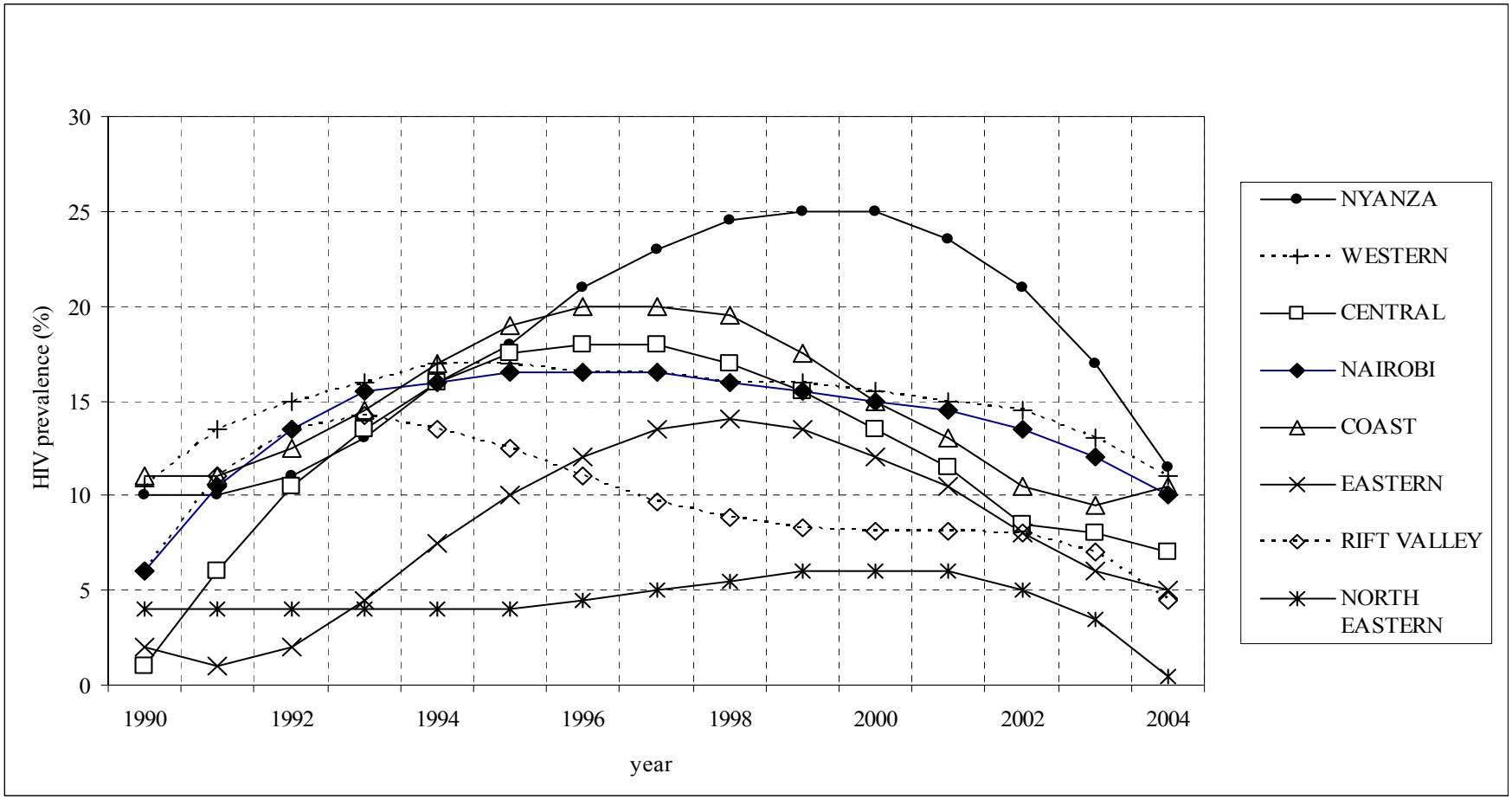

Figure 2-4: Provincial HIV prevalence trend, 1990-2004.

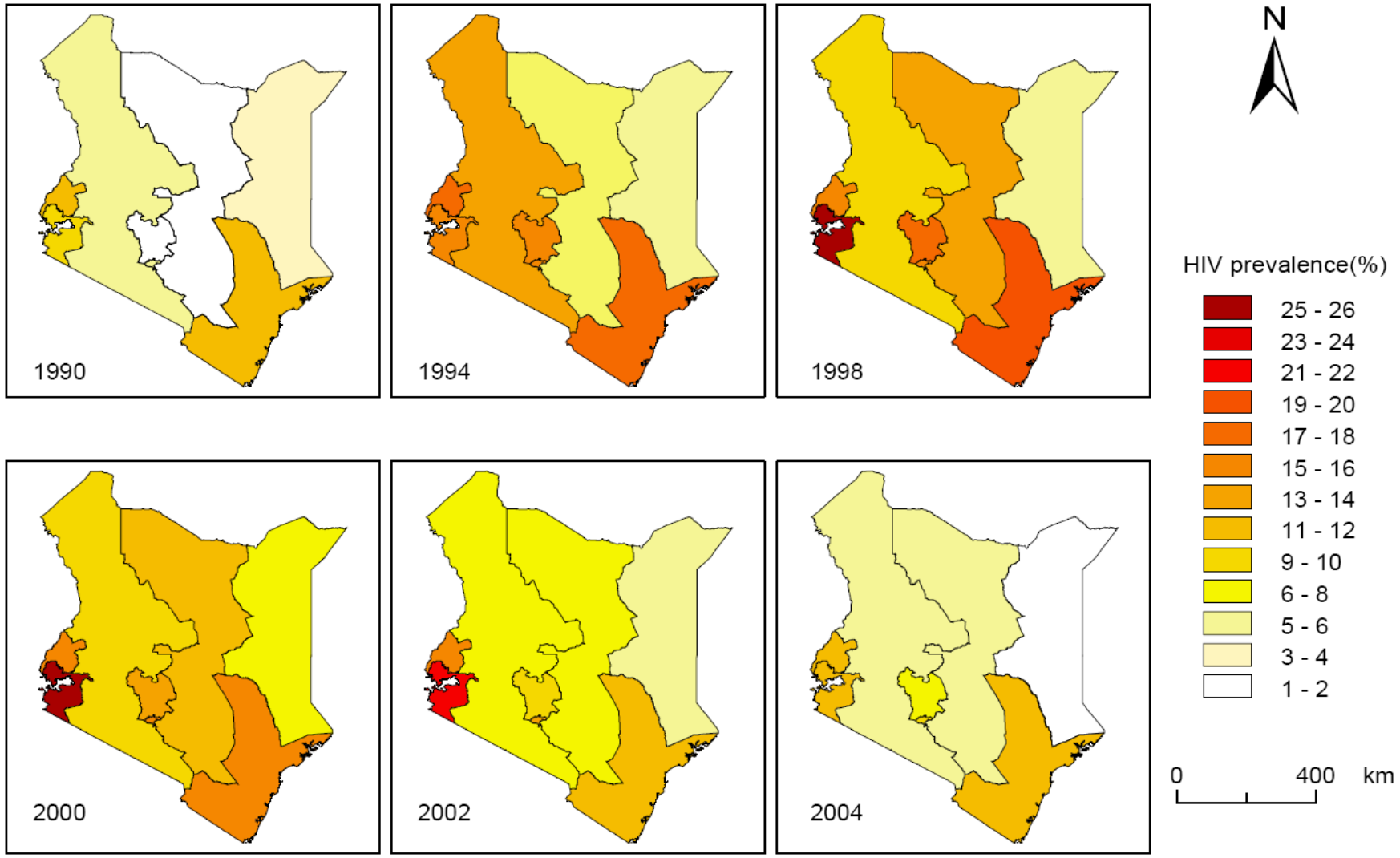

Figure 2-5: Spatial trend of the HIV/AIDS epidemic in Kenya, 1990-2004

reached its peak at the provinces from as early as 1990s. Rift Valley reached its peak prevalence in 1993, followed by Western provinces in 1994/1995, with Eastern, Nyanza, and North Eastern peaking in the late 1990s and in 2000. The peaking levels vary from 6% in North Eastern province to 25% in Nyanza.

The trend curves in all the provinces follow the typical 'S' epidemic curve, where the rise in prevalence rates is an indicator of the spread of the HIV through the susceptible population. As the slope of the curves suggest, Central province, Nairobi, and the Rift valley experienced rapid rise in the HIV prevalence levels in the early years of the surveillance. While the Rift valley province attained its peak prevalence value as early as 1993, other provinces continued to show increasing prevalence, with the Eastern and Nyanza provinces reaching their maximum values at the latest, in 1998 and 2000, respectively. The shapes of the trend curves show that only the North Eastern province had had the lowest of infection levels throughout the surveillance period (Figure 2-4 and 2-5). The different prevalence levels at the start of the surveillance, the variation in the rise and peaking levels, and the year when the prevalence levels started declining do suggest the role of variation in the factors influencing in the provincial spread of the HIV/AIDS epidemic. The most notable trends are from the Central province, rising from 1% in 1990 to peak at 18% in 1996/97, and that of Nyanza province.

2.2 Socio-demographic and Socio-economic Characteristics of Kenya

Besides the role of the Trans-African highway in the spread of the epidemic across East Africa, regional socio-demographic and socio-economic characteristics may have had their influence in the existing spatial patterns of HIV/AIDS. Variation in population density, ethnic composition and cultural practices, urbanization levels, migration, are among the various factors which are attributed in the transmission of HIV in Kenya. Though the role of various factors has been a subject of interest in specific case studies (e.g. urbanization by Zulu *et al*., 2004), their contribution in the spatial patterns of the HIV/AIDS epidemic in Kenya is not yet explored. This

section presents the regional characteristic of the country, followed by an analysis on how this may have had an effect on the HIV/AIDS diffusion and spatial patterns.

Population distribution pattern

Kenya's population is concentrated in the coast (mainly in Mombasa), central and western parts of the country (Figure 2-6). Among the eight administrative provinces of Kenya, Nairobi has the highest density with over 3,000 people per square kilometre. Trailing at a distance is the Western province (400), Nyanza (350) and Central (280) provinces. The other provinces, due to large extents with low population, have densities of below 40 persons per square kilometre. North Eastern province has the lowest density with 8 people per square kilometre according to the 1999 census. The population distribution pattern follows the country's physical and climatic conditions; the high density areas are characterised by reliable rainy seasons, arable agricultural lands, and cool to warm and humid temperatures, conducive to human settlement. The low density regions are mainly dry, with harsh climatic conditions; the population settlements are mainly characterised by nomadic and pastoral life style.

The Rift Valley is the largest of the provinces (Figure 2-6), straddling the country from the border with Ethiopia in the North, to the Tanzanian border in the south. The province is very diverse, as it is composed of landscape varying from savannah in the south, cool and agriculturally productive highlands in the middle to dry and bare semi-desert in the north. The Eastern province, the second largest after the Rift Valley, is also climatically as diverse as the Rift Valley, with its most productive area close to the Central province. The main economic activity is also subsistence and cash crop farming. In the drier regions in the north, pastoralist lifestyle is the main economic activity.

Nyanza and Western provinces lie in the west of the country. Nyanza province borders Lake Victoria, making fishery one of the major economic activities. Farming is also a major

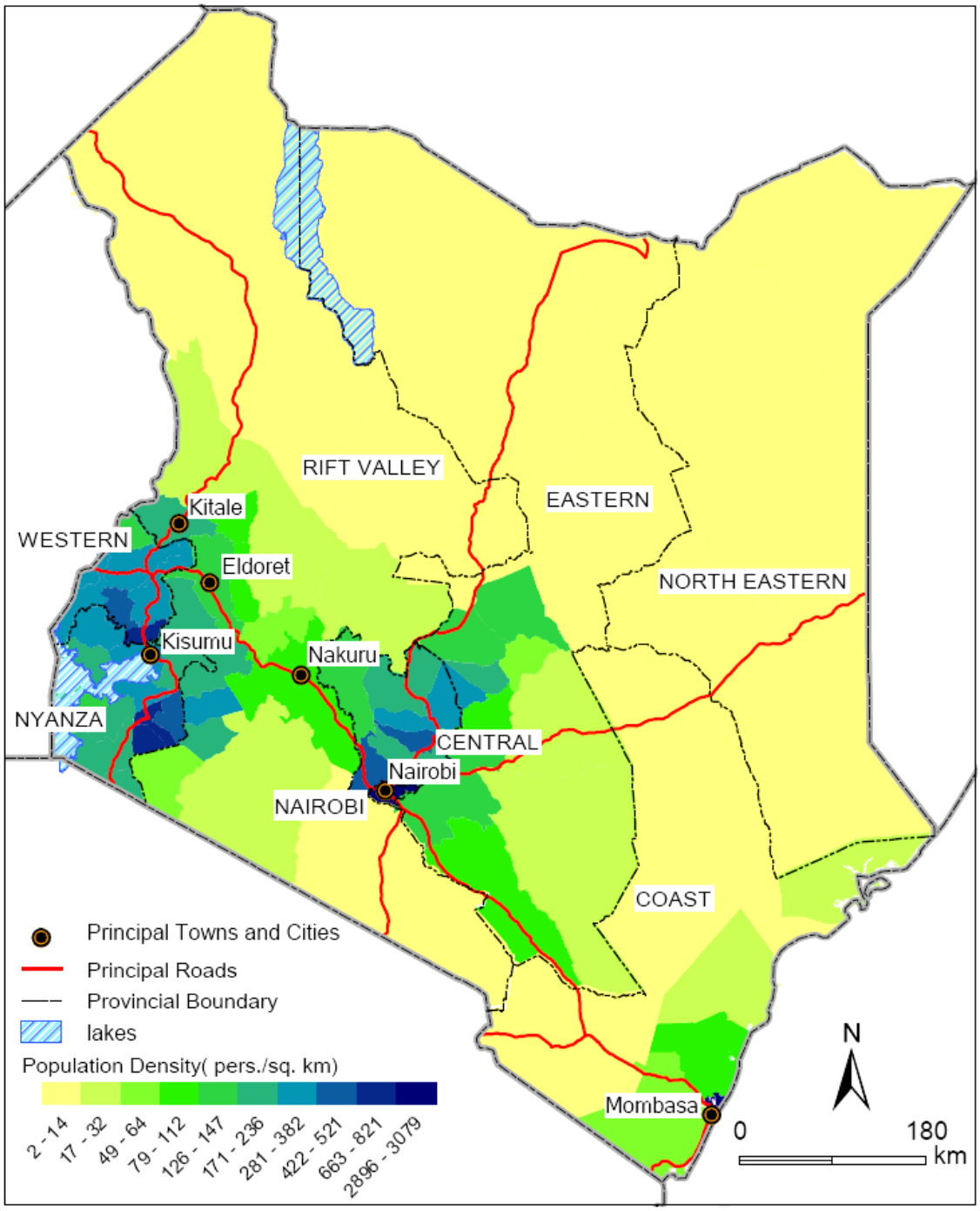

Figure 2-6: Population density distribution in Kenya, census 1999.

economic activity in this province. Nyanza province's capital Kisumu (Figure 2-6) is one of the principal urban centres in Kenya. The Western province in the west provides the main link with neighbouring Uganda through the international trunk road traversing the country from the port city of Mombasa. The province's main economic activity is agriculture. The Western and Nyanza provinces are one of the major sources of migrants to the Nairobi, the country's capital.

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The Coast province, lying to the south east of Kenya, is the gateway to East Africa, through the port city of Mombasa, its capital. The province is also attractive to many immigrants and workers as it provides a unique economic activity in tourism. The North Eastern province, neighbouring Somalia (Figure 2-6) is mainly dry. Due to unreliable rainfall and harsh climatic conditions, the main economic activity is pastoralism. There is little economic activity between this province and the rest of the country due to the low level of economic activities.

Ethnic Composition

Kenya's population is composed of over 40 ethnic groups. The ethnic groups from African descent, who form 98% of Kenya's population, are further classifiable into 7 ethnic categories or classes, namely the Central Bantu, Western Bantu, Coast Bantu, Nilotic, Nilo-Hamitic, Eastern Hamitic and Western Hamitic, based on their anthropological origins and historical settlements pattern. The 1989 census, which included Kenya's ethnic composition, indicate that though Kenya is multi-ethnic, ethnic agglomeration characterise the population

settlements among the provinces (Figure 2-7).

The Central Bantu are mainly in Central, Eastern, and parts of the Rift Valley province; the Western Bantu are dominant in Western province, while the Eastern Hamitic is the dominant group in the North Eastern province. The Coast province is occupied by the Coast Bantu, while Nyanza Province is composed of both the Nilotic and the Western Bantu. Rift Valley, Nairobi, and to some extent the Coast province, show higher levels of ethnic mixing. Nairobi is composed of three major ethnic classes; the Central Bantu, the Western Bantu, and the Nilotic, while the Rift Valley has the Nilo-Hamitic, the Central Bantu, and the Western Bantu. Such regional dominance implies cultural homogeneity is likely; if any cultural practice has influence on transmission of HIV or any other disease, then the ethnic classes' distribution patterns could explain the spatial patterns and trends of the diseases.

Urbanization levels and migration

In Kenya, the proportion of population living in the urban areas is quite low in comparison to that living in the rural areas. Only 19% of the population was living in urban areas in 1999. Nonetheless, the urban population has been increasing steadily from 8% in 1970, 18% in 1990, reaching 19% in 1999 in spite of declining intercensal rates. Nairobi, both a province and a city, has had the highest proportion of the urban population among the administrative provinces (Table 2-1).

Urban primacy defines Kenya's urban system. The difference between Nairobi city and second city is quite large. While Nairobi had 2,143,254 people in the 1999 census, Mombasa, the next city in hierarchy, had 665,018 people. A few cities dominate the regional urban population distribution. For instance, Mombasa city is the dominant urban centre in the Coast province with 74% of the provinces' urban population. In Nyanza province, Kisumu the provincial capital had 196,000 people, and the next urban centre in hierarchy had just a mere 32,000. While the other provinces display less disparity in their urban population distributions, there is still dominance of

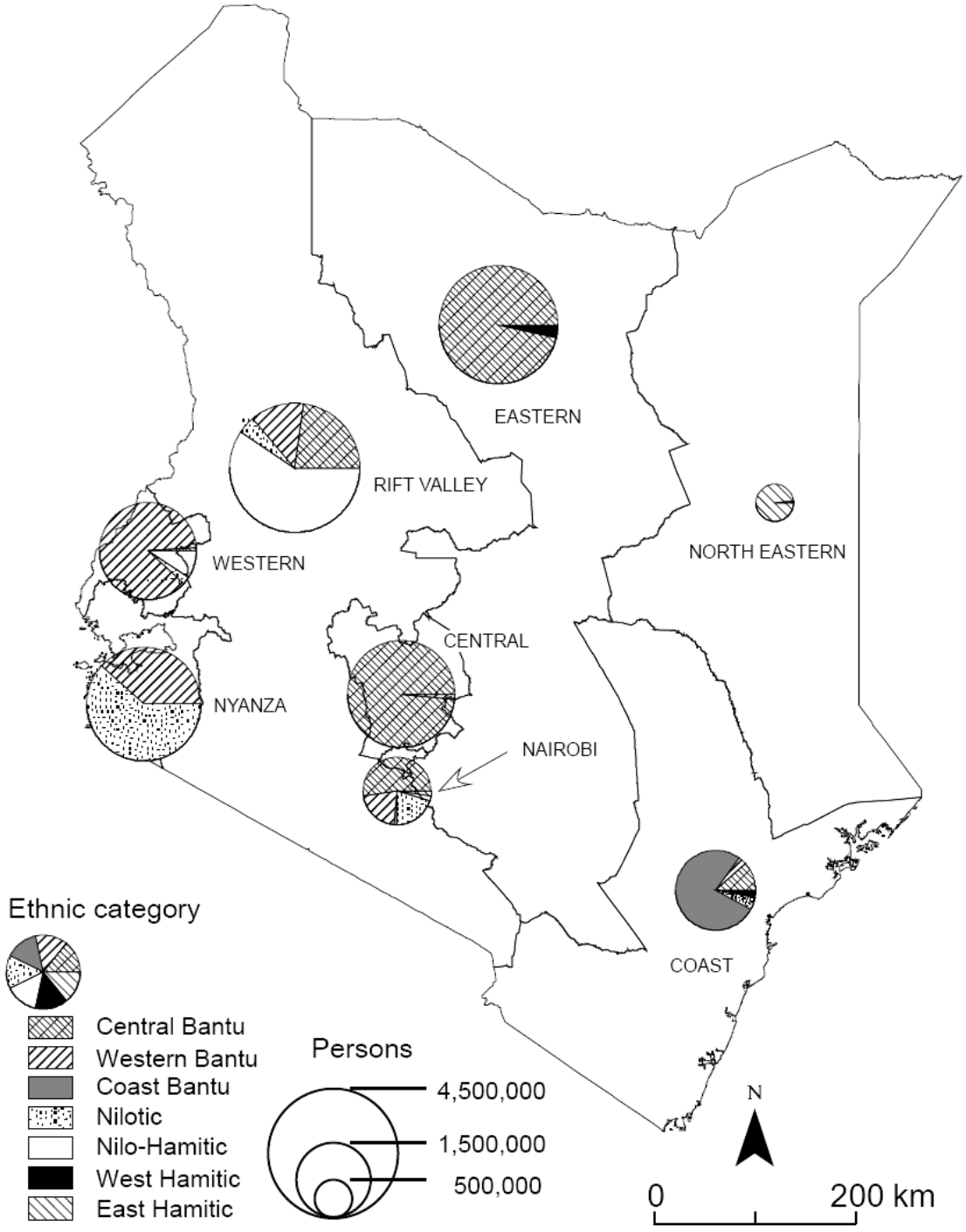


Figure 2-7: Distribution of the major ethnic classes by province.

