FEMALE AND MALE MIGRATION PATTERNS INTO THE URBAN SLUMS OF NAIROBI, 1996 - 2006: EVIDENCE OF FEMINISATION OF MIGRATION?*

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Abstract:

In sub-Saharan Africa, rural to urban migration was historically a male-dominated process due to colonial recruitment regimes. Since independence from colonialism, the proportions of men and women migrating have evened out somewhat, with wives migrating to join their husbands in their migrant destinations. In recent years the improvement of educational opportunities for girls/women and a shift in cultural norms, which previously may have prevented young women moving away from home, has led to an emerging phenomenon of autonomous female migration. However, due to the lack of appropriate migration data there have been relatively few empirical studies which have been able to document this phenomenon. This study uses newly collected ten-year migration history data on 11487 adults (older than 12 years old) from two slum populations in Nairobi, Kenya, and aims to: (i) use sequence analysis techniques to derive a typology of migrant for females and males; (ii) assess whether or not there is a trend of feminisation of migration. We identified a typology of migrant, and found higher proportions of women migrating over time, reducing the sex ratio of migration closer to 1.00. This feminisation trend appears to be due not only to increased opportunities for family reunion, but also an increasing proportion of women migrating independently in search of employment and better economic opportunity.

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1. INTRODUCTION

In sub-Saharan Africa, rural to urban migration was historically a male-dominated process due to colonial recruitment regimes (Macharia 2003). This led to heavily male biased sex ratios in Africa's main cities and large numbers of women "left behind" in rural areas (Boserup 1970). Since independence from colonialism, however, the proportions of men and women migrating have evened out somewhat, with wives migrating to join their husbands in their migrant destinations (Boserup 1970; Khasiani 1995). However, in recent years the improvement of educational opportunities for girls/women and perhaps a shift in cultural norms that may previously have prevented young women moving away from home has led to an emerging phenomenon of autonomous female migration (i.e. independent of their husbands and/or families) (Brydon 1987; Chant and Radcliffe 1992; Nelson 1992; Adepoju 2004; Posel & Casale 2004).

Feminisation of migration has been noted at the international level, particularly with respect to the movement of female domestic workers from South-East Asia to the Middle East and from Latin America to North America (Chant and Radcliffe, 1992; IOM, 2003; Castles and Miller, 2003 in Carling, 2005; UNFPA, 2008). In particular, this has been highlighted as one of the leading issues in international migration in sub-Saharan Africa, alongside the "brain drain", migrant remittances from abroad, and human trafficking (Adepoju, 2004 & 2006; Cross et al, 2006). Adepoju (2006) draws on anecdotal evidence to describe the migration of female professionals, such as nurses, to the United Kingdom and Middle East, as well as internal and regional migration of women within West Africa for commercial purposes (self-employment). Using national household surveys, Posel and Casale (2004) reported that in 1993, 30 per cent of the African adult labour migrant population in South Africa were women, but by 1999 this had increased to 34 per cent. Collinson et al (2003) uses demographic surveillance data from a study area in rural South Africa to show a trend of increasing female temporary migration between 1997 and 2001 (35-54 year old women went from 15% migrants in 1997 to 25% migrants in 2001, and 15-34 year old women showed a three-fold increase in the same time period).

Several reasons for the recent trend of feminisation of migration has been hypothesised, for example, Cross et al (2006) suggest that the trends is sparked by increasing poverty at the household level, creating the need for more women to move to look for work. Similarly, Adepoju (2006) suggests that fragile ecosystems that make farming (generally the domain of women in Africa) risky, and economic crisis that has caused many men to lose their jobs, has made it necessary for women to find ways of helping to support the family – often resulting in migration from rural to urban areas, often pursuing self-employment in the commercial sector. Casale and Posel (2002) support the contention that there is an increasing need for women to enter the labour force, however, they also highlight changes in household composition and the reduction in marriage rates as factors in the feminisation trend. Another suggestion from Adepoju (2006) is that the rise in proportions of women migrating is partly due to improved access to education and training opportunities, making women more employable both locally and internationally. Carling (2005) suggests that while more women are now moving independently for economic purposes, the global change in the sex composition of migration is because the importance of family and refugee migration (in which women usually outnumber men) has grown in relation to labour migration in recent years.

Whether moving independently or not, the balancing out of migration in African society is likely to change gender roles within the family, as well as within the labour market. This has the potential to improve the status of women by providing them with earning opportunities and weakening traditional patriarchal authority (Bilsborrow and Zlotnik 1992). However, more importantly, autonomous female migration has important implications for both development and demographic outcomes, because it not only highlights societal change with respect to women's roles in the home and economic spheres (Chant and Radcliffe 1992), but also has potentially positive consequences for reducing future population growth through fertility decline (Brockerhoff and Yang 1994). However, these trends are likely to be highly context-specific, and to our knowledge, they have not yet been documented in any part of East Africa. Moreover, there is no evidence on migration trends and sex composition in African slums, which will have different characteristics compared to urban areas in general.

Over 900 million people worldwide currently living in slum settlements (projected to rise to 1.5 billion by 2020) (UN-Habitat 2003), and 92% of new households in urban areas of sub-Saharan Africa are located in slums (Todaro 1997). With so many rural to urban migrants moving into slums/informal settlements when they migrate to urban areas, it is important to understand the changing gender composition of migration into these areas to ensure that appropriate policy measures can be put in place to adequately prepare for the projected large scale growth of urban centres and the associated socio-economic consequences (Thadani and Todaro 1979; Chant and Radcliffe 1992; Lall et al. 2006).

