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Changes in headship patterns and household organization in South Africa in the 1990s in a time of HIV/AIDS and other macro-social transformations

Long Abstract

Introduction

The 1990s have seen profound social, political and demographic changes in South Africa. This was a period of exceptionally rapid growth of HIV incidence rates with a consequent increase in AIDS mortality by the end of the decade. Adult HIV prevalence from antenatal surveys increased from 1 percent in 1990, 7.6 percent in 1994 to the current 26.5 percent (Department of Health 2003). With its 5 million cases (UNAIDS 2002a), South Africa is currently the country with the largest number of people infected with HIV. Based on a combination of vital registration data and estimates derived from AIDS modeling, Dorrington et al. (2001) attributed to AIDS a significant increase in mortality at young and middle adult ages since the late 1980s, and estimated that 40% of the adult deaths aged 15-49 in 2000 were from AIDS. The rapid spread of HIV coincided with the collapse of the *apartheid* system, which brought about social and political transformations of cataclysmic proportions. Among the panoply of massive reverberations on South African society, the collapse of *apartheid* deeply changed the nature of population movements between rural and urban areas. While a*partheid* supported a predominantly male migrant labor system of circular character which affected almost every black African household, and kept families divided by forcing heavy restrictions on residential changes of migrants' wives, children and elderly relatives (Murray 1980, 1987; Russell 1998), its collapse in the early 1990s was followed by an intensification of migration flows which involved broader age groups as well as women (Posel and Casale 2002; Collinson et al. 2003). In addition to these two landmark events, forces of modernization have continued to penetrate various segments of South African society, gnawing at traditional family relations, institutions and ideologies. Finally, the effects of South Africa's unique pension laws, in combination with high prevalence of youth unemployment, may have encouraged the adoption of different residential arrangements, e.g. by inducing changes in individual coresidential preferences.

Any of these macrosocial phenomena, let alone their simultaneous operation, must have had some visible influence on family structure, headship patterns and, consequently, on dimensions of individual well-being related to the family. By family structure we mean the combination of an array of kin relations that are relevant for most individuals, individual residential patterns, and household composition and functioning. All three of these components and their combinations, play an important role in individuals' life course trajectories, careers, and ultimately, their levels of well-being.

Few studies have focused on the South African family, and even fewer have investigated the causal connections between observable patterns of family structure and social transformations.[1] As a result we know little about the changed landscape of South

[1] The exception to this is the growing body of South African studies over the last twenty years on changes in urban and rural domestic boundaries as a result of labor migration under rapidly changing social

African families, and even less about the nature of adjustment to the aforementioned transformations.

Data

This paper contributes to our knowledge in this area by examining changes in family and household organization and headship patterns over time in relation to these specific macrosocial processes using South African data from three consecutive censuses taken between 1991 to 2001: The 1991 census, the last census of *apartheid* South Africa, the 1996 census, the first census of democratic South Africa, and the 2001 census. In particular, we will accomplish the following related goals.

Objectives

(1) To formulate a simple framework to interpret aggregate changes in residential arrangements and kinship relations and to associate them with large-scale societal changes. This framework will allow us to hypothesize the direction and mechanisms through which each macrosocial change will affect age and gender patterns of household headship and the distribution of households by type. It will also draw a distinction between various dimensions of change, whether this is due to changes in demographic conditions or in individual preferences and ideologies about families and households.

(2) To provide a description of changes in household organization and headship patterns during the 10-year interval between 1991 and 2001. Preliminary findings show a decline in the prevalence of nuclear and incomplete-nuclear households, especially households composed by a woman and her children, and an increase in prevalence of solitary households, extended households and skip-generation households, i.e. households where grandparents live with their grandchildren in the absence of their adult children. In addition, while male headship rates have declined at most ages, female headship rates have increased substantially between 1991 and 2001 and this increase has occurred at all ages.

(3) To identify the mechanisms responsible for the observe changes of gender-specific patterns of headship, and to identify how much of the observed changes in headship rates over time are due to shifts in demographic conditions and how much are due to shifts in individual preferences.

(4) To examine the implications of female headedness for the well-being of other household members, by identifying the type of households in which female heads are more likely to live.

Methods:

To carry out the third objective, we model the individual probabilities of being a head (male or female) as a function of selected characteristics. Because the values of the headship rates correspond to probabilities attaining values within the (0,1) interval, we formulate a model for their logit transformation. The advantage of this is that the logit of the probability of being a head takes all the values between $-\infty$ and $+\infty$.