Source: Compiled from the 1989 population census data

Table 2-1: Trends and patterns of urbanization by province, 1969-1999

Province	Urban Population				Share of Urban Population (%)				Intercensal Growth Rate (%)		
	1969	**1979**	**1989**	**1999**	**1969**	**1979**	**1989**	**1999**	**1969-79**	**1979-89**	**1989-99**
Nairobi	506,286	827,775	1,324,570	2,083,509	47.0	35.7	34.1	38.4	4.9	4.7	4.5
Central	45,955	128,932	309,821	365,842	4.3	5.6	8.0	6.7	10.3	8.8	1.7
Coast	283,652	406,991	588,470	897,011	26.3	17.6	15.2	16.5	3.6	3.7	4.2
Eastern	37,965	233,316	355,664	287,561	3.5	0.1	9.2	5.3	18.2	4.2	-2.1
North Eastern	-	63,486	91,174	145,704	-	2.7	2.3	2.7	-	3.6	4.7
Nyanza	43,929	207,757	352,527	427,377	4.1	9.0	9.1	7.9	15.6	5.3	1.9
Rift Valley	148,576	341,696	672,429	942,613	13.8	14.8	17.3	17.4	8.3	6.8	3.4
Western	10,645	105,743	186,049	280,173	1.0	4.6	4.8	5.2	23.0	5.6	4.1
Total	**1,076,908**	**2,315,696**	**3,880,704**	**5,429,790**	**100.0**	**100.0**	**100.0**	**100.0**	**7.7**	**5.2**	**3.4**

Source: Kenya Central Bureau of Statistics, 2004

a few urban centres. Thirty-eight percent of Kenya's urban population is in Nairobi; with 65% of the urban population in just 8 urban centres.

Urban to rural migration is the main contributor to population increase in the urban areas. Though natural increase in population is contributing to the growth of the urban population, migration is still the predominant contributor. For example, the 1999 census revealed that 70% of Nairobi's population were in-migrants from the other provinces. Recent in-migrant (migrated within a year preceding census) formed 16.9% of the city's population. Central, Eastern, Nyanza, and Western provinces were the main sources of migrants to the city (Figure 2-8. The Rift Valley and Coast provinces had also significant levels of migrants coming from the other provinces.

Poverty and regional inequality

Globally, the HIV/AIDS epidemic is affecting the most poor of the continents. Sub-Sahara Africa, with more than 48% of the population living with less than US$ 1 a day has nearly two-thirds (63%) of the global population living with HIV/AIDS. Even though assertions about the links between economy (poverty) and HIV/AIDS are credible, they are often based on slim empirical research findings with the bulk of the studies being undertaken at the national (macro) level(Agyei-Mensah, 2006). Mixed results have often been obtained in charting the macro links between poverty and HIV/AIDS. Botswana, for example, with the highest per capita income in Africa has one of the highest levels of infection (Agyei-Mensah, 2006; Whiteside, 2002). Besides the national aggregate level, the link between poverty and HIV/AIDS among different socio-economic groups and geographical regions need to be understood.

In Kenya, regional aspect in economic strength/weakness is now possible with recently (2003 and 2005) published poverty and inequality estimates data for the year 1999. The indicators of poverty and inequality were computed using detailed household expenditure from welfare and monitoring survey undertaken in 1997 and data on socio-economic characteristics from the 1999 population and housing census. Quantitative measures of poverty constructed as

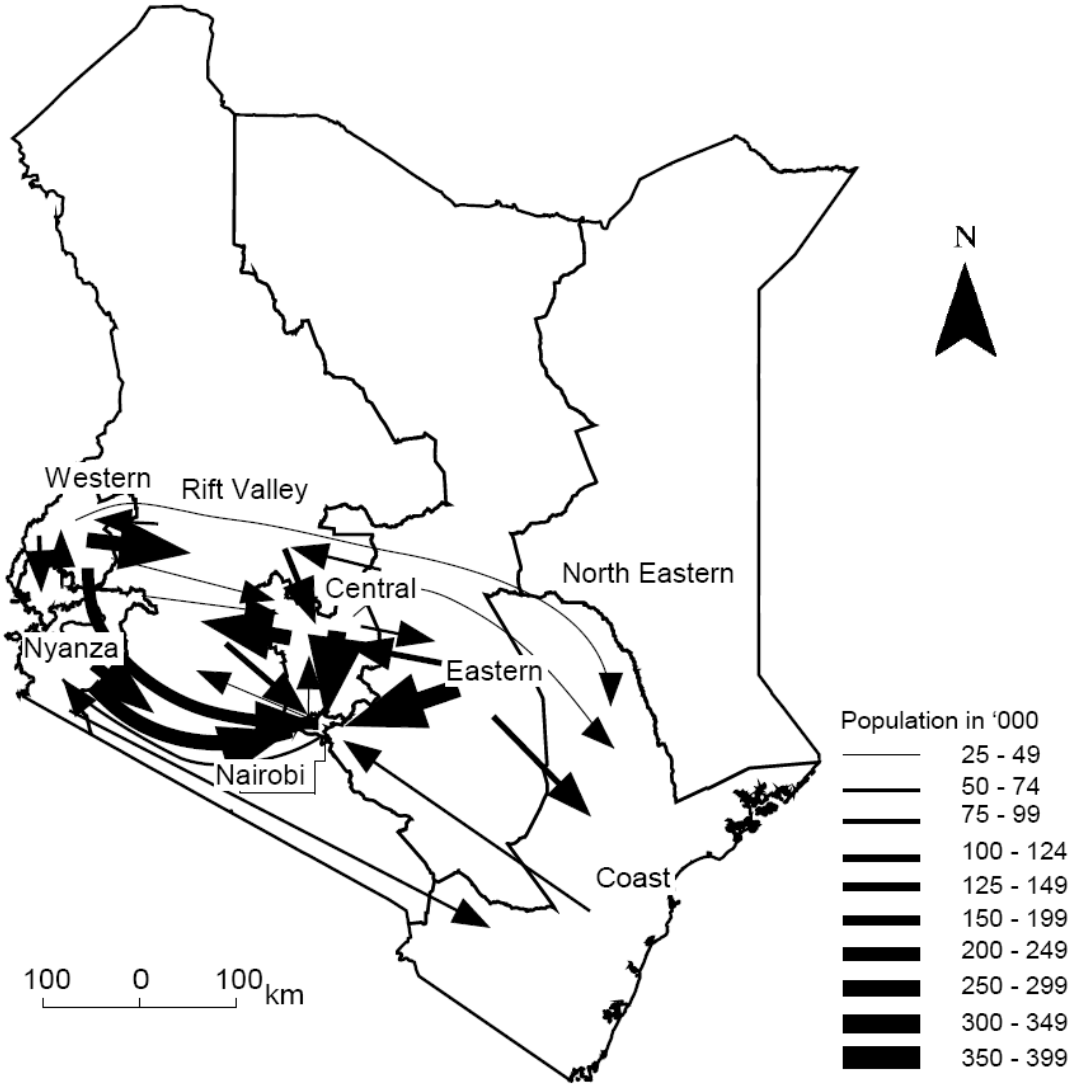


Figure 2-8: Inter-province migration in Kenya, 1999.

Note: The map shows migration of 25,000 people and above

Source: Kenya Central Bureau of Statistics, 2004

functions of consumption expenditures relative to a defined poverty line were poverty incidence, poverty contribution, and poverty gap, while Gini index was the measure adopted to express the inequality in consumption expenditure.

In Kenya, the poverty line is defined as the minimum amount of money required to buy a food basket that allows minimum nutritional requirements to be met (set at 2,250 calories per adult equivalent per day). This poverty line was estimated to be about Ksh. 1,239 and Ksh. 2,648 (US$ 17and US$ 34) per month for rural and urban households, respectively (Kenya, Central Bureau of Statistics, 2003). The percentage of population whose consumption expenditure falls below the poverty line is the poverty incidence. The poverty contribution measure shows the proportion contribution of an area to the overall poverty of the whole country or to a larger administrative area, and poverty gap measure (known also as depth of poverty) provides information on how much poorer the poor people are relative to the poverty line.

Overall, 53% of Kenya's population is estimated to be living below the poverty line. However, this general measure of poverty incidence conceals a lot of variation at the lower levels. Table 2-2 and Figure 2-9 show the provincial patterns of poverty levels, as well as the income/consumption inequality in each province by urban and rural classification.

The patterns in Figure 2-9 are quite revealing. Central province has the lowest poverty incidence. Next in ascending order is Nairobi, followed by Rift Valley. Eastern and Coast province are next in line, while Western, North Eastern and Nyanza have the highest poverty levels. Significant variations within the provinces do exist at lower administrative levels, and between the rural and urban areas. Central province for example had the lowest poverty incidence of 31%, but its urban poverty level was higher than that in Nairobi and Coast provinces. In addition, though Western province was the third highest on average, it had the highest poverty incidence among the urban areas (Table 2-2).

There is a great variation in consumption income across the whole population distribution. Income disparity among the provinces was more pronounced in the urban areas (Table 2-2 and

Table 2-2: Selected indicators of poverty by administrative province

Province	Percentage urban population below poverty line [(a)]	Percentage rural population below poverty line [(b)]	Percentage total population below poverty line	Density of population below poverty line n (pers./km^2)	Urban inequality measure (Gini Index)	Rural inequality measure (Gini Index)
Nairobi	44	--	44	1256	38	--
Central	49	31	31	84	48	37
Coast	47	63	58	16	36	36
Eastern	51	59	58	17	44	34
North Eastern	61	64	64	4	36	29
Nyanza	63	65	65	218	39	34
Rift Valley	54	47	48	17	35	35
Western	68	60	61	241	45	34

[a] urban poverty line = Ksh 2,648 [b] rural poverty line = Ksh 1, 239

Source: Kenya Central Bureau of Statistics, 2005

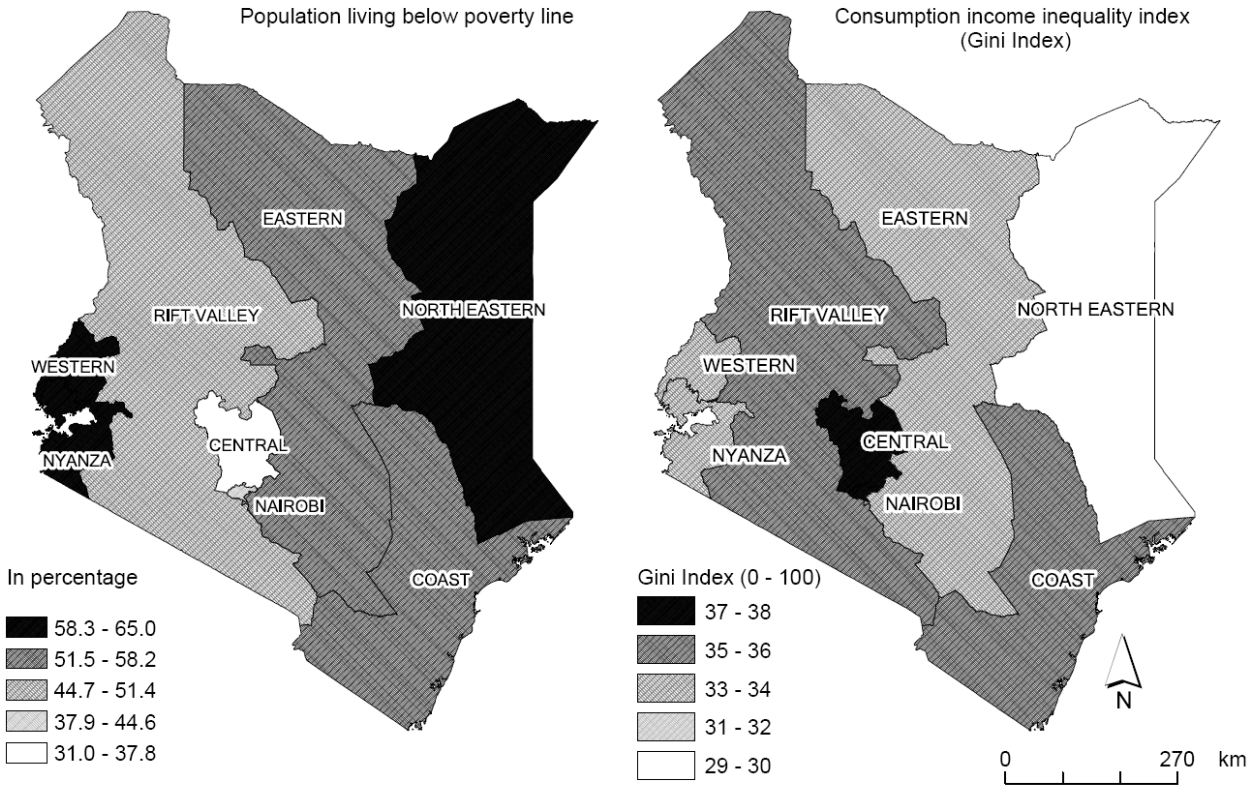


Figure 2-9: Poverty levels in Kenya, 1999.

Source: Kenya Central Bureau of Statistics, 2003 and Kenya Central Bureau of Statistics, 2005

Figure 2-9). On the Gini index, scale zero to one hundred (zero meaning most equitable and 100 the most inequitable), the urban inequality range was 35 to 48 while in the rural areas it was from 29 to 37. Central province, though having lowest percentage of population below the poverty line, depicts the largest disparity in the consumption income distribution. In contrast, North Eastern province, with the highest percentage of poverty incidence, has the lowest disparity in distribution of income or consumption among its rural population. This implies that though it is the poorest province, North Eastern has the most equitable distribution of income. In contrast, Nairobi and Central provinces, though having the lowest proportion of population below poverty line, have the most inequitable distribution of income. The concentration of poor people is highest in Nairobi, followed by Nyanza, and Western provinces (Table 2-2).

2.3 HIV/AIDS Spatial Patterns with Regional Socio-demographic and Socio-economic Characteristics

Several factors have been attributed to the spatial diffusion as well in the regional disparities of the HIV/AIDS epidemic in Sub-Saharan Africa. These factors include cultural practices surrounding sexuality among certain ethnic communities, migration, and vulnerability, among many other interrelated factors (Akeroyd, 2004; Brockerhoff and Biddlecom, 1999; Oppong, 1998). For example, migration and urbanization are interrelated as most of the migration in Africa is between the rural and urban. Despite the knowledge of the factors, many are not included in national-level surveillance systems. Based on the trend curves on Figure 2-4, the HIV prevalence rates are correlated with selected demographic and socio-economic characteristics of the country at the provincial level from the 1989 and 1999 population census, and poverty and income inequality index data for 1999.

HIV/AIDS, urbanization and migration

A wide range of surveillance data show higher prevalence levels for urban areas, despite

the fact that urban residents tend to show greater awareness of AIDS and ways of preventing HIV infection. In 2003, 6.7% of Kenyan adults were HIV positive (NASCOP/Ministry of Health, 2005). The HIV prevalence rate for the urban residents was 10% while that of the rural was 5.6%, an almost double in difference. Despite the observation that HIV prevalence is higher in the urban areas, the provincial differences in the prevalence could not be explained by this factor, as the bivariate correlation between HIV prevalence in both 1990 and 2000 against provincial percentage of population that was urban did not reveal any significant correlation (Table 2-3).The lack of strong correlation could be explained from the fact that in the early 1990s the epidemic was higher in provinces with lower urban populations, an indication of a possible rural origin in the epidemic. By 1999, the epidemic had already penetrated into the rural areas, and decline had started in the major urban areas.

Likewise, the correlation between HIV prevalence and migration did not also show any strong significance. However, the percentage of in-migrants to each province at both 1989 and 1999 censuses strongly correlated with the percentage of the population that was urban (Table 2-3). This is because rural-to-urban migration dominates migration in Kenya. However, the fact that HIV prevalence has been higher in provinces that are less urban conceals the relationship and role of urbanization in the spread of HIV. Nevertheless, as migrants to the urban areas always maintain link with the rural areas, the spread of HIV between the urban and rural areas and vice versa is still a possible influence in the spatial diffusion process. Frequent visits between the urban and rural areas, or circular migration, a common phenomenon in Kenya, may maintain constant rates of infection at both the rural and urban ends of the migration chain (Ngigi, 2007). Many migrants to the urban areas such as in the city of Nairobi live also in abject poverty. The environment in which they live in, and lives demands in the city propels them, especially women, to engage in risky sexual engagements for basic survival (Zulu *et al*., 2004).

Table 2-3: Correlation matrix of HIV prevalence in 1990 and 2000 against provincial urban population and migration

	HIV Prevalence 1990	HIV Prevalence 2000	Percentage urban population 1989	Percentage urban population 1999	Percentage in-migrants 1989	Percentage in-migrants 1999
HIV prevalence 1990	1					
HIV prevalence 2000	0.534 (0.086)	1				
Percentage urban population 1989	0.038 (0.464)	0.002 (0.498)	1			
Percentage urban population 1999	0.101 (0.406)	0.074 (0.431)	0.990 (0.000)	1		
Percentage in-migrants 1989	0.030 (0.472)	0.029 (0.473)	0.958 (0.000)	0.969 (0.969)	1	
Percentage in-migrants 1999	0.018 (0.483)	0.074 (0.431)	0.955 (0.000)	0.970 (0.000)	0.997 (0.000)	1

Significance levels in the parentheses.

HIV/AIDS and culture

There are some similarities in some cultural practices among the tribes making the ethnic groups in Kenya. For example, most of the Bantu practice male circumcision, while the Nilotic do not. Among the Nilotic, wife inheritance is a common cultural custom where a widow is supposed to be inherited after the death of her husband to fulfil some cleansing rites required by the community. Traditionally, brothers or of the deceased had to inherit the widows to ensure the property of the deceased remained within the family circle. In case there was no one ready to inherit the widow, 'professional inheritors' had to perform the customary duty of inheriting the widow. The culmination of the inheritance involved sex; in the AIDS era, many of the widows were also infected, the infection chain extended to the inheritor, to his wife and eventually to the next inheritor. Refusal to be inherited resulted in losing support from the family, or right to participate in other societal ceremonies such as attending burials of close relatives. Even with full knowledge that a widow's was already HIV positive, some inheritors insisted on having sex without condoms (Luginaah *et al*., 2006).

Table 2-4 shows the bivariate correlation between HIV prevalence and the ethnic groups in 1990 and 2000. Positive but not so strong correlations with the Western Bantu, the Coastal Bantu, and the Nilotic are observed in 1990, while exhibiting a strong negative correlation(R = -0.801) with the Central Bantu. In 2000, a strong and significant correlation (R = 0.829) with the Nilotic is in line with the high HIV prevalence in Nyanza province while in other provinces a declining had started. This strong correlation with the Nilotic who form the majority of the Nyanza province population reaffirms the role of cultural factor in the high prevalence rates seen in the 1990s. The significant negative correlation with the Central Bantu may not definitely indicate the role of the ethnic group's cultural practices, though the Central Bantu practise male circumcision, a culture said to lower the infection risk. The relation may simply be highlighting the epidemic's trend since 2000. The Central Bantu are mainly in areas that are close to and in the city of Nairobi; therefore, they have more access to frequent mitigation information.

Table 2-4: Bivariate correlation between HIV prevalence in 1990 and 2000 against provincial ethnic composition

	Central Bantu	Western Bantu	Coastal Bantu	Nilotic	Nilo-Hamitic	Western Hamitic	Eastern Hamitic
HIV Prevalence,1990	-0.801	0.617	0.488	0.430	0.028	-0.097	-0.242
	(0.008)	(0.052)	(0.110)	(0.144)	(0.474)	(0.410)	(0.282)
HIV Prevalence,2000	-0.154	0.441	0.088	0.829	-0.387	-0.109	-0.552
	(0.358)	(0.137)	(0.418)	(0.005)	(0.172)	(0.399)	(0.078)

Significance levels in the parentheses.

The correlation directions are also indicators of the ethnic clustering of settlement patterns in Kenya, with diversity pronounced only in Nairobi and the Rift Valley provinces. The concentration of a people of similar culture has influence on the spatial pattern of the epidemic through cultural practices that either reduce or increase the transmission risks of HIV. The Nilotic, mainly composed of the Luo ethnic tribe, practice wife inheritance. This cultural practise coupled by lack of male circumcision may have played a role in the high prevalence rates of Nyanza province.

HIV/AIDS and poverty

The association between poverty and HIV/AIDS is a subject much debated by scientists and of great concern to governments and donor agencies (Agyei-Mensah, 2006). Poverty is said to be linked to HIV/AIDS in different ways; on the one hand, it is seen as a causative factor of HIV/AIDS in which economically deprived people engage in economic practices such as prostitution that puts them at risk to HIV and AIDS. On the other hand, it is seen as a consequence of HIV/AIDS where the infected use all their resources in treatment and are economically unproductive due to their weak bodily condition.

Nyanza province, which has the highest poverty incidence, shows the highest HIV prevalence rates. In contrast, North Eastern province with equally high levels of poverty has had very low prevalence rates all through the surveillance period (Figure 2-4). A scatter plot between poverty incidence and HIV prevalence does not show strong correlation (Figure 2-10). This could be due to the fact that no single factor acts on its own in increasing the HIV/AIDS risks. The environment in which a poor person may get into risky behaviour is governed by other factors such as the presence of persons with a higher income who are willing to pay for sex. Both measures of poverty indicate the likelihood of higher HIV infection levels in the areas where inequalities in income distribution are high. The scatter diagrams however, show the direction of the relationship; higher levels of poverty may lead to higher rates of infection.