Given that less is known about migration patterns in East Africa, compared to South and West Africa, this study focuses on two slum populations in Nairobi, Kenya. Nairobi had an urban growth rate of approximately 5% per year between 1969 and 1999 (Government of Kenya 2000) despite poor economic growth since the 1980s, and currently has an estimated population of approximately 3 million people. This urbanisation has been largely attributed to rural-urban migration (APHRC forthcoming). Although there are no official figures, it is estimated that between a third and half of Nairobi residents live in informal settlements ("slums") with poor quality housing, little access to water and sanitation, and lacking security of tenure that occupy only 5% of the residential land area of the city (APHRC 2002). We plan to address the gaps in the literature by analysing migration patterns and trends of men and women, using data from a demographic surveillance system in two slum populations of Nairobi, Kenya.

This study aims to:

(i) use sequence analysis techniques to derive a typology of migrant for females and males;

(ii) assess whether or not there is a trend of feminisation of migration.

The next section (2) presents the study site and data, section 3 outlines the methods used in the study, followed by a summary of the results in section 4. In section 5, the limitations of this study will be discussed, concluding the section with implications for policy and future research.

2. STUDY SITE & DATA

STUDY SITE

The African Population and Health Research Center (APHRC) is a Non-Governmental research organisation based in Nairobi, Kenya. While they carry out a wide range of research projects, their core ongoing project is running a demographic surveillance site two slum sites in Nairobi, Viwandani and Korogocho. The two study sites have a joint population of approximately 60,000 in approximately 20,000 households and covering an overall area of just under 1km^2 but are geographically distinct. Salaried employment is low at 18.5% for men and 3.5% for women (APHRC 2008). However, overall percentages in income generating activities are much higher (77.8% and 46.4% respectively – see section 3.2), indicating that the majority of workers in the study site are involved in informal or casual work, or run their own businesses. Total fertility rate as measured by the APRHC in 2006 (APHRC 2008) was 3.3 in Korogocho, and 2.8 in Viwandani, both lower than the national average of 4.9 children per woman, but slightly higher than the average for Nairobi 2.7 births per woman (CBS *et al.* 2004). Mobility of residents is high with a reported annual attrition rate of 20% (APHRC 2008) – this is a factor that will have to be addressed appropriately in any longitudinal analysis of the population. The two sites are also demographically quite different, having different ethnic compositions among other differences. Korogocho is a much more established slum that seems to attract families and people looking for longer term settlement, while the majority of the population in Viwandani, being very close to the Nairobi's industrial area, are young male migrant workers. These kinds of differences between the two sites are likely to be reflected in different types, duration and reasons for migration, and may lead to differences in the socio-economic circumstances of residents in the two sites. Therefore, unless otherwise stated, this analysis will consider Korogocho and Viwandani as two completely separate populations, in order to compare and contrast the results from these two different slums populations.

DATA

The Nairobi Urban Health and Demographic Surveillance Site (NUHDSS) collects demographic (births, deaths, in and out migration), socio-economic (marriage, education, birth history, employment, assets), and health (morbidity, vaccinations, verbal autopsy) information from all members of the DSS. The initial census was conducted in August 2002, followed by updates on all residents every quarter to balance logistical requirements and community fatigue.

Several nested studies are linked to the NUHDSS, collecting more detailed information about specific characteristics of certain segments of the population. One of these nested studies is the Urbanisation, Poverty and Health Dynamics (UPHD) project, which addresses key health consequences of rapid urbanization and growing urban poverty at different stages of the life course namely childhood, adolescence, adulthood, and old age. The main data used in this analysis comes from one arm of this project, which conducted a detailed migration and employment history survey between September 2006 and April 2007. A representative sample of 16715 adults (older than 12 years old) was selected, resulting in a dataset of 11487 individuals mostly due to high levels of out-migration in the 9 months between sampling and data collection. For all respondents, an 11 year migration history calendar (recording all the places the respondent lived for at least three months, including reason for move), a 5 year employment history calendar (including main income generating activity), and a detailed cross-sectional questionnaire (including place of birth, main income generating activity, reason for unemployment, monthly wage, household details, links with place of origin) was collected.

The two datasets (NUHDSS and UPHD migration histories) will be merged together to allowing individual characteristics, such as age, education status, marital status and birth history, which are not collected in the history, to be linked with the migration history data. The use of the demographic surveillance data in conjunction with the migration and employment history provides a unique opportunity for shedding light on the different types of migration, with respect to origins, motivations, forms and lengths of stay of migrants, and how they relate to outcomes such as employment and family building in this slum population.

Previous studies on the DSS data (APHRC forthcoming) have shown that while men make up the majority of migrant stocks in absolute numbers, greater proportions of females migrate into and out of the slums compared to males. Female migrants are more likely to come from rural areas compared to males. The majority of female migrants, move to the slum for family-related reasons, while males are more likely to cite better job prospects. Female in-migrants are more likely to move out of the study site compared to their male counterparts.

