Chronic and transitory poverty in the face of HIV/AIDS-related morbidity and mortality: Evidence from South Africa[1]

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ABSTRACT

The socio-economic impact of HIV/AIDS combines to create a vicious cycle of poverty and HIV/AIDS in which affected households are caught up. This paper focuses on evidence from a longitudinal household impact study currently being conducted in two sites in the Free State province of South Africa. The impact of HIV/AIDS on households is being assessed by means of a cohort study of households affected by the disease, and compared with a control group of households not currently affected by the disease. This paper focuses on an analysis of the data collected during the first three rounds of interviews. Descriptive analyses, mobility profiling and regression analysis are employed in exploring poverty dynamics in affected and non-affected households. The incidence, depth and severity of poverty are relatively worse amongst affected households, especially affected households that have suffered illness or death in the recent past. The intensity of income mobility increases as the probability of households being affected by illness or death increases. Affected households, particularly those facing a greater burden of morbidity or mortality, are more likely to experience variations in income and to experience chronic poverty. Not only conventional determinants of poverty (e.g. human capital, access to labour markets, and physical capital), but also HIV/AIDS-related determinants (e.g. mortality. morbidity and the orphaned crisis) play a role in explaining why some households remain poor while other households are upwardly mobile and can escape poverty. The evidence underscores the importance in the longer term of economic policies focused on job creation and education in addressing chronic poverty in the face of the HIV/AIDS epidemic, with a social safety net targeting HIV/AIDS-related poverty impacts being important in the short to medium-term.

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1.   INTRODUCTION

The HIV/AIDS epidemic poses a severe threat to the economies of developing countries, and those on the African continent in particular. South Africa, which is being affected fundamentally by the epidemic, is no exception. By the end of 1997, an estimated 2.8 million adults in South Africa were living with HIV/AIDS. By 2001, this figure had increased to 4.7 million. The estimated prevalence of HIV/AIDS among the country's adult population (20.1%) is amongst the highest in the world (ILO, 2000; UNAIDS, 2002). According to the Metropolitan-Doyle model, the annual number of AIDS deaths is estimated to increase from 120 000 to between 545 and 635 thousand between 2000 and 2010. The number of children younger than fifteen years orphaned by AIDS has been estimated to be 800 000 by 2005, rising to more than 1.95 million by 2010 (Abt Associates, 2000: 8-11).

These infected individuals and affected children all belong to individual households (meaning that an even larger number of people are affected by the epidemic in some way) and their deaths will have a significant impact on their families. Poverty, moreover, is likely to deepen as the epidemic takes its course. The socio-economic impact of HIV/AIDS combine to create a vicious cycle of poverty and HIV/AIDS in which affected households are caught up. As adult members of the household become ill and are forced to give up their jobs, household income will fall. To cope with the change in income and the need to spend more on health care, children are often taken from school to assist in caring for the sick or to work so as to contribute to household income. Because expenditure on food comes under pressures, malnutrition often results, while access to other basic needs such as health care, housing and sanitation also comes under threat. Consequently, the opportunities for children for their physical and mental development are impaired. This acts to further reduce the resistance of household members and children (particularly those that may also be infected) to opportunistic infections, given lower levels of immunity and knowledge, which in turn leads to increased mortality (World Bank, 1998; Bonnel, 2000: 5-6; Wekesa, 2000). Households headed by AIDS widows are also particularly vulnerable, because women have limited economic opportunities and traditional norms and customs may see them severed from their extended family and denied access to an inheritance (UNDP, 1998). Worrying, more, is that firms are increasingly using contract labour rather than appointing employees on a permanent basis, which

increasingly shifts the burden of HIV/AIDS onto households and government (Rosen and Simon, 2002). This also means that HIV/AIDS-affected households (and in particular infected persons) may find it increasingly difficult to find employment and remain in employment, which is crucial for ensuring some kind of economic security at the household level. In many third world situations, therefore, HIV/AIDS exposes already vulnerable, resource-poor households to further shocks.

These are all ways in which HIV/AIDS can cause poverty to increase. Whiteside (2001/02) describes the above linkages between HIV/AIDS and poverty in considerably more detail, but then goes on to point out that poverty can also result in increased vulnerability to HIV/AIDS, which in turn can aid the spread of the disease. Poverty, apart from being associated with poor nutrition and a breakdown of immune systems, also stand to increase the vulnerability of people to HIV/AIDS by resulting amongst others in unsafe sexual practices as a result of lack of knowledge and lack of access to means of protection, due to women's inability to negotiate about condom use with sexual partners as a result of entrenched gender roles and power relations, and because of violence and coercion (Whiteside, 2001/02). In fact, both Desmond (2001) and Whiteside (2002) emphasize how complex the relationship between poverty and HIV/AIDS actually is and how many facets it has, e.g. how labour migration induced by rural poverty can contribute to the spread of the disease and how poor, single mothers may be forced to become occasional sex workers in order to survive (Desmond, 2001: 56; Poku, 2001: 195). Gillies *et al*. (1996) and Nyamathi *et al*. (1996), moreover, highlight the importance of homelessness, urban/rural migration patterns, migrant labour practices and the breakdown of social support networks in communities with limited access to social service delivery and in developing countries in increasing the vulnerability of poor people to HIV/AIDS. This paper deals primarily with the question of the extent to which HIV/AIDS (via increased morbidity and mortality, as well as other HIV/AIDS-related impacts) can cause poverty to increase and what the experience of HIV/AIDS affected households are in terms of income mobility and chronic and transient poverty.

2.   DATA AND METHOD

The impact of HIV/AIDS on households was assessed by means of a cohort study of households affected by the disease, and compared with a control group of households

not currently affected by the disease. The survey was conducted in two local communities in the Free State province, one urban (Welkom) and one rural (QwaQwa), in which the HIV/AIDS epidemic is particularly rife. Affected households were sampled purposively via NGOs and other organizations involved in AIDS counselling and care and include at least one person known to be HIV-positive or known to have died from AIDS in the past six months. Informed consent was obtained from the infected individual(s) or their caregivers (in the case of minors). Non-affected households represent households living in close proximity to these affected households, but which did not at the time of the first interview include persons suffering from chronic HIV/AIDS-related diseases such as tuberculosis or pneumonia. Households were defined in terms of the standard definition employed by Statistics South Africa in the October Household Survey, i.e. "a person or a group of persons who live together at least four nights a week at the same address, eat together and share resources". A survey on the quality of life and household economics was conducted. Interviews were conducted with one key respondent only, namely the "person responsible for the daily organization of the household, including household finances". The results reported in this paper are based on an analysis of the data for the 355 households interviewed in the first three waves of this study. (A total of six waves will be conducted over a three-year period.) The analysis of income mobility and (chronic) poverty presented in these pages employs the data for the 328 households for which income estimates were available for each wave of the study. The three waves of data collection were respectively completed in May/June and November/December 2001 and in July/August 2002.

Although the sample population in certain instances closely reflects the socio-economic profile of the national population (e.g. male/female distribution), it in most cases differs distinctly from the general South African population (Booysen *et al*., 2002). The profile of the sample of households included in this study can largely be attributed to the sampling design. Given that affected households were sampled from networks and/or organizations involved in counselling, home-based care and public health care and mainly in poorer communities, the sample does not include affected households that mainly utilize private health care services. Moreover, the study was conducted in one specific province (Free State) and in two selected sites only. However, the fact that South Africa's poor, predominantly African population face relatively high HIV prevalence rates and are particularly vulnerable to the epidemic

and therefore dependent on support from the public service sphere, means that the findings and policy recommendations put forward in this paper are especially relevant to informing government's responses to HIV/AIDS.

3. DISCUSSION

3.1 Morbidity and mortality

Figures 1 and 2 illustrate that the morbidity and mortality experienced by affected as opposed to non-affected households exhibit a classical HIV/AIDS pattern, with larger numbers and a greater proportion of persons in affected households having experienced illness or having died at ages under 50. Approximately 80% of the illness in affected households can be classified as HIV/AIDS-related (Booysen *et al*., 2002).