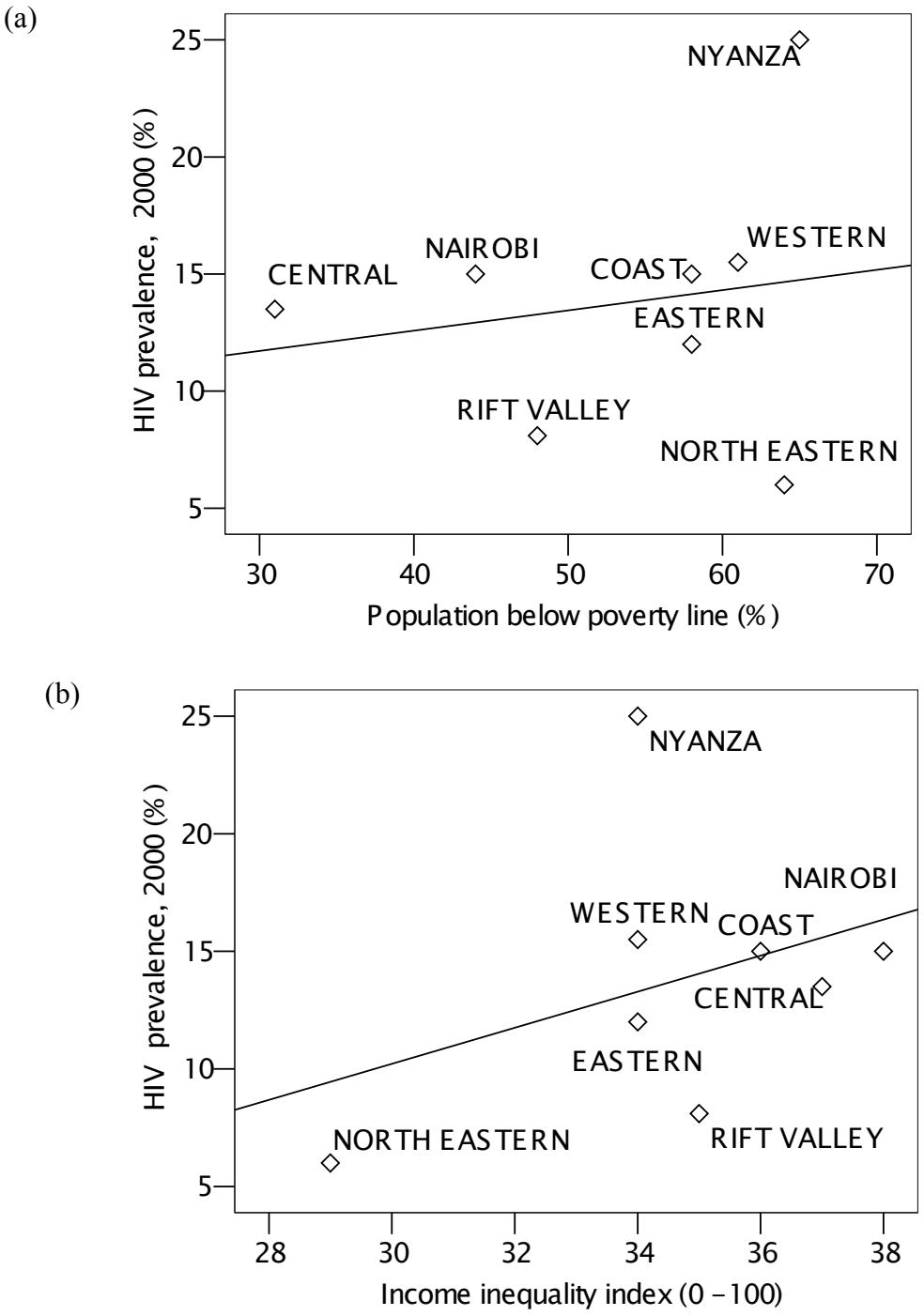


Figure 2-10: HIV prevalence in 2000 against (a) percentage population living below poverty line and (b) income inequality index.

Source: Poverty and income distribution: Kenya Central Bureau of Statistics, 2003 and Kenya Central Bureau of Statistics, 2005; HIV prevalence data: trend curves in Fig. 2-4

Chapter Three

General Characteristics and Spatial Distribution Pattern of PLWHA in Nairobi City

The HIV/AIDS epidemic in Kenya has shown heterogeneous patterns among the provinces of Kenya throughout the surveillance period. Nairobi, the capital city and the smallest of the provinces, plays a crucial role as Kenya's economic, social and cultural hub. The spatial characteristic of the HIV/AIDS epidemic within the borders of the city is important in understanding the local factors that are invisible from the provincial level analysis. This chapter presents the findings of a survey on people living with HIV/AIDS (PLWHA) conducted within the city of Nairobi. A review of the general characteristic of the HIV/AIDS epidemic trend in the city and the spatial structure of the city in which population density and poverty levels are presented.

3.1 Background on the HIV/AIDS Epidemic in the City of Nairobi

The history of HIV/AIDS in Nairobi is as old as the epidemic itself in Kenya. The first case of AIDS to be diagnosed in Kenya was in a Nairobi resident. Efforts in tracking the spread of HIV in Kenya also started in Nairobi where seroprevalence tests confirming the virus to have penetrated the prostitute community in the city from as early as the mid 1980s (Kreiss *et al.*, 1986). HIV surveillance on pregnant women in Nairobi has been ongoing since 1991. Prevalence trend in the four sites that have tracked the infection levels in the city show that the HIV/AIDS epidemic has been stably high all through, especially in the first decade of surveillance (Figure

3-1). The surveillance data from the sentinel sites show the infection levels and trends of the epidemic in the city of Nairobi, but do not depict its spatial characteristic as the residential origins of the tested population is not available at lower scales. Photo 3-1 shows a health centre whose antenatal clinic is one of the surveillance sites in Nairobi.

Estimated population of HIV-infected population in 2004 was 159,000 (NACC, 2005), the third highest in the HIV/AIDS-infected population among the eight provinces. Owing to its small size, the estimates imply that the city of Nairobi has the highest density of people living with HIV/AIDS among the provinces. Their spatial distribution within the city however remains undetermined as the unlinked and anonymous sentinel surveillance system does not allow for small-area estimation for lack of detailed locational information. However, within Kenya, as it is else where in other parts of the HIV/AIDS-afflicted countries such as in Thailand (Del Casino Jr., 2001), PLWHA support groups present a starting point from where the epidemic can be spatially mapped at the local scale. The support groups were initially few, but the number of such groups has grown with the increasing numbers of PLWHA as the HIV/AIDS epidemic progresses. In Kenya, PLWHA support groups fall in two levels depending on size and range of activities; NGO or community-based organization (CBO). The NGOs have larger number of members, with some having branches in various parts of the country while the CBOs mainly draw their memberships from local neighbourhoods.

Utilizing PLWHA support groups, this research located the HIV/AIDS epidemic to a lower scale than is possible from the national surveillance system. The research sought the factors such as migration, residential area risks, and individual characteristics that are influencing the residential distribution of the PLWHA as well as the spatial diffusion of the epidemic. The 1999 population census and poverty mapping data were utilized as the background data under which the epidemic has manifested itself within the city of Nairobi.

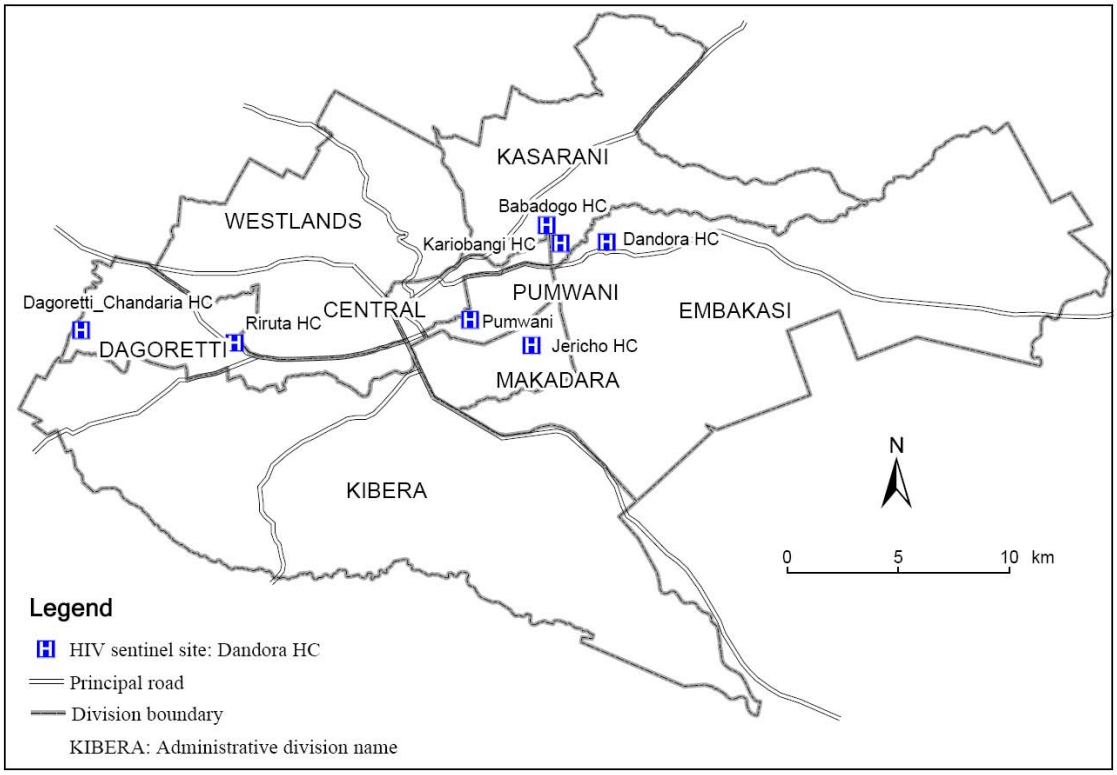


Figure 3-1a: Distribution of HIV surveillance sites in Nairobi.

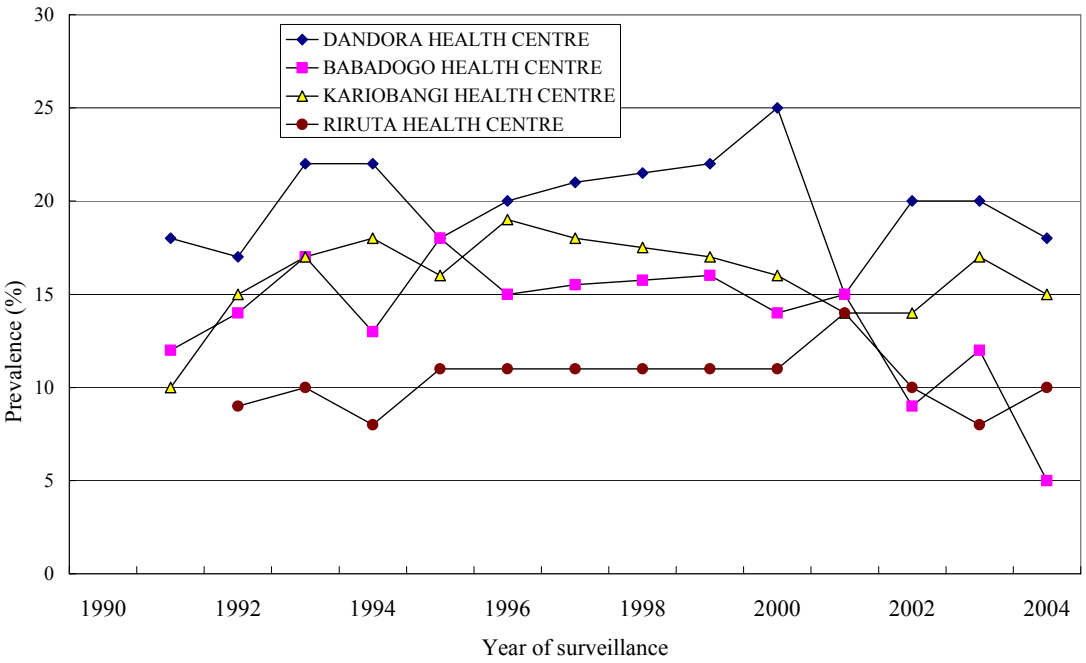


Figure 3-1b: HIV prevalence trend for the four surveillance clinics in Nairobi with surveillance data since 1991.

Note: Data values for 1997 and 1998 are by linearly interpolation

Source: NASCOP/ Ministry of Health, 2005

Photo 3-1: Riruta Health Centre in Nairobi has been a HIV surveillance site since 1991. Besides other health care, the health centre provides antenatal care to pregnant women.

Source: Taken by research assistant in April 2007

3.2 General Characteristics of the Respondent PLWHA

Responses from the interviewees revealed that PLWHA support groups in the city of Nairobi drew their membership not just from within the city, but also from the neighbouring provinces. Out of the 230 respondents, eighty-eight percent (202) live within the city borders (Fig 3-2). The remaining twelve-percent reside among five provinces, 11 reside in the neighbouring Eastern province, 9 in Central province, 3 in Nyanza, and 2 in the Rift Valley province (Figure 3-2). Since the research focussed on the spatial characteristic of the epidemic at a scale smaller than the province, only the questionnaires from the city residents were considered for further analysis.

Gender

Surveillance results from the global, regional, and country levels have found more women to be affected by the HIV/AIDS epidemic as they are biologically more vulnerable to infection than men, and are more likely to engage in risky behaviour due to lack of alternative economic activities. By gender, 72 % (145) are women and only 28% (57) are men. This could be because several of the PLWHA support groups were initiated by women, and therefore had women as their primary targets. An example of such a support group is the Kenya Network of Women with AIDS (KENWA), now an NGO, established by a group of five women, and had a membership of almost 3,000 women who were living with HIV/AIDS.

Age

The AIDS epidemic is having a higher effect on the productive part of the society, with the younger generation being the most affected. Younger women are more vulnerable than men of the same age as they become sexually active at earlier age. Almost three-quarters of the respondent PLWHA are aged below 40 years (Table 3-1). Among the females, 28 % are below 30 years old, while there are only 9% of the males in the same category. Only 7% of the respondents are fifty years old and over; an indication of less infection in the older generation.

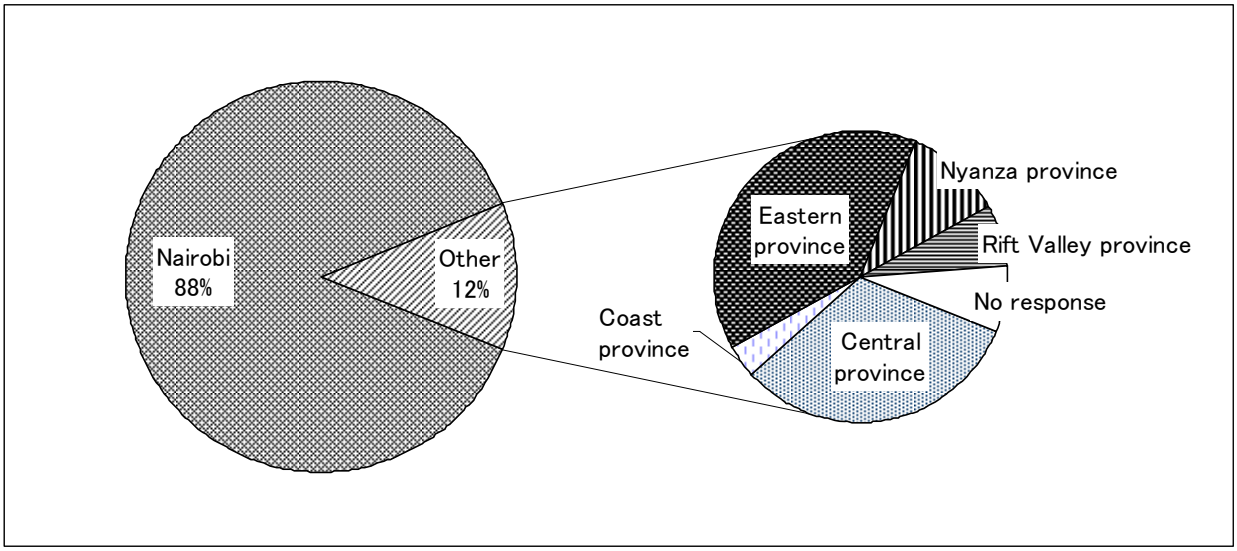


Figure 3-2: Characteristics of the total respondents by province of residence (n = 230).

Source: Questionnaire survey in January 2005

Table 3-1: Characteristics of the respondent PLWHA by age and marital status

Characteristic	Category	Gender				Total	
		Male		Female			
		no.	%	no.	%	no.	%
Age group	15-20	-	-	4	2.8	4	2.0
	21-29	5	8.8	37	25.5	42	20.8
	30-39	30	52.6	73	50.3	103	51.0
	40-49	18	31.6	21	14.5	39	19.3
	50 and over	4	7.0	10	6.9	14	6.9
	TOTAL	57	100.0	145	100.0	202	100.0
Marital status	single	10	17.5	28	19.3	38	18.8
	married - monogamous	29	50.9	34	23.4	63	31.2
	- polygamous	4	7.0	2	1.4	6	3.0
	divorced/separated	7	12.3	37	25.5	44	21.8
	widow/widower	7	12.3	44	30.3	51	25.2
	TOTAL	57	100.0	145	100.0	202	100.0

Source: Questionnaire survey in January 2005

Marital Status

The HIV/AIDS epidemic is affecting all regardless of marital status. Of the interviewed, only 19% are single, over fifty percent of the 57 men interviewed are married, while only 25% of the women are married (Table 3-1). Among the widowed, women form the higher percentage (30%) as compared to the men (12%), while the percentage of single PLWHA was almost equal for both genders, 18% and 19%, respectively. A notable percentage (22%) of the respondents is separated from their spouses, a situation that many stated to be the results of disagreements and blame on the source of the HIV infection. High death rate of infected persons has resulted to rising numbers of widowed population, and eventually rising numbers of AIDS orphans. With a quarter of the surveyed population being widows/widowers, signifies the high number of children who have lost their parents due to AIDS. Many of the widowed, especially the women, rely heavily on help from the PLWHA support groups for their daily living and upkeep of their children as they have no source of income.

Education level, occupation and income

HIV/AIDS affects all people regardless of education level. In terms of highest education level attained, the PLWHA ranged from those with no formal education to those with college and university education. Demographic and health survey found that persons with at least primary level education were more likely to get infected with HIV than those without any formal education or those with higher education level (Kenya, Central Bureau of Statistics, 2004). In Table 3-2, the classification of the PLWHA shows that those with primary and secondary level education were almost equal in number, while those with no education or reached university level were the fewest. As Table 3-2 further shows, majority (87%) of the PLWHA earned less than Kenya Shillings (KES) 10,000 (US $ 133) per month, with the highest percentage being those with lower education level.

The income levels are a reflection of the occupations of the PLWHA. Twenty percent reported to have no income-generating occupation, 19% engaged in unskilled/semi-skilled

Table 3-2: Characteristics of the respondent PLWHA in terms of education level and occupation and categorized by monthly income

			Monthly income in Kenya shillings [b]							Total	
			None	less than 5,000	5,000-10,000	11,000-15,000	16,000-20,000	more than 20,000	No response		
			Count	Count	Count	Count	Count	Count	Count	Count	%
Education level [a]	None		2	4	-	-	-	-	1	7	3.5%
	Primary school		28	37	10	-	-	-	1	76	37.6%
	Secondary/High School		5	35	19	2	2	1	6	70	34.7%
	College		5	8	20	3	5	2	1	44	21.8%
	University		1	-	1	1	1	1	-	5	2.5%
Occupation	None		41	-	-	-	-	-	-	41	20.3%
	Farming		-	1	-	-	-	-	-	1	0.5%
	Unskilled/semi-skilled		-	29	9	-	-	-	-	39	19.3%
	Skilled		-	1	2	-	-	-	-	3	1.5%
	Commerce/business		-	39	13	-	-	1	-	53	26.2%
	Clerical/supervisory		-	-	8	2	2	-	-	12	5.9%
	Semi-professional		-	1	10	2	3	-	1	17	8.4%
	Professional		-	-	1	-	3	3	-	7	3.5%
	HIV/AIDS social work		-	13	7	1	-	-	-	21	10.4%
	No response		-	-	-	-	-	-	8	8	4.0%
	TOTAL	Count	41	84	50	6	8	4	9	202	
		%	20.3%	41.6%	24.8%	3.0%	4.0%	2.0%	4.5%		100%

[a] Education categories refer to the highest level of education attended
[b] USD was approximately Kenya Shillings 75.00 at the time of survey

Source: Questionnaire survey in January 2005

activities, 26% were in commercial activities, while only 4% were in professional careers. A notable percentage (11%) was engaged in occupations directly involving the HIV epidemic. The HIV-related occupations were mainly concerned with care of the affected families and orphans left by deceased parents, as well as counselling of other infected PLWHA. With occupations that have low monetary remuneration, the necessity for alternative sources of income is high, considering the high cost of living in the city. Heightened risks of infections are very likely, especially among those who cannot negotiate for safe sex.

HIV infection, marital status and number of sexual partners

Heterosexual transmission accounts for the highest HIV transmissions mode among the adult population in Kenya. Blood transfusion, a significant mode of transmission in the early years of the epidemic, is almost negligible as all the blood is tested for HIV before any transfusion (Kenya Ministry of Health, 2001).However, HIV transmission through handling of contaminated blood, and fluids, especially in the care of the infected remains a risk.

