Employment, government cash transfers and household living arrangements in old age: implications for intergenerational support in rural South Africa

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Introduction

This article employs descriptive and regression analyses to examine household living arrangements and access to income by older people and by members of their household over the period 2005-2010, and on the basis of the patterns and trends to postulate on the probable directional flow of support from, to and between older people. It uses longitudinal surveillance data for the period 2005-2010 collected in rural South Africa. The paper begins with a section on theoretical underpinnings of intergenerational transfers, followed by a section which will briefly discuss income sources among rural South African populations and a discussion on income pooling within households. This background discussion will then be followed by sections on study objectives, data sources and study design including an overview of analytical measures and factors considered. A presentation of the study findings, comment on these findings and a conclusion section will then conclude the paper.

Some theoretical underpinnings of intergenerational transfers

The social care system in sub-Saharan Africa is usually characterised by reciprocity between younger and older generations: initially parents and older people are responsible for the care and well-being of the younger generation, once that generation has achieved independence and/or older people become less physically and economically active, the younger generation is expected to care for and support the older generation. According to Bengtson's solidarity theory (1975), the transfer of care and support between younger and older generations is governed by family bonds, which include emotional connectedness, geographical proximity, shared norms, values and expectations (Lowenstein 2005). However, tension and disagreement may sometimes lead to a breakdown of filial relations to the detriment of intergenerational support flows. Cultures, norms and socialisation of the individual, family and society are vital for maintaining a sound intergeneration support system (Giarrusso, Silverstein et al. 2005). Such filial piety is not restricted to African societies. A study from western Canada revealed quite strong piety where adult children expressed supporting older persons not as a form of 'pay back' but rather as a result of strong feelings for mutuality in support, filial duty and reciprocated love (Funk 2012). Evidence of strong intergenerational exchanges between older persons and their adult children has similarly been found in Britain (Grundy 2005). But even where norms, cultures

and expectations encourage strong filial relations, circumstances beyond the individual or family may hamper the flow of support between the younger and the older generation.

According to the political-economy perspective, intergenerational support is highly dependent on the economic and political constraints imposed on the individual (Phillipson 2005). For instance, high unemployment among the younger generation may limit their ability to support the older generation (Aboderin 2005), likewise older people with limited resources may not be able to support the younger generation. The composition of households may thus present opportunities for mutual exchanges of care and support (Lowenstein 1999). However, the assumption that older people in developing countries living in extended families will have secure and satisfying lives has been questioned (Johnson 2005). Johnson (2005) suggested that relations within the family and socio-economic circumstances are likely to impact on intergenerational support more than household composition. Antonucci and colleagues (2011) note that individual characteristics like sex, age and race will additionally influence the support exchanged. A combination of economic hardships and the HIV epidemic (Schatz and Ogunmefun 2007; Muhwava 2008) in sub-Saharan Africa has likely contributed to major shifts in the social support system. At the time when older people are in need of care and support they may not get it as either the adults are economically deprived to be able to provide or they are not available due to the severe consequences of HIV on adult mortality.

Sources of income for daily living in rural South Africa

Income for households in rural South Africa is usually derived from a variety of sources, but mainly from wages of resident household members, pensions or remittances from migrant household members (Case and Deaton 1998; Lund 1999; Neves and du Toit 2013). South Africa has a well-documented system of social assistance in the form of cash transfers to older people, persons with disabilities and children, initially designed to assist poor white people reaching retirement age without adequate pension provision but gradually extended to all non-white people by 1994 at the dawn of democratic governance (Lund 1993; Sagner 2000; Lund 2002; Case, Hosegood et al. 2005). South Africa's cash transfer programme has been described as among the most far-reaching and generous social assistance schemes

globally (van der Berg and Moses 2012; Barrientos, Møller et al. 2013). Although these transfers are meant to be received by individuals, they invariably benefit the whole household (Neves and du Toit 2013). Evidence from model cash transfer programmes in developing countries like Brazil, Mexico, Nicaragua and South Africa have demonstrated how even relatively low cash transfers to individuals living in abject poverty can be successful in reducing beneficiary household's income poverty (Ardington and Lund 1995; Case and Deaton 1998; Rawlings and Rubio 2005; Lloyd-Sherlock, Barrientos et al. 2012; Lloyd-Sherlock, Saboia et al. 2012).

South Africa has a range of cash transfers of varying amounts available to citizens or permanent residents (see Table A - 1 in appendix for a table adapted from Nyirenda and Newell (2010) of the various grant, their amounts and eligibility criteria). These include pension grants for persons aged 60 years or older; disability grants for adults aged 18-59 years with a mental or physical disability; war veterans grant for persons aged 60+ who fought in the second world war or Korean war ; care dependency grant for (carers of) children under 18 years with a severe or permanent disability; foster child grant for adults who are legally endorsed as foster parents of a child; child support grant to help support children under 18 years whose parents are not able to provide for them; grant-in-aid to help a person in full time attendance to a person in receipt of old-age, war veterans or disability grant; and lastly the social relief of distress grants for temporary relief in the event of a disaster (Sassa 2013). As of October 2013, all the above grants were around R1200 per month (approximately US $120 at mid-2013 exchange rates) except for child support, grant-in-aid, and foster child grant, which were much lower (Table A - 1). Prior to April 2009 the age-eligibility for the old-age grant was 63 years for men and 60 for women, then changed to 61 for men and from April 2010 changed to 60 years or older for both men and women (Sassa 2013). However, even before these changes, a non-trivial proportion of older people not yet age-eligible were receiving the old-age grant, estimated at about a quarter (23%) of age-ineligible men in the early years, either fraudulently or because some officials decided to overlook the eligibility criteria given the deprived status of the population (Case and Deaton 1998). In addition to the age-eligibility criteria, most of these grants are means tested as the grants are meant to assist persons with insufficient means to support themselves (Sassa 2013). That is, they are meant to be given to individuals whose asset

and/or income threshold (or that of spouse if married) is below a certain amount. In practice though, and for the old-age pension in particular, age eligibility and lack of a private pension are the main criteria determining receipt of this grant (Case 2004). In many rural areas of South Africa, income from government cash transfers, particularly the older age grant, has become the mainstay of household well-being (Booysen 2004; Kimuna and Makiwane 2007). As early as 1998, it was estimated that 80% of age-eligible older people among the African population were receiving the old-age pension grant (Case and Deaton 1998). In the quinquennium 1998-2003, the total number of cash transfer beneficiaries in South Africa is reported to have increased from 2.8 to 5.8 million people (Booysen and Van Der Berg 2005), and between 2001 to 2007 there was an over 200% growth in grant beneficiaries in South Africa from 3.5 million to 12 million (van der Berg and Moses 2012).

Income pooling and sharing in rural South Africa

Income from cash transfer programmes in rural South Africa, in particular the old-age pension grant, has been associated with larger household sizes as a result of attracting unemployed adults around a grant recipient (Neves, Samson et al. 2009). Also as shown by Klasen and Woolard (2009), unemployed adults are less likely to set up their own household and more likely to live with an old-age grant recipient to benefit from the resources. Whereas earlier results did seem to suggest a negative relationship between grant receipt and labour force participation (Case and Deaton 1998), more recent evidence suggests grant receipt may actually facilitate the mobility of the same unemployed adults in search of employment elsewhere (Booysen and Van Der Berg 2005; Ardington, Case et al. 2009). For example, Booysen and Van Der Berg (2005) demonstrated that whereas having an old-age or disability grant recipient in a household was associated with unemployment of other adult household members, receipt of child support grants was associated with higher likelihood of participation in the labour force by adults. Posel and colleagues (2006) further showed that this negative association between pension receipt and labour force participation disappeared when non-resident members were included in the definition of a household.

By improving living conditions, nutritional status and reducing stress of household members for day-to-day activities, cash transfer programmes have also been shown to protect the health status of not just the recipient but all household members (Case 2004). This of course is dependent on income pooling or the extent to which income is shared within the household. The continuum of income sharing will range from no sharing, where household members act to maximise individual benefits, to complete sharing, where individuals within a households act as a single entity. In practice many households will oscillate between these two extremes of no sharing to complete sharing as situations demand (Case 2004). Specifically the old-age pension has been noted to be usually pooled for general household spending, as most older people live in households with multiple generations (Ardington and Lund 1995; Case and Deaton 1998; Lund 2002). As Hosegood and Timeaus argue (2005), although not all members of a household would be related to each other, may not eat from one pot or care physically for one another, it is highly likely that household members will be related to each other somehow, will share their incomes and care for each other. This resonates with findings by Case that about 84% of older people receiving the old-age pension pooled their income and only 16% who did not (Case 2004). However, it is equally likely that older people would benefit from having adults or children in the household with an income. For households in generally poor areas much of the income earned from either employment or government cash transfers by any resident household member is likely to be shared within the household for common goods such as food, housing and health expenses (Case and Deaton 1998).

Despite the rural location of the population considered in this analysis, there is little subsistence farming going on in the area (Curtis, Bradshaw et al. 2002; Muhwava and Nyirenda 2008). For survival most people rely on income from formal employment and/or from government social grants, in particular the old-age pension and child support grants (Ardington, Case et al. 2009; Neves, Samson et al. 2009; Leibbrandt, Finn et al. 2012). However, there is limited information about the effect of household income by the older person as well as all other household members on probable support flows between the younger and the older generation.

Study aim and objectives

The main aim of this analysis is to contribute to the discourse on intergenerational exchanges of support between younger and older people aged 60 years or above by examining their household living arrangements and access to income over the period 2005-2010 in rural South Africa. Specifically the objectives of this study are:

1. To describe household living arrangements of older people aged 60+ in rural South Africa over the period 2005-2010;
2. To examine access to income (from government cash transfers or employment) by the older person and other household members over the same period; and
3. To postulate on the probable directional flow of support exchanges between younger and older people given income sources and living arrangements within the household.