Figure 1: Cumulative cases of morbidity by age
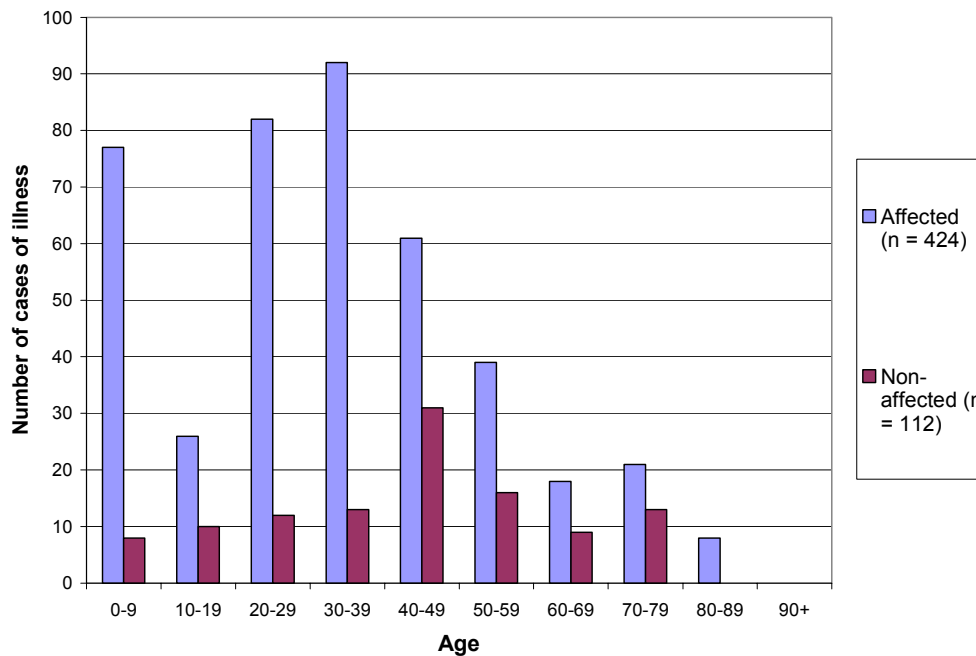
Figure 3, moreover, shows that morbidity and mortality have over time exacted a more severe burden on affected households, with a large proportion of households experiencing illness or death in each of the three waves of the study or at least in one wave. This implies that the subsequent analyses, albeit based on a relatively small,

purposive sample, present some indication of differences between affected and non-affected households.

Figure 2: Cumulative cases of mortality by age

Figure 3: Incidence of morbidity or mortality

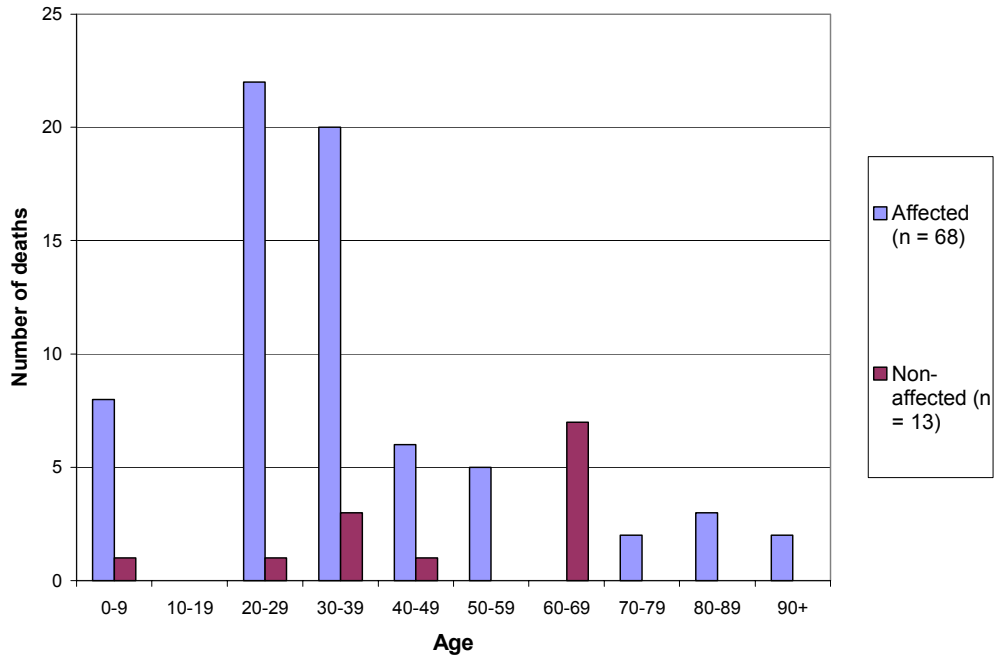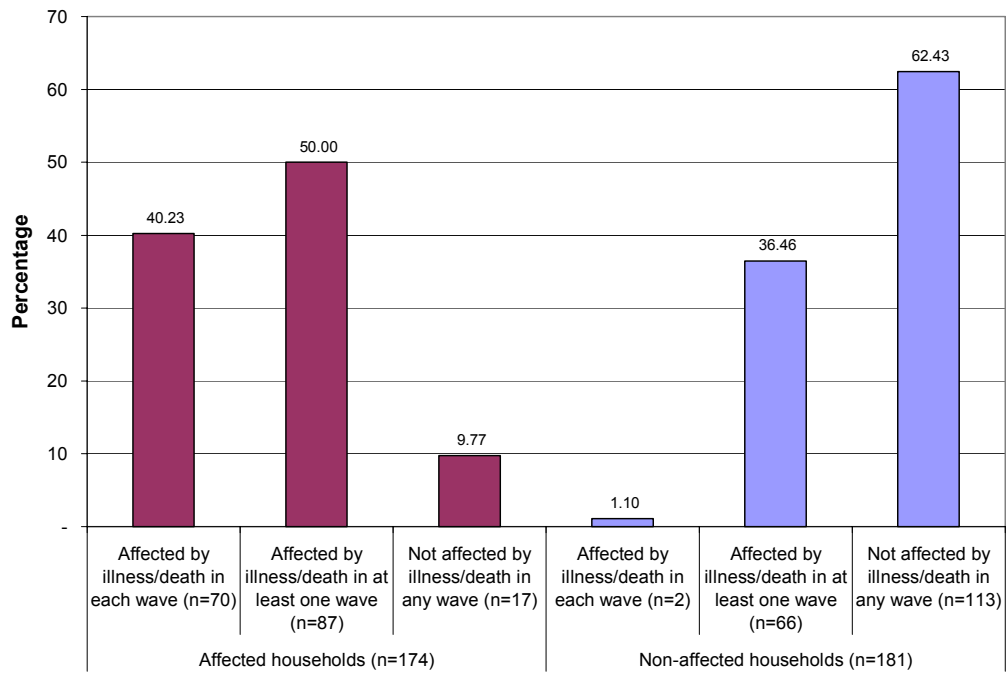## 3.2   Measurement of standard of living

Poverty (or standard of living) is measured at the household rather than the individual level, given that the focus here is on the household impact of HIV/AIDS. Poverty is here interpreted in terms of the command over commodities that resources afford people via income and consumption (Lipton and Ravallion, 1995: 2553-2567). The concern, therefore, is with 'poverty proper' (i.e. resource adequacy) and not with the physiological, sociological or political dimensions of poverty (Kgarimetsa, 1992: 8; Woolard and Leibbrandt, 1999: 3).

Generally, a single monetary indicator, such as income or consumption, is employed in assessing the extent of poverty and inequality (Ravallion, 1996: 1328-1334). Income is argued to reflect consumption opportunities and is therefore a popular measure of poverty (Hagenaars, 1991: 135-146). During the survey, data were collected from one informant regarding the employment income, non-employment income and receipts of remittances for the members of the particular household. An estimate of total monthly household income was derived from these figures by adding up the various component items. Consumption represents an alternative resource base for measuring poverty and inequality (Lipton, 1997: 1003). During the survey, fieldworkers collected expenditure-related data from the household member in charge of household finances in each of these households. This include estimates of household expenditure on specific items such as food, education, health care, transport, monthly repayments of debt, and clothing, as well as remittances made to persons not living with the household. As in the case of income, an estimate of total monthly household expenditure was calculated by adding these items together.