3. METHODS

Aim (i) – use sequence analysis techniques to derive a typology of migrant;

The patterns of movement into the slums, as well as within, between, and away from them, are quite complex, with people moving from various different types of places, often in more than one move, and occasionally returning to their place of origin. We use sequence analysis techniques to analyse the typology of migration history. Sequence analysis allows us to sort and group sequences according to specific pre-set similar characteristics (e.g. place of origin, reason for moving, form and duration of stay in each place of residence over the past eleven years). Applying sequence analysis techniques, the patterns of migration will be explored by creating summary variables, such as mean number of elements or episodes in the sequence and length of sequence or episode. These summary statistics will be used to compare sub-groups, including sex. The sequences will also be graphed using an index plot, which provides a detailed picture of all the sequences and how they differ. Sequences of the same order will be grouped together to create migrant typologies.

We then apply logistic regression to study the probability of being a "migrant" in order to highlight the profile of migrant into the slum of Nairobi. We will do this first for both sites together, followed by separately for each study site (not presented in this version), controlling for age, ethnicity, education level, ever married status, socio-economic status (a self reported variable) and relationship to household head. Multinomial logistic regression will then be carried out, using the migrant typology (as described above) as the outcome of interest for migrants only, and sex as the explanatory variable of main interest. This will allow us to assess the different characteristics of each typology of migrant by sex in the overall study population, and in each of the two study sites (not yet presented).

Aim (ii) – assess whether or not there is a trend of feminisation of migration.

First of all, it should be noted that the migration history sample was drawn from the population resident in December 2005. Therefore, there is a proportion of the population who will have left the study site before the survey was carried out, and the survey did not capture any very new residents who in-migrated during 2006. Therefore we cannot study very short term (within a year) migration and it is not appropriate to analyse the in-migration trend for 2006.

In order to assess whether there has been a trend in feminisation of migration between 1996 and 2005, we will graph the number of male and female migrants per year and the sex ratio of migrants per year. We then use the Mantel-Haenzel test for a trend in increasing share of women among all migrants into the slums. The same will be done to analyse the trend in proportions of autonomous migrants, and economic migrants between 1996 and 2005.

Definition of Variables

- *Migrant*

  Almost all the respondent born outside the two slums area or Nairobi, hence by definition almost all the respondent were migrants at some point in their lifetime (99%). However, for the purposes of this analysis we consider the reference period used in the migration history and, defined a non migrant an individual who has not lived outside of the DSA since before 1996 (the start of the retrospective follow-up period); a long term migrants as those who have lived in the DSA for at least 5 years, a recent migrants individuals who have lived in the DSA for less than 5 years, a serial migrants are those who have lived in more than one place in the last 10 years and before moving to the DSA and circular migrants defined as having lived in the DSA at least one before the current residence period.

- *Autonomous/Associational*

  Autonomous migrants are generally defined as migrants who (a) make an independent decision to migrate, (b) migrate alone, and/or (c) live alone at the place of destination. However, this definition can be open to interpretation, and may include one or all of the above conditions. For the purposes of this analysis, autonomous migrants have been defined as those who did not move to the DSA with, or to join, a member of their household.

Associational migrants, on the other hand, are migrants who moved either with or to join another member of their household.

- *Economic/Non-economic*

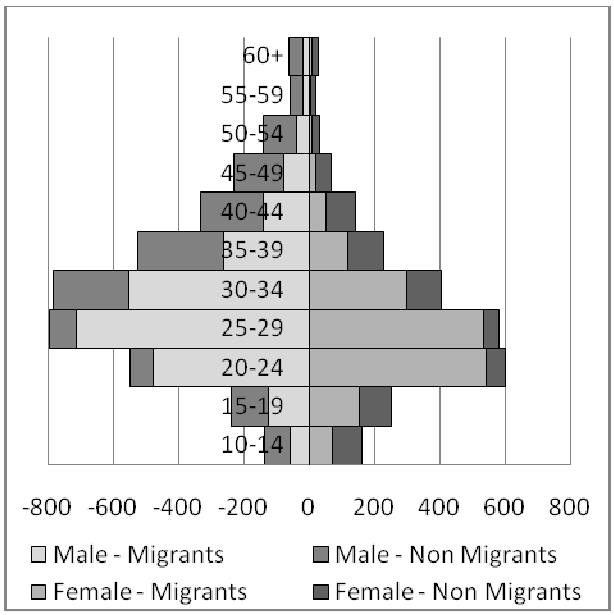
  Economic migration is defined as a binary variable according the respondent's answer to the question "What is the most important reason why you left the place you were living before coming to Viwandani/Korogocho?" If the answer was coded as job-related, the migrant is categorised as an economic migrant; if the answer was not job-related, such as family-, education-, housing-, or health-related, the migrant is categorised as non-economic. This definition does have its drawbacks, mainly because only one answer could be given meaning that while people may have had multiple reasons for leaving the previous place of residence, only one is reported here.

4. MAIN RESULTS[3]

Figure 1: Age and Gender Structure of Viwandani & Korogocho in Dec 2006, by in-migrant status

[3] The results currently shown are for both sites grouped together, however, the final paper will consider the two slum populations as separate, in order to compare and contrast the results from each.