Regardless of the marital status, heterosexual intercourse was the main mode of HIV transmission among the PLWHA (Table 3-3). Except for two respondents who got HIV through blood transfusion and eight who did not know how they contracted HIV, the majority (95%) of the respondents reported to have been infected through heterosexual contact. Most of the respondents claimed to have contracted HIV from their spouses or close friends; a few claimed to have acquired HIV from commercial sex work (4%) and casual encounters (7%), while a significant percentage (24%) did not know from whom they could have contracted the virus (Table 3-4). While there were claims of certainty on the source of infections, this stands questionable as any among the partners could have been the source of infection. For example, among the ones who said to have obtained infection from their spouses, twenty-four of them had had more than one sexual partner. In the absence of testing, one may transmit HIV to any of his/her partners unknowingly. Additionally, in a dynamic population, even low level of risky behaviour is capable of high HIV transmission rates, especially when the epidemic is endemic.

Table 3-3: Mode by which the respondent PLWHA contracted HIV

Marital Status	Mode by which HIV contracted						
	Heterosexual		Blood transfusion		Do not know		
		%		%		%	TOTAL
Single	36	(97.3)			1	(2.7)	37
Married - monogamy	60	(98.4)	1	(1.6)			61
- polygamy	5	(83.3)			1	(16.7)	6
Divorced/separated	41	(93.2)			3	(6.8)	44
Widow/widower	46	(92.0)	1	(2.0)	3	(6.0)	50
TOTAL	188	(95)	2	(1)	8	(4)	198

Source: Questionnaire survey in January 2005

Table 3-4: HIV infection sources classified by number of sexual partners

	Proportion of PLWHA by number of sexual partners													
	1		2		3		4		more than 4		cannot recall		Total	
Infected by	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Wife/husband	63	(31.2)	15	(7.4)	5	(2.5)	3	(1.5)	1	(0.5)	-		87	(43.1)
Close friend	16	(7.9)	12	(5.9)	8	(4.0)	1	(0.5)	1	(0.5)	-		38	(18.8)
Casual friend	8	(4.0)	5	(2.5)	1	(0.5)	-		-	-	-		14	(6.9)
Commercial sex work	1	(0.5)	1	(0.5)	-		1	(0.5)	5	(2.5)	-		8	(4.0)
Do not know	27	(13.4)	11	(5.4)	5	(2.5)	3	(1.5)	1	(0.5)	2	(1.0)	49	(24.3)
No Response	5	(2.5)	-	-	-	-	-	-	1	(0.5)	-		6	(3.0)
Total	120	(59.4)	44	(21.8)	19	(9.4)	8	(4.0)	9	(4.5)	2	(1.0)	202	(100.0)

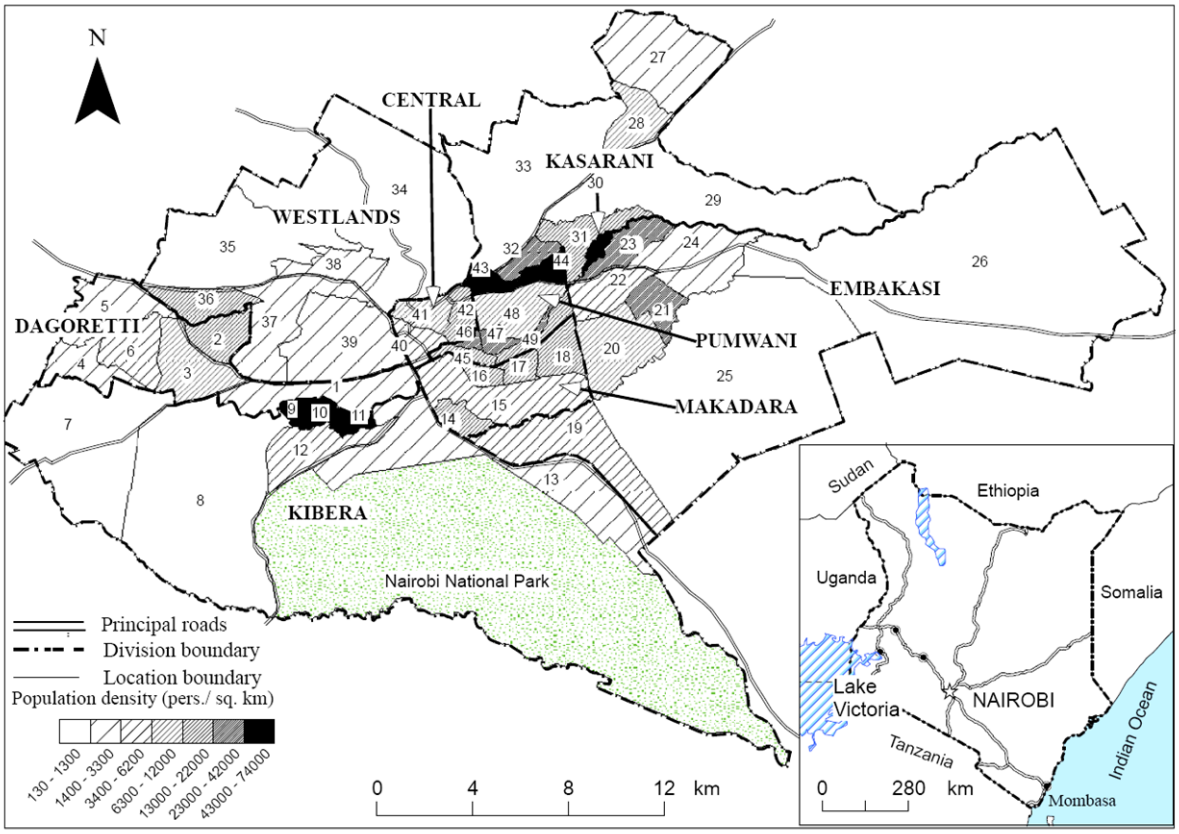
Note: Percentages are from total number (202) of respondents residing within Nairobi

Source: Questionnaire survey in January 2005

3.3 Spatial Distribution of the Respondent PLWHA with the Spatial Structure of the City

The spatial structure of present-day Nairobi is a result of its historical origins, geographical location, and contemporary forces. The city has grown from a caravan route camp set up in 1896, to become Kenya's largest city. The site of Nairobi was chosen because it offered a suitable stopping place during the construction of the Mombasa-Uganda railway; adequate water supply from the nearby rivers, ample level land for railway tracks and sidings, elevated and cooler ground suitable for residential purposes, and apparently deserted land for land appropriation(Obudho, 1997). The reaching of the railway construction in 1899 and eventual transfer of the rail company headquarters from Mombasa resulted in the growth of Nairobi as a commercial and business hub for the then British East Africa protectorate. A defined urban boundary was in place by 1900, with racially segregated residential areas for the Europeans and Asians emerging, and the Africans residing on the periphery of the urban centre.

The spatial pattern of residential areas of Nairobi is sectoral; the pattern being largely a product of political, particularly colonial and post-colonial processes. The historical origins of Nairobi as a racially segregated urban centre continue to affect the city's population distribution structure even today. Divisions according to class and income replaced the old racial divisions of the city after the country's independence in 1963. The former African areas remained as low-income areas with high population densities, while new ones grew with the extension of the city boundary in 1963. These former African areas include planned workers residential estates close to the industrial area and east of the central business district, and unplanned satellite townships of Kawangware, Kangemi and Riruta on the western side of the city (refer to Figure 3-3 for location names). Other African areas, originally squatter settlements on the periphery of the city but included in the city boundary extensions, developed along unplanned flood plains and rivers valleys to become large uncontrolled slums. Prominent examples are Kibera and Mathare locations which have grown to become some of the largest informal settlements in the Nairobi (Figure 3-3). Most of the migrant job seekers, low-income workers, and informal traders,



Location names

1: Kenyatta/ Golf Course	2:Kawangware	3:Riruta	4:Mutuini	5:Uthiru/Ruthimitu	6:Waithaka	7:Karen
8: Langata	9: Sera Ngombe	10: Kibera	11:Laini Saba	12: Mugumoini	13: Nairobi West	14: Mukuru Nyayo
15: Viwandani (Industrial Area)	16: Makongeni	17:Maringo	18:Makadara	19:Mukuru kwa Njenga	20:Umoja	21:Kayole
22:Kariobangi South	23:Dandora	24:Njiru	25:Embakasi	26:Ruai	27:Kahawa	28:Githurai
29:Kasarani	30:Korogocho	31:Kariobangi	32:Ruaraka	33:Roysambu	34:Highridge	35:Kitsuru
36:Kangemi	37:Lavington	38:Parklands	39:Kilimani	40:Starehe (City centre)	41:Ngara	42:Kariokor
43:Mathare	44:Huruma	45:Kamukunji	46:Pumwani	47:Eastleigh South	48:Eastleigh North	49: Bahati

Figure 3-3: Map of Nairobi showing population density distribution at the location administrative level, 1999.

Source: Kenya Central Bureau of Statistics, 2001

who form the majority of the city's population, are concentrated in these former African sectors (Lee-Smith and Lamba 1998).

The middle and high-income earners mainly reside in the former Asian and European sectors. These areas constitute parts of Central, Westlands and Dagoretti divisions. A characteristic of these areas is low population density, with a mixture of middle and high-income residential estates. Post-independent development in addition created new middle-income earner residential estates in the eastern part of the city in Embakasi division. While some are located in the low to medium densely populated locations such as Umoja and Embakasi locations, others are in more densely populated areas such as in Kayole (21) and Dandora (23) locations (Figure 3-3).

As noted by Kahimbaara (1986), the sectoral pattern inherited from colonial history and perpetuated by post-colonial policies have encouraged dualism not only in the sense that Nairobi's spatial structure consists of sharply contrasting sectors, but also in the sense that each one on Nairobi's communities has its own fortified social space and geographical centre around which the community is organised. The social distance between the communities is likely to be extreme. Nonetheless, the sectoral pattern has seen the flourishing of symbiotic existence of slum areas and rich neighbourhood that characterise Nairobi, where the former supplies unskilled and semi-skilled labour to the latter in form of drivers, security, house, and garden staff.

3.3.1 Population Density

Table 3-5 shows the distribution of the respondent PLWHA by residential location and population density. Figure 3-4 give the spatial representation of this distribution. The residential distribution of the respondents at a lower and the best achievable scale show that the HIV/AIDS spatial distribution pattern follows the population density structure of the city (Table 3-5 and Figure 3-4). Most of the respondents resided in locations characterised by high population density. Nearly 70% of the PLWHA resided in just eight locations. Kibera location has the

Table 3-5: Residential distribution of the respondent PLWHA among the administrative locations

Administrative Area	No of respondent PLWHA	Percentage of total	Cumulative Percentage	Population density, 1999 (pers./sq. km)
Kibera	33	17%	16.5%	49,228
Kawangware	22	11%	27.5%	21,706
Mathare	16	8%	35.5%	46,002
Kayole	16	8%	43.5%	27,367
Makadara	14	7%	50.5%	14,495
Eastleigh South	14	7%	57.5%	35,319
Riruta	13	7%	64.0%	14,495
Dandora	10	5%	69.0%	27,541
Huruma	7	4%	72.5%	64,340
Umoja	7	4%	76.0%	10,348
Kariobangi	6	3%	79.0%	13,988
Langata	4	2%	81.0%	362
Mugumoini	4	2%	83.0%	4,276
Nairobi West	4	2%	85.0%	1,849
Mukuru Nyayo	4	2%	87.0%	15,753
Bahati	4	2%	89.0%	17,114
Kasarani	3	2%	90.5%	1,278
Laini Saba	3	2%	92.0%	74,313
Sera Ngombe	3	2%	93.5%	19,317
Maringo	3	2%	95.0%	47,557
Viwandani	2	1%	96.0%	5,201
Kilimani	2	1%	97.0%	3,063
Waithaka	1	1%	97.5%	3,692
Kariobangi South	1	1%	98.0%	3,810
Kahawa	1	1%	98.5%	2,171
Roysambu	1	1%	99.0%	978
Makongeni	1	1%	99.5%	15,959
Kamukunji	1	0.5%	100.0%	13,196
Total	200	100%	100%	

Source: Questionnaire survey in January 2005, and population data from Kenya Central Bureau of Statistics, 2001

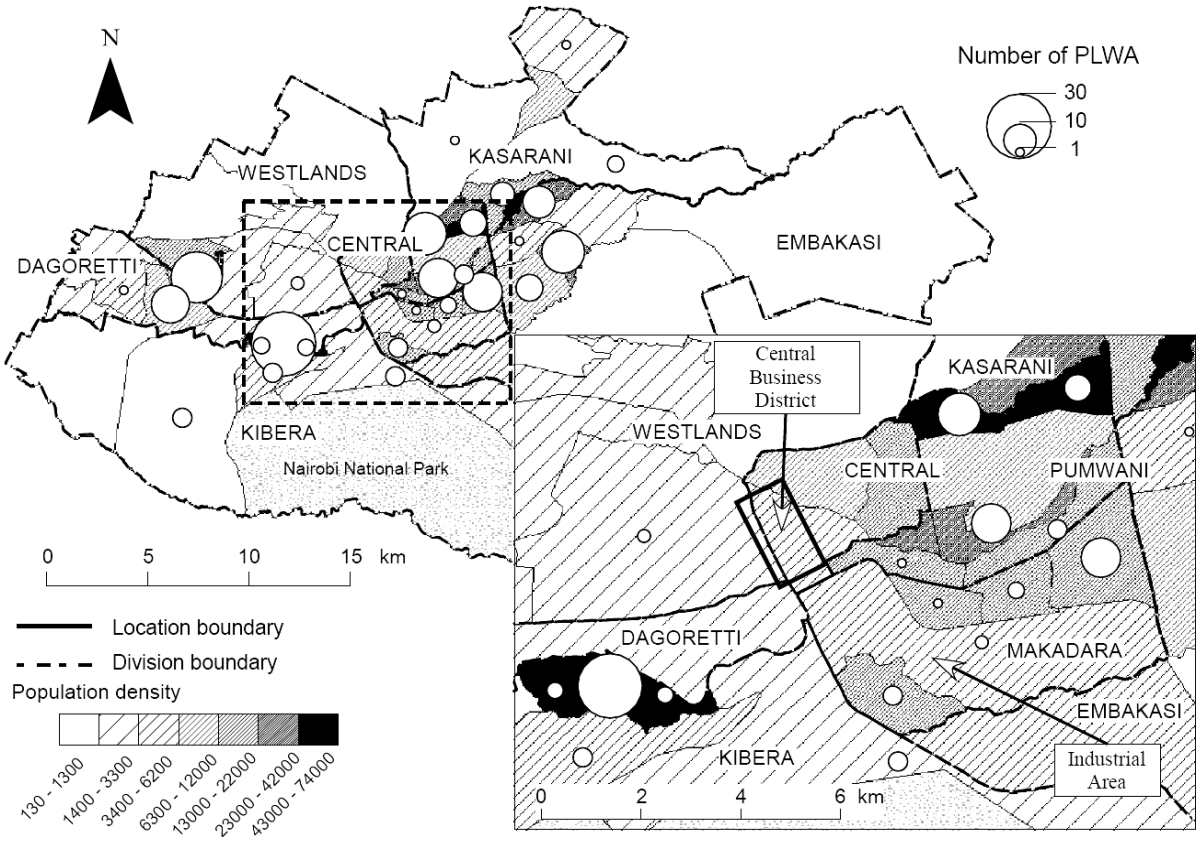


Figure 3-4: Spatial distribution of the respondent PLWHA with population density.

Source: Questionnaire survey in January 2005

highest number of respondents (17%); followed by Kawangware (11%), Kayole (8%), Mathare (8%), Eastleigh South (7%), Makadara (7%), Riruta (7%) and Dandora (5%) locations (refer to Figure 3-3 for the location names). These locations are not only characterised by high population density, but also by large, overcrowded informal settlements (slums) close to well planned residential estates.

The PLWHA survey also revealed the contrasting nature of the residential environs in the city of Nairobi. Clean and secure neighbourhoods lie juxtaposed with dirty and insecure slums within the same administrative locations. From an open-ended inquiry, it became evident that cost of basic living necessities such as rent and food was the major factor considered in describing the positive aspects of a residential neighbourhood. As the respondents were all at various stages of HIV/AIDS, many of who were heavily dependent on antiretroviral drugs to improve their conditions, the presence of PLWHA support groups and NGOs was important in describing their residential environments. For many who resided in the slums such as in Kibera location, presence of many NGOs and PLWHA support group was a great advantage of the area that even surpassed the high level of insecurity describing the area (Photo 3-2).

Living with HIV/AIDS is a long process that lasts many years from infection till death. It is characterised by a long duration when one has to depend heavily on friends and family as the body gets weaker and weaker. Having supportive family and friends is thus important for prolonged living the infected persons. Among the respondents, 52 said they liked their residential area due to the presence of family and friends, while 12 said that they disliked their residence as they had neither good neighbours nor friends in the neighbourhood, and were separated from their families (Figure 3-5).

On the other hand, among the negative descriptions of the residential areas, environmental issues and security topped the list. Among 117 respondents, 88% reside in dirty and unsanitary residential areas, while only 25% of those who considered security (90) described their residential locality to be safe(Figure 3-5). Table 3-6 gives in detail the description of 11

Photo 3-2: Kibera slums in the city of Nairobi. Presence of medical support for PLWHA may be attracting more infected residents in this area.

Source: Taken by researcher in January 2006

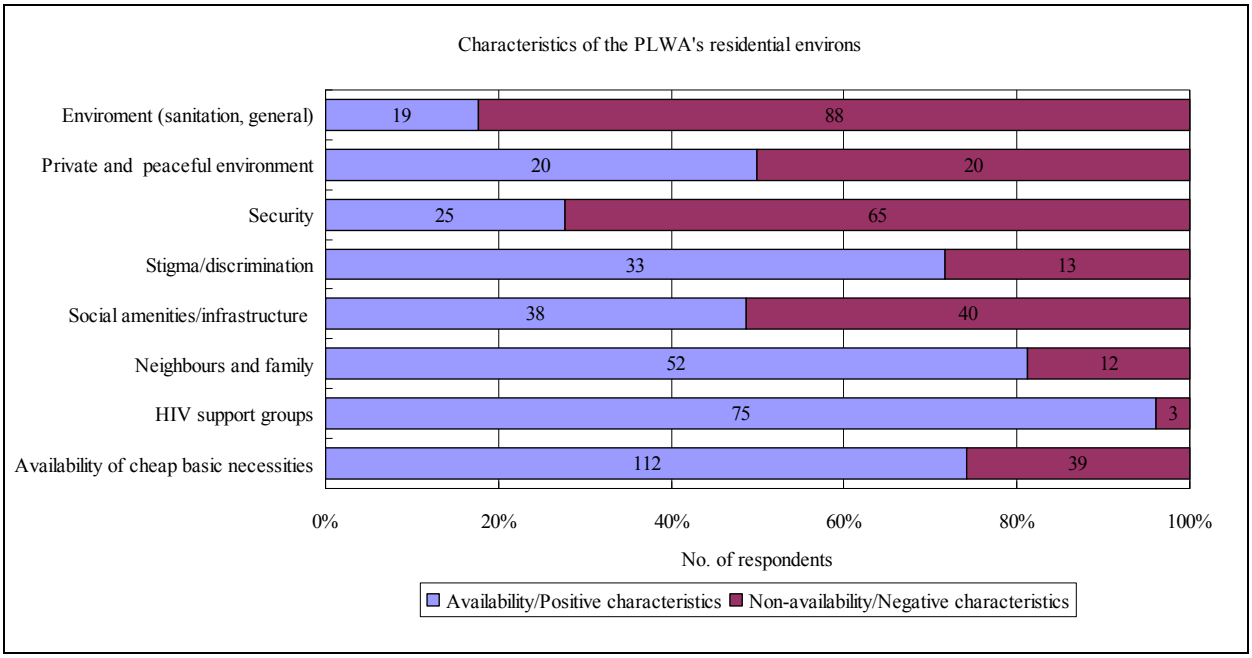


Figure 3-5: Residential characteristics of the city of Nairobi from the respondents' viewpoint and experiences.