Income, however, in a certain sense represents an inadequate measure of poverty. So, for example, it is generally assumed that household income is employed in a manner that benefits the whole family. Yet, this may not necessarily be the case, given inequalities and inequities in the intra-household allocation of resources (Woolley and Marshall, 1994: 422-429). Furthermore, levels of income and consumption often differ as a result of consumption smoothing. Consumption also represents a better proxy of current living standards and long-term average well being than income for other reasons. Consumption bridges the observed disparity between income and expenditure levels. Expenditure also reveals information about both past

and future incomes, because it includes consumption financed from savings (Lipton and Ravallion, 1995: 2573).

The income-based estimates of household welfare in the case of this study exceed the expenditure-based estimates. Normally, one would expect the opposite, with expenditure-based estimates exceeding income-based estimates of household welfare. This may be because the one informant that was interviewed (i.e. the person in charge of household finances) generally has a better idea of the employment status and average earnings of other members of the household (in fact, the person during the interview often verified this information with other household members). This person, moreover, is unlikely to be knowledgeable about the manner in which each member of the household spends their income. In fact, individuals and/or households have been found to rarely record expenditure data in detail (Woolard and Leibbrandt, 1999: 23-24). Expenditure, therefore, in this case most likely reflects only that amount of resources of household members that is spent on communal household needs.

The literature, moreover, suggests that HIV/AIDS can impact on household income and expenditure in different ways. On the one hand, the changes in the supply of household labour caused by AIDS morbidity and mortality are likely to be accompanied by a drop in household income. On the other hand, household expenditure may increase initially following illness or death, given that households need to spend more on medical care and funerals. In the Kagera study, for example, the total level of expenditure was 25 percent higher in households suffering an adult death than in household where no adult death occurred (Lundberg and Over, 2000). In the case of rural Thailand, though, per capita expenditure in households affected by an adult death on average dropped by 43.5 percent (Kongsin *et al*., 2000, as quoted in Parker *et al*., 2000: 44). As a result, the income-based estimates are likely to represent a more reliable measure of the standard of living of these households and are likely to be a better proxy of the impact of HIV/AIDS on household welfare, which means that this paper employs household income as proxy of standard of living rather than household expenditure.

Households with the same level of income do not necessarily enjoy the same level of welfare. The larger the household, the lower the level of welfare at similar levels of household income. Measures of equivalent income are employed to allow for these differences in standard of living related to household characteristics (Lipton and Ravallion, 1995: 2574; Burkhauser *et al*., 1997: 154-161). Estimates of household

income were here adjusted for differences in household size by dividing total monthly income by n^{α}, where n represents the number of household members and α an adjustment for household economies of scale (Filmer and Pritchett, 1998: 13). According to Lanjouw and Ravallion (1995) and Drèze and Sen (1997), a α coefficient of 0.6 represents an adequately robust and reliable adjustment for household economies of scale. The income estimates for the three waves were also adjusted for inflation using CPI estimates published by Statistics South Africa (2003).

3.3 Comparisons of levels of household income

Table 1 report on the average adult equivalent real per capita household income of affected and non-affected households over the entire period, i.e. waves I, II and III. A distinction is also made between affected households that have experienced illness (i.e. a member of the household has been chronically ill in the thirty days preceding the interview) or death (i.e. a member of the household has died in the six months preceding the first interview or in the time elapsed following the first interview) in all three waves or at least in one wave and those households that has not been affected by morbidity or mortality.

Table 1: Average Real Per Capita Adult Equivalent Household Income (waves I-III) (2000=100)

	Total sample	Affected households	Affected households suffering illness or death in each wave	Affected households suffering illness or death in at least one wave	Affected households suffering no illness or death	Non-affected households
Mean	586.77	450.74	354.37	441.03	893.75	711.66
Median	357.90	311.21	296.3	311.21	475.69	430.86
Sample (n)	*328*	*157*	*66*	*75*	*16*	*171*

The loss of labour supply brought about by AIDS will cause household income to decline (Topouzis, 2000). Consequently, affected households (and in particular ones affected by morbidity or mortality) should be poorer than non-affected households. This fact is born out in the results presented in Table 1. A comparison of the three groups of affected households (these households all include someone known to be HIV/AIDS positive) presents even clearer evidence of the likely effect of HIV/AIDS

on household welfare. The average adult equivalent real per capita income of affected households that has experienced illness or death in each wave is substantially lower than is the case in affected households that experienced illness or death in at least one wave but not in all three waves. Affected households that did not experience any illness or death over the period had a considerably higher income (Table 1). (Differences in the median incomes, however, are less pronounced and do not fit this picture, except in the case of the comparison between affected and non-affected households.)

The available evidence from other household impact studies supports the above findings, i.e. that households affected by HIV/AIDS generally are poorer than non-affected households. Only one study reports on the impact of AIDS morbidity on household income. Households living in rural Chanyanya in the Kafue district in Zambia that were affected by chronic illness had an annual income 46 per cent lower than households in the same area that were not affected by chronic illness (Mutangadura and Webb, 1999, as quoted in Topouzis, 2000: 18). A number of studies have reported on the effect of AIDS mortality on household income. So, for example, households in Zambia that have suffered a paternal death have experienced a drop in monthly disposable income in excess of 80 percent (Nampanya-Serpell, 2000). Households in rural Thailand affected by an adult death saw household income drop by 70.7 per cent, while total per capita income dropped by 68.4 percent (Kongsin *et al.*, 2000, as quoted in Parker *et al.*, 2000: 44). A study in the Ivory Coast, which fails to indicate whether the focus in on AIDS morbidity or mortality, reported that the household income of affected families was found to be half that of total average household income (Bechu, 1998, as quoted in Desmond *et al.*, 2000: 5).

3.4   Comparisons of incidence, depth and severity of poverty

Apart from describing differences between affected and non-affected households in terms of general levels of welfare (or household income in this case), one would also want to determine how poverty differs between affected and non-affected households. To estimate poverty one requires a poverty line, i.e. a level of income below which people are considered poor. Poverty lines provide a yardstick with which to compare the circumstances of individual households. Aggregate measures of poverty cannot be estimated without a poverty line. Armed with the estimate of household income and

the poverty line estimate, one can aggregate this information into a variety of descriptive measures of poverty and inequality (Grootaert, 1983: 3-10). The following specific measures of poverty and inequality were employed in this analysis.[2]

The *Gini coefficient* (G) represents the average ratio between the proportion of total income actually earned by a specific household and the proportion of income the household would have earned had income been distributed equally. G = 0 denotes total equality and G = 1 total inequality (Paukert, 1973). Because inequality is an important determinant of poverty, an analysis of the extent of income inequality can provide an important pointer to determining whether poverty is more severe amongst affected than non-affected households. If inequality is more pronounced amongst affected households, one would expect that more affected households fall below the poverty line. This in turn will mean that poverty is more prevalent amongst affected households, which can be determined by comparing the estimates of the following poverty indices across affected and non-affected households.