Viwandani



Korogocho

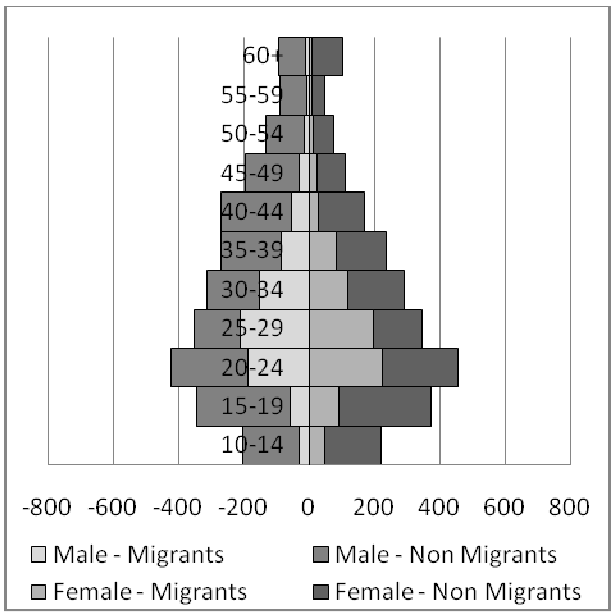


Table 1 confirms the earlier finding (APHRC forthcoming) that females are more mobile than males, showing shorter lengths of stay, greater mean number of places lived and greater mean number of residence episodes.

Table 1: Mean length of stay in the DSA between 1996 and 2006

Sex	Mean length of stay (months)	Standard Deviation	Frequency
Male	97.35	41.80	6561
Female	93.14	43.69	4926
Total	95.55	42.67	11487
	Mean number of places lived	**Standard Deviation**	**Frequency**
Male	1.63	0.70	6561
Female	1.65	0.69	4926
Total	1.64	0.69	11487
	Mean number of residence episodes	**Standard Deviation**	**Frequency**
Male	1.67	0.79	6561
Female	1.69	0.79	4926
Total	1.68	0.79	11487

Aim (i) – Patterns of male & female migration into the urban slums of Nairobi, 1996 - 2006

Just over half of the respondents lived in the study site for the duration of the eleven-year study period (55% males, 51% females). Among those who migrate into the slums the majority

came from rural areas, of which some came directly and other through a series of movements. 22% of migrants have lived in 3 or more places of residence in the last 11 years, and can therefore be classified as serial migrants.

The preliminary analysis find that women are more likely to be mobile than men, with shorter durations of staying, living in a greater number of places, and having a greater number of residence episodes during the 11 year period.

A migration typology was identified, by grouping based on duration of stay and number of moves: long term migrant (moved more than 5 years ago), recent migrant (moved less than 5 years ago), serial migrant, circular migrant. Among the 5,984 migrants, 41% were classified as long term migrants, 35% recent migrant, 20% serial migrants, and 5% circular migrants. Men are more likely to be long term migrants and less likely to be recent migrants, compared to women. The proportions of serial and circular migrants among men and women are similar (see appendix for index plots of migration histories by migrant type.

The logistic regression shows that sex, study site, age group, and education level have significant effects on the odds of being a migrant. Females have a 41% higher odds of being a migrant, Korogocho residents have an odds ratio of 0.28 compared to Viwandani residents, people in the 20-24 age group has the highest odds of being migrants. Those with no education are least likely to be migrants, while those with primary education are more likely to be migrants than those with secondary education, and those with higher education are the most likely be migrants (results not shown).

The multinomial logistic regression on migrant type provide evidence of that females migrants have greater odds of being recent migrants than long term migrants in comparison to male migrants, but there is no evidence of a sex difference for serial or circular migrants (see Table 2). Those living in Korogocho and individuals in households of better socio-economic statuses have lower odds of being recent or serial migrants. There is evidence of an association between age groups and the odds of being recent, serial and circular migrants – while the 15-19 year old age group have lower odds compared to the 20-24 reference group, various older age

groups have higher odds. The Luhya, Luo and Kisii ethnic groups show higher odds of being recent and circular migrants, and Luhya, Luo and Kamba ethnic groups show higher odds of being serial migrants. Education level appears to affect only recent migrants, with those with higher education levels attained being less likely to be recent migrants. Those who have ever been married as well as those who are unrelated to the household head are less likely to be recent, serial and circular migrants in comparison to the long term migrant baseline group. However, spouses, children, and other relatives of the household head are more likely to be recent migrants, although children are also more likely to be circular migrants. Those stating economic reasons for migration are less likely to be serial and circular migrants. Associational migrants have greater odds than autonomous migrants of being recent, serial and circular migrants.

