How much has the HIV epidemic had an impact on demographic structures: insights from southern Uganda

Key points
- HIV/AIDS has caused many deaths in Africa, however other factors such as labour-migration have also affected the population age structure and dependency ratio.
- Children fostering affects household composition, however, not all fostering is because of HIV. There is a tradition of fostering in the many parts of Africa to promote the socialisation of children as well as care for children of labour migrants.
- The epidemic has not increased the dependency burden on the 15-64 year age group.
- However, HIV and AIDS have contributed to an increase the proportion of female headed households.

Background
In the last 30 years over one million people have died from AIDS-related illnesses in Uganda while more than one million were living with the disease in 2008 and 100,000 people became newly infected in the same year. The loss of so many people has raised concerns about the impact of the epidemic on demographic structures. Stuart Gillespie, for example, writing in 1989, cautioned that AIDS would significantly reduce the availability of labour in Rwanda because of high morbidity and mortality, not only among adults but also among children. In 2002 the Ministry of Agriculture, Animal Industry and Fisheries in Uganda conducted a study looking at the impact of the epidemic on agricultural production in the country. From a study of 313 households in four districts (Rakai, Lira, Iganga and Mbarara) they concluded that ‘HIV/AIDS has changed family structure with able-bodied members dying, leaving the very young ones and elderly […] agriculture which absorbs the biggest proportion of the workforce, and constitutes the single most important source of people’s livelihood is being threatened by HIV/AIDS’.1

This briefing paper questions these assumptions by drawing on empirical research on the impact of HIV at the household level. It argues that not only does the evidence not support a picture of a declining workforce in HIV-affected households (those where an AIDS-related death has occurred) but the assumed model of impact takes no account of the capacity of households and wider families to mitigate the impact of mortality by drawing on wider social resources. The brief ends with some policy recommendations in which the impact of HIV on demographic structures is seen as part of the on-going broader social and economic changes in rural areas.

This brief is based on quantitative evidence from a cohort of 20,000 people established in 1989 to study the epidemiology of HIV and AIDS. The General Population Cohort (GPC) of the Medical Research Council/Uganda Virus Research Institute Uganda Research Unit on AIDS covers 25 villages in a sub-county in southern Uganda. The cohort began with 15 villages but expanded to cover 25 in 2000. Every year since its inception, an annual household census of the resident population has been taken and a medical sero-survey of all willing residents aged 13 and above has been conducted which includes collection of blood specimens for HIV testing and a brief behavioural questionnaire.

The impact of HIV on population age structure
Concerns about the impact of HIV on the population structure are premised on the established knowledge that in the absence of HIV in developing countries, mortality is concentrated among the very young and very old while HIV-related deaths are primarily among adults aged 15-50 years old. Thus it was assumed that by shifting the usual pattern of deaths HIV would distort and alter the population age structure. The death of an adult household member may have short term household level effects around the time of death, but the long term impact beyond the household would be manifested much later and would involve structural changes at the population level. However, in the GPC study area the population has grown throughout the epidemic. Moreover this growth has not been

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limited to just the younger age groups; rather it has happened across the age spectrum including among the age groups most affected by HIV. Similarly, contrary to expectations that HIV would cause a reduction of the proportion of the working population, the findings from the current study show that this proportion has largely remained unchanged. The prevalence of HIV was 9% in 1990 and declined to about 6% until the introduction of Anti-Retroviral Therapy in 2004 after which there has been a slight rise.

In 1990 the Uganda GPC population was about ten thousand with women making up 50.6 percent in the then 15 villages. In 2008, when 25 villages were included, the population was about twenty thousand and women comprised 50.4 percent. This close to even distribution of sex was maintained across different age groups. Even in 1989/1990 which is now believed to have been the height of the epidemic, 53% of the population was under 15 years old. Now, children under 15 constitute 52% of the population (2007/2008). The population pyramids in Figure 1 and Figure 2 illustrate this youthful bulge. The 15-49 year old age group constituted 42% of the population in 1989/1990 and 41% in 2007/2008 and the population over 60 was 5% and 6% in 1989/90 and 2007/2008 respectively. The findings show a largely unchanged population age structure.

HIV-incidence among the 18-24 year olds was 0 (per 1000 person years) for males and 3.5 for females in 2008 in this population. Increasing labour migration, therefore, is likely to have been largely responsible for the sharp decrease in population between ages 15-19 and 20-24 in 2007/2008, rather than HIV.