The *headcount poverty index* (H) is a measure of the prevalence or incidence of poverty, i.e. the percentage of the population with a level of income below the poverty line (z). H = q/n, where q represents the number of poor persons falling below the poverty line z and n the total population (Ravallion, 1992/94a/94b; Lipton and Ravallion, 1995). The *poverty gap index* (PG) is a measure of the intensity or depth of poverty that allows for how far the poor fall below the poverty line. The index is calculated as each individual's shortfall below the poverty line (z) summed over the total population. It considers the non-poor to have a zero poverty gap. PG = $1/n \Sigma [(z-y_1)/z]$ = H $(1-\mu/z)$, where H represents the headcount poverty index, μ mean expenditure or income, and z the poverty line (Ravallion, 1992/94a/94b; Ravallion and Bidani, 1994; Lipton; 1997). The *squared poverty gap index* (SPG) represents a measure of the severity of poverty that allows for the extent of inequality amongst the

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[2] The estimates of the measures of poverty and inequality that are presented in these pages were calculated with the aid of the POVCAL program developed by the World Bank. POVCAL is an easy to use and reliable tool for routine poverty assessment work. It uses sound and accurate methods for calculating poverty and inequality measures with only a basic PC and any of the various types of grouped distribution data typically available, often in published form. POVCAL estimates a General Quadratic Lorenz curve and Beta Lorenz curve for each data set and then performs a range of tests to assess the validity of each of the Lorenz curves. The measures of poverty and inequality reported in these pages are based on the General Quadratic Lorenz curves (and in one instance on the Beta Lorenz curves) estimated from the tabulated data. The General Quadratic Lorenz curves were invalid at the upper extremes of the income distribution only, whereas the Beta curves were valid (and the General Quadratic curve invalid) in one case only. The sum of the squared standard errors over these Lorenz curve were generally extremely small.

poor. The SPG attaches more weight to those gains furthest from the poverty line. The index is calculated as the mean of the squared proportional poverty gaps over the entire population with the non-poor again counted as having a zero poverty gap. SPG $= 1/n \; \Sigma[(z-y_1)/z]^2 = PG^2/H + (H-PG)^2 \, / \, H*CV_p^2$, where H and PG respectively represent the headcount and poverty gap indexes, while CV_p^2 is the squared coefficient of variation of income or consumption amongst the poor (Ravallion, 1994a/94b; Ravallion and Bidani, 1994; Lipton and Ravallion, 1995; Lipton, 1997).[3]

Table 2: Estimates of the Headcount Poverty Index (H), Poverty Gap Measure (PG), Squared Poverty Gap Index (SPG) and Gini-coefficient (waves I-III)

	Total sample	Affected households	Affected households suffering illness or death in each wave	Affected households suffering illness or death in at least one wave	Affected households suffering no illness or death	Non-affected households
H	29.843	34.851	38.565	33.892	24.127	21.084
PG	9.385	11.455	13.185	10.572	7.438	8.166
SPG	3.918	5.133	6.415	4.484	3.178	4.269
Gini	49.285	43.637	35.288	41.102	50.473	56.647
Sample (n)	*328*	*157*	*66*	*75*	*16*	*171*

The Gini coefficients and poverty indices calculated for each of the groups of affected and non-affected households are reported in Table 2. The results are here reported only for the poverty line of R250 adult equivalent per capita income, which was employed in the most recent poverty estimates published by Statistics South Africa (2000: 11), albeit not in adult equivalent form. Evident from the results in Table 2 is that the degree of inequality is slightly higher amongst non-affected households than amongst affected households. These differences in the extent of income inequality are even more pronounced in the case of the comparison between the different groups of affected households, i.e. those having experienced illness or death in each wave or at least in one wave, and those not having experienced illness or death. This may be the result of households experiencing illness or death being more likely to have a lower

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[3] The headcount, poverty gap and squared poverty gap indices are special cases of the Foster-Greer-Thorbecke (FGT) class of poverty measures. $P_\alpha = 1/n\Sigma[z-y_i/z]^\alpha$, where z represents the poverty line and y_i the actual income or consumption level of each person or household. The three FGT measures each focus on a different conventional poverty measure. P_0, P_1 and P_2 respectively are derivatives of the headcount (H), poverty gap (PG) and squared poverty gap (SPG) indices (Greer and Thorbecke, 1986). As explained above, these poverty measures become more sensitive to the well-being of the poorest person as the value of α increases (Woolard and Leibbrandt, 1999: 28).

income, which translates into relatively lower levels of income and relatively less variation in income (at least across the higher ranges), which in turn means that the extent of income inequality is likely to be less pronounced. In the case of non-affected households, variation in household income is more pronounced, translating into higher levels of income inequality.

Poverty is relatively pronounced in both these communities, with a relatively high proportion of both affected and non-affected households being classified as poor. The average headcount index for the total sample amounts to 29.8 percent. According to Statistics South Africa (2000), the headcount poverty ratio in the magisterial districts of Welkom and Witsieshoek (which lies within the boundaries of the former Qwaqwa) respectively are 0.34 (this is likely to be much higher in the African communities in which this survey was conducted) and 0.69, while the estimate of average monthly household expenditure respectively amounts to R2364 (again likely to be much lower for the residents of the African and Coloured townships where the survey was conducted) and R807. According to the results presented in Table 2, the incidence, depth and severity of poverty are worse amongst affected households than amongst non-affected households. According to these estimates, poor, affected households will have to boost their income by 11.5 per cent to reach the poverty line. Non-affected households in turn only have to boost their income by approximately 8.2 per cent to reach the same poverty line. This is also the case when comparing the estimates of the incidence, depth and severity of poverty across affected households that have experienced illness or death in each wave, in at least one wave, or not in one wave of the study. Thus, poverty does appear to be significantly worse amongst affected households, especially those households that over time face a greater burden of morbidity and mortality.

Another question, however, is whether households affected by HIV/AIDS are more likely to experience chronic poverty compared to non-affected households, given the argument that HIV/AIDS is likely to deepen poverty. Figure 4 reports on the percentage of households in each of the clusters that can be classified as chronically poor, transient poor, and non-poor. The *chronic poor* represent those households for which real adult equivalent per capita household income fell below R250 in each period or on average were below R250 across the three waves, although the household did not experience poverty in each period. (Chronic poverty is here defined with reference to a much shorter period of time (i.e. almost two years) compared to that

employed in the standard definition of Hulme and Shepherd (2003), i.e. a five-year period, primarily because of the nature of the particular survey). The *transient poor* are those households that had an average real adult equivalent per capita household income around or above the poverty line, but were classified as poor in at least one period. Lastly, the *non-poor* represents those households for which real adult equivalent per capita household income exceeded R250 in each period (Hulme and Shepherd, 2003).

Figure 4: Incidence of chronic and transient poverty (%)
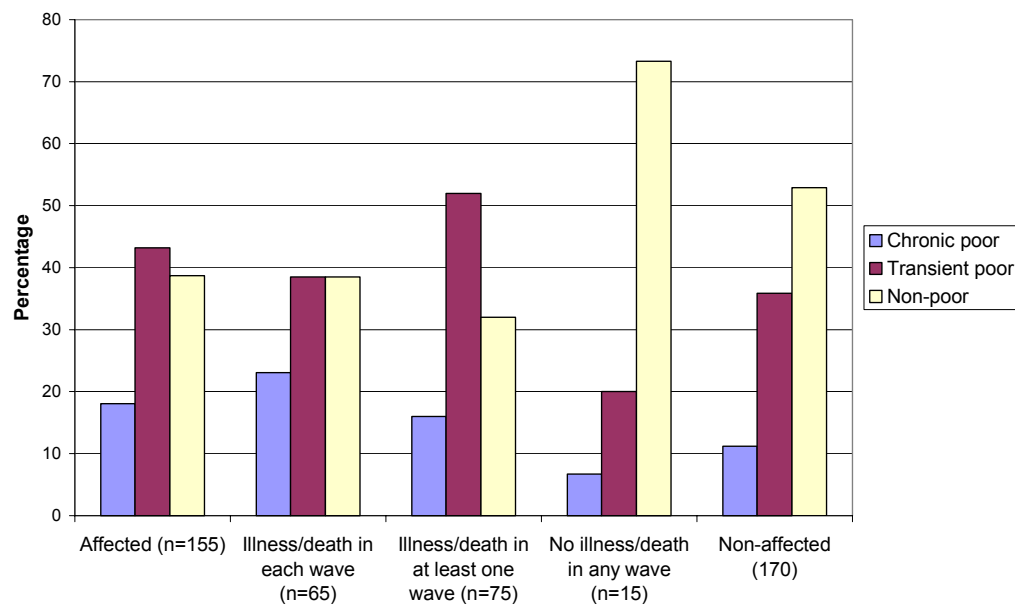
Evident from Figure 4, is that a larger proportion of affected households, and in particular affected households that have experienced illness or death, can be classified as chronically poor. For example, almost a quarter of households that experienced illness or death in each period were classified as chronically poor, compared to a tenth only of non-affected households. Likewise, transient poverty was more evident amongst affected households and affected households that have experienced illness or death. Interestingly, however, transient poverty was more prominent amongst households that have experienced shorter spells of morbidity and mortality, i.e. that have been affected by illness or death in one period only. This may hint at the extent to which cumulative burdens of morbidity and mortality may push households deeper into poverty, thus resulting in chronic poverty. (The regression model that employs

chronic poverty status as dependent variable in exploring the determinants of poverty transitions and that is discussed elsewhere in this paper sheds more light on the possible determinants of chronic poverty.)