In addition to income among older people, income from any other person in the household from government cash transfers or employment (formal or self-employment) was also included in the analyses. Excluded from the analysis was any potential income from remittances or donations that older people or any other household members may be receiving as those data were unavailable and there are considerable measurement challenges for these alternative sources of income (Lund 1999: 58). However, leaving out remittances should not significantly bias our findings as it has been noted by Jensen (2004) that receipt of a government cash transfer results in significant reductions in remittances to older people of around 30 cents per rand of cash transfer received. That is to say, the likelihood that households receiving government cash transfers receive additional remittances decreases with the amount of cash transfers received.

Definition of terms

Persons aged 60 years or older were defined as older people, while adults are those aged 18-59 years and children those aged less than 18 years. According to South African labour laws “work by children under 18 which is exploitative, hazardous or otherwise inappropriate for their age, detrimental to their schooling, or social, physical, mental, spiritual or moral development” is defined as child labour (Department of Labour 2012). Age 18 is in addition

the time around which many are expected to complete secondary education and start to search for their first job.

Sources of data and study design

Data for this analysis came from the longitudinal Africa Centre Demographic and Health Surveillance located in uMkhanyakude district in northern KwaZulu-Natal, South Africa. Since inception in 2000 data on demographic, social, health and household characteristics are collected from a key household respondent on all household members (Tanser, Hosegood et al. 2008), in bi-annual rounds until end of 2011 and tri-annual thereafter. A distinctive feature of the Africa Centre's surveillance is the definition of a household not as a group of related individuals dwelling together or eating from the same pot, but as a social unit of related or unrelated individuals who identify themselves as one either through a shared household head or owner of dwelling unit (Hosegood and Timæus 2005). As a result, even individuals not physically living in the surveillance area can be included as non-resident members provided the key household informant considers such individuals to be household members. In addition individuals can report to belong to more than one household in the surveillance area, with their record updated at each of the households of which they are a member, although they can only be resident in one household at a particular time (Hosegood and Timæus 2005; Hosegood, Benzler et al. 2006). In the context of the analysis presented here, these non-resident members are important as in many cases they are employed or have left in search of employment leaving behind young children being cared for by an older person, but may continue to support their household of origin (Ardington, Case et al. 2009).

In addition to the demographic information collected, household and individual socio-economic (HSE) status data such as asset ownership, access to water, electricity, sanitation facilities, education, employment and receipt of government grants has been collected annually from 2001 except for 2008. This paper was restricted to analysis of data collected over the period 2005-2010. Details about the Africa Centre surveillance have been previously presented elsewhere (Hosegood, Benzler et al. 2006; Tanser, Hosegood et al. 2008).

Analytical sample

This analysis considered the population of older people aged 60 years and above included in the Africa Centre longitudinal surveillance over the period 2005 to 2010. Snap-shots of the surveillance population as at mid-year of each year were divided into three broad age groups: children (under 18 years), adults (18-59 years) and older people (60+ years). We used age 60 as a cut-off into old-age as that is the age-eligibility for old-age pension grants and is widely used by international agencies like the United Nations to define ageing populations; by age 18 children are expected to have completed secondary level of education and are legally defined as adults. Of interest in this analysis were older people and all households to which they belonged and/or where resident. We explored household composition, living circumstances and having a regular income source (from government cash transfers or employment) of all registered household members.

In Table A - 2 (appendix) descriptive statistics of this population of older people stratified by whether they were non-resident or resident household members over the period 2005-2010 are presented[1]. Individuals belonging to one household but spanning different spatial locations is an important feature of particularly rural South African population, which can be traced back to the legacy of the apartheid era policies as well as to the government cash transfer programme in contemporary South Africa (Posel 1991; Posel, Fairburn et al. 2006). Close to three-quarters of resident older people were female compared to less than 50% among non-resident older people. For each year, a slightly higher proportion of older people among non-residents lived in urban areas than among resident older people. On the other hand, a higher percentage of resident than non-resident older people reported not to have completed any formal education, to be unemployed, to be receiving government grants and to belong to large households of 11 or more members (Table A - 2). This analysis was restricted to focus on older people who were resident in the surveillance area as at mid-year for each of the years from 2005-2010, as little is known about the composition, living arrangements or potential support exchanges by and from household members outside of

[1] Information for 2008 is not included in the table as the socio-economic characteristics key to this analysis - employment, grant access, education - for this year were not available.

the surveillance area. These differences by residency status, however, highlight the importance to allow for whether a household had non-resident members or not in subsequent analyses.

Measures

Factors considered were at two levels: individual and household. At individual level the following potential confounders of intergenerational flow of support were explored: age (in five and ten-year age groups), sex (male or female), place of residency (urban, peri-urban or rural), membership type (resident vs non-resident), employment status, receipt of government grants, being a primary care giver to children (under 18 years), co-residency with one's own children and marital status (never been married, married, previously married). At household level we examined: household size, number of members in employment, number receiving grants, household headship, and household composition (sole older person household, older persons' only households, skip generation households (older plus grandchild), multi-generation household (children, adults and older persons).

The main outcome variables in this analysis were directional flow of intergenerational support, which was estimated from information on employment and access to government grants within the household – the major sources of income in rural South Africa (Booysen 2004; Kimuna and Makiwane 2007), and changes in support flows given change in living arrangements. An indicator variable was generated for exchanges of support between older and younger people (intergenerational exchanges), with four categories:

1) in the case of a single older person or an older-persons only household, with an older person employed or receiving a grant, the directional flow of support was assumed to be self or peer-support;

2) where the older person in a household with adults and/or children was the only person listed as employed or receiving a grant (sole income earner in household) the directional flow of support was assumed to be downward;

3) where the older person was not earning any income but an adult or child in the household was recorded to be in employment or receiving a government grant, the directional flow of support was assumed to be upward; and

4) when an older person was earning an income and there was at least one other adult or child in the household also earning an income the directional flow of support was assumed to be bi-directional or reciprocal.

Missing data

To accommodate missing data for some of the covariates included in the models, multiple imputations were used on the basis of information collected in earlier or later years if available. For instance, if an individual had missing data on grant receipt in later years but were known to be receiving a grant in earlier years we carried forward their grant receipt status provided they were age eligible for that particular grant. To further address remaining missing data, an extra 'missing/don't know' category was created for affected variables. Although this could potentially introduce some bias in our estimates, any such bias is likely to be small if correlations between the outcome and explanatory variables is weak (Steele, Kallis et al. 2006).

Statistical analysis

Bivariate and multivariable descriptive statistics were assessed using chi-squared, t-tests and log-rank tests. We also examined changes over time in household size, household structure (sole older person household, proportion of adults, children and older people, and household headship), household composition (in employment, in receipt of government grants), and household socio-economic status. Information on employment, government cash transfers and household living arrangements was taken as at mid-year for 2005-2010. The year 2008 was excluded from the analysis because the household social economic module (HSE) in which information on employment and grants is collected was not conducted. We therefore had up to five repeat observations for the n=6806 persons aged 60+ during the period 2005-2010. About 15% (n=906) of the study participants had only a single observation; close to half (45%, n=2749) were observed in each of the years over the study period (2005, 2006, 2007, 2009 and 2010). For older persons observed throughout the study period (n=2749) multinomial logistic regressions were conducted to explore transition into various categories of intergenerational support flows between t_0 and t_1, where t_0 refers to characteristics of older persons at first or baseline observation which is 2005 and t_1 are their characteristics as at last observation in 2010. Multinomial logistic regressions were run

for change between t_0 and $t_1$into peer, downward, upward and reciprocal support using no change in intergenerational transfer flows as the base outcome, given changes in living arrangements. All models were adjusted for age, education, marital status, place of residency and household wealth status (or socio-economic status (SES)) as at t_1. An alpha level of 0.05 was set to test statistical significance. All analyses were conducted using Stata 11.2 (StataCorp 2009).

Ethical approval

Ethical approval for all data used in this analysis was obtained from the University of KwaZulu-Natal Bio-medical Research Ethics Committee (Ref: E009/00), which is annually re-certified. Participation in the Africa Centre's demographic, health and socio-economic surveillance is by verbal informed consent.

Study findings: A description of older people in rural South Africa

There has been a modest increase in the total population under surveillance by the Africa Centre in northern KwaZulu-Natal, South Africa. The total mid-year population increased from around 88,900 in 2005 to about 92,401 in 2010; with more women (52%) than men (48%) in the study population. The surveillance population as a whole is relatively young, with a median age of 20 years (IQR = 10-33) in the period 2005-2010. Of the total mid-year population, around 6% were older people aged 60 years or older. The overall median age among older people was 69 years (IQR = 65-76); 68 (IQR = 62-75) for men and 70 (IQR = 65-76) for women.

Household typology, employment, grant receipt and income trends, 2005-2010

Table 1 shows household structure characteristics and trends over time in employment, receipt of government grants and earning an income stratified by sex of older people. The total number of households under surveillance ranged from 11,882 in 2005 to 12,428 in 2010, of which about 35% contained at least one older person aged 60+ years. There were relatively more men in older-only households than women, but older-only households were rare. A higher proportion of women than men were in multi-generation households (households with grandparents, adults and grandchildren). The proportion of older people

in so-called skip generation households (households with older persons and young children only) was very low for both men and women. In addition, for women there was a slightly higher proportion of households with a non-resident adult member than among household with older men (22% vs 19% in 2010). Consistent with an average household size of about 8 persons, the majority of older people belonged to households with seven or more persons; household sizes varied widely from 1 to 61 household members (median 7).