Table 2: Polytomous logistic regression on migrant typology 2

	Recent Migrant		Serial Migrant		Circular Migrant	
Independant Variables	**RRR**	**95% CI**	**RRR**	**95% CI**	**RRR**	**95% CI**
Sex						
Male (ref.)	1.00	-	1.00	-	1.00	-
Female	1.22*	(1.00 – 1.49)	0.86	(0.69 – 1.08)	0.90	(0.63 – 1.29)
Study site						
Viwandani (ref.)	1.00	-	1.00	-	1.00	-
Korogocho	0.82*	(0.67 – 1.01)	0.54***	(0.42 – 0.69)	0.78	(0.54 – 1.14)
Age group						
15-19	0.68***	(0.56 – 0.84)	0.33***	(0.26 – 0.43)	0.64*	(0.42 – 0.97)
20-24 (ref.)	1.00	-	1.00	-	1.00	
25-29	1.19	(0.95 – 1.51)	1.61***	(1.28 – 2.02)	2.96***	(1.99 – 4.39)
30-34	1.57**	(1.14 – 2.16)	1.30	(0.92 – 1.82)	3.60***	(2.13 – 6.08)
35-39	1.37	(0.85 – 2.22)	1.11	(0.68 – 1.81)	3.79***	(1.85 – 7.78)
40-44	2.24***	(1.32 – 3.81)	0.69	(0.34 – 1.42)	1.10	(0.25 – 4.79)
45-49	1.97	(0.84 – 4 .62)	1.87	(0.82 – 4.30)	1.44	(0.18 – 11.48)
50-54	1.67	(0.66 – 4.27)	0.21	(0.03 – 1.61)	3.46	(0.72 – 16.47)
55-59	1.05	(0.25 – 4.32)	0.00	0	7.48**	(1.75 – 31.88)
60+	0.76	(0.15 – 3.75)	0.65	(0.13 – 3.16)	2.84	(0.33 – 24.22)
Ethnic Group						
Kikuyu (ref.)	1.00	-	1.00	-	1.00	-
Luhya	1.84***	(1.41 – 2.40)	1.90***	(1.40 – 2.56)	1.81**	(1.11 – 2.93)
Luo	1.49**	(1.12 – 1.97)	2.01***	(1.46 – 2.76)	1.72*	(1.03 – 2.87)
Kamba	1.10	(0.88 – 1.37)	1.46***	(1.14 – 1.87	1.18	(0.78 – 1.78)
Kisii	1.58**	(1.12 – 2.22)	1.19	(0.81 – 1.76)	2.05**	(1.15 – 3.64)
Other	1.04	(0.74 – 1.45)	1.27	(0.87 – 1.85)	1.16	(0.63 – 2.13)
Highest education level reached						
No education (ref.)	1.00	-	1.00	-	1.00	-
Higher education level	0.84*	(0.72 – 0.98)	1.06	(0.89 – 1.25)	0.99	(0.75 – 1.30)
Ever Married Status						
Never Married (ref.)	1.00	-	1.00	-	1.00	-
Ever Married	0.23***	(0.19 – 0.28)	0.52***	(0.41 – 0.65)	0.32***	(0.22 – 0.48)
Socio-economic status (1-10)						
Poorest [1] (ref.)	1.00	-	1.00	-	1.00	-
Less poor	0.95*	(0.90 – 1.01)	0.95*	(0.89 – 1.01)	0.99	(0.89 – 1.09)
Relationship to Household Head						
Household Head (ref.)	1.00	-	1.00	-	1.00	-
Spouse	1.62***	(1.17 – 2.24)	0.91	(0.63 – 1.30)	1.49	(0.85 – 2.60)
Child	5.42**	(1.66 – 17.73)	1.24	(0.29 – 5.31)	15.00***	(4.13 – 54.44)
Other relative	1.89**	(1.16 – 3.06)	1.30	(0.74 – 2.27)	1.52	(0.72 – 3.20)
Unrelated	0.27***	(0.22 – 0.33)	0.30***	(0.24 – 0.37)	0.30***	(0.21 – 0.43)
Economic reason for moving to the DSA?						
No (ref.)	1.00	-	1.00	-	1.00	-
Yes	0.88	(0.73 – 1.06)	0.37***	(0.31 – 0.46)	0.47***	(0.34 – 0.66)
Associational migrant?						
No (ref.)	1.00	-	1.00	-	1.00	-
Yes	2.71***	(2.26 – 3.26)	1.72***	(1.40 – 2.10)	2.66***	(1.91 – 3.70)

* p<0.05
** p<0.01
*** p<0.001

Number of obs = 4243
LR chi2(75) = 1346.43
Prob > chi2 = 0.0000
Log likelihood = -4520.2953
Pseudo R2 = 0.1296

The odds of being a recent migrant compared to the baseline long term migrant is higher for women than for men (OR=1.22, p≈0.05), and lower for Korogocho residents compared to Viwandani residents (OR=0.82, p≈0.05). The 15-19 age group are less likely to be recent migrants, and the 30-34 and 40-44 age groups are much more likely to be recent migrants, compared to the 20-24 reference group. Luhya, Luo and Kisii ethnic groups are more likely to be recent migrants compared to the Kikuyu ethnic group,The higher the level of education attained, the less likely a migrant is to have moved within the last 5 years (OR=0.84, p<0.05). Ever married individuals have 77% lower odds of being a recent migrant compared to never married individuals. We don't find strong evidence of a relationship between socio-economic group and probability of being a recent migrant. We found evidence of family reunion into the slum, the probability of being a recent migrant increase is 60 per cent higher for spouses and 5 times higher for children of the household head. There is no evidence of a difference in odds of being a recent migrant for economic and non-economic migrants. However, associational migrants have almost three times higher odds of being recent migrants compared to autonomous migrants.

There is no evidence of a difference between men and women in the odds of being a serial migrant, when controlling for other individual characteristics. However, Korogocho residents are much less likely to be serial migrants compared to Viwandani residents. The 20-39 age groups have the greatest odds of being serial migrants, in comparison with those over 40 or under 20. Luhya, Luo and Kamba ethnic groups show higher odds of being serial migrants compared to the reference Kikuyu group. There is no evidence of a difference in odds of being a serial migrant among different education levels. Ever married individuals are much less likely to be serial migrants. There is weak evidence that higher self-reported socio-economic status gives lower odds of being serial migrant. There is strong evidence of lower odds of being a serial migrant for those unrelated to the household head. Those stating economic reasons for moving to the DSA are much less likely to be serial migrants, and those moving with other members of their household are much more likely to be serial migrants.