3.5   Robustness of poverty comparisons

In order to further substantiate such argument, one needs to perform a number of poverty comparisons. The main purpose with a poverty comparison is to determine whether the results of such comparison are robust and consistent. The conclusion drawn from a poverty comparison, i.e. whether affected households are poorer than non-affected households or not, should not be dependent on the choice of a particular standard of living indicator, poverty line, or poverty measure (Ravallion and Bidani, 1994: 76; Ravallion, 1994b: 44-51). The robustness of a poverty comparison is determined by comparing the headcount, poverty gap and squared poverty gap index across a critical range of poverty lines. Arbitrariness is practically unavoidable in setting poverty lines, primarily because of the multitude of methods that are employed for this purpose (Kgarimetsa, 1992: 9; Alcock, 1993: 60-62; Johnson, 1996: 110-112). Hence, the standard practice has become one of testing the robustness of poverty lines by simultaneously employing more than one such estimate in poverty analysis. Ravallion (1994b: 43) refers to this as the use of dual poverty lines. Results are compared across poverty line estimates based on different methodologies and/or alternative assumptions made using similar methods (Lipton and Ravallion, 1995: 2577; Lipton, 1997: 1003). A similar approach is followed here. The range of poverty lines used for this purpose varies from R100 to R500 in adult equivalent per capita terms, which covers most poverty line estimates employed in poverty studies on South Africa, even when allowing for the effect of inflation (Klasen, 1997: 56; Woolard and Leibbrandt, 1999: 14; Booysen, 2001: 680). Partial poverty orderings or poverty value curves are used for the purposes of presenting the results (Ravallion, 1994b: 1-3; Woolard and Leibbrandt, 1999: 12). To obtain these curves, estimates of the headcount, poverty gap and squared poverty gap indices for the subgroups of households are plotted for the critical range of poverty lines. The values of the poverty measure are plotted on the vertical axis and the cumulative values of the poverty line are plotted on the horizontal axis. A comparison is robust and consistent if the poverty value curve for one subgroup dominates and/or matches that of another

subgroup across the entire range of poverty line estimates. This means that one subgroup is poorer than another subgroup regardless of the poverty line used for comparative purposes. Only the poverty incidence dominance curves for each of the clusters of households are reported here (Figure 4). According to Ravallion and Sen (1996: 776), the conditions for dominance are likely to hold for the poverty gap and squared poverty gap measures if it holds for the headcount index.

Figure 5: Incidence of poverty in affected and non-affected households
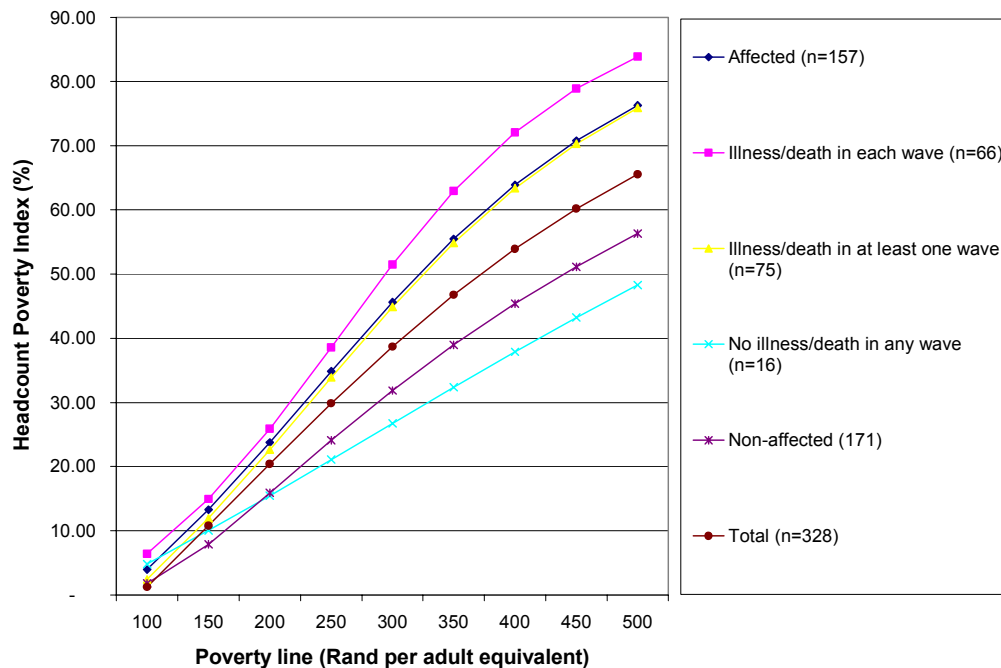
Evident from Figure 4, is that levels of poverty are generally higher amongst affected households regardless of the choice of poverty line. The poverty incidence curve for affected households dominates that for non-affected households across the entire range of poverty lines. Poverty, therefore, does seem to be worse amongst affected households. The fact that the socio-economic impact of AIDS is indeed worse in poorer households has been confirmed by Nampanya-Serpell (2000), while much of the analysis following from the Kagera household study has argued that household wealth and access to public services are very important in protecting households from the impact of HIV/AIDS. Impact was found to only be significantly worse in households affected by adult deaths compared to ones with no adult deaths when controlling for differences in socio-economic status (Ainsworth *et al.*, 2000;

Ainsworth and Dayton, 2000; Lundberg and Over, 2000). Another test of the robustness of the findings presented here is the extent to which poverty is consistently worse amongst affected households that have actually experienced illness or death. The incidence of poverty is consistently higher amongst affected households that have experienced illness or death in each wave than in affected households where this is the case in one wave only or not in one wave. (However, the comparison is not robust at the lower end of the spectrum of poverty lines, with the curves crossing at the bottom end of the range of poverty lines. This could be the result of the relatively small number of affected households that have not experienced illness or death, which makes meaningful comparisons difficult.) Again, therefore, the evidence seems to suggest that HIV/AIDS is indeed associated with poverty.

3.6   Poverty shares

The above analysis does not take into account how many affected households there are in comparison to non-affected households. Hence, the analysis fails to highlight the extent to which affected and non-affected households share the burden of poverty. Such analysis requires poverty measures that are additively decomposable. Additive decomposability means that overall inequality can be portioned into inequality between subgroups and within subgroups. Decomposition across space requires measures of the type $P_\alpha = n_A P_{\alpha A} + n_B P_{\alpha B}$, where A and B represent two subgroups and n_A and n_B the population shares of the two groups that the poverty estimate P_α for each group is weighted by (Lipton and Ravallion, 1995: 2580-2581). The FGT class of poverty measures is additively decomposable. This feature of the three measures of poverty employed in this analysis makes it possible to determine the share of affected and non-affected households in the poverty burden. Poverty shares were calculated separately for affected and non-affected households, as well as for affected households that have and have not experienced illness or death in the recent past. Poverty shares were calculated with reference to the R250 adult equivalent per capita poverty line. The evidence suggests that affected households have born a relatively greater share of the burden of poverty. Affected households faced 60.3 percent of the incidence of poverty, compared to the 39.7 percent born by non-affected households. When the poverty shares are calculated across the sub-samples of affected households

only, the results further underscore the extent to which affected households that have experienced illness or death bear the brunt of poverty compared to affected households not yet affected by illness or death. Households that have experienced illness or death in each wave or at least in one wave have born 46.5 percent of the burden of poverty on affected households. Affected households that have not as yet experienced illness or death have born 2.5 per cent only of the total burden of poverty on affected households. As a result, policies aimed at poverty alleviation can be argued to be particularly crucial in sustaining the livelihoods of affected households that have actually experienced illness or death, an argument that will be further substantiated in the remainder of the discussion in this paper.