There was a downward trend in the proportion of households with at least one employed person (adult or older person). For example, in households with older men, between 2005 and 2010 there was a decline from 73% to 62% in having at least one employed household member. The proportion of older women who lived in a household with at least one person in employment was a few percentage points higher than for men, but similarly declined from 74% in 2005 to 66% in 2010. It is evident from Table 1 that employment rates have generally been declining in the area over the study period, but employment levels have remained higher among non-resident than resident household members. Although not included in Table 1, the proportion of households with three or more employed persons in 2010 was nearly five-times as high (14% compared to 3%) in households with employed non-resident members than among those with only employed resident household members. With regard to employment levels among older people, they have similarly been declining over time and employment rates among older men are relatively higher than among older women. In addition, the proportion of older people who are the only employed person in the household has also fallen, especially among older women. In contrast to employment trends, the proportion of households with at least one person accessing a government grant has steadily increased in both households with older men and with older women, substantially so among older men. Interestingly in spite of this upward trend in grant receipt, the proportion of households where the older person is the only grant recipient in the household has fallen over time. Combining information on employment status and access to grants shows upward trends in having at least one person with an income in the household, such that by 2010 about 88% of households among men had at least one person with an income compared to 93% among women. However, the proportion of older persons who were the sole income earners in their household declined over time; by close to 50% for example among women from 13% in 2005 to 7% in 2010.

Socio-demographic details and some living arrangement characteristics for resident older people stratified by sex are shown in Table 2. The population of older people comprised of about 70% women, and over 40% aged 60-69 in each of the years for both men and women. There was little difference between men and women with regard to co-residency with own children, place of residency and household size, although a slightly higher percentage of older women than older men were co-resident in the same homestead with their own children. Overall, close to 29% (n=1464) of older people, most of whom were women, were listed as primary care givers to one or more young children (<18 years) (Table 2); women were also more likely to look after more than one child than men were. In over half of the cases where an older person was said to be a primary care-giver it was to an orphaned child.

Patterns and trends of intergenerational flows of support, 2005-2010

Using data on grants and employment status of older persons and other household members, Figure 1 shows the likely directional flow of support exchanges on the assumption that whatever income is earned (from employment or grants) by household members will somewhat be shared. Such that if adults or children are the only sources of income then support will predominantly flow upward (from younger to older person). On the other hand if the older person is the only one with an income then support will most likely flow downwards, and where both younger and older people have an income then there is likely to be some sharing of support (reciprocal) within the household. For older-only households support will either be towards self or to another older person (peer-support). Figure 1 shows that the proportion of households where the likely directional flows of support is peer-support has remained relatively constant at around 5% for men and 3% women. The proportion of households where an older person is likely to be predominantly supporting younger people (downward support) was always low, and has further declined overall as well as for men and women separately. Overall, downward support declined from around 11% in 2005 to 7% in 2010. The percentage of older people receiving support from younger persons (upward support) was much higher than for downward or peer support flows ranging from 8% to 30%, but upward support likewise declined over time. What have increased are households where older and younger people are supposedly helping to support each other (reciprocal support).

Table 3**Error! Reference source not found.** presents differentials in directional flows of support by characteristics of older people for 2010. Neither the percentage of men nor women in peer-support showed much difference with age. The percentage of men supporting younger people as well as in reciprocal support significantly increased with age, while receiving support from younger people declined with increasing age. For women no significant changes in support flows were observed with age. In 2010, for both men and women differentials by place of residency were significant, upward support was highest among urban dwellers, while reciprocal support was more common in peri-urban and rural areas. In terms of marital status, whereas reciprocal support was more common for both men and women, this was especially true for the previously married older people. A relatively higher proportion of older men resident with their own children (45%) were in upward support compared to among older women (37%). However, among older people co-resident with their own children the highest proportion were in reciprocal support flow households among both men and women. Table 3 further shows that most older people listed as main care-givers were similarly in reciprocal support flows, consistent with findings regarding co-residency with own children. Other differentials worth mentioning relate to household structure. In particular, whereas about 44% of older people living with children only were likely to be receiving support from the children (upward support), less than 40% of older persons resident with adults only were likely to be receiving support from the adults. Over 50% of older persons belonging to households with one or more non-resident adults were in reciprocal support flows; as was the case for households with 7 or more members among both men and women.

Changes in living arrangements and intergenerational support flows over time

In the sub-sample of participants observed throughout the period 2005-2010 (n=723 men and 2026 women), changes in living arrangements between t_0 (baseline) and t_1 (last observation) are presented in Table 4 and Table 5 by 10-year age groups for men and women respectively, which essentially revealed a lot of stability by age group and overall for many of the characteristics considered. For example among older men, 80% of those co-resident with their own child at t_0 were still co-resident at t_1; 16% were not co-resident at t_0 and t_1 and for around 90% of older men household structure had remained unchanged.

Similarly, the majority of older men had either remained poor (close to 60%) or remained rich (one in five) between t_0 and t_1. With regard to changes in employment status and access to grants, just a little over one half of older people belonged to households with at least one employed person or grant recipient in the household between t_0 and t_1. There were significant changes in household sizes over time; Overall, close to 50% of older men belonged to households that increased in size between t_0 and t_1; while household size declined for almost 30% of male participants. Changes in living arrangements observed for older men were generally similar to those for older women as shown in Table 5. Some notable differences pertained to change in being a main care-giver, with for instance over 10% of older women not main care-givers at t_0 becoming main care-givers t_1 compared to less than 3% for men. Overall, however, living arrangements characteristics among older women were generally as stable as among older men. This was the case even when the analysis was extended to all participants observed at least twice over the period 2005-2010 (n=1587 men and 3620 women) (results not shown); living arrangements with respect to inter alia co-residency with own children, household SES, household size, household structure, employment and grant receipt status remained largely unchanged even among this extended sub-sample, further justifying restricting the analysis only to participants observed throughout the period.

Despite the relative stability in living arrangement patterns highlighted above, Figure 2 shows there were significant changes in probable directional flows of support among participants observed throughout the period 2005-2010 between their baseline and last observation status. Around 51% (n=371/723) of older men and 46% (n=934/2026) women had experienced changes into peer, downward, upward or reciprocal support flows between t_0 and t_1. The biggest changes were into upward and reciprocal support. For around 50% of both men and women, however, there was no change in probable intergenerational support flows between baseline and last observation. The relative risk of changes in intergenerational support flows contingent on changes in household living arrangements was further explored in regression analyses for this sub-sample in the next section.

Modelling the relationship between living arrangement and intergenerational flows

Figure 3 shows for older men results from multinomial logistic regressions of transitions between baseline and last observation into various categories of intergenerational support flows, given changes in living arrangements, using no change in support flows as base category and adjusted for age, education, marital status, place of residency and household wealth status as at t_1 (2010). For older men whose household structure had changed between baseline and endline to become a skip-generation household (defined as older person living with adults or children only), there was a statistically significant increased likelihood of change in intergenerational support flows to downward support. Whereas for households among older men which had become multigenerational over the period, there was a statistically significantly increased likelihood of change into upward support flows. Multigenerational household structure was further marginally associated with increased relative risks of transition into reciprocal support in the adjusted multinomial regressions.

As was the case for older men, Figure 4 shows that among older women becoming skip-generation households and multi-generational households was statistically significantly associated with transition into downward and upward support flows, respectively. It is also worth pointing out that for both men (Figure 3) and women (Figure 4), for change in living arrangements to become skip-generation households, the relative risks of transition into upward support and reciprocal support were both not statistically significant relative to no change in support flows between t_0 and t_1. Among older women it became very evident that change into multigenerational households was associated with significantly increased relative risk of transition into downward support relative to no change in support flows between t_0 and t_1. There was in addition statistically significant increased likelihood of reciprocal support when households with older women became multigenerational households.

Comment on study findings

In this analysis household living arrangements, having an income from employment or government grants, and the potential implication of these on support exchanges between older and younger generations was investigated. Although the general population under

surveillance in the Africa Centre surveillance study area is relatively young, at 6% the proportion of older people aged 60 years and above is nearly twice as high as in many sub-Saharan African countries like Uganda, Niger, Guinea and Tanzania (United Nations 2002). With projections indicating further rapid increases in this ageing trend, older people have become of growing social and public health concern (Kalache and Keller 2000; He, Muenchrath et al. 2012), and this analysis makes an important contribution to this discourse.

Even though the study area is largely rural, daily living is predominantly built around a cash economy. Government grants and formal employment are the major sources of income on which this rural population is heavily reliant (Tanser, Hosegood et al. 2008; Ardington, Case et al. 2009). According to information from Statistics South Africa (2013), unemployment levels in South Africa among the adult population 15-64 years were lowest at 21.8% by the 4th quarter of 2008 since when unemployment rates steadily increased to 25.6% by the second quarter of 2013. Consistent with those trends, findings here revealed a steady decline in the proportion of older people in households with at least one employed person. Levels of employment in the households had been relatively constant from 2005 to about 2007, since then there were noticeable declines up to 2010 amidst the global financial crisis. Expectedly even among older people themselves, the proportion employed declined over the period. In any case most of these older persons were past the retirement age, thus it is not surprising that employment levels declined over time. But trends in the proportion receiving government grants especially among older men were moving in the opposite direction during the study period. A combination of these two trends resulted in generally an increase over time in the proportion of older people with an income; as such by 2010 around 90% of older people in the study had an income - the bulk of it from grants. The increasing accessibility to government grants has been an effect of legislative changes as well as pressure from civil society on government to rapidly roll out the transfers to more people country wide, not only old-age people but younger people as well, women and children in particular. The effect of this wide accessibility to grants can be seen in this analysis particularly for men - as older people were increasingly accessing grants, the proportion of households where the older person was the only person receiving a government grant was declining.

The study area is characterised by high unemployment levels (Curtis, Bradshaw et al. 2002; Muhwava and Nyirenda 2008); by 2010 only around 37% of the resident adult population (15-64 years) were in employment (www.africacentre.com). Despite such high unemployment levels, it is interesting to note from results of this analysis that around 60% of households with an older person had at least one employed person. And combined with access to grants, over 90% of the households had at least one person with a recognised income source. This suggests households are most likely built around an employed person and/or persons with a government grant. This lends credence to assertions of income pooling in rural South African settings (Ardington and Lund 1995; Case and Deaton 1998; Lund 2002; Case 2004; Neves and du Toit 2013). This income from government grants and/or employment is highly likely to be shared within the household (Booysen 2004; Hosegood and Timæus 2005; Kimuna and Makiwane 2007), and influences mobility and living arrangements of household members (Møller and Ferreira 2003; Booysen and Van Der Berg 2005; Ardington, Case et al. 2009; Neves, Samson et al. 2009). The nuances of how this income may or may not be shared in the household was beyond the scope of this analysis, the focus here was merely on the potential for exchanges of support given who in the household has an income. We previously showed that over four-in-five older people receiving a grant said they used it on household expenses rather than to meet their own needs (Nyirenda, Evandrou et al. 2013). Therefore, if older people with an old-age pension living with others in the household share their income, then it is highly likely that adults or children with an income will equally be expected to share some of their income with other household members.