Source: Questionnaire survey in January 2005

Table 3-6: Description of the residential environs of eleven administrative locations where almost 80% of the respondents resided

Administrative Location	**No. of PLWHA resident**	**Positive residential area characteristics**	**Negative residential area characteristics**
Dandora	10 (5%)	• Acceptance of PLWHA • Family and friends • Cheap, affordable food and housing • Good transportation link to the central business district (CBD)	• Insecurity • Overpopulated • Muddy, dirty environmental, pollution from chemical damping • Lack of enough transport, and long distance to medical facilities • HIV/AIDS stigma
Eastleigh South	14 (7%)	• Good access to ARVs, • medical support and care from HIV support groups (mainly KENWA) • Cheap and affordable housing • Good social neighbourhood • Good security in some residential areas • Low stigma	• High levels of insecurity: robbery, rape, petty crimes • Poor sanitation and dirty environment: not adequate public toilets • Rent is still high for the poor slum dwellers • Long distance to ARV collection centre • Bad infrastructure: poor roads, • HIV stigma/ discrimination • High levels of poverty, and rising number of orphans • noisy
Huruma	7 (4%)	• Availability of drugs, and medical care • Community support for PLWHA, and good social neighbourhood. • Cheap and affordable housing and food • Availability of public transportation	• No utilities, life is expensive • Dirty environment • Bad housing • Stigma and discrimination
Kariobangi	6 (3%)	• Good social environment: friendly people • Affordable housing • Availability of water, electricity, and transportation means	• Bad social environment: presence of drunkards • Poor quality, small, expensive housing
Kawangware	22(11%)	• Good accessibility • Good business opportunities, • community support groups and closeness to medical facilities • Cheap and affordable housing, food • Availability of electricity and water • Presence of family and friends • Secure and spacious housing facilities	• Insecurity • Slums: dirty environment, poor sanitation, illicit brews and drugs, and risky sexual behaviour, poor housing • Stigma and discrimination • Water shortage
Kayole	16 (8%)	• Good business opportunities • Convenient to work place, school • support from friends and community support groups • Availability of ARV • Low cost of house rent, food • clean environment and quiet • availability of water	• High rent, high transportation cost • Poor living standards • Stigma • Insecurity, • Dirty environments

Table 3-6 (continued):

Administrative Location	No. of PLWHA resident	Positive residential area characteristics	Negative residential area characteristics
Kibera	33 (17%)	• Low cost of housing, food and transportation • Thriving business due to high population • Very close to the CBD and the industrial area (for job search and employment) • Availability of water and electricity • Free medical care support and presence of many NGOs • Donor support: MSF Belgium, and others • Family and friends present	• Insecurity • High levels of unemployment: risky behaviour, use of drugs and illicit drinks • Dirty environment, poor sanitation, and poor infrastructure • crowded, noisy,
Makadara	14 (7%)	• Good access to health facilities • no discrimination • Plenty of HIV/AIDS support groups • Clean and not overpopulated • Better housing, spacious • Good security • friends and family	• Insecurity • Lack of continuous supply of water • Rising levels of insecurity • Social immorality and prostitution in the neighbourhood
Mathare	16 (8%)	• Affordable house rent rates • Good business environment: illicit business thrives well such as in brews. • Presence of support and care for PLWHA by NGOs: food, medical, and social. • Good social environment: neighbours	• Stigma • Water scarcity • Lack of adequate facilities :sharing such as toilets, bath etc • Dirty environment with poor sanitation; open and dirty drains in slum environment • Social immorality too much: illicit alcohol and drugs, rape, prostitution
Riruta	13 (7%)	• Cheap and affordable housing, food, and other basic necessities • Security is good • No stigma • Good social environment; living with parents and family • Availability of water, electricity • Presence of support groups for PLWHA	• Dirty environment: garbage, and free-flowing drainages • Insecurity • Stigma • High rent, and basic necessities • Poor infrastructure: unpaved roads • Water scarcity • Domestic problems, land disputes
Umoja	7 (4%)	• Distant from noisy and busy CBD • Affordable and good housing • Adequate water, and access to health care • No stigma • Good security	• Stigma and discrimination • Overcrowded and dirty environment • Insecurity • Transportation problems: traffic jam and high cost • Prostitution

Note: Values in brackets are percentage out of 200 of the PLWHA whose residence was identified to the administrative location level

Source: Questionnaire survey in January 2005

administrative locations of the city where 80% of the PLWHA resided. Contrasting descriptions of a residential location shows the heterogeneity of the Nairobi, where the same neighbourhood possess very inconsistent characteristics.

3.3.2 Poverty Levels

Poverty estimate data for 1999 from the Kenya Central Bureau of Statistics provides another perspective in depicting the spatial structure of Nairobi. The density of persons living below the urban poverty line (Ksh 2,648) follows that of the population density. The populated areas are also characterised by higher concentration of persons living below poverty line (Figure 3-6). However, as the figure also shows, there are areas with equally high population densities with fewer number of PLWHA. This could be due to the extent the surveyed PLWHA support groups drew their members, and the venue where the groups held their regular meetings.

Many of the groups have grown through social networking; therefore, the respondents were likely to be living in the same neighbourhoods. For example, several of the contacted PLWHAs had their regular meeting places in Kibera, Mathare, Kawangware, and Kayole, which explains the higher number from these localities. Nonetheless, some neighbouring locations with similar or worse socio-economic conditions are also likely to have equally high PLWHA presence, but the distance to the support groups meeting venue and the interview locations could have influenced the number that joined the association meetings and/or membership. Example is Laini Saba, and Sera Ngombe locations that neighbour Kibera; both are characterised by slums, and have equally high population density as Kibera.

3.4 Influence of Migration on the Spatial Distribution Patterns of the Respondent PLWHA

Migration influences the diffusion of diseases when infected populations relocate to new areas, and as they pass infections to uninfected susceptibles. Residential migration also affects

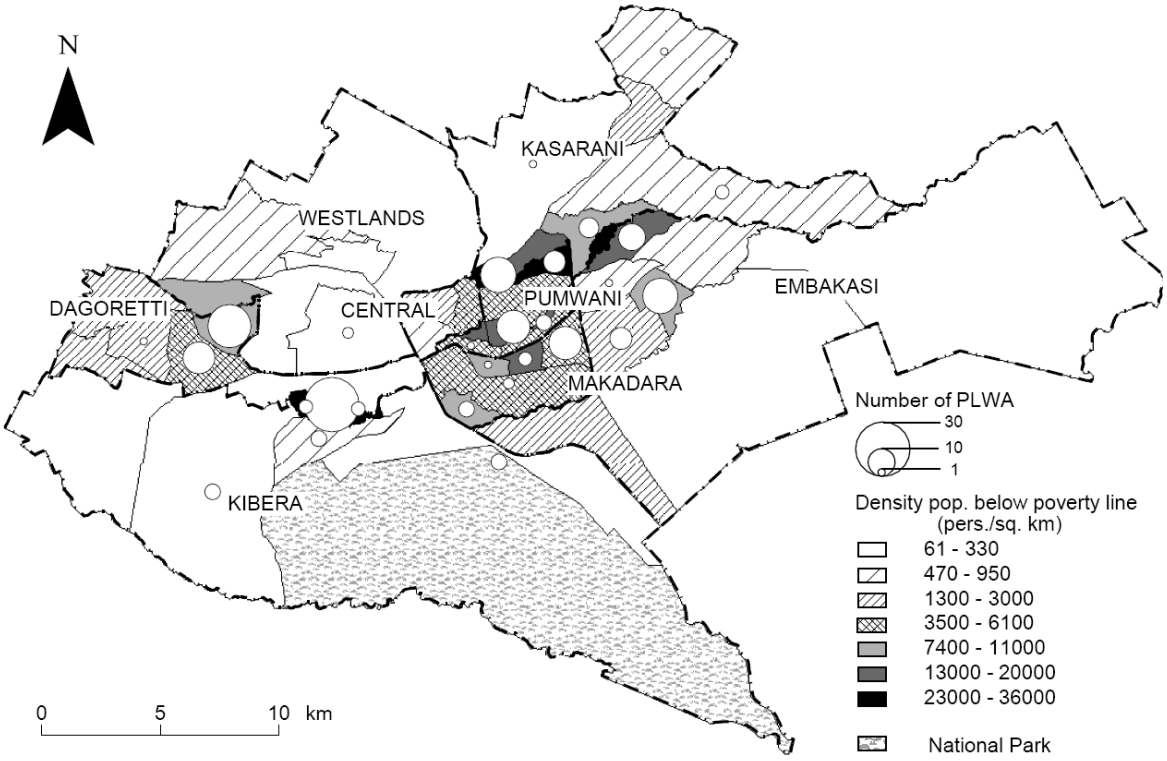


Figure 3-6: Distribution of the respondent PLWHA by resident location against density of population living below poverty line.

Source: Questionnaire survey in January 2005 and Poverty density data derived from Kenya Central Bureau of Statistics, 2003

the ability to detect geographic differences in relative risks of diseases, as the diffusion of cases makes the detection more difficult. Migration tends to reduce the observed spatial variability in disease rates. However, the study of migrant population is useful in examining whether rates are more closely associated with place of origin or destination. In seeking to track the diffusion characteristic of the HIV/AIDS epidemic in the city of Nairobi, the research established that 23% of the respondents had migrated into the city after HIV infection.

Table 3-7 shows the province where the respondents and partner from whom they contracted HIV from were living at the time of infection. The highest percentage of cases occurred when both the respondent PLWHA and the 'infector') were resident in the same province. A large percentage (18.3%) also did not know where their partners were resident. A significant percentage (7.4%) of the respondents migrated from Nyanza, a province that contributes a high percentage of migrants to the city. Central and the Rift Valley provinces also contributed significantly to the PLWHA in the city, with 4.5% and 3.5% of the respondents migrating from the provinces, respectively.

How does migration influence the spatial pattern of the HIV/AIDS epidemic? There was little inter-city migration as most of those infected within Nairobi remained in the same residential areas. However, migrant PLWHA were likely to influence the spatial pattern of the epidemic within the city through their residential location preference. Table 3-8 and Figure 3-8 show the distribution of residential locations of the PLWHA in terms of where they were residing (within the city) at the time of infection and the distribution of those who had migrated into the various residential locations after infection. The distribution of the PLWHA in terms of whether they were still residing in the same location as at the time of infection is also shown.

Residential locations with high HIV infection levels are characterised by high numbers of migrant PLWHA. Kibera, which had the highest number of infections among the locations, had also the highest proportion (15.8%) of those who migrated into the residential area after infection (Table 3-8). It was also observed that though Kayole location in Embakasi division and Eastleigh

Table 3-7: A cross-tabulation of the province of residence of the respondent PLWHA and that of the person from whom they contracted HIV

Province resident on HIV infection		Province of residence of infector											Total
		Nairobi	Central	Coast	Eastern	North Eastern	Nyanza	Rift Valley	Western	Outside Kenya	Do not know	No response	
Nairobi	Count	103	1	2	1	1	3	1	1	2	28	2	145
	% of Total	51.0%	0.5%	1.0%	0.5%	0.5%	1.5%	0.5%	0.5%	1.0%	13.9%	1.0%	71.8%
Central	Count	-	8	-	-	-	-	1	-	-	-	-	9
	% of Total	-	4.0%	-	-	-	-	0.5%	-	-	-	-	4.5%
Coast	Count	-	-	-	-	-	-	-	-	-	-	-	5
	% of Total	-	-	2.5%	-	-	-	-	-	-	-	-	2.5%
Eastern	Count	-	-	-	4	-	-	-	-	-	-	-	4
	% of Total	-	-	-	2.0%	-	-	-	-	-	-	-	2.0%
Nyanza	Count	1	-	-	-	-	12	-	1	-	1	-	15
	% of Total	0.5%	-	-	-	-	5.9%	-	0.5%	-	0.5%	-	7.4%
Rift Valley	Count	2	-	-	-	-	-	-	-	-	2	-	7
	% of Total	1.0%	-	-	-	-	-	1.5%	0.0%	-	1.0%	-	3.5%
Western	Count	-	-	-	-	-	-	-	1	-	-	-	1
	% of Total	-	-	-	-	-	-	-	0.5%	-	-	-	0.5%
Outside Kenya	Count	-	-	-	-	-	-	-	-	2	-	-	2
	% of Total	-	-	-	-	-	-	-	-	1.0%	-	-	1.0%
Do not know	Count	1	-	-	-	-	-	-	-	-	6	1	8
	% of Total	0.5%	-	-	-	-	-	-	-	-	3.0%	0.5%	4.0%
No response	Count	-	1	-	-	-	-	-	-	-	-	5	6
	% of Total	-	-	-	-	-	-	-	-	-	-	2.5%	3.0%
Total	Count	107	10	7	5	1	15	5	3	4	37	8	202
	% of Total	53.0%	5.0%	3.5%	2.5%	0.5%	7.4%	2.5%	1.5%	2.0%	18.3%	4.0%	100.0%

Table 3-8: Distribution of the respondent PLWHA in terms of the location of HIV infection and residential shift after infection

Administrative area Division/Location	Infected in residential area		Infected and reside in the same residential area		Shifted into residential area after infection	
	count	%	count	%	count	%
Central Division	**20**	**14.2**	**16**	**15.2**	**7**	**9.2**
Huruma	7	5.0	6	5.7	2	2.6
Mathare	12	8.5	10	9.5	5	6.6
Ngara	1	0.7	-	-	-	-
Dagoretti Division	**24**	**17.0**	**18**	**17.1**	**21.1**	**16**
Mutuini	1	0.7	-	-	-	-
Kawangware	15	10.6	12	11.4	11	14.5
Riruta	7	5.0	5	4.8	5	6.6
Waithaka	1	0.7	1	1.0	-	-
Embakasi Division	**19**	**13.5**	**14**	**13.3**	**19.7**	**15**
Dandora	7	5.0	5	4.8	3	3.9
Embakasi	1	0.7	-	-		-
Kayole	6	4.3	4	3.8	11	14.5
Umoja	5	3.5	5	4.8	1	1.3
Kasarani Division	**11**	**7.8**	**9**	**8.6**	**3.9**	**3**
Kahawa	-	-	-	-	2	2.6
Kariobangi	5	3.5	4	3.8	-	-
Kasarani	4	2.8	4	3.8	1	1.3
Roysambu	1	0.7	1	1.0	-	-
Ruaraka	1	0.7	-	-	-	-
Kibera Division	**34**	**24.1**	**27**	**25.7**	**25.0**	**19**
Nairobi West	2	1.4	-	-	2	2.6
Kibera	23	16.3	20	19.0	12	15.8
Laini Saba	3	2.1	2	1.9	1	1.3
Langata	2	1.4	1	1.0	1	1.3
Sera Ngombe	2	1.4	2	1.9	1	1.3
Mugumoini	2	1.4	2	1.9	2	2.6
Makadara Division	**18**	**12.8**	**11**	**10.5**	**5.3**	**4**
Makadara	12	8.5	8	7.6	3	3.9
Makongeni	2	1.4	1	1.0	-	-
Maringo	1	0.7	-	-	-	-
Mukuru Nyayo	2	1.4	1	1.0	-	-
Viwandani	1	0.7	1	1.0	1	1.3
Pumwani Division	**11**	**7.8**	**9**	**8.6**	**14.5**	**11**
Bahati	1	0.7	1	1.0	2	2.6
Eastleigh North	3	2.1	-	0.0	-	0.0
Eastleigh South	5	3.5	5	4.8	7	9.2
Kamukunji	2	1.4	1	1.0	-	-
Westlands Division	**4**	**2.8**	**1**	**1.0**	**1.3**	**1**
Kilimani	1	0.7	1	1.0	1	1.3
Lavington	3	2.1	-	-	-	-
TOTAL	**141**	**100**	**105**	**100**	**76**	**100**

Note: The percentages are from the column totals in each category

Source: Questionnaire survey in January 2005

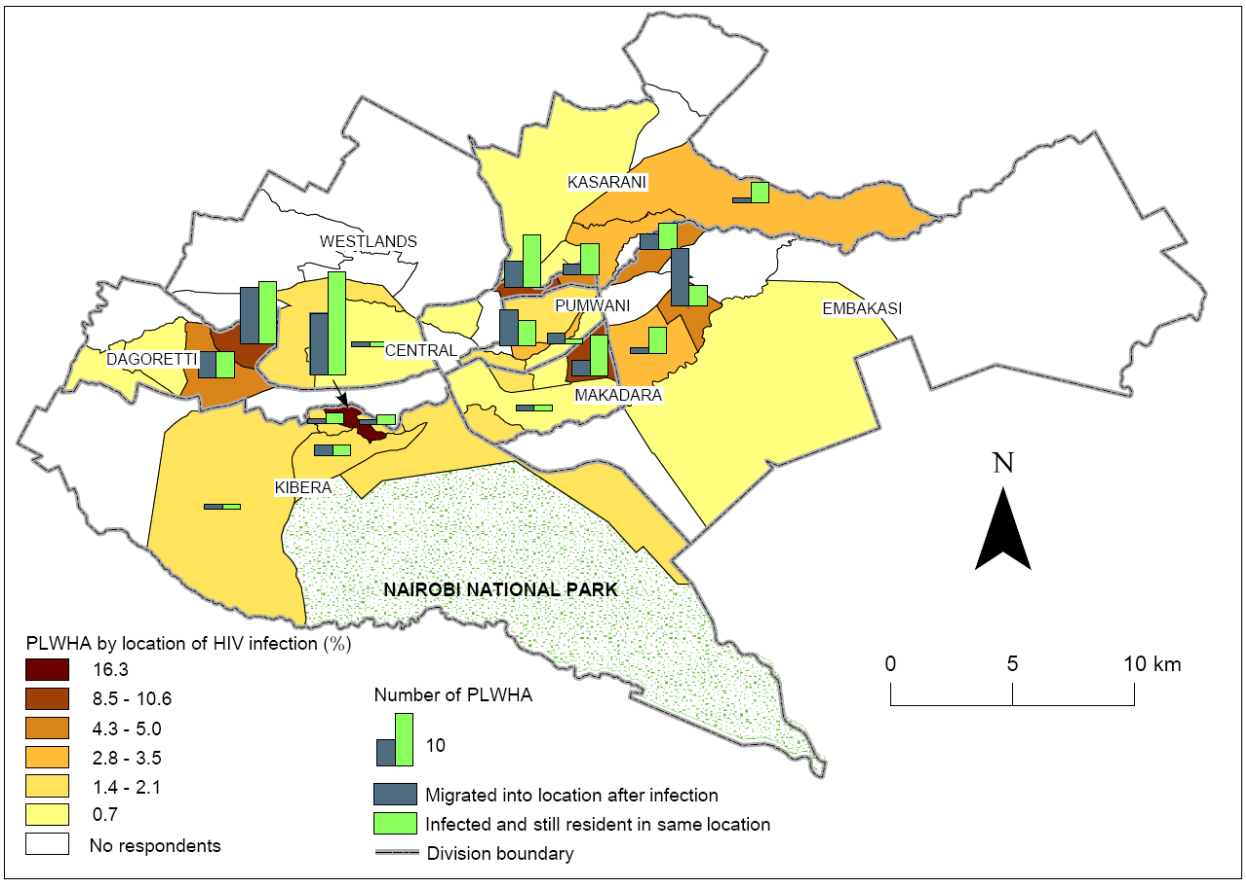


Figure 3-7: Spatial pattern of location of residence at time of HIV infection and residential migration choices for the PLWHA. Locations characterised by high rates of infections are also the main residential destination for infected in-migrants.

Source: Questionnaire survey in January 2005

South location in Pumwani division had relatively low percentage of the respondent PLWHA who were infected there (4.3% and 3.5% respectively), but attracted a significant percentage (14.4% and 9.2%) of migrant PLWHA. Low cost of housing, easy access to ARVs, and presence of support groups, and low stigma made these locations conducive to reside for the PLWHA.

3.4.1 Circular Migration

Nairobi is mainly composed of migrants from the other provinces. Migration to the city is mainly circular as many of those who migrate eventually return to their 'rural' origins in the short term or in the long term. In the interim, they maintain a continuous link with their places of origin through visits. Migrants in Kenya, especially those in the urban areas often visit their home during festive occasions such as Easter, usually in April, or at Christmas in December. These periods are usually marked with revelry as many of the migrants return home with some earnings acquired in the urban areas. It has been reported that there are increased number of reported STD cases after the festive seasons, an indicator of disease diffusion from the urban to the rural areas, and a defined pathway for HIV/AIDS diffusion.

The majority of the respondents (91%) have a rural home outside the city (Table 3-9). The highest number was from Nyanza, followed by Central, Eastern and the Western provinces where more than eighty percent of the survey population originated. The respondents maintained a high link with their rural home; visiting between one and five times in a year. Over 50% of those from Nyanza and the Western provinces visited home either once or between two and five times, suggesting a high possibility that the visits were made during the festive times, a period with heightened risk of HIV and other sexually transmitted infections (STIs).

3.4.2 Factors Influencing Migration by the PLWHA

The respondent PLWHA who had migrated into or within the city gave a number of factors/reasons that influenced their migration (Figure 3-8). The cost of basic living, family

Table 3-9: Number of respondent PLWHA by frequency of visits between Nairobi and their home province

Home province	Percentage visiting 'rural' home by number of times in an year												TOTAL	
	>12		6 - 12		2 - 5		1		never		N/A			
	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%
Nairobi	-	-	-	-	-	-	-	-	-	-	18	(9.1)	18	9.1
Central	3	(1.5)	2	(1.0)	9	(4.6)	19	(9.6)	7	(3.6)	-	-	40	20.3
Coast	-	-	-	-	1	(5)	3	(1.5)	2	(1.0)	-	-	6	3.0
Eastern	4	(2.0)	2	(1.0)	8	(4.1)	5	(2.5)	9	(4.6)	-	-	28	14.2
North Eastern	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nyanza	1	(0.5)	1	(0.5)	33	(16.8)	19	(9.6)	8	(4.1)	-	-	62	31.5
Rift Valley	1	(0.5)	-	-	5	(2.5)	2	(1.0)	2	(1.0)	-	-	10	5.1
Western	1	(0.5)	1	(0.5)	15	(7.6)	9	(4.6)	5	(2.5)	-	-	31	15.7
Outside Kenya	-	-	-	-	1	(0.5)	-	-	1	(0.5)	-	-	2	1.0
Total	10	(5.1)	6	(3.0)	72	(36.5)	57	(28.9)	34	(17.3)	18	(9.1)	197	100

Note: Values in brackets are percentage of the total respondents

Source: Questionnaire survey in January 2005

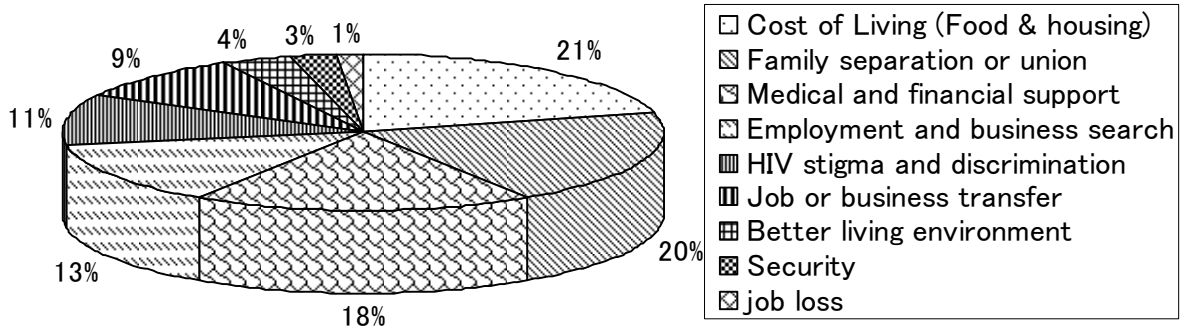


Figure 3-8: Factors influencing residential migration of the respondent PLWHA into and within Nairobi (n = 76).