3.7   Poverty transitions and income mobility

Given the longitudinal design of this study, it is possible to consider the extent to that affected and non-affected households move into and out of poverty over time, or alternatively remain in poverty. According to May and Roberts (2001: 100), this is one of the main advantages of panel studies, namely to distinguish between transitory and persistent poverty. The subsequent discussion presents evidence on income mobility and the nature of experiences of affected and non-affected households with regard to chronic and transitory poverty using a variety of alternative measures of income mobility.

Income mobility matrices are particularly useful in exploring the extent of transitory and persistent poverty. Similar to Leibbrandt and Woolard (2001: 678), which also assessed income mobility in a relatively small sample, this paper employs quintiles to assess income mobility[4]. A mobility matrix represents the proportion of households classified in different income quintiles in each of the two periods (i.e. wave I and III), distinguishing between the mobile (i.e. households moving between quintiles over time) and immobile (i.e. households falling in the same quintile on the income distribution in each period). The main question, therefore, is whether affected households and affected households that have experienced illness or death are more likely to be mobile compared to other households.

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[4] Poverty transition matrices are similar tools, but assess mobility relative to poverty line estimates rather than to income quintiles or deciles (May and Roberts, 2001).

Table 3: Quintile mobility matrices, waves I to III

A. Total affected households (n=157)						
Wave I quintile	Wave III quintile					Total
	1	2	3	4	5	
1	35.00	32.50	10.00	17.50	5.00	100
2	12.50	40.00	17.50	27.50	2.50	100
3	12.50	21.90	34.40	28.10	3.10	100
4	7.40	7.40	25.90	18.50	40.70	100
5	0.00	11.10	11.10	11.10	66.70	100
B. Affected households experiencing illness or death in each wave (n=66)						
Wave I quintile	Wave III quintile					Total
	1	2	3	4	5	
1	44.40	27.80	11.10	16.70	0.00	100
2	0.00	47.40	21.10	26.30	5.30	100
3	0.00	25.00	31.30	43.80	0.00	100
4	10.00	10.00	10.00	30.00	40.00	100
5	0.00	0.00	0.00	33.30	66.70	100
C. Affected households experiencing illness or death in at least one wave (n=75)						
Wave I quintile	Wave III quintile					Total
	1	2	3	4	5	
1	26.30	36.80	10.50	15.80	10.50	100
2	25.00	30.00	15.00	30.00	0.00	100
3	27.30	27.30	27.30	18.20	0.00	100
4	7.10	7.10	35.70	14.30	35.70	100
5	0.00	18.20	18.20	9.10	54.50	100
D. Affected households experiencing no illness or death (n=157)						
Wave I quintile	Wave III quintile					Total
	1	2	3	4	5	
1	33.30	33.30	0.00	33.30	0.00	100
2	0.00	100.00	0.00	0.00	0.00	100
3	20.00	0.00	60.00	0.00	20.00	100
4	0.00	0.00	33.30	0.00	66.70	100
5	0.00	0.00	0.00	0.00	100.00	100
E. Total non-affected households (n=171)						
Wave I quintile	Wave III quintile					Total
	1	2	3	4	5	
1	28.60	25.00	28.60	14.30	3.60	100
2	24.10	24.10	27.60	20.70	3.40	100
3	12.10	30.30	42.40	6.10	9.10	100
4	3.00	12.10	18.20	42.40	24.20	100
5	8.30	4.20	6.30	22.90	58.30	100
F. Total (n=328)						
Wave I quintile	Wave III quintile					Total
	1	2	3	4	5	
1	32.40	29.40	17.60	16.20	4.40	100.0
2	17.40	33.30	21.70	24.60	2.90	100.0
3	12.30	26.20	38.50	16.90	6.20	100.0
4	5.00	10.00	21.70	31.70	31.70	100.0
5	6.10	6.10	7.60	19.70	60.60	100.0

One would expect affected households (due for example to the changes in income caused by illness and/or death) to move between quintiles to a larger extent than non-affected households. Yet, affected households may in the longer term also be immobile, particularly at the lower end of the income distribution, because of the

cumulative impact of the loss of household member that are economically active and the effects of increased stigmatisation on these households, which may further alienate them from existing community support structures and exclude their members from labour markets.

According to the evidence presented in Figure 6, income mobility is relatively more pronounced at the upper end of the income distribution in the case of affected households and in particular in the case of households that have experienced illness or death. Generally, a smaller proportion of these households have remained on the diagonal compared to non-affected households. At the lower end, however, the mobility matrices suggest that affected households are relatively less mobile, with larger proportions classified in the same quintile. This suggests that HIV/AIDS may be associated with increasing variation in income at the upper end of the income distribution (where illness and/or death can cause past income to vary substantially), but with less variation at the lower end of the distribution (where illness or death may make little difference where households already have a low income and face high unemployment). The question, moreover, is whether HIV/AIDS is likely to push households deeper into poverty, a question to which we return later in this paper.

Table 4: Intensity of income mobility between waves I and III (%)

Number of quintiles moved between waves III and I	Affected (n=157)	Illness/death in each wave (n=66)	Illness/death in at least one wave (n=75)	No illness/death in any wave (n=16)	Non-affected (171)	Total (n=328)
-4	0.00	0.00	0.00	0.00	2.90	1.50
-3	2.50	4.00	1.50	0.00	1.20	1.80
-2	3.20	8.00	1.50	6.30	3.50	3.40
-1	17.80	18.70	9.10	6.30	15.80	16.80
0	49.70	29.30	40.90	56.30	51.50	50.60
1	17.80	22.70	30.30	18.80	15.20	16.50
2	5.70	10.70	10.60	6.30	5.80	5.80
3	1.90	4.00	6.10	6.30	4.10	3.00
4	1.30	2.70	0.00	0.00	0.00	0.60
Total	100.00	100.00	100.00	100.00	100.00	100.00

Table 4 present further evidence of how the intensity of income mobility increases as the probability of households being affected by illness or death increases. A third and two fifths respectively of affected households that experienced illness or death in each wave or in at least one wave remained immobile on the ranking. In comparison, more than half of affected households that experienced no illness or death and of non-

affected households were immobile on the ranking. In addition, there are relatively more losers than winners in affected households that have experienced illness or death, with a larger percentage of households having dropped down the income distribution.

Table 5: Mean absolute change in quintile ranking between waves I and III

Wave I quintile	Affected (n=157)	Illness/death in each wave (n=66)	Illness/death in at least one wave (n=75)	No illness/death in any wave (n=16)	Non-affected (171)	Total (n=328)
1	1.25	1.00	1.47	1.33	1.39	1.31
2	0.93	0.89	1.00	0.00	1.03	0.97
3	0.81	0.69	1.00	0.80	0.79	0.80
4	1.04	1.00	1.07	1.00	0.76	0.88
5	0.67	0.33	1.00	0.00	0.81	0.77
Average	0.97	0.86	1.13	0.69	0.93	0.95

Table 6: Mean algebraic change in quintile ranking between waves I and III

Wave I quintile	Affected (n=157)	Illness/death in each wave (n=66)	Illness/death in at least one wave (n=75)	No illness/death in any wave (n=16)	Non-affected (171)	Total (n=328)
1	1.25	1.00	1.47	1.33	1.39	1.31
2	0.68	0.89	0.50	0.00	0.55	0.62
3	-0.13	0.19	-0.64	0.00	-0.30	-0.22
4	-0.22	-0.20	-0.36	0.33	-0.27	-0.25
5	-0.67	-0.33	-1.00	0.00	-0.81	-0.77
Average	0.35	0.53	0.20	0.31	-0.02	0.16

Tables 5 and 6 presents evidence on the mean absolute and algebraic change in quintile rankings. Poorer households on average move a greater distance across the income distribution, with the average absolute change in rankings in this quintile exceeding the average changes in other quintiles. The evidence also exhibits the classical pattern of regression to the mean (Fields, 1988, as quoted in Leibbrandt and Woolard, 2001: 681), with the mean algebraic changes in rankings decreasing as we move up the income distribution. However, there is no clear-cut evidence that suggests that average changes in income mobility are relatively more pronounced in affected households and in affected households that have experienced illness or death, with average changes not being consistently higher.