No significant differences were observed between older men and women regarding marital status, education level, place of residency and household size, but there were significant differences between men and women in being a primary care-giver, and co-residency with own children – with more women than men for each of the factors. Co-residency with one's own children is not only important for potential exchanges of support but for psychological well-being as well. A Chinese study demonstrated how older people co-resident with adults had a better life satisfaction compared to those living along or even those living with a spouse only (Wang, Chen et al. 2013). Overall, only around 4% of households in the study

were older-only or older with children-only (around 6% for older men, 3% for women); the overwhelming majority of households, 85%, were multigenerational, that is, there were older persons, adults and young children in the household. Furthermore, about 1-in-5 households had a non-resident adult household member. Usually adults leave the area due to better employment prospects outside the area; their out-migration may be preceded by them securing some income in the form of child support grants for any children they may be leaving behind in the care of older people (Ardington, Case et al. 2009). Thus non-residency is not only associated with having at least one other person other than the older person with an income from for instance child support grants. There is likely to be in addition more income from elsewhere if the adult finds employment at their place of destination. For older women, non-residency of adult household members is also encouraged by the fact that they are more readily able to provide care to young children (Hill, Hosegood et al. 2008; Nyirenda, Evandrou et al. 2013). Even though the proportion of households with at least one employed person declined between 2005-2010, there was a relatively higher proportion of households with an employed non-resident than employed resident member. This is partly explained by the fact that those who out-migrate tend to have better education and may have better social networks outside of the surveillance area which helps in finding employment (Muhwava, Hosegood et al. 2010).

The proportion of households where one older person was likely to be supporting self or another older person (peer-support) remained stable over the study period at 3-5%. However, both the proportion of households where an older person may be supporting younger people (downward support) or where younger people are supporting an older person (upward support) declined over the study period. What has evidently increased and remains the predominant likely directional flow of support (78% overall) is younger and older people helping to support each other (reciprocal support). There appears to be some shifting from upward and downward into reciprocal.

Findings from this analysis have established that living arrangements among both older men and women have remained highly stable over the study period. Among those observed throughout the period 2005-2010, around 80% remained co-resident with their own children, about 60% remained poor and close to 90% had no change in their household

structure. As such because living arrangements have remained fairly stable, changes in access to income by older persons as well as other household members have implied major changes in the probable directional flows of support between older and younger people. This was particularly the case with regard to access to grants. Nearly 80% of older people not receiving a grant at baseline were highly likely receiving support from younger persons (upward support), but if they then had a grant at subsequent time period about 87% changed to reciprocal support exchanges. Conversely, if they had been receiving a grant at baseline but were not at a later time point, where as 80% would initially have been in reciprocal support households, 94% were in upward support at the latter time point. That is, when older persons have an income they are less likely to be a burden on younger persons and do usually make a contribution to household income (Edmonds, Mammen et al. 2003; Neves, Samson et al. 2009; Lloyd-Sherlock, Barrientos et al. 2012).

Our findings suggest an older person living with children only or with adults only is more likely to be supporting the children or adults rather than the other way round, which given strong filial piety is to be expected. A study from rural South Africa showed how older people felt strongly obligated to provide care and support to their children or grandchildren with sentiments such as: “taking care of my own blood”, “I am bound to look after them” or “it is my responsibility” (Schatz 2007). Older people are prepared to provide care and share their incomes even at great cost to their own physical and emotional well-being (Aboderin 2007; Nyirenda, Evandrou et al. 2013). Findings here further suggest that next to supporting younger persons, older people in skip-generation or multi-generational households are highly likely to be supporting each other with younger persons with an income source.

Conclusions

Over the five years considered in this analysis, household living arrangements changed very little, indicative of how robust living arrangements are to shocks such as high HIV prevalence and wide spread access to HIV treatment that have led to major changes in adult mortality rates (Herbst, Cooke et al. 2009). Highly likely due to wide spread poverty in the study area households either stay together or some members move away to other places to increase their employment opportunities. As a result whatever income is earned by household

members is highly likely to be shared within the household (Ardington and Lund 1995; Case and Deaton 1998; Lund 2002; Hosegood and Timæus 2005). Findings in this analysis are consistent with strong filial piety between older and younger people, as suggested by intergenerational solidarity theories (Lowenstein 1999; Bengtson, Elder et al. 2005). However, despite strong desires to do so, socio-political circumstances (Phillipson 2005), economic deprivation (Aboderin 2005) and individual relations or characteristics within families (Johnson 2005; Antonucci, Birdtt et al. 2011) may hamper potential exchanges of care and support between younger and older people.

When all else is considered, older people living with adult offspring were strongly related with downward support or at best with reciprocal support. Findings here are thus consistent with observations by Grundy (2005), that despite a strong reciprocity in intergenerational exchanges, on the balance of probability intergenerational exchanges are more downward rather than upward. For policy response to these findings, the coming together of adults or children to live with older persons should not be presented in the negative light it usually tends to be in the popular media. Rather in the absence of creation of employment opportunities within the study community, access to government grants should extend to all who are eligible. For unemployed adults who do not qualify for any of the current grants a form of unemployment benefit would be helpful in enabling them to make some contribution to household income and in so doing lessen the strain on the old-age grant received by the older person. Filial piety needs to be promoted as much as possible, and where possible co-residence of older persons, adults and children encouraged as it offers greater possibilities for the intergenerational exchanges of support and care to the benefit of both the older and the younger generation.

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TABLES

Table 1: Characteristics of households with at least one resident older person, 2005-2010

	Male					Female					
Characteristics	**2005**	**2006**	**2007**	**2009**	**2010**	**2005**	**2006**	**2007**	**2009**	**2010**	**p-value**
Number of households	1,171	1,163	1,153	1,161	1,155	2,416	2,428	2,431	2,502	2,613	
Household typology											<0.001
Older only HH	5.4	5.2	5.7	4.8	4.9	2.7	2.5	3.0	3.1	2.8	
Older + children HH	1.2	0.8	0.7	0.7	0.7	1.0	1.1	1.0	0.6	0.7	
Older + adults HH	9.1	9.9	10.1	12.4	12.6	9.3	9.1	9.0	9.4	9.4	
Multi-generational HH	84.3	84.1	83.5	82.1	81.7	87.0	87.3	87.0	86.9	87.1	
Household size											<0.001
1	3.7	3.8	4.0	3.6	3.8	2.2	2.2	2.6	2.6	2.5	
2-6	23.3	23.6	23.5	21.7	22.4	25.1	24.1	23.4	23.6	23.6	
7-10	30.4	31.4	29.1	28.1	27.5	31.2	31.3	31.8	30.3	30.2	
11+	42.6	41.2	43.4	46.6	46.2	41.5	42.3	42.3	43.5	43.7	
HH has a non-resident adult member	18.7	19.9	19.6	18	18.7	21.6	20.2	20.3	20	21.6	<0.001
HH has an employed person	72.5	70.1	72.7	67.7	61.9	74.2	72.4	76.7	70.6	65.5	<0.001
HH has an employed resident member	41.8	41.1	42.4	39.4	35.3	40.6	39.3	42.7	37.0	33.8	0.07
HH has an employed non-resident member	54.9	52.8	58.5	54.5	48.6	59.9	59.3	64.2	58.4	54	<0.001
HH has an employed older person	16.7	16.6	13.4	14.0	11.9	10.9	9.4	7.3	6.9	5.8	0.023
Only older person is employed in HH	4.4	5.0	3.3	3.7	2.9	2.3	1.7	1.4	1.2	1.1	<0.001
HH has at least one grant recipient	69.5	74.7	81.1	79.9	82.1	86.4	92.0	94.8	91.5	91.2	<0.001
Only older person is grant recipient in HH	36.3	36.5	20.5	18.4	19.5	43.6	40.2	22.6	18.1	17.5	<0.001
HH has at least one income earner	77.5	82.1	87.3	86.0	87.6	88.0	93.0	95.5	93.1	92.8	<0.001
Only older person earns income in HH	14.3	13.9	10.3	8.0	8.7	13.1	11.7	8.8	7.3	7.1	<0.001

Note: HH = Household

* p-value for chi square comparisons of male to female older persons by selected household characteristics.