Changes in numbers of female household heads
The gender of a household head is an important element of demographic structure because of differences in gender-determined roles of men and women and HIV infection may have had gender specific effects. Under the land tenure system in most parts of Uganda, women do not own or inherit land and this lack of tenure security may affect food security in female-headed households. Gender also affects power relations and ability to access and leverage additional resources which are important for food security. We examined the proportion of female headed households over a period of 17 years (1991-2008) and found that the proportion of female headed households has increased in both HIV-affected (where a death has occurred) and
unaffected households from about 26 percent in 133 HIV-affected and 1,692 HIV-unaffected households in 1991 to 42 percent in HIV-affected households and 32 percent in HIV unaffected households in 2008 (t-test, p<0.001). There were 372 HIV-affected and 3,205 HIV-unaffected households in 2008. This difference in the proportion of female headed households between HIV-affected and HIV-unaffected households in 2008 was statistically significant (t-test, p<0.001). Overall the proportion of households headed by women rose to 33 percent or one third of all households in 2008 and has continued to increase as shown by Figure 3.

**Figure 3: Proportion of female headed households over time**

The HIV epidemic has a played a role in increasing the proportion of female headed households but there are also other factors at play contributing to this increase, including labour-migration and relationship instability.

**Changes in the dependency ratio**

The population age structure directly influences the age dependency ratio defined as the ratio of the total of young people less than 15 years of age and those aged 61 and older, to those in the age group 15-60 years. This statistic indicates the relative importance of those in the “dependent” ages to those in the so-called “productive” ages. This ratio also serves as a measure of demographic change. In developing countries characterised by high fertility, the ratio typically ranges from 80 to 105 dependents per 100 productive persons while in developed countries the ratio is between 50 and 60 per 100 productive persons when the productive age is defined as people aged 15-64 years. In the GPC comparing the dependency ratio at base line to 2008, the dependency ratio has decreased from 133 in 1990 to 128 in 2008. The current dependency ratio of 128 is still very high (a result of the age structure shown above) even by developing country standards, but the fact that the dependency ratio has reduced and continues to decline in all households including HIV-affected households and the near coincidence of the line graph for HIV-unaffected households and the one for all households (see Figure 4), signify a lack of a clear cut effect of the HIV epidemic. The evidence therefore does not support the claim that HIV and AIDS has increased the dependency burden on the 15-64 year age group. Moreover it is expected that the dependency ratio will show further reductions in the years to come as fertility declines to lower levels. Coupled with ART which will reduce mortality levels among those in the adult ages, the dependency ratio is likely to continue to drop and the possible effects HIV and AIDS will become even harder to detect.

![Figure 4: Total DR and DR by household HIV status](image)

**The impact of child fostering on household structures**

Fostering of children is widely practiced in the study area, as in many other parts of Africa. Biological parents may send children to live with other people, often family members, for long periods of time for many different reasons: to strengthen family ties, redistribute child labour, adjust household size because of shortages/surpluses, and schooling, all of which may be independent of HIV-infection. The fostering-out of children by an HIV-affected household could be seen as a household response to infection by seeking to reduce household consumption demand. Equally the fostering-in of children by such households might also be seen to be an effect of such households seeking additional labour. The evidence from the GPC shows that more children in absolute numbers have been fostered-in by HIV-affected households than into HIV–unaffected households. In HIV-affected households the average number

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3 Given our other research which shows that many people aged 50-64 are extremely active and productive members of their households, we would suggest 15-64 is a more realistic age range for `productive' age group and, in the case of men `reproductive' too.
of children fostered-in has been fairly stable over time at about 2.4 children per household although it is beginning to decline. For HIV-unaffected households the average number of children fostered in fell from 3.4 in 1991-1995 to 2.3 in 2001, and has since 2002 stabilized at about 2.4 children per household.

The observed trend in child fostering also paints a mixed picture of the impact of HIV and AIDS and points to no direct linkage with HIV effects. The explanation for this might lie in other factors that lead to fostering in a household.

The data from the GPC do not support a picture of major effects of HIV on household demographic structure, household size or on household dependency ratios. Considering the data on child fostering there is no clear evidence of a direct impact of HIV. Thus impact on demographic structure that has been assumed or predicted is not detectable from this data set. We do not wish to suggest that HIV at the individual household and family level has not had a serious effect. Indeed HIV has undoubtedly had a devastating impact on many households and families and we do not intend to belittle the losses that have occurred. But the effects of scale that have been predicted for HIV on household structures are not supported by the data from this site, in this particular context.

Towards a new realism: Some reflections on policy
What does this suggest for policy? Development policy that may be premised on the presumed impact of HIV on demographic structures needs to be reconsidered. The HIV epidemic is one among many other factors, including labour migration, that are affecting population structures in rural Uganda. Because the HIV epidemic has not happened in isolation, developing HIV-focused policies may not be the best strategy; broader approaches to social development policy are needed that address social inequalities, particularly gender-inequities. Many people are feeling the effects of demographic changes brought about by labour migration and separation and divorce. In addition the costs of feeding and caring for children affect many poor families. These factors affect HIV-affected and unaffected alike and call for social protection initiatives that provide support for the most vulnerable, particularly older people and women living in poverty who are heading households.

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