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circumstances. See, *inter alia*, Murray 1976, 1981; Spiegel 1986, 1987, 1994a, 1994b; Spiegel, Watson and Wilkinson 1996; and Crankshaw 1996.

$$LogitY_x = \alpha + \beta * Logit(z_x),$$

where $LogitY_x$ is the logit of the observed probabilities of being a head at age *x* and $Logit(z_x)$ is the logit of a chosen set of standard probabilities of being a head in the same age group. For the standard, we select the average of the logit of the age-specific probabilities of being a head in the 1991, 1996 and 2001 census. It is important to note that unlike conventional standards using in mortality models, the proportion of individuals of a given age who are heads does not necessarily increase (decrease) monotonically. This means that the interpretation of the parameter β is not always straightforward though it preserves its role as parameter that "tilts" the observed proportions relative to the standard. To avoid ambiguities we will apply procedures using alternative standards and verify that results lead to similar conclusions.

This model can also be expressed as:

$$\text{logit } Y(x) = a + bx + \beta(\text{logit } z_x)$$

where $(a + bx)$ is α.

The parameters α and β change the level of the standard probabilities as follows: The parameter α is an indicator of the headship "level" affecting headship at all ages in the same direction. $\alpha > 0$ implies higher levels of headship. The parameter β, on the other hand, represents the slope of the headship function. A value $\beta > 1$ leads to higher values of the probabilities of being a head at ages above the median (approximately) and to lower values at ages below the median. As the parameter decreases below 1 the reverse occurs. The covariates, x, are assumed to affect the value of α, not the value of β. But this can be generalized easily to also make β a function of covariates.

We model the effects of the following covariates *x*: marital status, population group, education, region of residence, household type. The set of estimated regression coefficients for 1991, 1996, and 2001 will allow us to identify similarities and differences over time in the magnitude and direction of the estimated effects of each variable on the probability of being a head. The level of heterogeneity of α and β will allow us to assess change in the age pattern of headship over time. In fact, we may expect a certain degree of heterogeneity in these parameters, primarily because of differences in pre- and post-*apartheid* policies on population mobility and their effect on various household members, and the age-selectivity of AIDS mortality.

To decompose changes in headship rates over time and assess the relative contribution of the effects of changes in individual propensities and of changes in population composition to the overall change in headship rates between two time periods, we will adopt the following steps:

a. Calculate predicted probabilities in time 1 and time 2

$$Y_x^1 = a^1 + b^1 x^1 + c^1 Logitz_x$$
$$Y_x^2 = a^2 + b^2 x^2 + c^2 Logitz_x$$

b. Calculate predicted probabilities in time 1 after substituting the coefficients of logit models estimated for time 2, and, alternatively, substitute the means of the variables in time 1 with those in time 2.

$$\bar{Y}_x^1 = a^2 + b^2 x^1 + c^2 Logitz_x$$
$$\bar{\bar{Y}}_x^1 = a^1 + b^1 x^2 + c^1 Logitz_x$$

c. The same procedure is done by substituting coefficients and variables of time 2 into equations for time 1.

$$\bar{Y}_x^2 = a^1 + b^1 x^2 + c^1 Logitz_x$$
$$\bar{\bar{Y}}_x^2 = a^2 + b^2 x^1 + c^2 Logitz_x$$

d. Calculate observed difference in predicted probabilities: $Y_x^1 - Y_x^2$

e. Calculate difference (D_1) due to changes in variables *x* (to estimate the effects of change in population composition by marital status, education, residence, pop group, household type).

$$Y_x^1 - \bar{\bar{Y}}_x^1 = \Delta_1$$
$$Y_x^2 - \bar{\bar{Y}}_x^2 = \Delta_2$$
$$D_1 = \frac{\Delta_1 + \Delta_2}{2}$$

f. Calculate difference (D_2) due to changes in coefficients (to estimate the effects of changes in propensities):

$$Y_x^1 - \bar{Y}_x^1 = \Delta_1$$
$$Y_x^2 - \bar{Y}_x^2 = \Delta_2$$
$$D_2 = \frac{\Delta_1 + \Delta_2}{2}$$

g. From this, we will calculate the relative contribution of the effects of changes in propensities and that of the effects of changes in population composition to overall observed change in headship rates.

To carry out the fourth objective and examine what type of households women are more likely to head, we will run multinomial logit models to estimate the probability of

residing in a particular type of household as a function of age, headship status, residence, population group, education.