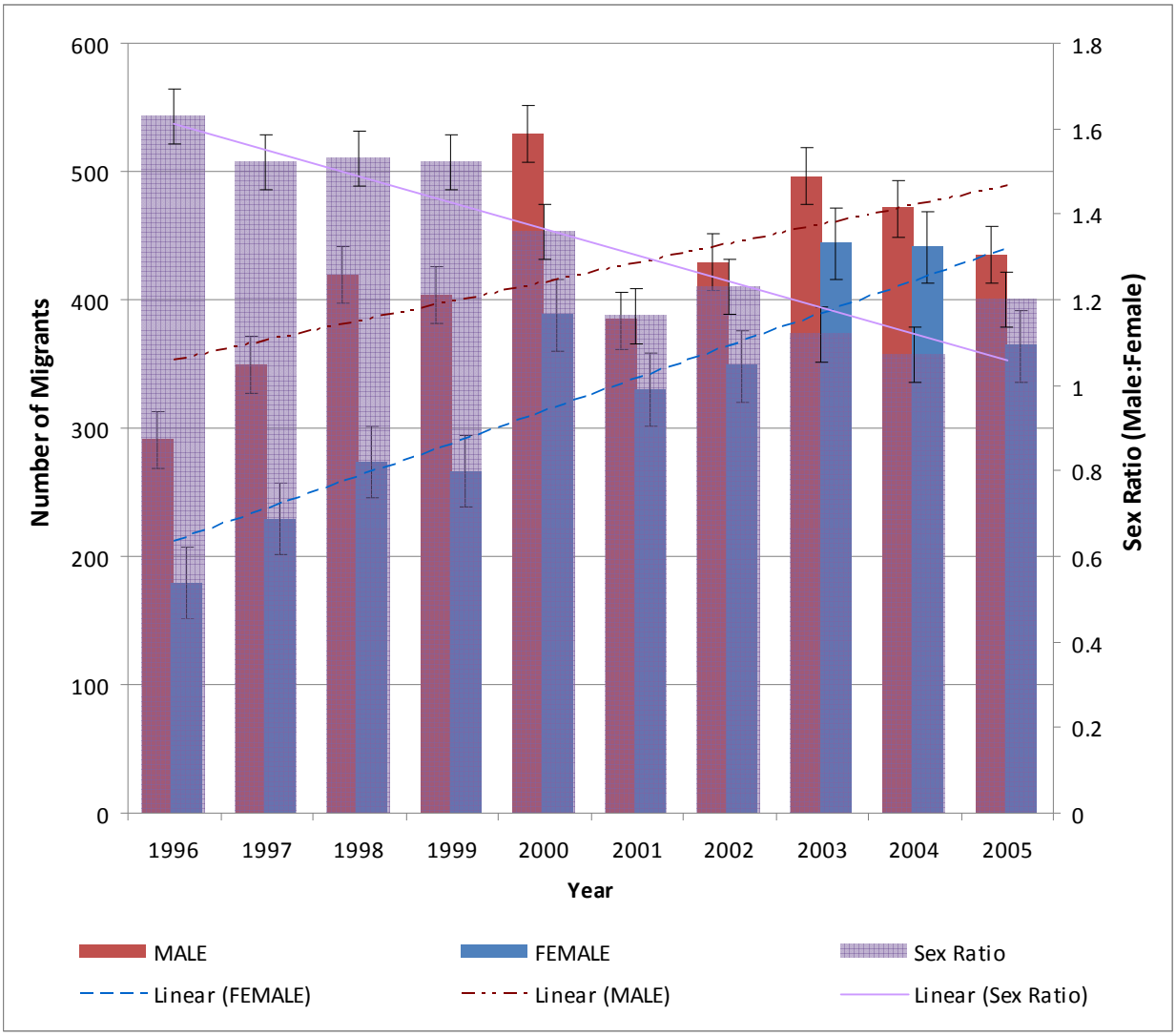
There is no evidence of a difference in the odds of being a circular migrant between men and women or between Viwandani and Korogocho residents, when controlling for other individual characteristics. There is strong evidence that those in 25-29, 30-34, 35-39, and 55-59

age groups have higher odds of being circular migrants compared to 20-24 year olds, while 15-19 year olds have lower odds of being circular migrants. Luhya, Luo and Kisii ethnic groups show higher odds of being circular migrants compared to the reference Kikuyu group. There is no evidence of a difference in odds of being a circular migrant among different education levels. Ever married individuals are much less likely to be circular migrants. There is no evidence of a difference in odds of being circular migrant by socio-economic status. There is strong evidence of higher odds of being a circular migrant for children of the household head, and lower odds of being a circular migrant for those unrelated to the household head. Those stating economic reasons for moving to the DSA are much less likely to be circular migrants, and those moving with other members of their household are much more likely to be circular migrants.

Aim (ii) - Has there been a trend of feminisation of migration?

Numbers of both male and female migrants per year increase between 1996 and 2005, however, number of female migrants increase more steeply, creating an overall effect of reducing sex ratio of migrants over the analysis period.