Table 2: Description of surveillance resident population aged 60 years and above as at mid-year, 2005-2010

Residents	**Males**						**Females**					
Characteristics	2005	2006	2007	2009	2010	p-value	2005	2006	2007	2009	2010	p-value
Number of observations	1271	1270	1254	1281	1274		2960	2962	2955	3041	3146	
Age group						<0.001						<0.001
60-64	31.1	29.2	29.0	29.8	31.6		24.6	22.5	21.9	24.0	26.7	
65-69	25.0	27.6	28.2	28.1	24.4		25.1	26.4	27.0	24.0	20.3	
70-74	16.1	15.0	15.2	15.3	18.0		21.8	19.9	18.9	18.6	20.3	
75-79	17.0	16.8	14.8	12.3	10.9		16.7	18.1	17.9	17.6	15.7	
80+	10.8	11.5	12.7	14.5	15.1		11.8	13.1	14.3	15.9	17.0	
Marital status						<0.001						<0.001
Never been married	21.5	21.7	21.4	21.2	21.4		13.1	13.4	14.6	16.7	17.4	
Married	66.9	67.7	66.9	66.6	64.6		23.1	24.2	23.6	22.6	21.7	
Previously married	11.3	9.9	10.4	9.4	10.6		63.4	61.8	60.9	57.9	56.8	
Don't know	0.3	0.7	1.4	2.9	3.5		0.4	0.6	0.9	2.8	4.0	
Education completed						<0.001						<0.001
No formal education	48.0	44.9	42.8	39.1	32.4		53.7	51.2	50.9	48.3	43.4	
Primary	21.1	19.1	17.9	17.7	17.0		24.9	23.6	22.5	21.1	19.9	
Secondary+	11.7	9.1	11.3	11.7	10.0		6.4	6.5	7.0	7.4	7.4	
Missing	19.2	26.9	28.0	31.5	40.5		15.0	18.6	19.6	23.2	29.3	
Place of residency						0.358						0.364
Urban	2.0	2.3	2.5	2.8	3.1		2.8	3.2	3.3	3.6	3.8	
Peri-Urban	23.4	22.4	23.4	24.9	25.3		25.1	24.9	25.0	26.2	26.3	
Rural	74.6	75.3	74.2	72.3	71.6		72.0	71.8	71.7	70.2	69.9	
Is a primary care-giver*						<0.001						<0.001
No	92.8	93.0	96.4	97.8	96.5		48.8	47.5	49.7	56.1	57.3	
Yes	7.2	7.0	3.6	2.2	3.5		51.2	52.5	50.3	43.9	42.7	
Co-resident with own children						0.917						0.631
No	20.1	20.1	20.4	20.8	21.4		17.5	17.7	17.9	18.5	18.8	
Yes	79.9	79.9	79.6	79.2	78.6		82.5	82.3	82.1	81.5	81.2	
Household size						0.261						0.945
1	3.5	3.5	3.7	3.3	3.5		1.8	1.9	2.2	2.1	2.1	
2-6	23.1	23.0	23.1	21.6	21.8		23.7	22.9	22.4	22.4	22.5	
7-10	30.5	31.1	29.1	27.6	26.9		30.2	30.5	30.1	29.4	29.6	
11+	42.9	42.4	44.1	47.5	47.8		44.3	44.8	45.3	46.0	45.8	
Household Headship						0.750						<0.001
Self	91.0	90.6	91.2	90.2	91.8		44.9	46.6	48.9	51.2	53.3	
Spouse	0.9	1.3	1.0	1.0	1.3		23.2	22.9	22.5	22.3	21.7	
Other	8.1	8.2	7.7	8.8	6.9		31.9	30.5	28.6	26.6	25.0	

* Older person is listed in the household surveillance as a primary care-giver for a household member child aged less than 18 years.

p-value = difference in the categories for each variable over time for males and females

Table 3: Differentials in directional flows of support by characteristics of older people, 2010

	MALES					FEMALES				
	Peer	Down	Up	Reciprocal		Peer	Down	Up	Reciprocal	
	%	%	%	%	p-value	%	%	%	%	p-value
Age Group					0.011					0.08
60-69	4.5	2.7	44.7	48.1		2.1	2.8	37.8	57.3	
70-79	4.9	5.7	38.6	50.8		3.1	4.0	33.7	59.2	
80+	4.7	6.2	32.6	56.5		3.4	4.5	36.6	55.6	
Place of residency					0.047					<0.01
Urban	7.5	2.5	60.0	30.0		2.5	6.7	53.3	37.5	
Peri-Urban	5.6	5.9	38.5	50.0		3.5	3.7	32.6	60.1	
Rural	4.2	3.5	41.2	51.1		2.4	3.3	36.5	57.9	
Marital status					<0.01					<0.01
Never married	9.3	4.9	40.7	45.1		5.2	3.7	34.8	56.4	
Married	2.2	2.6	41.8	53.5		1.6	2.8	40.1	55.5	
Previously married	7.1	8.6	36.4	47.9		2.0	3.5	34.3	60.2	
NA/DKN	14.0	14.0	46.5	25.6		7.4	7.4	47.1	38.0	
Co-resident with own children					<0.01					<0.01
No	21.6	9.9	27.5	41.0		14.2	9.0	30.9	45.9	
Yes	0.0	2.5	44.9	52.6		0.0	2.3	37.3	60.4	
Main Care Giver					0.441					<0.01
No	4.8	4.1	41.1	50.0		4.7	5.2	37.5	52.7	
Yes	0.0	2.3	43.2	54.5		0.0	1.3	34.2	64.5	
HH Headship					0.332					<0.01
Self	4.9	4.2	40.7	50.2		4.0	4.5	33.7	57.8	
Spouse	0.0	5.9	64.7	29.4		2.2	2.9	39.9	55.0	
Other	2.3	2.3	42.0	53.4		0.3	1.9	37.9	59.9	
HH SES					<0.01					<0.01
Poor	8.4	6.6	23.2	61.7		4.7	5.6	21.7	68.0	
Moderate	1.5	3.7	32.5	62.3		1.0	2.7	24.3	72.0	
Richer	1.4	4.1	29.4	65.1		1.2	3.1	24.1	71.6	
HH structure					<0.01					<0.01
Older only HH	100.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	
Older + children	0.0	33.3	44.4	22.2		0.0	24.0	44.0	32.0	
Older + adults	0.0	23.6	39.5	36.9		0.0	20.8	36.2	43.0	
Multi-gen HH	0.0	1.1	43.7	55.2		0.0	1.6	37.1	61.3	
HH size					<0.01					<0.01
1	100.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	
2-6	5.4	17.3	38.5	38.8		2.5	14.1	36.2	47.2	
7-10	0.0	0.9	42.9	56.3		0.0	1.1	34.8	64.1	
11+	0.0	0.2	44.3	55.5		0.0	0.1	38.6	61.4	
Non-Resident adults in HH					<0.01					<0.01
0	22.2	10.2	34.2	33.5		15.8	10.7	30.3	43.2	
1	0.0	8.8	38.3	52.9		0.0	5.8	34.5	59.7	
2-6	0.0	0.6	43.9	55.5		0.0	0.9	37.7	61.4	
7+	0.0	0.0	49.3	50.7		0.0	0.0	43.3	56.7	
Number of observations	59	52	524	639		84	111	1136	1815	

Note: HH = household; p-value = difference in intergenerational support flows by categories for each variable for males and females

Table 4: Changes by age group in living arrangements of older people in rural South Africa, Males*

	60-69	70-79	80-89	90+	Total	p-value
Number of observations	234	319	142	28	723	
Change in co-residency status						0.768
Not Co-resident at t_0 and t_1	13.2	18.2	14.8	10.7	15.6	
Co-resident at t_0 but not at t_1	2.1	3.4	4.2	3.6	3.2	
Not Co-resident at t_0 but co-resident at t_1	1.3	0.9	1.4	0.0	1.1	
Co-resident at t_0 and at t_1	83.3	77.4	79.6	85.7	80.1	
Change in HH socio-economic status						0.377
No change, rich at t_0 and t_1	22.2	22.2	17.4	21.7	21.2	
Has become richer, was poor at t_0 but rich at t_1	6.8	11.7	6.4	13.0	9.1	
Has become poorer, was rich at t_0 but poor at t_1	13.1	14.6	10.1	17.4	13.3	
No change, poor at t_0 and at t_1	58.0	51.5	66.1	47.8	56.3	
Change in Marital status						0
Don't know/Miss	0.4	0.3	0.0	0.0	0.3	
No change, Never married at t_0 and t_1	18.4	17.2	11.3	0.0	15.8	
No change, Married at t_0 and t_1	63.7	65.2	73.2	57.1	66.0	
No change, Previously married at t_0 and t_1	3.8	6.6	8.5	32.1	7.1	
Change, Never married t_0 but Married/ Previously Married at t_1	4.3	2.2	0.0	0.0	2.4	
Change, Married t_0 but Not Married at t_1	6.4	7.5	6.3	10.7	7.1	
Change, Previously Married t_0 but Married at t_1	3.0	0.9	0.7	0.0	1.5	
Change in having Non-Resident Adults						0.99
No Non-Resident adults in HH at t_0 and t_1	9.8	9.4	10.6	14.3	10.0	
Non-Resident adults in HH at t_0 but not t_1	8.1	9.4	9.2	10.7	9.0	
No Non-Resident adults in HH at t_0 but has at t_1	7.7	8.5	8.5	3.6	8.0	
Non-Resident adults in HH at t_0 and t_1	74.4	72.7	71.8	71.4	73.0	
Change in HH size						0.3
HH size has remained same between t_0 and t_1	21.8	25.1	23.2	28.6	23.8	
HH size has increased between t_0 and t_1	48.3	47.3	47.9	25.0	46.9	
HH size has declined between t_0 and t_1	29.9	27.6	28.9	46.4	29.3	
Change in being Main Caregiver						0.322
No change, Not a Main Caregiver at t_0 and t_1	90.6	90.0	91.5	85.7	90.3	
Main caregiver at t_0 but not at t_1	8.1	6.9	4.2	7.1	6.8	
Not Main Caregiver at t_0 but has become at t_1	1.3	3.1	4.2	7.1	2.9	
No change, Main Caregiver at t_0 and t_1	0.0	0.0	0.0	0.0	0.0	
Change in HH structure						0.591
No change in HH typology between t_0 and t_1	92.3	89.0	88.7	85.7	89.9	
Became Older-only HH between t_0 and t_1	1.7	1.3	0.7	0.0	1.2	
Became Older with children only HH between t_0 and t_1	0.4	0.0	0.0	0.0	0.1	
Became Older with adults only HH between t_0 and t_1	4.3	6.0	6.3	7.1	5.5	
Became multigenerational HH between t_0 and t_1	1.3	3.8	4.2	7.1	3.2	
Change in having an employed person in HH						0.149
No change, No Employed person in HH at t_0 and t_1	10.7	14.4	11.3	14.3	12.6	
Employed person in HH at t_0 but not at t_1	18.4	26.0	25.4	28.6	23.5	
No employed person in HH at t_0 but has at least one at t_1	15.8	10.0	12.0	21.4	12.7	
No change, Has at least one employed person at t_0 and t_1	55.1	49.5	51.4	35.7	51.2	
Change in having an employed old person in HH						0.001
No change, No Employed older person in HH at t_0 and t_1	90.7	95.6	98.6	100.0	94.6	
Employed older person in HH at t_0 but not at t_1	8.5	3.2	0.0	0.0	4.3	
No employed older person in HH at t_0 but has at least one at t_1	0.8	0.6	1.4	0.0	0.8	
No change, Has at least one employed older person at t_0 and t_1	0.0	0.6	0.0	0.0	0.3	
Change in older person being only employed person in HH						0.11
Older person not only employed person in HH at t_0 and t_1	90.7	95.6	98.6	100.0	94.6	
Older person only Employed person in HH at t_0 but not at t_1	8.5	3.2	0.0	0.0	4.3	
No employed older person in HH at t_0 but has at least one at t_1	0.8	0.6	1.4	0.0	0.8	
HH has older person as only employed in HH at t_0 and t_1	0.0	0.6	0.0	0.0	0.3	
Change in older person receiving a grant HH						0
No change, no grant receipt older person in HH at t_0 and t_1	15.6	3.0	0.0	0.0	6.3	
Older grant Receipt person in HH at t_0 but not at t_1	8.7	18.5	11.7	25.0	14.2	
No older grant receipt person in HH at t_0 but has at t_1	52.0	11.2	0.9	0.0	21.6	
No change, has older grant receipt person at t_0 and t_1	23.7	67.4	87.4	75.0	57.9	