Table 7: Ratio between quintile mean income and mean income of first quintile

Quintile	Affected (n=157)	Illness/death in each wave (n=66)	Illness/death in at least one wave (n=75)	No illness/death in any wave (n=16)	Non-affected (171)	Total (n=328)
A. Wave I						
1	1.00	1.00	1.00	1.00	1.00	1.00
2	2.20	2.08	2.23	2.92	2.06	2.14
3	3.52	3.19	3.52	5.58	3.32	3.42
4	6.05	5.64	6.12	8.77	6.22	6.15
5	16.16	11.27	15.57	30.14	19.88	18.94
Average	4.43	3.01	4.79	11.29	7.93	6.27
B. Wave II						
1	1.00	1.00	1.00	1.00	1.00	1.00
2	2.50	2.24	2.61	5.84	2.11	2.32
3	3.72	3.54	3.66	8.05	3.30	3.51
4	6.11	5.93	6.07	12.74	5.18	5.62
5	14.32	13.35	11.33	42.02	14.84	15.16
Average	4.51	3.30	4.28	20.94	6.26	5.51
C. Wave III						
1	1.00	1.00	1.00	1.00	1.00	1.00
2	2.66	2.97	2.50	2.89	2.74	2.70
3	4.03	4.44	3.76	4.57	4.23	4.13
4	6.22	7.11	5.70	6.42	6.53	6.37
5	17.02	17.32	13.86	24.71	21.44	19.58
Average	5.91	5.68	5.04	12.84	8.14	7.05

There is some evidence that income differentiation has increased over the period of the study (Table 7), particularly in households that have experienced illness or death in each period. In the case of this cluster of households, the ratio between the mean income of the fifth and first quintiles increased from 11.3 (wave I), to 13.4 (wave II), to 17.3 (wave III). In the other clusters, there is no such clear pattern, with the extent of income differentiation actually decreasing in some cases, albeit relatively little.

It is important to conduct further analysis to identify the particular reasons explaining income mobility, e.g. whether the loss in income was caused by the death of a main breadwinner or whether the increase in household income was caused by an increase in the number of employed members in the particular household. Also of importance is the relationship between income mobility and the timing of the death, e.g. one would expect poverty transitions to be more pronounced (i.e. a larger number of households moving across more than one cell in the poverty matrix) the shorter the time that has elapsed between the death and the second measurement of household welfare. The regression results discussed towards the end of this paper goes some way towards answering these particular questions, although further work is required in this regard, particularly with reference to the relationship between poverty transitions and

the timing of the death relative to the measurement of household welfare. However, as explained elsewhere, the above results should be interpreted with caution insofar as measurement error (which normally is relatively pronounced in the measurement of economic variables) may be important in explaining part of the variation in the classification of households as poor or non-poor in the respective waves of this panel study.

3.8   Determinants of poverty

In order to further explore the relationship between poverty and HIV/AIDS, some regression analyses were performed with different indicators of income mobility and poverty transition, particularly with a view to determining those factors that act to protect households against poverty or in turn increase their vulnerability. Janjaroen (1998), for example, report that differences between affected households in adult equivalent per capita expenditure are small and are not statistically significant, except when controlling for socio-economic status and vulnerability by for example allowing for differences in education of the household, gender of the deceased and the duration of illness. Examples of three of the five types of dependent variables employed in regression models of mobility correlated are employed in this paper, respectively representing changes in the absolute level of welfare, the duration in absolute poverty, and exit chances from relative poverty (Yaqub, 2002). The specific dependent variables that were employed in the analysis are the following:

- Change in natural logarithm of average adult equivalent real per capita household income between waves III and I (CLNAE13)
- Chronic poverty status (CPSTAT=1 if household remained in chronic poverty in all three waves, i.e. adult equivalent per capita household income were below R250 in each period or on average were below R250 although households did not experience poverty in each period, 0 otherwise)
- Moved to higher quintile (CQUINT=1 if household moved to a higher quintile between waves I and III of the study, 0 otherwise)
- Exited poorest quintile (EXITLQ=1 if household moved to a higher quintile between waves I and III of the study, 0 otherwise)

- Exited poorest 40 per cent and moved into richest 40 per cent (EXITPR=1 if household moved from two lower quintiles to two higher quintiles between waves I and III of the study)

The results of these regression analyses are reported in Table 8. The first model employed standard regression analysis (the outcome being a continuous variable), while the latter four models employed logistic regression analysis (the outcome being binary in nature). Included in the models as independent, explanatory variables were income at baseline and variables reflecting what Leibbrandt and Woolard (2001) defines as human capital variables (or demographic details), segmentation variables, physical capital variables (ownership of assets), labour market variables (changes in employment and unemployment), and a series of variables reflecting changes over time in the former variables[5]. Yaqub (2002) also lists these types of variables as the main determinants featuring in models of income mobility. The models also include a number of variables reflecting HIV/AIDS-specific household impacts, e.g. affected status, incidence of illness and death, burden of orphan care, as well as a social capital variable reflecting access to support from family and friends. In the subsequent discussion, the emphasis is on those determinants that were statistically significant predictors of income mobility and of which the signs of the coefficients satisfied *a priori* expectations. (Conventional panel data analysis will be applied to this data set at a later stage to explore the nature of these complex relationships in more detail.) Note, however, as Yaqub's (2002) claim, that such approach is no substitute for the need to employ so-called "life-full" rather than "lifeless" approaches in the study of chronic poverty in developing countries. Such work will remain crucial in elucidating the dynamics of intergenerational transfers of human, financial, socio-cultural, socio-political, and environmental capital and the role thereof in explaining chronic poverty (Moore, 2001).

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[5] Access to medical aid was not included in these models as an explanatory independent variable, given that it most likely represents proxy of socio-economic status rather than a factor directly linked to the impact of HIV/AIDS, given that most ill persons and those that have died had accessed public health care facilities (Booysen *et al*., 2002). Thus, it represents but a marker for having a good job and therefore lies downstream from employment/unemployment and education, which are included in the model.