Source: Questionnaire survey in January 2005

re-union or separation, and seeking of medical and financial support were the major reasons for residential shift. Out of 60 of the respondents who had migrated or changed their residences, 21% were due to cost of basic living, 20% moved to either join or separate from their families, and 18% moved to seek medical and financial support. Family reunion mainly resulted when a separately-living partner moved into the city, while many separations were mainly because of disagreements related to HIV/AIDS origin among couples. HIV/AIDS-related stigma and discrimination constituted other important factors compelling residential shift, while security was the least among the reasons (Figure 3-8).

While the stated reasons for residential migration apply to the respondent PLWHA, most do apply also to the majority of migrants in the city whose incomes are inadequate to afford the living demands of better residential environment. In addressing the factors that lead to concentration of PLWHAs in certain localities, sustainable solutions applicable to all migrants would offer the best solution.

Chapter Four

Dynamics of HIV/AIDS: A Life Course Perspective

4.1 Life Course Approach and HIV/AIDS

The Life Course Perspective conceives of the life course as reflecting the transitions occurring in the different domains of life through which individuals make adjustments to changes in their social environment and through which an their statuses in education employment, relationships , family life and health are maintained and developed. The life course is the product of sets of interactions between biological predisposition, personal agency and the social environment. In order to develop a better understanding of the HIV/AIDS pandemic in Africa, Araia (2003) argues that, an integrative life course approach is important in conceptualising the link between socio-cultural factors and HIV risk as it integrates the historical and cultural location of an individual's life, the linked nature of human lives in social relationships and the human agency of individual lives in relation to the timing of life events, and; the multi-level perspective of life course approach recognises the location of individuals in a hierarchy of social structures and thus enables the analysis of cross-level causal relations. The life course approach is creative in integrating different traditions of looking at social structure and individuals' lives through its four principles namely: the principle of historical time and location, the principle of linked lives, the principle of agency, and the principle of timing.

The first principle recognises that lives are embedded in different cultures and at different times, the principle of linked lives looks at the social ties in the life course of an individual, the principle of agency concerns individual's perceptions, behaviours and decisions, while timing is

the principle through which all the three principles are channelled. The principle of historical time and location recognizes that individual behaviour is shaped by the historical times and places a person experiences over his or her lifetime. For example, culture is not constant but varies according to time and location. The principle of linked lives recognizes that culture itself is mediated through a person's social relationships and networks. For example, gender perceptions and expectations, which are critical factors in the HIV/AIDS pandemic, are instilled by the society as a whole, but are reinforced or altered by peer pressure.

The principle of agency is influenced by the principles mentioned above. In addition, the agency is related to the individual's characteristics such as education, temperament, intelligence and so on. It is the changes in the agency that eventually determine the course of the HIV/AIDS epidemic. The principle concerns the timing of life events as a strategic adaptation by the individuals.

The timing of events is the common medium for linking the human agency, social relationships and geographical and historical locations to account for the shape of the individuals' life course. For example age at first sex is a time marker but it is also determined by where it happened (in or away from one's home town), under what conditions (peer pressure or in marriage), and with whom (a prostitute or a marriage partner). Biological timing, that is timing of maturation and aging, is another dimension in the timing of events, as differences in biological timing affects individual behaviours and social expectations.

To understand the various socio-cultural factors affecting biomedical mechanisms of HIV transmission and the relative risks across social and cultural groups and periods, individuals' life course events are necessary. Longitudinal studies on cohorts are said to be the best in capturing life events and their timing in the life course paradigm. However, with the urgency required in controlling the spread and impacts of HIV/AIDS in sub-Saharan Africa, longitudinal data collection may not be feasible. The utilization of any available data that incorporates life events is recommended.

4.2 The Life Course of People Living with HIV/AIDS

Unlike in the case of other infectious and chronic diseases that result from direct effects of the environment on the body's physiology, the social environment is usually the main influence in the infection rates of HIV. Cultural and socio-economic factors influence the life course pathway taken by individuals, which in turn affects the degree of risk in getting HIV infection. Aiming to understand events in life that places persons in the risk path of HIV/AIDS, this chapter explores on the life course of ten persons already infected with HIV with an emphasis on their spatial location and implications in the dynamics of the HIV/ AIDS epidemics in Kenya.

4.2.1 General Characteristics of the Interviewed PLWA

Six men and four women, all members of self-help PLWHA associations, were interviewed in detail regarding their life course. Four were single, one divorced, three widowed, while two were married. They are within the range of thirty to forty-seven years old. Except for one, all the others have dependants. The divorced and the widowed attributed their current marital situation to HIV/AIDS; the widowed had lost their spouses to AIDS-related deaths, while the divorced had separated due to disagreements and quarrels concerning the source HIV in their midst. They were from the Kikuyu, Luo, Luhya and Kamba ethnic groups; the four major ethnic groups in Kenya.

Seven of the interviewed had post-high school training; two reached high school, while one attained only primary level education. They were engaged in a variety of occupational activities that ranged from social work, to counselling, to clerical and management duties; their incomes varied widely too. All resided within the city of Nairobi, but none considered it a home, despite two of them having been born there. The section below gives the ten case studies of the interviewed PLWHA. Their real names have been altered to conceal identity; other information that may lead to individual identification has been omitted too.

4.2.2 The Case Studies of Persons Living with HIV/AIDS

Case Study 1

Chris (not his real name) is a thirty-six year old married male, working as an administrator at a HIV/AIDS clinic in one of the major hospitals in Nairobi. He tested HIV positive in 1995, but confidently claimed to have protracted HIV in 1992. Chris was born, brought up and educated in Nairobi where he obtained his primary, secondary as well as professional training. His parents were migrant labourers who earned their living through tailoring employment in Nairobi. Their income was quite low and could only afford residence in the low-income residential areas of the city. Like many migrants to the city, Chris parents maintained a rural homestead in the Nyanza province, back to where they returned after attaining their retirement age.

Chris started living independent of his parents at the age of twenty-two soon after he got his first job. His working history shows that all his working experience was in Nairobi. His migration within Nairobi was in search of better living environment that was cleaner, safer, and secure. His changes in employment affiliation were mainly due to job loss brought about by change in company structure and policies, and in search of better remuneration. The changes in employment and occupation did not seem to influence the choice and time for migration destination.

Perhaps due to the influence of the contemporary urban living environment, Chris had his first sexual intercourse at the age of twelve. Despite this early experience, he got married at twenty three, reporting only one sexual partner who became his wife. Chris reported that he got HIV infection through sexual intercourse. He only realised his HIV status when he was already three years in marriage, citing his close friend, and now his wife as the source of infection. Despite having heard about HIV and AIDS by 1988 while at the age of 19, Chris still contacted the virus. Chris contraction of the HIV is an example of contagious diffusion resulting from already contaminated neighbourhoods that have high probability of infection levels. The failure

of not using protective means before knowing one's HIV status, especially in an environment that is likely to host an extensive sexual network, may result in higher probabilities of infection, as witnessed in the case of Chris. Contagious diffusion is the strongest mode of spatial spread of the disease in such neighbourhoods where the rate of people's contact is high.

Chris was in touch with his rural home in Nyanza province. His main reasons for travel to the rural home are visiting parents and for societal functions such as burials and weddings. Chris travelled to the rural areas monthly, staying usually for two days. High rates of sexually transmitted infections in the rural areas have been associated with high seasonal migration to the rural areas by migrants from Nairobi (Zulu *et al.*, 2004). Migration habits similar to that of Chris may be contributing in the diffusion of HIV between the city of Nairobi and the rural areas, especially during the festive seasons when reckless sexual behaviour is most likely.

Chris is a member of three PLWHA self-support groups reported to gain psychological support from sufferers like him; he is able to obtain also more education on how to manage ailments resulting from HIV/AIDS, as well as participate in lobbying for the rights of the PLWHA. In his viewpoint, he stressed the need for more education and information on the various modes of HIV transmission with emphasis on preventive ways in combating the spread of the epidemic.

Case Study 2

Mutua (not his real name), a forty-nine year old married Christian male was born in Machakos district, Eastern province of Kenya. He only attained primary level education, after which he engulfed into handicraft business in his rural home before migrating to Nairobi in search of better business opportunities. Born in a polygamous family of eighteen children, his parents could not afford to take Mutua through secondary school; therefore, he had to start working in order to assist his parents in the up-bringing of his younger brothers and sisters.

After finishing his primary education, Mutua underwent circumcision at the age of 18 according to the Kamba ethnic community practice. He moved to Nairobi at twenty, and married

by twenty two. He stayed in Nairobi for business, while his wife stayed in the rural areas, in the Eastern province for the period 1982 to 1999. He used to make frequent visits, once in a month or in two months; sometimes his wife used to visit him too in the city, but only for a short duration.

In the period 1994 to 1998, Mutua's business took him across the border to neighbouring Tanzania, and sometimes as far as Zambia. It was during the business trips in 1998 that he got involved into casual relationship with a fellow female trader. He recalled that their sexual acts were mainly in Dar es Salaam, Tanzania, in which he used condoms, but says that inappropriate use or rupture of the condom during intercourse could have resulted in HIV exposure. He only realized his HIV-positive status in 2005 after he started getting sick in 2005.

Besides that single extra-marital relationship, Mutua did not engage in any other sexual relationships. Mutua's case is an example of the role of sexual networking in the diffusion dynamics of the HIV/AIDS epidemic. Influenced by cross-border trade, and spatial distance from his spouse, and peer pressure from fellow traders could have had influence in the sexual behaviour during his business trips.

Mutua now lives together with his wife since 1988, engulfed in counselling people who are infected or affected by the HIV/AIDS epidemic, and running a small-scale retail shop business. He coordinates a self-help association of PLWHA within Kibera location, of which he said provided a platform for getting funds from well wishers, non-governmental and the government for projects that improve on the living conditions of the infected, and the many orphans left by the dying patients. The PLWHA associations also served as entry point in providing counselling, and discussing matters relating specifically to the community infected and affected by the HIV/AIDS epidemic.

Mutua attributed the high presence of persons with HIV/AIDS in Kibera and surrounding locations, mainly covered by slums, to low stigma in these areas and to the higher concentration of many international and local non-governmental bodies whose target groups were the PLWHA

and poor population. In addition, he stressed that these localities are characterised by higher density of vulnerable population where high presence of infection was also occurring.

Case Study 3

Onyango (not his real name) is a forty-eight year old widower, born in Migori, Nyanza province. He had his primary and secondary education in Nyanza province, before migrating to Nairobi in search of employment. While working in Nairobi as a clerk, he was able to obtain college training in accountancy, a profession that he was dependent on as a freelance bookkeeper at the time of the interview.

Onyango started living independent from his parents in 1981 after migrating to Nairobi. Soon after, he had his first relationship and sex in the same year. At 29, he impregnated a girl, who later became his wife. Onyango reported of having numerous sexual relationships in the period between 1981 and 1986 in Nairobi, and at his rural home in Nyanza province. After his marriage in 1987, Onyango did not enter any other sexual relationship. He cited the source of infection as his wife, who was working as a nurse in Homa Bay in Nyanza province; a likelihood of contamination during her working as a nurse, eventually transmitting the virus to him through sexual intercourse.

After moving to Nairobi, Onyango resided briefly in a middle-income residential area, before moving to the low income and crowded Sera ngombe Location of Kibera division. This could have been mainly because of the high cost of living in the city coupled with demands of remittance of income back to the rural family (parents and younger siblings). Durations of unemployment, very low income jobs, may have influenced his choice of residential area in Nairobi.

Migratory pattern in Onyango's life course is between his rural home in Nyanza and Nairobi. He also cited, periods of long separation from his wife in 1989 to 1993 and from 1997 to 1998, when his wife migrated to Tanzania for nurse training, and when she started working in

Nyanza province while Onyango worked in Nairobi. Long period of spousal separation is likely to encourage extra-marital affairs, especially among the men in urban areas. Men with relatively decent income face increased 'risk' of having multiple partners since they become obvious targets for women who are having difficult time making ends meet (Zulu *et al.,* 2004). In an environment such as the one Onyango was living (slums), such is the characteristic.

Onyango said that being a member of a PLWHA group was beneficial through sharing problems, encouragements, and participation in antiretroviral treatment programs administered though the group. He said that continuous usage of condoms, abstinence, and revealing one's HIV status as good ways in managing the spread of the HIV/AIDS virus.

Case Study 4

Pamela (not her real name), a thirty-year old single woman, has two children; one her own and the other adopted. She is a Muslim by religion, born among the Luhya ethnic tribe (who form a large percentage of the Western Bantu) in Western province of Kenya in a family of three sisters and two brothers. She had her upbringing, primary and secondary school in Western province of Kenya, while she resided with her parents. Pamela's case, being a Muslim, shows that HIV/AIDS has no religious boundaries despite the fact that Islam-dominated regions have low levels of HIV prevalence.

After her high school, she moved to Mombasa at the Coast province and lived with her sister for four years before migrating to Nairobi in search of employment. In Nairobi, she has worked as a hairdresser, earning as little as Ksh. 7,000 and later as a community social worker, working mainly to encourage the Muslim community to take HIV tests.

Pamela had her first relationship with a boy at the age of fifteen, during which she had her first sexual encounter and got pregnant. She has been in three relationships since: one in her home region in Western province, and the other two in Nairobi. It is from her second relationship in Nairobi that she believes she got HIV infection. Her boyfriend was a trader whose work

involved travel between the Nairobi, the capital, and Mombasa (the second largest and port city of Kenya). During this relationship, she was living in Kibera division of Nairobi. Pamela only got to use the condom after she had known of her HIV status.

Now, HIV-positive, a member of a PLWHA group, Pamela advocates for the promotion and consistent and proper use of the condom, reduction in stigma and discrimination against people already infected with HIV/AIDS, for the successful reduction in the spread of HIV. Pamela says that through counselling and sharing experiences among the members of the PLWHA groups, she is able to grow stronger each day and be able to cope and focus ahead with life. For effective and better uptake of HIV antiretroviral treatment, Pamela feels that there should be more funding through the PLWHA organizations and literacy training on treatment. This is due to fact that continuous and right dosage and food intake is the prerequisite for improvement on the bodily strength of a PLWHA.

Case Study 5

Ann (not her real name) is a thirty-eight year old widow, whose husband died of AIDS-related illnesses in 2001. She was born in Kakamega in the Western province of Kenya, but moved to Nairobi with her parents when she was two years old. She started her primary education in Nairobi, but later transferred to a boarding school in the Western province of Kenya. She moved to Nairobi for her secondary school while living together with her parents. She started her career in counselling late in life, after she already knew her HIV-positive status.

Having been brought up by parents who resided mainly in Nairobi, Ann has had her life course markers mainly in Nairobi. She took alcohol, smoked cigarettes and light intoxicants while living with her parents in Nairobi. At the age of seventeen, she had her first sexual relationships with a person who was older than her. She got married in 1987 and got pregnant in the same year.

Despite coming from Nyanza province as most of the people from her Luo tribe, her rural

home is in the Western Province. Nevertheless, her current partner resides in Nyanza province. She cites polygamy and wife inheritance as cultural practices still active among her tribe, a good example being that of her husband who became polygamous in the course of their married life.

Ann realized that she was HIV positive during her second pregnancy in 1990. She was not sure of the source of infection, though she suspected her husband to have had numerous relationships before their marriage. Ann suggests the use of media, as platform in the mitigation efforts, and better understanding of the cultural backgrounds influencing transmission rates among the ethnic communities. She advocates the use of spoken media in strengthening mitigation efforts.

Case Study 6

Sarah (not her real name) is a thirty-five year old widower, whose husband died in 2001.She was born, raised, and educated in Nairobi. Both her parents had jobs stations in Nairobi, during her schooling. The parents were usually present at home, except for some occasions when the father travelled abroad for training and work.

Sarah is a good example of peer pressure, as she explained. She said that her first sexual intercourse, which was not on consent, made her pregnant requiring her to get an abortion. At twenty one, she had already used a condom, as a protection against pregnancy.

Sarah learned of her HIV-positive status in 2001, but was not certain of when she got infected as she had been in marriage since 1994. She claimed to have contracted the HIV from her husband, as she had no any other partner during her period of marriage. Her husband, an advocate by profession started getting sick, and it was after his death that Sarah got tested for HIV. Though having heard of HIV/AIDS by the age of nineteen, Sarah had already engaged in risky behaviour through unprotected sex even before her marriage. Nevertheless, as she already had uninfected children with her husband in the earlier years of marriage, Sarah was in no doubt she got her infection through sexual contact with her diseased husband.

Sarah, a member of a PLWHA association has the opinion that the spread of HIV/AIDS can be controlled by the use of condoms even among the infected in order to avoid re-infection, relentless campaigns on awareness especially among the children. The PLWHA groups are beneficial in the shared experiences, on how to cope with treatment of opportunistic infections and intake of antiretroviral drugs (ARVs) and on nutrition necessary in accompanying the treatment.

Case Study 7

Peter(not his real name), a thirty-three year old, single, Christian male, tested HIV positive when he was just starting his career life after completing his diploma training in a local college in Nairobi. A first born in a family of four, Peter's condition could be a big blow to his parents and family, once they learn of his HIV status, but he has kept it secret; thanks to the antiretroviral treatment that has kept him looking healthy despite his illness.

Peter was born in Murang'a district in the Central province of Kenya. His parents put him in a boarding primary school while he was in mid-primary school as they relocated from the Central province to Nairobi. Peter proceeded with his secondary school in a boarding school, and then joined a technical college in the city of Nairobi. His career life started and was still, at the time of the interview, in Nairobi. His upbringing was in two places: once, he was in the boarding school most of his young life in Central province, and in Nairobi, where he joined his parents' during school holiday. As he summarises it, his life falls into three residential epochs; his early schooling life in Central province, living with parents in Nairobi, and living on his own in a different part of the city.

The urban environment could have been an influence to his behaviour. At the age of twelve, Peter had his first sexual experience with a lady who was far much older than he was while still residing with his parents. At the age of fifteen, Peter was in a boy-girl relationship. At the age of eighteen, Peter used a condom for the first time. Among the Kikuyu community,

circumcision for boys was mainly the transition from boyhood into adulthood. It was easier for Peter to get into sexual relationships with any girl after having undergone circumcision at the tender age of 13 years. During his high school, Peter started smoking and tried the use of marijuana, due to peer pressure.

After high school, Peter, now residing fully with his parents in Nairobi, started relationship with opposite sex more diligently, some of which involved casual sexual relationship. The relationships were mainly localised to his residential area. It is in such relationship that Peter got infected, learning of his status by 1996 on the completion of his diploma. Despite having known his HIV status, Peter has been in three other close relationships. In case of not using condoms consistently or properly, such relationship may heighten the transmission rates of the HIV/AIDS pandemic. Due to the stigma and discrimination, Peter intended to shift from his current residence for privacy reasons.

Case Study 8

Mary (not her real name) is a thirty-one year old single female. She was born, and brought up in Nyeri in the Central province of Kenya. She had her primary, secondary and college training in institutions within her home locality and in the neighbouring administrative district, and later migrating to Nairobi in search of employment and better economic opportunities.

It is after Mary migrated to Nairobi, being independent from her parents, when she got into her first sexual relationship. Mary's first sexual encounter was casual, which implies that she did not have enough background knowledge on her partner, and neither did she intend to have the relationship for a long time. Mary reported to have had three partners since 1998. She suspects to have contracted HIV from her second boyfriend in 1999, but only realised her status in 2004. Despite having had of the risks of HIV since she was eleven years old, Mary never gave it a thought that anyone could get infected. Like many women who financially depend on men,

Mary may have thought that the use of condoms could have made her lose her boyfriend.

Mary, a member of a PLWHA association calls for the creation of more awareness for the testing of HIV before people get into sexual relationships, especially those that were bound to last for a time, where the use of condom would not be consistent.

Case Study 9

Wafula (not his real name) is a single, thirty year old male, born in Bungoma district, Western province of Kenya. He is the third born among eight children of primary school teachers. He received his primary and secondary education at institutions close to his rural home, later migrating to Nairobi to pursue his college education. After his college training, he got his first job within the city of Nairobi, where he worked only for one year. In 2002, he got his second employment as a librarian, but his failing health could not allow him to continue. He current works as a volunteer in HIV/AIDS related work.

Wafula, a Luhya by ethnicity, got circumcised at the tender age of eleven years. By the age of fourteen, Wafula had his first sexual encounter, a product of peer pressure. After migrating to Nairobi, he got involved in two other relationships, one of which he impregnated a woman. Wafula, suspects to have gotten infected in 2003, from sexual intercourse with a girlfriend who was carrying out business in the city.

Wafula keeps constant contact with his rural origins where his parents and siblings reside by visiting his rural home three times in a year, during which he stays for two days.

Case Study 10

Steve is a thirty-three year old male, separated from his wife. He was born in Nakuru town in the Rift-Valley province, and resident of Nairobi at the time of the interview. His father's job transfer from Nakuru to the city of Nairobi influenced made him to have his first years of schooling in Nairobi. However, transfers led him to have the rest of his primary

education in his rural village in Migori, Nyanza Province, later moving to Nairobi city for his high school education. After his high school, he did not obtain further training, but engaged in small scale second-hand clothes business.

Similar to the typical migrant's lifestyle, his parents had two homes, a rental one in the city, and a rural home in Nyanza province. The parents were living separately, as the father's income was inadequate to support the family to live in the city. The father worked and resided in Nairobi, visiting his rural home only once a year, while his mother and the children resided in the rural areas.