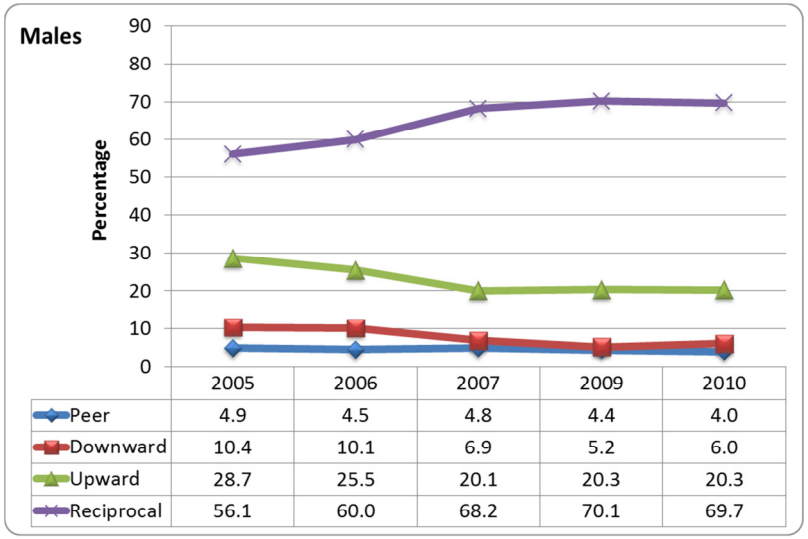
* For participants observed throughout 2005 to 2010; baseline (t_0) is observation in 2005, while t_1 is status at last observation in 2010; Age as at last observation.

Table 5: Changes by age group in living arrangements of older people in rural South Africa, Females*

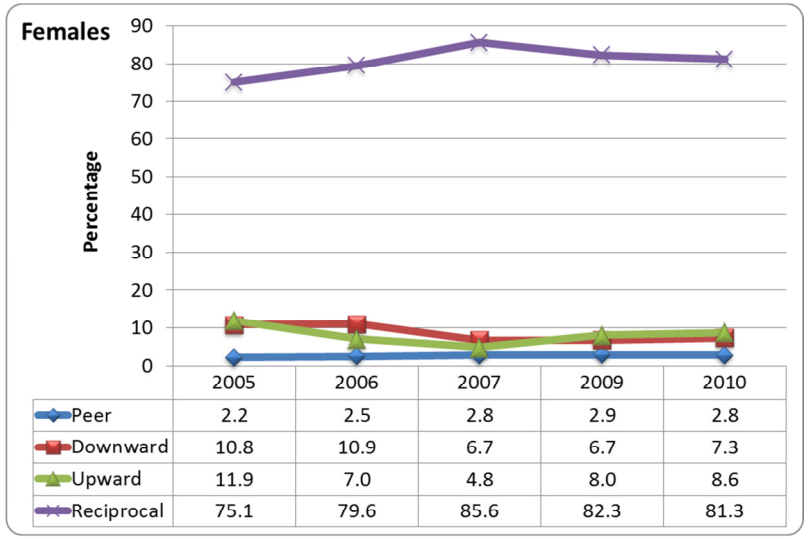
	60-69	70-79	80-89	90+	Total	p-value
Number of observations	561	997	399	69	2026	
Change in co-residency status						0
Not Co-resident at t_0 and t_1	11.1	11.6	18.3	23.2	13.2	
Co-resident at t_0 but not at t_1	2.9	5.7	7.0	2.9	5.1	
Not Co-resident at t_0 but co-resident at t_1	1.2	1.0	1.0	1.4	1.1	
Co-resident at t_0 and at t_1	84.8	81.6	73.7	72.5	80.7	
Change in HH socio-economic status						0.133
No change, rich at t_0 and t_1	19.7	20.8	18.6	11.3	19.7	
Has become richer, was poor at t_0 but rich at t_1	13.3	10.3	7.5	7.5	10.4	
Has become poorer, was rich at t_0 but poor at t_1	10.6	13.1	12.4	11.3	12.2	
No change, poor at t_0 and at t_1	56.4	55.9	61.5	69.8	57.7	
Change in Marital status						0
Don't know/Miss	0.2	0.4	0.5	0.0	0.3	
No change, Never married at t_0 and t_1	16.8	10.1	5.3	1.4	10.7	
No change, Married at t_0 and t_1	28.5	18.9	8.3	4.3	19.0	
No change, Previously married at t_0 and t_1	40.8	56.6	75.7	85.5	57.0	
Change, Never married t_0 but Married/Previously Married at t_1	2.1	1.6	1.8	0.0	1.7	
Change, Married t_0 but Not Married at t_1	9.6	8.6	6.0	4.3	8.2	
Change, Previously Married t_0 but Married at t_1	2.0	3.8	2.5	4.3	3.1	
Change in having Non-Resident Adults						0.652
No Non-Resident adults in HH at t_0 and t_1	8.0	7.2	6.5	10.1	7.4	
Non-Resident adults in HH at t_0 but not t_1	7.8	8.1	7.0	10.1	7.9	
No Non-Resident adults in HH at t_0 but has at t_1	5.5	7.6	8.5	4.3	7.1	
Non-Resident adults in HH at t_0 and t_1	78.6	77.0	77.9	75.4	77.6	
Change in HH size						0.746
HH size has remained same between t_0 and t_1	19.4	21.9	21.8	20.3	21.1	
HH size has increased between t_0 and t_1	45.5	46.4	44.1	42.0	45.6	
HH size has declined between t_0 and t_1	35.1	31.7	34.1	37.7	33.3	
Change in being Main Caregiver						0
No change, Not a Main Caregiver at t_0 and t_1	21.7	31.7	44.1	56.5	32.2	
Main caregiver at t_0 but not at t_1	24.8	25.5	30.3	29.0	26.4	
Not Main Caregiver at t_0 but has become at t_1	10.0	10.7	9.5	7.2	10.2	
No change, Main Caregiver at t_0 and t_1	43.5	32.1	16.0	7.2	31.2	
Change in HH structure						0.05
No change in HH typology between t_0 and t_1	90.2	90.1	92.7	85.5	90.5	
Became Older-only HH between t_0 and t_1	0.7	1.5	0.0	1.4	1.0	
Became Older with children only HH between t_0 and t_1	0.4	0.3	0.3	1.4	0.3	
Became Older with adults only HH between t_0 and t_1	6.2	4.1	4.3	8.7	4.9	
Became multigenerational HH between t_0 and t_1	2.5	4.0	2.8	2.9	3.3	
Change in having an employed person in HH						0.019
No change, No Employed person in HH at t_0 and t_1	8.9	10.7	11.8	15.9	10.6	
Employed person in HH at t_0 but not at t_1	20.3	23.6	19.8	21.7	21.9	
No employed person in HH at t_0 but has at least one at t_1	13.9	11.4	11.0	1.4	11.7	
No change, Has at least one employed person at t_0 and t_1	56.9	54.3	57.4	60.9	55.8	
Change in having an employed old person in HH						0
No change, No Employed older person in HH at t_0 and t_1	97.2	98.2	99.6	97.6	98.1	
Employed older person in HH at t_0 but not at t_1	2.2	1.5	0.4	0.0	1.4	
No employed older person in HH at t_0 but has at least one at t_1	0.3	0.4	0.0	2.4	0.4	
No change, Has at least one employed older person at t_0 and t_1	0.3	0.0	0.0	0.0	0.1	
Change in older person being only employed person in HH						0.285
Older person not only employed person in HH at t_0 and t_1	97.2	98.2	99.6	97.6	98.1	
Older person only Employed person in HH at t_0 but not at t_1	2.2	1.5	0.4	0.0	1.4	
No employed older person in HH at t_0 but has at least one at t_1	0.3	0.4	0.0	2.4	0.4	
HH has older person as only employed in HH at t_0 and t_1	0.3	0.0	0.0	0.0	0.1	
Change in older person receiving a grant HH						0
No change, no grant receipt older person in HH at t_0 and t_1	4.3	0.5	0.9	0.0	1.7	
Older grant Receipt person in HH at t_0 but not at t_1	17.4	17.8	20.0	20.8	18.2	
No older grant receipt person in HH at t_0 but has at t_1	10.5	2.7	1.3	0.0	4.5	
No change, has older grant receipt person at t_0 and t_1	67.8	79.0	77.8	79.2	75.6	

* For participants observed throughout 2005 to 2010; baseline (t_0) is observation in 2005, while t_1 is status at last observation in 2010; Age as at last observation.