Figure 2: Numbers of male and female migrants, and sex ratios, 1996-2005



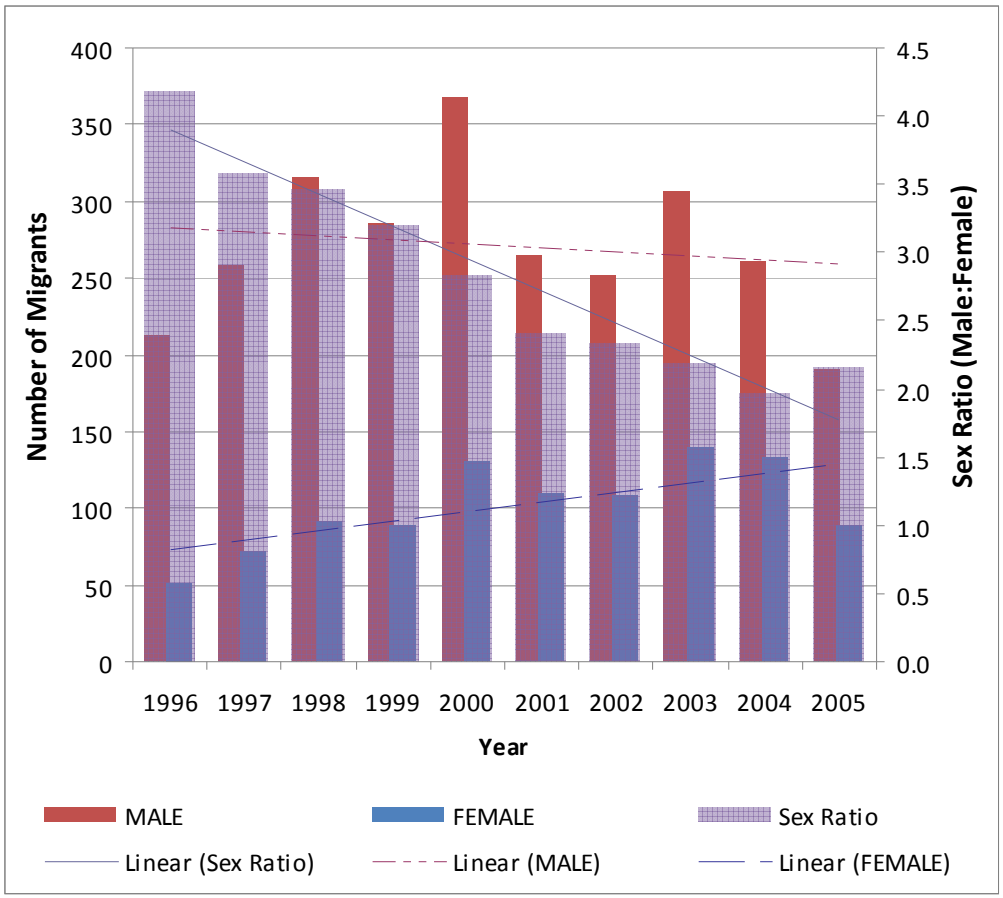
Between 1996-1999, the odds of being a migrant were lower for females compared to males (OR=0.8,5 p=0.0003). Between 2000-2002, there was no evidence of a difference in male or female odds of being a migrant. The odds of being a migrant were greater for females than for males (OR=1.31 p<0.0001) between 2003-2006 (see table 7). This suggests a trend of increasing proportions of female migrants over the 10 year period of follow up.

Table 3: Odds ratios comparing female migration compared to male migration, by cohort of migration

Year Group	Odds Ratio	Confidence Interval
1996-99	0.85	[0.79 – 0.93]
2000-02	1.06	[0.97 – 1.15]
2003-05	1.21	[1.11 – 1.31]

Test of homogeneity of ORs (approx): chi2(2) = 33.86 Pr>chi2 = 0.0000

Figure 3: Numbers of male and female autonomous migrants, and sex ratios, 1996-2005



There is weak evidence of decrease in odds of being an autonomous migrant among males between 1996 and 2006 (OR=0.98 per year, p=0.02). However, there is strong evidence of a trend of increasing odds of being an autonomous migrant among females over the 10 year study period (OR=1.07 per year, p<0.001). There is also strong evidence of an increase in odds of being an associational migrant each year for both males and females.