At the age of sixteen, Steve had had his first sexual experience, with a girl of twenty-five, through casual encounter. By the time he was seventeen, he impregnated a girl. Steve reported to have smoked, used some illicit drugs, and had taken alcohol at the age of 18. He got married at the age of 22. Despite the earlier sexual encounters, Steve used protective means only at the age of 28 years. He tested HIV positive in 2000, but thinks that he could have been infected in 1995 after the marriage, thus thinking that the most probable source of infection would be his wife. Both were living within the city boundary, in Makadara, and Pumwani divisions. Steve separated from his wife during his ailment. Since his separation, Steve has had a chain of relationships, all of which have been within Nairobi. Two of the relationships were with ladies in the same neighbourhoods; while others were though the network of PLWHA groups he joined and in Kibera division, in spite of the fact that Steve was already HIV positive and ailing with AIDS.

Steve says that he gets encouragement to live through fellow PLWHA group members, and advocates for relentless awareness campaign to reduce the spread of the HIV/AIDS epidemic.

4.3 The Life Course Pattern of the Interviewed PLWHA

The above ten case studies give an insight into the lives of persons infected with HIV/AIDS. Despite being limited in nature due to the fact that only one person in the infection

chain could be interviewed, the case studies do offer different situations leading to HIV infection and characteristic of the spatial diffusion. These illustrate the nature of the dynamics in the patterns and spatial diffusion of the epidemic at the individual and societal level.

An individual's culture and behaviour is a product emanating from the environment where one grows up. This is at great length determined by the parents' ethnicity and socio-economic characteristic. The level of each of the cultures (ethnic and contemporary) determines ones behaviour and attitude towards sex. The parents, and individual socio-economic status determines migration reasons and patterns, influences residential choices, and thus levels of risk exposure in contracting HIV, especially in the urban environments. The interplay of these factors within the country and at the local level controls the rates of spatial diffusion and patterns of the HIV/AIDS epidemic. Figure 4-1 illustrates the life course of the ten interviewed cases, using the progress from birth, through schooling, and career as the life course event markers.

Education and upbringing

Cultural values and norms are acquired from parental guidance as well as from the community that one grows in during early formative years. Matters relating to sexual behaviour, gender roles, and societal expectations are instilled by parents, the extended family, as well as by the community that one is living in as well. Traditionally, the life course traversed through several customary rituals and passage of rites which started from birth, through adolescence, marriage, adulthood and into death. The customs and cultural practices varied by ethnic groups; however, there were similarities also in some instances. The entry of western culture and religion into Kenya, coupled with modernity and changes in lifestyle, many aspects of the traditional customs and cultural practices have changed. While some customary practices and their significance have eroded with time, others remain ingrained in the ethnic communities. Examples of some significant cultural practices, said to influence patterns of HIV/AIDS today, include circumcision, polygamy, and wife inheritance. Male circumcision reduces the rate of

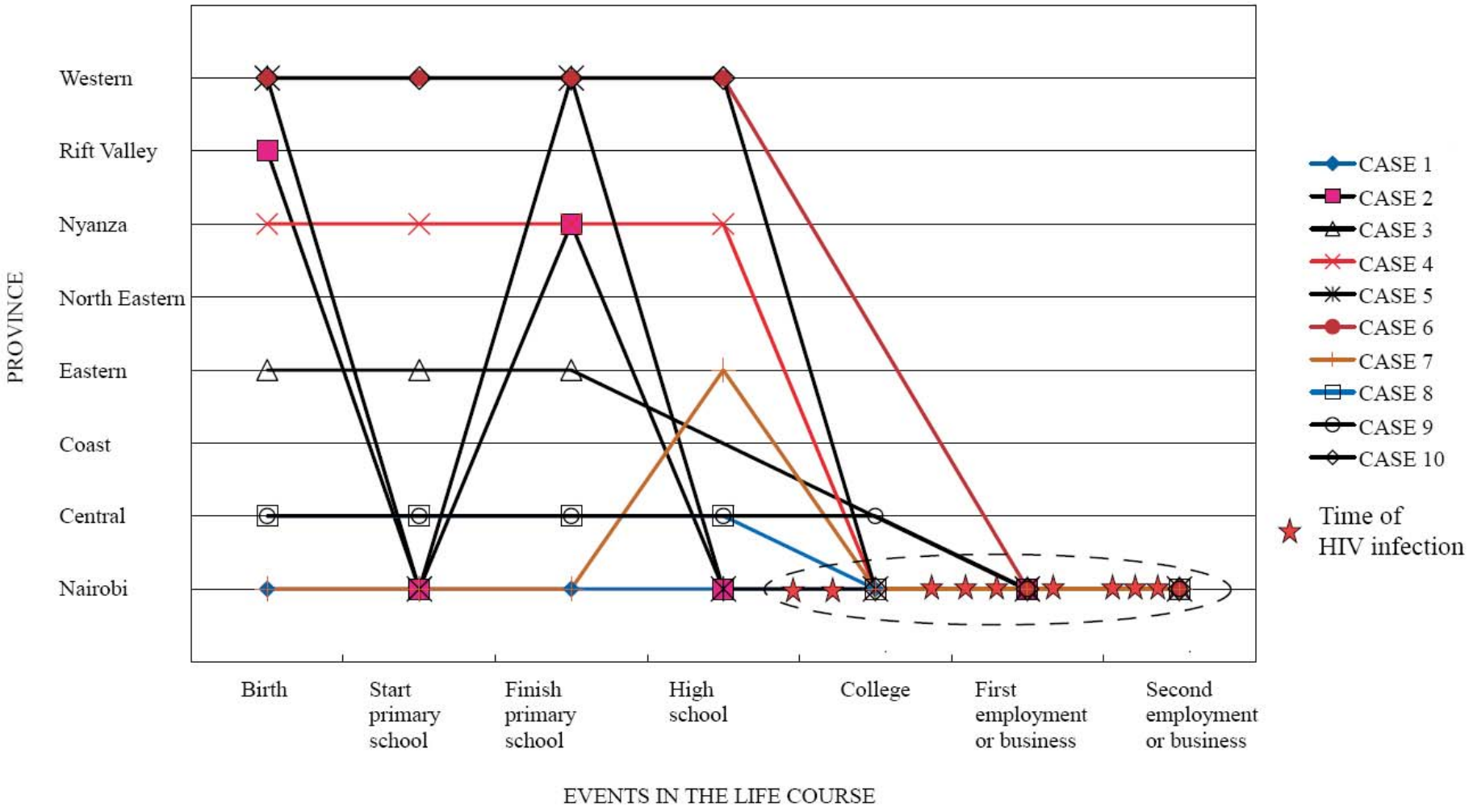


Figure 4-1: The life course pattern of ten persons living with HIV/AIDS who were interviewed by the researcher.

HIV infection; its absence increases the risk due to the presence of the foreskin on the male penis. Polygamy on the other hand increases the risk due to exposure to many sexual partners.

Formal schooling, monetary-based livelihood, and better communication between the various parts of the country, have had their influence in changing what constitutes the life course of many Kenyans. Straddling different environments during the life course, especially in the early formative years, exposes one not just to a single culture confined to his/her own ethnic community, but to a variety of cultural environments and lifestyles that may influence the behaviour at the time or even at later parts of life. Values instilled by the community in one environment are lost or strengthened in another (Araia, 2003).

The parent(s)' residence, school location, and /or parent(s) place of work define the environment and community that one grows in during the early childhood and adolescence. As noted by Agesa (2004) while exploring rural to urban migration in Kenya, many migrant families in the urban areas, especially those with low incomes, maintain two homes, one urban and another rural. The household head works and stays in the urban area, while the wife and children remain in the rural areas. Schooling, especially for those migrants whose income cannot maintain the whole family in the urban area, is usually in schools located near the rural home. In other instances, schooling may start in the urban areas, but with rising costs of living, the children get transferred to schools located close to the parents' residence in the rural areas. During the schooling, straddling across the two different environments may result in conflicting cultural views; community norms, customs and cultural practices on the one hand against peer pressure and contemporary culture in the urban environment on the other.

From the interviews, several scenarios of schooling were noted; (1) full time urban schooling and upbringing interspersed by visits to the rural homes mainly during festive seasons; (2) rural upbringing and schooling in early childhood with migration to Nairobi or different locality for the higher education (high school or college); and (3) split schooling, part in the city and part in the rural areas, characterised by school transfers from Nairobi to the home provinces,

or from the rural areas to the urban areas where the parent(s) worked. Post–high school training was mainly in Nairobi; except for one person who attended training in a different province, all the other interviewed had their post-high school training in Nairobi. This usually defined the beginning of period for independent living.

Indulgence in habits that are associated with increased health risks start as early as teenage. Habits such as smoking, use of alcohol, and stimulants usually started in the high school and post–high school training, a resultant usually from peer influence. Entry into sexual relationships also began during this period. Out of the ten interviewed, three had smoked cigarettes and marijuana, and taken alcohol while still under their parent's care. However, all interviewed had had their first sexual experiences by the age of twenty-four, and in spite of the fact that most were still residing with their parents. Religious teachings and parental presence, reported to have been part of the growing up process, did not seem to have had any influence in delaying entry into sexual activities.

Career and migration

All of the interviewed PLWHA started their occupation in the city of Nairobi. The urban areas have better economy than the rural areas in Kenya; institutes of higher learning, as well as formal and informal economic activities are also concentrated in the urban areas, with the highest concentration in Nairobi. The city provides better economic opportunities than the rest of the country, with the informal sector earnings better than in the rural areas. With deteriorating rural economy, more and more people join the urban job market. Low pay, rising unemployment, and rising cost of living in the urban areas, may increase the need for alternative income sources, including prostitution, sex-for-support liaisons, that increase the risks of HIV infection.

Regular contact through frequent visits to the rural home ensures a continuous link with one's ethnic cultural and societal practices that are different from the contemporary culture in the urban areas. The major reasons stated for 'rural' home visits were visiting parents, attending

wedding and burial ceremonies, and participation in festivities during long holiday periods in April and December. Other reasons cited were visiting spouses and children, for those living separately. Though not explored in this research, the frequent visits between the rural and urban areas have implications in the levels of HIV prevalence both in the urban areas and in the rural areas. Some studies had revealed that increased cases of sexually transmitted infections in some rural areas after festive seasons could be due to the seasonal migration of a large number of people from the urban areas (Zulu *et al*., 2004).

Sexual and union events

Events in the life course involving sex mainly start in adolescence. First sexual experience is usually a factor of age, cultural and moral values, and, social and geographical environment (Araia, 2003). In several of the ethnic communities in Kenya, circumcision, a rite of passage that marks the transition from childhood to adulthood, was a marker from where matters relating to sex and adult life began. Sex education was usually introduced during this rite of passage. It also marked the point where one could enter into marital relationships. This age varied from early to late teenage across ethnic communities. Though circumcision is still in practice, the traditional values and teachings accompanying the rites are dying, especially among those whose lifestyles were already affected by modernity and urbanization.

The interviews revealed that entry into boy-girl relationships varied widely from early adolescence into the early twenties. Among the interviewed, the earliest sexual experience reported was at the age of twelve, while the latest was at twenty-three. First sexual experiences were mainly casual resulting from peer influence, though a few especially those occurring in the earlier twenties were in girl-boy relationships. Living with parents did not have much influence in detouring indulgence in the sexual or boy-girl relations as parents hardly discussed matters relating to sexuality and relationships with opposite sex with their children. Seven of the interviewed were still under their parents care, and living together when they had their first

sexual experiences. However, as the locality of first sexual relationship occurred when the interviewed were within the city of Nairobi, influence of peer pressure may have prevailed.

From the interviews, it became evident that concurrent partnership and multi-partnerships was common before marriage. Sexual relationships usually develop around the environs that one is residing, working, or frequents. There is hardly use of condoms in relationships that are running for a period. None of the interviewed reported the use of condoms before the realisation that they were infected with HIV. Those married claimed the source of infection to be their spouses, while the single ones pointed to certain partners as sources of infection. However, with concurrency of partnership, the transmitting partner certainty was of doubt. HIV infection of partners before marriage was also a high possibility. An example is a lady whose husband developed symptoms of AIDS a few years after their marriage; an indication that HIV infection may have occurred before their marriage.

Most of the ethnic groups in Kenya practised polygamy. This culture has slowly been diminishing with the adoption of Christianity and changing lifestyle. Nevertheless, the custom is still in practise among some communities, especially in the rural areas. One of the interviewed commented that despite low polygamy among the Kikuyu, the habit of having mistresses among the Kikuyu ethnic community men could be a major factor in the diffusion of the epidemic in Nairobi, especially when a woman has several married men as supporters. In such relationships involving financial support and termed as ‘close’, use of protective means against HIV or sexually transmitted infections was unlikely. Where married couples are separated, and the family maintains a rural home where the wife usually stays, the diffusion of HIV finds its way from urban areas into the rural.

Knowledge and living with HIV

Most of the population in Kenya have the general awareness of AIDS. According to the Kenya Demographic and Health Surveys held in 1998, over 99% of Kenyans in the reproductive

age (above 15 years old) reported to have heard of AIDS. However, the percentage that knew the specific ways to control its transmission was lower; 92% men and 86% women believed that there were ways to avoid HIV/AIDS (Kenya Central Bureau of Statistics (CBS) *et al.,* 2004.)

Knowledge about HIV/AIDS started as early as the mid 1980s when AIDS presence in Kenya was realised. From the interviews, the earliest had heard of HIV by 1985, while the latest to hear of HIV/AIDS was in 1998. Except for one person who did not know the mode through which she got infected, all the others stated sexual intercourse as the mode of transmission. Two claimed to have obtained infection through casual relationship, four from close friends, and three from their spouses.

The life course of the PLWHA includes the period during which one is infected. Depending on one's immunity level and exposure to diseases, the duration varies from a few years to almost twenty years. The use of antiretroviral drugs has altered the life course of those already infected by prolonging the period under which one lives with the disease. From the time of testing, the interviewees had lived with HIV/AIDS for a period ranging between one and sixteen years. However, the duration of infection may have been longer as some indicated that they had known their HIV status after the death of their partners, or after bouts of recurrent illnesses.

Except for one who stated to have been infected during a business trip out of the country, all the others indicated that they were infected while residing in Nairobi. This finding strengthens further the findings in Chapter three which showed that the highest percentage of infections within the city of Nairobi were from within. With the knowledge of ones' HIV status, the rate of transmission gets reduced with the adoption of protective methods. However, continued sexual activity with several partners, indicates the possibility of continued spread of the virus.

Joining self support groups constitutes a part of the life course of the PLWHA. The PLWHA groups help the infected to share ideas in coping with the emotional, material and physiological problems that result from the HIV/AIDS infection. In these groups, the infected are

able to discuss ways and means to handle stigma and discrimination, besides being an access point to medical and financial support to the infected as well as to the many orphans left behind after the death of their parents. Many of the groups' activities are located in the low-income, densely populated areas of the city.

The period of living with HIV/AIDS is also characterised by mobility, though at low rates, which could have an impact in the spatial patterns of HIV through relocation diffusion. The fear of one's status getting known by neighbours, work mates and in some cases even family had influenced change in residence and work places to some of the infected. Stress brought about by deteriorating health also influenced geographic relocation in order to get closer to places of work and medical care. Other reasons for residential change as indicated in Chapter Three include better housing, lower cost of living in destination residence, medical and financial support, among others.

Chapter Five

Conclusions

Using HIV prevalence data from the National AIDS and STD Control Programme (NASCOP) coupled with primary data collected from a survey on persons living with HIV/AIDS (PLWHA), the objective of this study was to examine the spatial pattern and diffusion characteristics of the HIV/AIDS pandemic in Kenya. Data from HIV sentinel sites that had continuous data in 1996 were used to estimate provincial HIV prevalence values for the period 1990 to 2004, from which each trend curves were derived. To analyse the progression and spatial diffusion of the pandemic, a series of maps were plotted for the period under surveillance. Demographic and socio-economic data from the 1989 and 1999 population and housing censuses were utilized to analyse the factors that may have influenced the regional (provincial) epidemic patterns; 1990 and 2000 were chosen as the two epochs of analysis. Further, to explore the patterns and factors affecting the epidemic at a lower scale of analysis, Nairobi was selected as the study area, owing to its cosmopolitan level in comparison to the other provinces, and being the primate city in Kenya. Using a semi-structured questionnaire, the spatial location of 202 PLWHA was sought at the administrative location level. In addition, a detailed interview on the life course history of ten PLWHA was utilized to explore further the HIV/AIDS dynamics in Kenya.

Prevalence trend curves of the eight provinces in Kenya showed that the HIV/AIDS epidemic was present in all the provinces by 1990, the start of systematic surveillance in Kenya, but at different levels. The Central, Eastern and North Eastern provinces had prevalence levels below 5 %, while the Nyanza, Western, and Coast provinces had the prevalence levels above

10%. Rapid progression of the epidemic at almost similar rates was noted in all the provinces except North Eastern and Eastern provinces, however gradual rise of the epidemic in the Eastern province was noted from the mid to late 1990s, while the North Eastern Province maintained low prevalence of below 10% through out the surveillance period 1990-2004. The prevalence trend curves revealed also that the epidemic peaked at different times, starting with the Rift Valley in as early as 1990, to as late as 2000 for the Nyanza province, and the North Eastern province, from whence all the provinces had steadily dropping trends.

Trend map of the epidemic across the province from 1990 through 2004, showed an epidemic that started its diffusion from the western part of Kenya and most probably, to the Coast province, before eventually penetrating the rest of the country. This is corroboration to other studies on the role of the Mombasa-to-Uganda highway, whose main stops and longest waiting terminus for trucks are the port city of Mombasa in the Coast province, and Kisumu and border towns in Nyanza and Western Provinces of Kenya. Low prevalence in North Eastern Province reveals low spatial diffusion into the province, while the other provinces show steady diffusion rates. Nyanza province showed high rates, reaching 25% and persistently higher that all the other provinces since 1996. The levelling off of the epidemic at different times among the administrative provinces suggested that factors influencing the spatial diffusion of HIV/AIDS acted at different rates among the provinces.

Analysis of HIV prevalence in 1990 and 2000 against the major demographic and socio-economic factors, namely: urbanization, migration, culture, poverty and income inequality showed that the HIV prevalence levels had positive relationships with provincial ethnic groups' composition and poverty and income levels. However, relationship with percentage urban population did not show any relationship, despite the fact that the nationally aggregated prevalence values have been higher than in the urban areas. The use of only a few sites to represent the vast provinces such as the case for Rift Valley and Eastern provinces is not very representative of the real status, therefore calling for addition of surveillance sites for effective

surveillance. There was positive and strong correlation of the HIV prevalence with Western Bantu, Coastal Bantu and the Nilotic ethnic class in 1990, suggesting possible cultural influence in the patterns. However, the correlation remained only strong against the Western Bantu, and the Nilotic group against whom the relationship was significant. The high correlation, especially with the Nilotic groups which is mainly compose of the Luo goes along with previous studies that have focused on the cultural practises among the Luo which enhance HIV transmission, and therefore on its spatial diffusion. The Luo are mainly resident in Nyanza province, which explains the provinces' high prevalence levels; a significant percentage is in Nairobi, the capital city, and a small percentage has migrated to the Coast Province. There was low and negative correlation against other groups such as the Central Bantu, Western Hamitic, Eastern Hamitic and the Nilo-Hamitic. Regional dominance of ethnic groupings in the provinces could be a start point in investigating other cultural factors that may be contributing to the low prevalence levels. For example, the low prevalence in North Eastern province and the early peaking and decline of the epidemic in the Rift Valley Province could be due to regional-based practices that may have reduced the rate of HIV infections such as male circumcision, or the role of religion.

Mixed results observed in the relationship between HIV prevalence and poverty suggests that poverty alone does not explain the heterogeneity in the HIV/AIDS patterns in Kenya. Nyanza province on the one hand with high poverty incidence had high HIV prevalence in contrast to North Eastern province with equally high poverty incidence but showed low HIV prevalence levels. A region characterised by high income inequality is likely to create an environment where supply and demand of sexual transactions is higher than regions with equitable distribution of income.

Survey on PLWHA living within the city of Nairobi revealed further the spatial pattern of the HIV/AIDS epidemic at a lower level and its diffusion characteristics. The survey found the highest percentage of PLWHA to be living in the high densely populated sections of the city. The highest percentage of the PLWHA were the poor, who could only afford living in the

environmentally-unsuitable regions. The cities heterogeneous spatial structure, defined from its historical origins has led to the confinement of high percentage of the population in limited spatial locations, thus increasing HIV infection risks. Though a percentage of the PLWHA were economically better, the progression of the disease reduces productivity, and as resources dwindle, the only affordable place would be in the areas where housing, food and other necessities were affordable.

Except for factors such as stigma and discrimination, and presence of HIV/AIDS support groups that may be specific to the study population of PLWHA, other factors/reasons affecting migration patterns are common to all migrants to the city. With migration to the city continuing, and factors leading to infection of HIV not checked, the HIV/AIDS in the city may continue to be high as it has since the 1990s. The positive correlation of the PLWHA distribution with population density and poverty incidence indicates a relationship between poverty and population concentration in which there are higher risks of infection in the poor, densely-populated regions of the city than the richer areas.

The research, by utilizing a survey methodology on people with HIV/AIDS registered in self-help groups, assumed that the PLWHA form a good spatial representation of the HIV/AIDS in the city of Nairobi. However, there may be a bias in the membership as most of these PLWHA associations are forums for financial assistance. The socio-economically stable PLWHA may not join the groups. Nonetheless, as it is widely accepted that there is a link between HIV/AIDS and poverty the membership to the associations is a good representation of the epidemic's state in the Nairobi. Therefore, an analysis using PLWHA who are members of the groups forms a good entry into understanding the spatial characteristic of the AIDS epidemic in the city.