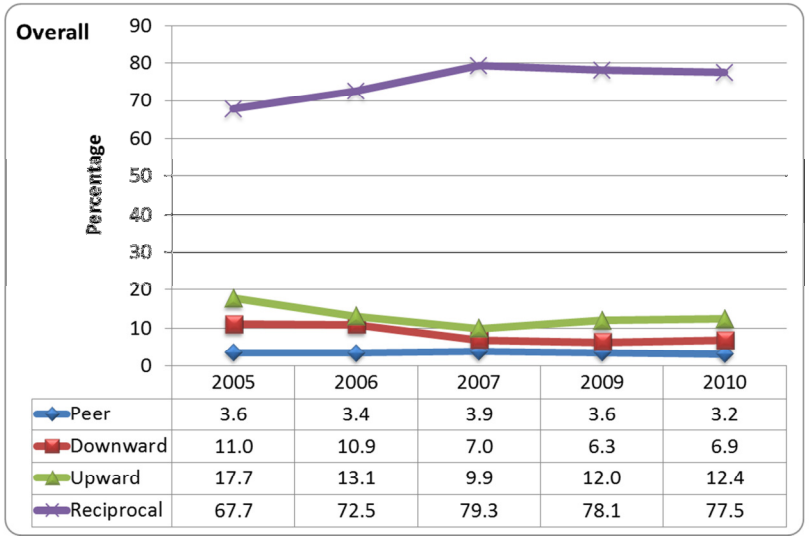
FIGURES



	2005	2006	2007	2009	2010
Peer	4.9	4.5	4.8	4.4	4.0
Downward	10.4	10.1	6.9	5.2	6.0
Upward	28.7	25.5	20.1	20.3	20.3
Reciprocal	56.1	60.0	68.2	70.1	69.7



	2005	2006	2007	2009	2010
Peer	2.2	2.5	2.8	2.9	2.8
Downward	10.8	10.9	6.7	6.7	7.3
Upward	11.9	7.0	4.8	8.0	8.6
Reciprocal	75.1	79.6	85.6	82.3	81.3



	2005	2006	2007	2009	2010
Peer	3.6	3.4	3.9	3.6	3.2
Downward	11.0	10.9	7.0	6.3	6.9
Upward	17.7	13.1	9.9	12.0	12.4
Reciprocal	67.7	72.5	79.3	78.1	77.5

Figure 1: Intergenerational flows of support among older people by year and Sex, 2005-2010

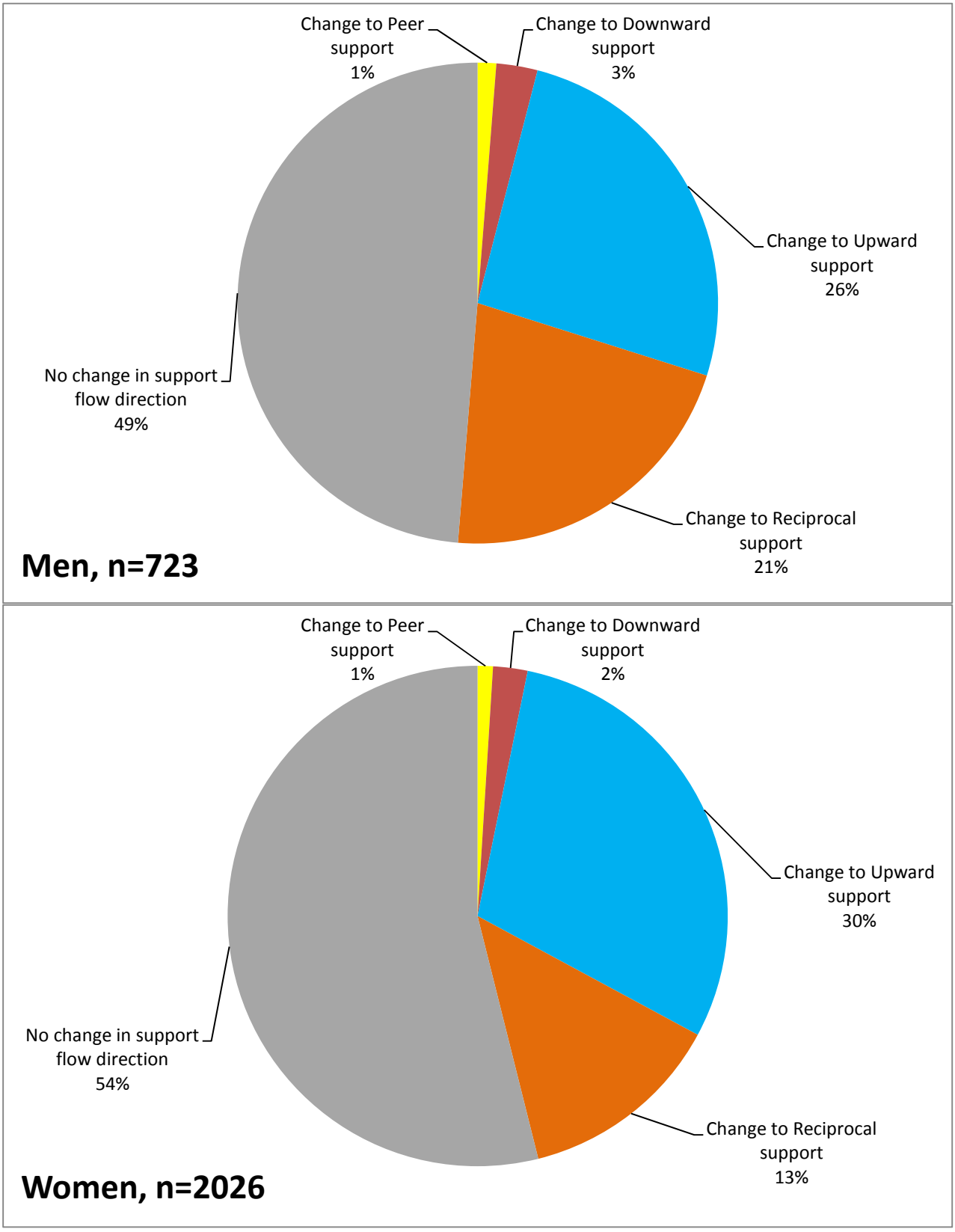
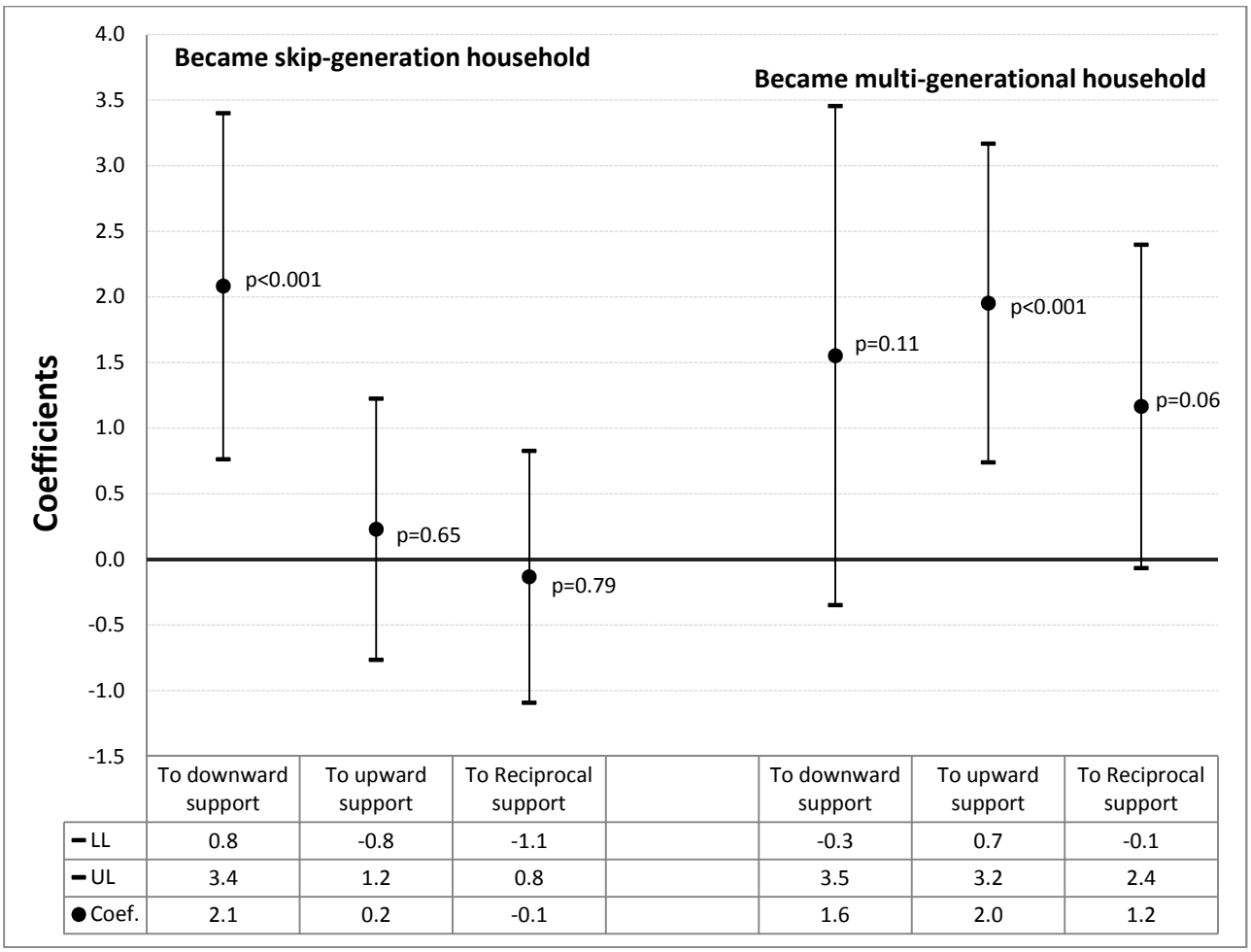