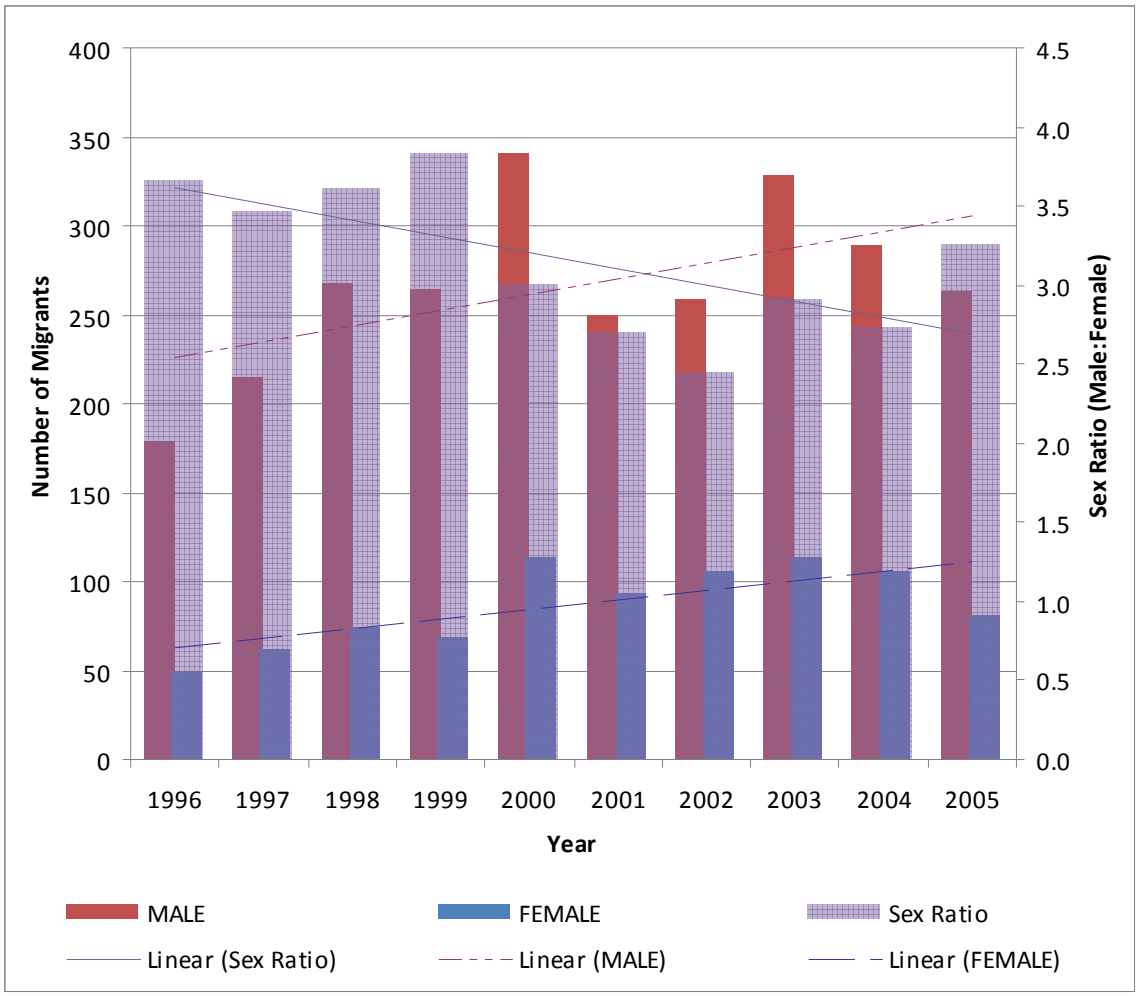
These results suggest that the trend in feminisation seen above may be due to an increase in proportions of female autonomous migration, as well as an increase in female associational migration. However, it will be necesarry to carry out multivariate analyses to confirm this trend, controlling for age and other individual factors that may confound this relationship.

Table 4: Odds ratios for a one year increase, comparing autonomous and association migrants, by sex.

Sex	Form	Odds Ratio	[95% Conf. Interval]
Male	Autonomous	0.98	[0.97 – 0.99]
Male	Associational	1.14	[1.12 – 1.16]
Female	Autonomous	1.07	[1.04 – 1.09]
Female	Associational	1.10	[1.08 – 1.11]

Test of homogeneity of ORs (approx): chi2(3) = 175.57 Pr>chi2 = 0.0000

Figure 4: Numbers of male and female economic migrants, and sex ratios, 1996-2005



There is evidence of an increase in odds per year of both economic and non-economic migration for both males and females. However, the increase in odds per year is greater among females than males, and greater for non-economic females compared to economic females.

The results suggest that the trend in feminisation is perhaps due to a greater increase non-economic migration of women compared to economic migration. However, because the definition of economic migrants was besed solely on the response to the question "why did you

move to this place from the previous place of residence", the response may not truly reflect whether or not a migrant moved for economic reasons or not. Therefore in future work, it will be necessary to use more information to define economic and non-economic migrants before being able to fully understand this relationship.

Table 5: Odds ratios for a one year increase, comparing economic and non- economic migrants, by sex.

Sex	Reason	Odds Ratio	[95% Conf. Interval]
Male	Non-economic	1.03	[1.01 – 1.05]
Male	Economic	1.04	[1.02 – 1.05]
Female	Non-economic	1.09	[1.07 – 1.10]
Female	Economic	1.07	[1.04 – 1.10]

Test of homogeneity of ORs (approx): chi2(3) = 29.03 Pr>chi2 = 0.0000

5. CONCLUSION

In this paper, we have identified differences between male and female patterns of migration, specifically that adult women are more likely to have moved into the study site recently (within the last 5 years) compared to adult men. We also found evidence of a trend in feminisation of migration, with the migratory flow of women catching up with that of men since 1996. This trend appears to be due not only to increased opportunities for family reunion, but also an increasing proportion of women migrating independently in search of employment and better economic opportunity. Although this study has its limitations, particularly with reference to the definition of autonomous and economic migrants, and needs further clarification in the form of multivariate analysis with regards to feminisation trends, these findings have important social, demographic, and policy-related implications for both the sending and destination areas.

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7. APPENDIX – Index Plots