Table 8: Predictors of income mobility between waves I and III

Explanatory variables and summary statistics	CLNAE13	CPSTAT	CQUINT	EXITLQ	EXITPR
Income variable					
Ln (real adult equivalent per capita income)	**-0.659**	**-2.280**	**-0.958**	**-1.756**	**-0.487**
Human capital variables					
Number of children (<15) in household	-0.324	0.227	0.063	0.103	0.264
Number of adults (15-64) in household	0.214	-0.052	0.702	0.357	0.307
Number of elderly (>65) in household	**0.505**	-1.447	**1.896**	-0.266	0.022
Total number of years of education	0.003	0.007	0.025	-0.000	-0.058
Age of household head	-0.055	0.160	**-0.348**	-0.129	0.334
Age of household head square	0.768	-1.724	**4.518**	1.672	**-4.818**
Segmentation variables					
Household headed by female (yes=1, no=0)	**-0.162**	**1.168**	**-0.692**	-0.381	-0.305
Place of residence (urban=1, rural=2)	**0.190**	-0.269	0.047	0.543	0.348
Physical capital variables					
Household owns dwelling (yes=1, no=0)	**-0.324**	-0.957	-0.013	0.583	1.320
Number of assets owned by household	**0.153**	**-0.423**	-0.000	0.141	-0.165
Labor market variables					
Number of employed household members	0.061	-1.154	-0.690	-0.221	0.041
Number of unemployed household members	**-0.257**	-0.316	**-0.877**	-0.157	0.212
HIV/AIDS impact variables					
Affected status (1=affected, 0=non-affected)	-0.104	**1.041**	-0.299	-0.389	-0.247
Number of ill persons in household	0.430	**1.187**	**0.606**	-0.010	0.682
Number of deaths in household	**-0.423**	**2.884**	**-1.486**	**-2.527**	-1.153
Number of orphans in household	0.063	-0.187	-0.072	**-0.929**	-0.311
Social capital variable					
Household asked and received help	-0.104	0.696	-0.369	-0.268	-0.302
Change variables between waves I and II					
Change in number of children in household	-0.041	0.136	-0.130	-0.529	-0.057
Change in number of adults in household	**0.204**	0.195	**0.970**	0.696	0.490
Change in number of elderly in household	**0.744**	-1.228	**1.952**	-0.220	**1.988**
Change in total years of education	-0.006	-0.045	-0.018	-0.010	**-0.065**
Change in number of assets	**0.125**	**-0.635**	0.217	0.197	-0.053
Change in number of employed members	**0.328**	-1.675	**1.004**	0.745	**1.475**
Change in number of unemployed members	**-0.263**	0.070	**-0.765**	-0.299	-0.342
Change in number of ill persons	0.390	**0.974**	-0.016	-0.355	0.349
Change in number of deaths in household	**-0.314**	**1.646**	**-1.014**	-0.634	-1.075
Change in number of orphans in household	-0.017	-0.392	-0.318	**-0.686**	-0.196
Constant	0.833	14.428	-9.578	1.038	15.611
Sample (n)	*326*	*323*	*326*	*326*	*324*
F or LR value	*11.89*	*130.57*	*128.43*	*112.55*	*63.17*
(P)	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(<0.001)*
R^2 (Pseudo R^2)	*0.528*	*(0.487)*	*(0.306)*	*(0.424)*	*(0.296)*
Adjusted R^2	*0.484*				

Note: CLNAE13 = Change in natural logarithm of average adult equivalent real per capita household

income between waves III and I; CPSTAT=1 if household remained in chronic poverty in all three

waves and 0 otherwise, i.e. adult equivalent per capita household income were below R250 in each period or on average were below R250 although households did not experience poverty in each period; CQUINT=1 if household moved to a higher quintile between waves I and III of the study and 0 otherwise; EXITLQ=1 if household moved to a higher quintile between waves I and III of the study and 0 otherwise; EXITPR=1 if household exited the poorest 40 percent and moved into the richest 40 percent between waves I and III of the study and 0 otherwise. Explanatory variables are values at baseline (wave I), unless stated otherwise. Change variables refer to changes in the respective variables between waves I and III. Coefficients in bold are statistically significant at least at a 0.10 level.

Income at baseline featured as statistically significant in all the models. Households with a lower income at baseline were more likely to be upwardly mobile. This most probably reflects the fact that poorer households on average move a greater distance across the income distribution, as reported elsewhere. However, households with a lower income at baseline were also more likely to be in chronic poverty, which makes sense insofar as those with very low incomes may find it extremely difficult to exit poverty, even if temporarily, due to their limited resources for investment in human and other forms of capital.

Most interesting in this paper, is that the number of deaths at baseline featured as a statistically significant determinant of mobility in four of the five regression models. Households that experienced a larger number of deaths at baseline are likely to find it more difficult to improve their absolute or relative position in the income distribution and are more likely to remain in chronic poverty. Furthermore, an increasing number of deaths experienced over time are likely to hamper income mobility and to enhance the likelihood of households being caught in a (chronic) poverty trap. Hence, mortality appears to be an important determinant of income mobility or lack thereof. Morbidity was also a significant predictor of income mobility. However, the number of ill persons at baseline and the change over time in the number of ill persons featured only in one regression model, namely the model with chronic poverty status as dependent variable. Therefore, both mortality and morbidity appears to be associated with chronic poverty.

Labour market issues remain important in explaining income mobility. The number of unemployed persons at baseline featured in two models, while changes over time in the number of employed and unemployed persons in each household represented a statistically significant determinant of income mobility in respectively three and two models. Related to this is the fact that an increase in the number of

adults in the household was likely to promote income mobility. Generally, households with a larger supply of labour (or more economically active persons) are more likely to have more people find jobs over time. In addition, households headed by females were more likely to experience limited income mobility, possibly because of the disadvantaged position of women in society, which limits their access to jobs and other socio-economic opportunities.

A number of human capital or demographic variables represent significant determinants of income mobility of lack thereof. Most notable of these are the number of elderly in the household at baseline and changes over time in the number of elderly persons in the household. Households with more elderly members and in which the number of elderly persons increased over time were more likely to be upwardly mobile. This particular finding probably reflects the extent to which households in these relatively poor areas remain dependent on income from social grants, with old age pensions representing an important source of income (Booysen *et al.*, 2002). The relatively high uptake in South Africa of these grants means that households with more elderly persons actually are more likely to be classified as non-poor and to be upwardly mobile in societies characterized by high levels of unemployment and limited access to employment opportunities. In addition, households headed by older persons were more likely to remain in (chronic) poverty.

Surprisingly, physical capital did not feature that strongly in these regression models. This may be the result of levels of asset ownership being relatively low in this sample (Booysen *et al.*, 2002). The number of assets at baseline represented a significant determinant of income mobility in two models and changes over time in the number of assets in one model. Fewer assets are baseline and greater depletion of assets saw households being more likely to not be upwardly mobile.

Lastly, two other HIV/AIDS specific determinants of income mobility featured in the model attempting to explain the determinants of the likelihood to exit the bottom quintile in the income distribution. Households sheltering fewer orphans at baseline and that did not experience large increases over time in the number of orphans were more likely to be upwardly mobile in the income distribution.

In summary, therefore, these regression models show that not only conventional determinants of poverty (e.g. demographics, access to labour markets, and physical capital), but also HIV/AIDS-related determinants (e.g. mortality.

morbidity and the orphaned crisis) play a role in explaining why some households remain poor while other households are upwardly mobile and can escape poverty.

4. CONCLUSION

Affected households are poorer than non-affected households in adult equivalent terms, regardless of the poverty line and poverty measure employed in measuring poverty. These poverty comparisons are relatively robust, particularly so in the case of the comparison of affected households that have experienced illness or death (and who also bear the major share of the burden of poverty) with affected households that have not experienced illness or death. In other words, the incidence, depth and severity of poverty are relatively worse among affected households and especially among affected households that have suffered illness or death in the recent past. There is evidence that the intensity of income mobility increases as the probability of households being affected by illness or death increases. Evident as well is that affected households and particularly households that face a greater burden of mortality and morbidity are more likely to experience variations in income and to experience chronic and transient poverty. Not only conventional determinants of poverty (e.g. human capital, access to labour markets, and physical capital), but also HIV/AIDS-related determinants (e.g. mortality. morbidity and the orphaned crisis) play a role in explaining why some households remain poor while other households are upwardly mobile and can escape poverty. In fact, both mortality and morbidity featured as important determinants of chronic poverty. The findings therefore suggest that the introduction of a broad-based social security system offering minimal benefits or of specifically targeted welfare programs may in the short and medium term be important in mitigating certain aspects of the impact of the epidemic, e.g. ensuring food security, making sure that children attend school and mitigating the burden of funeral costs, particularly in the case of households that have directly experiences illness or death and that are chronically poor. Devereux (2002: 657), for example, shows that social safety nets can indeed help mitigate chronic poverty insofar as such initiatives see part of these welfare transfers being invested in "income-generating activities, education, social network, and the acquisition of productive assets". In the longer run, however, continued efforts at poverty reduction through improved education opportunities and job creation are likely to also remain important. It also

means that efforts aimed at ensuring HIV-infected persons equitable access to the labour market will remain crucial in keeping these households from slipping further into poverty.

5. REFERENCES

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