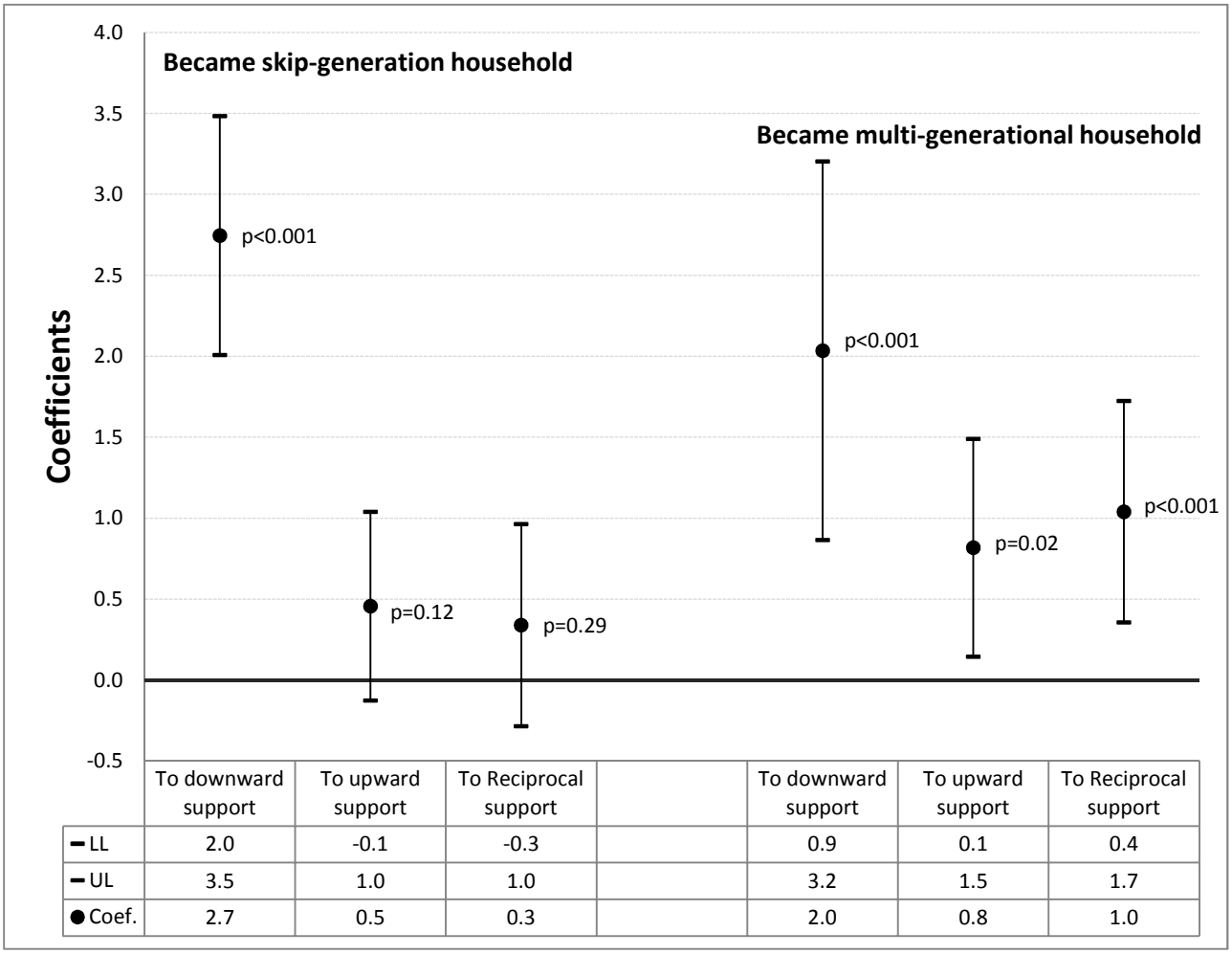
Figure 2: Changes in intergenerational support flows between baseline and last observation for men and women



	To downward support	To upward support	To Reciprocal support		To downward support	To upward support	To Reciprocal support
LL	0.8	-0.8	-1.1		-0.3	0.7	-0.1
UL	3.4	1.2	0.8		3.5	3.2	2.4
Coef.	2.1	0.2	-0.1		1.6	2.0	1.2

Figure 3: Relative risk of change in support flows given change in living arrangements between t_0 and t_1, Males

Note: Models adjusted for age, marital status, education, place of residency and household wealth status at t_1.



	To downward support	To upward support	To Reciprocal support		To downward support	To upward support	To Reciprocal support
━ LL	2.0	-0.1	-0.3		0.9	0.1	0.4
━ UL	3.5	1.0	1.0		3.2	1.5	1.7
● Coef.	2.7	0.5	0.3		2.0	0.8	1.0

Figure 4: Relative risk of change in support flows given change in living arrangements between t_0 and t_1, Females

Note: Models adjusted for age, marital status, education, place of residency and household wealth status at t_1.

APPENDICES

Table A - 1: Social grants, amounts and eligibility criteria in South Africa

Grant	Conditions for recipient	Age restriction	Amount*	Means tested
Old Age grant	• Must be SA citizen/permanent resident • Not being cared for in a state supported institution • Must not be in receipt of any other grant	• 60 years plus if female • 60 years plus if male	R1260	YES[g]
Disability grant	• Must be SA citizen/permanent resident • Must submit medical report confirming disability • Not being cared for in a state supported institution • Must not be in receipt of any other grant	• 18 years and over	R1260	YES
War Veteran's grant	• Must be SA citizen/permanent resident • Must have fought in World War II or Korean War • Must be disable (if not meeting age criterion) • Not being cared for in a state supported institution • Must not be in receipt of any other grant	• 60 years plus	R1280	YES
Care dependency grant	• Must be SA citizen/permanent resident • Must have a birth certificate • Must submit medical report confirming disability • Not being cared for in a state supported institution • Must not be in receipt of any other grant	• 1-18 years	R1260	YES
Grant in-aid	• Must require full-time attendance by another person owing to his/her physical or mental disabilities • Awarded as an additional grant to persons in receipt of Old age, War Veterans or Disability grants		R240	YES
Child Support grant	• Must be SA citizen/permanent resident • Must have a birth certificate	• Under 18 years	R290	YES
Foster Child grant	• Must be SA citizen/permanent resident • Must have a birth certificate • Must have court order indicating foster care status	• Under 18 years (may be extended to 21 on recommendation by a social worker)	R800	NO

Sources: "Grant for older persons." http://www.sassa.gov.za/Grant-for-older-persons-668.aspx. [Accessed 6th October 2013];
"Social security grants" http://m.mywage.co.za/main/decent-work/social-security/social-security-grants-1. [9th December 2013];
** Amounts as at October 2013. [g] There is a proposal being currently discussed to completely phase out the means testing.*

Table adapted from: Nyirenda and Newell, 2010. "Orphanhood and HIV risk in rural KwaZulu-Natal" in: Nzimande, N.B. (Ed.), State of the population of KwaZulu-Natal: demographic profile and development indicators. Department of Social Development/UNFPA, Durban, pp. 159-186.

Table A - 2: Description of the surveillance population aged 60 years and above as at mid-year by residency status, 2005-2010

	Non-Resident					Resident					
Characteristics	**2005**	**2006**	**2007**	**2009**	**2010**	**2005**	**2006**	**2007**	**2009**	**2010**	**p-value***
Number of older persons	662	652	655	628	666	4231	4232	4209	4322	4420	
Median age	66	67	67	67	67	69	69	69	69	70	
Sex											<0.001
Male	53.2	51.5	52.7	51.6	54.5	30.0	30.0	29.8	29.6	28.8	
Female	46.8	48.5	47.3	48.4	45.5	70.0	70.0	70.2	70.4	71.2	
Place of residency											<0.001
Urban	3.2	3.2	3.8	5.6	4.7	2.6	3.0	3.1	3.4	3.6	
Peri-Urban	27.0	27.8	27.5	26.8	26.6	24.6	24.2	24.5	25.8	26.0	
Rural	69.8	69.0	68.7	67.7	68.8	72.8	72.8	72.4	70.8	70.4	
Education completed											<0.001
No formal education	45.2	41.3	39.5	34.9	30.0	52.0	49.3	48.5	45.6	40.2	
Primary	17.7	16.0	14.5	14.0	13.7	23.8	22.3	21.1	20.1	19.1	
Secondary+	9.5	9.2	10.4	7.3	8.6	8.0	7.3	8.3	8.7	8.2	
Missing	27.6	33.6	35.6	43.8	47.7	16.3	21.1	22.1	25.6	32.5	
Grant receipt											<0.001
Recipient	55.4	64.1	71.5	67.4	67.1	80.9	86.7	90.6	88.2	88.5	
Non-recipient	32.3	27.5	20.6	20.9	21.2	11.2	8.0	6.2	6.8	6.3	
Don't know	12.2	8.4	7.9	11.8	11.7	7.9	5.3	3.2	5.0	5.2	
Marital status											<0.001
Never been married	23.1	23.6	25.6	28.0	27.8	15.6	15.9	16.6	18.0	18.6	
Married	42.1	40.2	40.8	38.5	39.6	36.2	37.2	36.5	35.6	34.1	
Previously Married	33.8	34.8	31.9	28.3	26.7	47.8	46.2	45.9	43.5	43.5	
Don't know	0.9	1.4	1.7	5.1	5.9	0.4	0.6	1.0	2.8	3.8	
HH size - Overall											<0.001
1	3.0	3.7	3.4	2.7	2.4	2.3	2.4	2.6	2.5	2.5	
2-6	27.2	25.6	26.9	27.1	28.7	23.5	22.9	22.6	22.2	22.3	
7-10	31.1	32.7	32.4	31.1	29.4	30.3	30.7	29.8	28.9	28.8	
11+	38.7	38.0	37.4	39.2	39.5	43.9	44.0	45.0	46.4	46.4	

* p-value for chi square comparisons of resident to non-resident older persons by selected characteristics of surveillance population.