Since almost 70% of the interviewed PLWHA are reside in just seven locations of the city, this indicates that though factors influencing HIV infections may be present across the city, some neighbourhoods have higher risks due to the concentration of vulnerable populations. In highlighting the spatial distribution characteristics of the PLWHA against Nairobi's urban

structure, the research brings to light the various factors such as overcrowding, unemployment, and poverty that also need to be addressed in order for other mitigation efforts such as abstinence and use of condoms to bear sustainable results. The improvement of economic resources of the city residents could reduce the concentration of vulnerable populations in poor neighbourhoods, which could in turn have an effect in reducing the risks of HIV infection. Improvements in medical infrastructure, especially in the rural areas, can reduce also the migration of PLWHA into the city as they search for medical and financial support.

The investigation on the life course of the PLWHA reveal that upbringing, education, and migration is playing a role in the infection, diffusion and ultimately on the spatial patterns of the HIV/AIDS patterns. Exposure to environments with differing cultural demands place people at higher risks of infection. Affected by macro level economies, the concentration of formal employment and income generating activities in the urban areas causes migration to the urban areas. The interviews on ten case studies reveals a pattern where as one progresses with growth, institutions of higher learning, such as colleges, employments are to be found in the city, which increases the risk of young adults. A pattern where families with low income in the urban areas cannot maintain the whole family, but has to send the children and usually the mother to the rural areas, may be influencing infection rates among separated couples, and exposing children to conflicting cultures. Circular migrations between these two environments result in bi-cultural influence; ethnic customs and cultural practices on the one hand, and contemporary urban culture on the other. At the onset of sexual encounter, casual engagements, mainly in the urban environments, depict the contemporary urban cultural influence which disregards parental and religious upbringing.

The use of primary data from people living with HIV/AIDS adds an extra perspective to the analysis of spatial patterns of the epidemic as it reveals not just the location of risky environments, but conditions that have befallen the people living with HIV and AIDS. Mitigation of the HIV/AIDS epidemic should not only target behavioural change, but must first

address the factors such as poverty and income inequality that influences people to engage in risky behaviour. Regional balance in economic opportunities will reduce migration into the cities, especially to the city of Nairobi. Improved economic status of in-migrants in the city where income levels will be able to sustain families could also reduce the phenomenon of split households. When married couples live together, chances of extra-marital affairs are reduced, thus the HIV infection risks. In addition to income, there is need to address the cultural practices that increase the risks of HIV transmission, such as polygamy, and culture of mistresses among urban residents.

This study utilized the few sentinel sites data available from the early 1990s at the provincial level. While the scale of consideration is still very large to cover the underlying heterogeneity that influence the HIV/AIDS epidemic, the study lays a foundation from which future trends and spatial patterns of the epidemic can be analysed. As the number of people living with HIV/AIDS increases, a comprehensive spatial database of their distribution would be useful in understanding the spatial diffusion of the epidemic, and for the management of ARVs distribution network and other related services. Intervention that targets the life course of individuals at an early stage before they join the risky stage of HIV infection would be an effective way to maintain low levels of HIV infection and spatial diffusion of the epidemic. Regional balance in higher institutions of learning and employment opportunities would reduce the influx of migrants to urban areas, which in turn would reduce infection and spatial diffusion of the epidemic.

Acknowledgements

Firstly, I wish to express my deep and sincere gratitude to my academic supervisor, Professor Yuji Murayama, for his guidance, encouragement and support throughout my study period at the University of Tsukuba. In particular, I am extremely grateful for his suggestions, comments, and advice that brought the realization of this thesis. Secondly, I would like to thank Professors Akira TABAYASHI, Akira TEZUKA, Kiyomi YAMASHITA, and Assistant Professor Takehiro MORIMOTO for their thoughtful and invaluable suggestions that helped immensely in the writing of the thesis.

I would like to acknowledge my colleagues in the Division of Spatial Information Science, University of Tsukuba. I am particularly grateful to Dr. Fatemeh AHMADI NEJAD MASOULEH, Dr. Yaolong ZHAO, Brandon Manalo VISTA, Rajesh Bahadur THAPA and Soo Kyung PARK for not only the captivating discussions, but also for the moral and social support during my studies, especially during the period I was writing this thesis. Special thanks go to Nobuhiko KOMAKI, whose help in translating English documents into Japanese was most invaluable; his assistance was unsurpassed.

I am very grateful to the Government of Kenya, the Japanese International Cooperation Agency (JICA), and the Rotary Yoneyama Memorial Foundation for their financial support that enabled my studies and living in Japan. Many thanks go the members of the Tsuchiura Rotary Club, Tsuchira, Ibaraki, and to my scholarship supervisors at the JICA Tsukuba International Centre (TBIC) for their kindness, hospitality and social life in the day-to-day living during my studies and stay in Japan.

I would like to express my gratitude also to all those persons who accepted to be interviewed during my field survey in Nairobi, Kenya. I am very thankful to the National Empowerment Network of People Living with HIV and AIDS in Kenya (NEPHAK) for their approval and introduction to the PLWHA groups. I thank also the staff of the National AIDS and

STD Control Programme (NASCOP) of the Ministry of Health Kenya for the HIV surveillance data and ancillary information used in this thesis. I am also very grateful to the Principal of the Kenya Institute of Surveying and Mapping, the Director of Surveys of Kenya, and the Ministry of Lands for their administrative support from the start until the end of my study period.

Finally, I would like express my grateful thanks to my parents, brothers and sisters, who though living far from me, provided valuable moral support and reassurances throughout my study period. I particularly express my heartfelt gratitude to my dear wife Margaret Tuto and my daughter Consolata Wangari for their endurance, forbearance, love and for coping with my absence as I pursued my studies. Without their encouragement, prayers and understanding, it would have been impossible to finish my studies. Last and not the least, I am very grateful to the Almighty God for watching over me and being there at all times of need.

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Appendices

APPENDIX I

HIV prevalence among pregnant women in sentinel surveillance sites with continuous data, 1990~2004

ID	SITENAME	clients	PROVINCE	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
1	Nyeri PGH	mixed	Central	2	3	8	2	5	20	8	6	15	13.5	12	11	8	8	6
2	Thika DH	mixed	Central	2	9	2	27	39	26	12	18	31	16	19	11	7	8	8
3	Mombasa PGH	urban	Coast	9	16	10	16	10	15	11	16	14	12	10	14	15	16	10
4	Tiwi RHTC	mixed	Coast					16	23	27	29	31	21	12	10	7	10	7
5	Karurumo RHTC	rural	Eastern					1	9	17.5	26	10	8	7	6	4	7	7
6	Kitui DH	mixed	Eastern	0	4	1	7	19	3	3	5	8	7	12	17	6	6	6
7	Meru DH	mixed	Eastern	2	1.5	1.25	1	10	8	15	13	21	28	23	10	5	8	3
8	Nairobi	urban	Nairobi	5	12	13	17	15	16	16	16	16	17	17	14	13	11	11
9	Garissa PGH	mixed	North Eastern	4	4	4	3	14	5	4	7	4	4	6.5	9	4	2	1
10	Chulaimbo RHTC	rural	Nyanza						20	26	30.5	35	24	29	25	22	22	14
11	Kisii DH	urban	Nyanza	1	3	0	2	8	3	15	15	13	11	14	17	14	9	6
12	Kisumu PGH	urban	Nyanza	18	18	19	19	29	24	26	32	27	25	33	29	26	26	11
13	Kajiado DH	mixed	Rift Valley						5	6	9	6	7	7.5	8	5	3	2
14	Kaplong MH	rural	Rift Valley							3	5	4	4	2	9	6	3	3
15	Kitale DH	mixed	Rift Valley	2	5	20	7	10	9	11	12	8	16	5	13	16	11	7
16	Mosoriot HC	rural	Rift Valley					1	12	10	8	1	1	5	4	3	3	5
17	Nakuru PGH	urban	Rift Valley	9	12	12	22	24	26	10	24	23	25	9	12	12	10	7
18	Busia DH	urban	Western	16	9	29	21	22	21	27	28	28	32	20	15	16	16	16
19	Kakamega PGH	mixed	Western	4	12	14	8	13	11	9	9	14	10	10	11	14	13	9
20	Mbale RHTC	rural	Western					11	10	12.5	15	10	11	23	11	11	8	10

APPENDIX II

Questionnaire for the survey of people living with HIV/AIDS (January 2005)

Questionnaire

Dear Participant,

This questionnaire is for academic research purposes only. It requires you to answer to some questions regarding HIV/AIDS, and on the various places that you have worked or lived. For the success of this research please answer as truthfully as you can remember. All the responses will be treated with utmost confidentiality.

1. Personal details

a. Sex

Male □ Female □

b. What is your age?

(a) 15-20 years □
(b) 21-24 year □
(c) 25- 29 Years □
(d) 30-34 Years □
(e) 35-39 Years □
(f) 40-44 Years □
(g) 45-49 Years □
(h) Over 49 Years □

c. Marital Status

(a) Single □
(b) Married □
(c) Polygamous □
(d) Separated/Divorced □
(e) Widow/Widower □

d. What is your religion?

(a) Christian □
(b) Muslim □
(c) Others (Specify)……

e. What is the Highest Education Level that have obtained?

(a) Did not complete primary school □
(b) Primary school certificate □
(c) Secondary school certificate □
(d) Obtained college certificate/Diploma □
(e) University degree □

(f) Postgraduate □

(g) None □

f. In which district were you born? .....

g. Up to the age of 14 years (or until you completed primary education) did you live in your district of birth?

Yes □ No □

If you did not stay there, in which district(s) did you live?

……..

h. Do you have any children?

Yes □ No □

- If yes how many do you have? .....

  How many of these children are dependent on you? …….

  How many of these children contribute to the family income? .....

i. Do you have any other dependents besides your children?

Yes □ No □

- If yes how many? .....

2. Occupation/Migration

a. What type of work or business do you do currently to earn money?

…….....

b. Which year did you start? …….

c. In which Town/District did you begin? ..... …….

d. Have you ever changed /shifted your place of work /business?

Yes □ No □

- If you have shifted, please fill the table below.

	Place of Work/Business (Town/Division/District)	***When did you start? (Month/Year)***	***Until when were you there? (Month/Year)***	***What was the approx. income per month (Select from Below)***	***Why did you move? (Select from below)***
1					
2					
3					
4					

Income in Kenya shillings:
- A. Less than 5,000
- B. 5,000 – 10,000
- C. 11000 – 15000
- D. 16000 – 20,000
- E. More than 20,000

Reasons for moving
- A. Works transfer
- B. Business transfer
- C. Higher income
- D. Family reunion
- E. HIV stigma and discrimination
- F. Others (specify)

3. Frequency of migration

a. Where are you staying currently?

(a) District …….

(b) Division …….

(c) Estate/Location ……

(d) Estate/Sub-location …….

b. Is the place you are staying the same as your rural home?

Yes □ No □

If no, which is your rural District? ……

c. Do you visit your rural home? Yes □ No □

If yes how many times in a year do you visit this rural home?

(a) More than 12 times □

(b) 6 - 12 times □

(c) 2 – 5 times □

(d) Once □

(e) Never □

4. Partners

a. Do you have a sexual partner (wife/husband/friend)?

Yes □ No □

- If yes, do you live together or separately?

  Together □ Separately □

- If you live separately,

(a) Where does your partner stay?

(b) When do you meet your partner?

(a) Every day □

(b) 3 days in a week □

(c) 1 day in a week □

(d) 1 day in a month □

(e) Others (Specify)…….

b. What does your current partner do to earn money?

……

c. Did you have any sexual partners before the current?

Yes □ No □

If yes, please fill the table.

Partner (Includes Husband or wife too)	When (Month/Year)	District or Town of Staying	Partner 's type of Work/ Business
Partner 1			
Partner 2			
Partner 3			
Partner4			
Partner 5			

5. HIV Status History

a. How do you think you got HIV/AIDS?

(a) Sexual Contact □

(b) Blood transfusion □

(c) Other modes (specify)…….....

b. Which year did you learn that you were HIV positive? ……

c. Which year do you think you got HIV? .....

If you cannot remember exactly when, please select the closest from below.

(a) Less than 1 year ago □

(b) 2 - 3 years ago □

(c) 4- 5 years ago □

(d) More than 5 years ago □

d. Who may have infected you with HIV?

(a) Wife/Husband □

(b) A close friend □

(c) A first time friend □

(d) Commercial sex worker □

(e) Not sure/I do not know □

e. Where was the person who infected you staying?

District ……Town .....……

f. What work/ business was the person who infected you doing? …….....

…….....

g. Which town/district was he/she working or doing business? …….....

…….....

h. Where were you living when you got infected with HIV?

District ……Town .....…….

i. After knowing your status,

(a)Have you changed place of work/ business?

Yes □ No □

If yes from…….. town .

to…….. ..…town .

(If within Nairobi, give the division or estate).

Why did you change?

…….....

.....

Have you shifted place of residence?

Yes □ No □

1. If yes from……. town

to……..……town

(If within Nairobi, give the division or estate).

2. Why did you shift?

……

……

……

3. How satisfied are you with the place that you are currently staying

i. Very satisfied □

ii. Satisfied □

iii. Dissatisfied □

iv. Very dissatisfied □

4. What is it that you like about the place that you currently stay?

v. …….

vi. …….

vii. ……

b. What is it that you do not like about the place you currently live in?

i. ……..

ii. ……..

iii. ……

iv. …….

c. Do you plan to move from your current residence within this year?

Yes □ No □

Thank you very much for your co-operation and positive participation.

APPENDIX III

Questionnaire for the in-depth life course interviews (January 2006)

Questionnaire

Dear Participant,

This questionnaire/interview is for academic research purposes only. It requires you to recall various events that may have happened in your life, and where and when these events took place. All the responses will be treated with utmost confidentiality. For the success of this research please answer as truthfully as you can remember. Thank you very much for your cooperation.

1. Personal details

a. Sex ……
b. Marital Status……
c. Number of children……No of other direct dependents……
d. Religion……
e. In which year were you born? .....
f. Here were you born? District……Division…….. …..

2. Education & early career/Employment

a. In which year did you start your primary school education?.....
b. Where was the school located?.....District……Division
c. Did you have any transfers during your primary education?.....
   If yes, where were the new schools located?.....
   In which class were you? .....
d. In which year did you finish or leave primary school? …….
e. In which year did you start your secondary school education?.....
f. Where was your school located?.....District…….Division……
g. In which year did you finish or leave secondary school? …….
h. Did you attend any training in a college?.....
   Year started……. Year left…….
i. What did you train in?.....
j. Where was the college located? .....District…….Division……
k. After leaving school what work did you get a job?.....Year……
l. Where was your first employment?..... District…….. Division
m. How long did you work in your first employment?.....
n. In which year did you get your next occupation?.....
   - What was the occupation? .....
   - Where was it located?..... District…….Division……

3. UPBRINGING (0-18yrs)

a. How many brothers and sisters do you have? ……..

b. What are their ages? .....

c. What were your parents doing to earn a living when you were young?

Mother……..Father……..

d. Were any of your parents working away from home?.....

- If any, who was away?.....
- Where was he working?

.....District …….Division

- How many times in a month+ was he coming home to visit?.....

e. In which year did you start living independently on your own and away from parents?……

f. While growing up which of the following did you have in your parents' home? Please tick.

(a) Coffee, tea, wheat, pyrethrum,

(b) Bicycle, Television, radio, fridge, car

(c) Cows, goats, sheep, donkey, chicken,

(d) *Rental house, own house*

g. Did you experience any of the following?

(a) Had three meals in a day

(b) Was sent away from school for fees

(c) Got new clothes at least once a year by the parents

(d) Your elder sisters and brothers paid your school fees

(e) Was reprimanded (e.g. through beatings) by parents when you did wrong misbehaved

(f) In adolescence, was cautioned or taught about boy/girl relationships.

(g) While growing up participated in religious activities such as church or mosque worship.

h. Did you experience any of the following before you were 24 yrs old?

Experiences	**Year**	**Age**
Smoked cigarettes,		
Used bhang, marijuana or other hard substances		
Took alcohol		
Had a boyfriend/girlfriend		
Had an abortion		
Sexual abuse; such as rape		

i. What is your ethnic group? .....

j. Please describe the following cultural aspects in your community today?

- Passage of rite to adulthood for boys and girls (initiation rites);

Boys……..

Girls……...

- Marriage (polygamy, bigamy, wife inheritance, for example)

……..

…….……..…….

What rite of the above have you passed through and when? ……

……..

4. Occupation and migration patterns

a. What type of work or business do you do currently to earn a living?

…….....

(i) In which place is it located? .....

(ii) Which year did you begin? .....

b. What other places have you worked, and what was the nature of work? Please fill in the table below, giving also the period you worked, monthly income and the reasons for changing jobs.

Place of Work/B (Town/Division/	Income per month in Kenya shillings: F. Less than 5,000 G. 5,000 – 10,000 H. 11000 – 15000 I. 16000 – 20,000 J. More than 20,000		Reasons for moving G. Works transfer H. Business transfer I. Higher income J. Family reunion K. HIV stigma and discrimination L. Others (specify)		*Reason move*
1					
2					
3					
4					

c. Where are you staying currently?
District ……Division …… Estate/Location……

Which is your rural District? ……Division……

d. How many times in a year do you visit this "rural" home? …….....

e. How long do you normally stay home when you visit……..

f. What are the reasons that make you visit your "rural" following reasons? Please Circle below.

(i) *To visit parents*

(ii) *See your wife and children*

(iii) *For burial and wedding occasions*

(iv) *To visit your boyfriend/girlfriend*

(v) *Other reasons (Indicate please)*

g. While growing up or/and while staying on your own you may have lived in various places. Please indicate the places you resided, when and why you moved/ stayed there.

Places of Residence (District/Division/Location/Estate)	**Year From**	**Year To**	**Reason moved**

5. <u>Sexual and Union Events</u>

a. Please indicate when/whether you had the following experiences.

Event	**Year**	**Age**	**Place(District/Division)**
Relationship with boy/girl			
First Sexual Encounter			
First pregnancy/ impregnated a girl			
First use of condom			
First engagement			
First Marriage/cohabitation			

b. With whom did you have your first sexual encounter? Girlfriend, casual friend, commercial sex worker, wife, husband……

c. About how old was your first sexual partner? ……. …….

d. Were you still living with your parents at the time of your first sexual encounter? .....

e. If you have ever been in marriage, please describe your marriage life in the following aspects;

i. No of marriage partners and duration of each union

……

……

ii. Any separation, duration /(days, weeks, months, years) of separation and reason for separation

……

……

……

iii. If husband/wife was working away from home, who visited the other, how many times in the month/year, when, and for how long?

……

iv. Have you ever experienced any of the following in your marriage,

(a) Husband or wife was the sole provider of the house needs

(b) Both husband and wife were providers of the house needs

(c) Husband or wife was a frequent alcohol consumer

(d) Wife/ husband was frequently beaten (physically abused)

(e) Suspicion of unfaithfulness of wife/husband

(f) Lack of sexual satisfaction from partner.

f. Do you currently have a sexual partner wife/husband/friend)? .....

- If yes since which year have you been together? .....

g. Do you live together or separately? ……

h. If you live separately, where does your partner stay?

.....….District ……Division ……..Estate/location

i. How often do you meet with your partner?

a. *Every day*
b. *3 days in a week*
c. *1 day in a week*
d. *1 day in a month*
e. *Others (Specify).....*

j. What does your partner do for living? .....

k. How many other partners/relationships have you had? ……

l. Please indicate in the table below, the type of partner, the duration of friendship, the type of work, and residence of the partner.

Partner(Close/Casual/CSW/Client) (Includes Husband or Wife)	From (Month/Year)	To (Month/Year)	Residence District /Division/ Town	Partners occupation (Job)

6. <u>HIV Status History</u>

a. When did you first hear of HIV/AIDS?.....Year …….Age

b. How do you think you got infected?

① Sexual Contact
② Blood transfusion
③ Other modes (please specify)

c. Which year did you learn of your status? .....

d. Which year do you think you contracted the virus? ….....

e. Who may have infected you? ……...

f. Where was the person who infected you staying?

……..District ……Division ……Estate/location

g. What work/ business was the person who infected you doing?

…….

h. Which town/district was he/she working or doing business?……

i. Where were you living when you got HIV?

……..District ……. Division…… Location/Estate

j. Have you experienced any of the following since learning of your status?

- Changed residence? ……

From…….To……..

(If within Nairobi, give the division/location and/ or estate).

Why did you shift residence?

……

……

……

- Changed business or jobs……...

If yes, from where (location)…… town.

To where (location)…….. ….town.

(If within Nairobi, give the division or estate).

From what type of job (occupation) to which did you shift/change to?

……..

What made you to change jobs?

…….....

k. In terms of the following conditions, how can you grade your residential locality?

	① Very Good	② Good	③ Bad	④ Very Bad
Security	1	2	3	4
Cleanliness (environment)	1	2	3	4
Transport Accessibility	1	2	3	4
Housing conditions	1	2	3	4
Access to social amenities (Hospitals, schools)	1	2	3	4
HIV Support groups/NGOs	1	2	3	4
Availability of ARVs	1	2	3	4

l. Do you plan to move from your current residence (within this year) and why?

……

m. Are you a member of any PLWHA association?

……

n. If a member, which PLWHA association do you belong?

……

o. What do you gain from being a member of this association…….

……

p. Is there anything else that you would like the done for you by the association.

……

q. In your opinion how would the HIV/AIDS' spread be reduced?

……

Thank you very much for your co-operation and positive participation.