



## Community-Level Impacts of AIDS-Related Mortality: Panel Survey Evidence from Zambia

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In communities hit hard by HIV and AIDS, households not directly incurring a death may nevertheless be affected by taking in orphans, losing access to resources owned by kin-related afflicted households, or transferring resources to afflicted households. In addition, broader effects of high mortality rates on communities' economic and social structures are likely. To date, relatively little quantitative research has been devoted to examining community "resilience," that is, the factors explaining why some communities appear better able than others to withstand the impacts of AIDS-related mortality despite suffering similar adult mortality rates (AMRs). This study measures the effects of prime age (PA) AMRs on community resilience using a set of community level indicators—changes in area of land under cultivation, crop output, and per capita income.

These findings should be important for governments and development agencies, especially in southern Africa, where HIV prevalence rates are the highest in the world and where the full impacts of the disease remain largely speculative.

### Data and Methodology

Data were drawn from a panel of 5,420 households surveyed in 393 rural communities in Zambia in 2001 and 2004. We computed community-level

AMRs from household data along with mean household welfare indicators for all communities. Village (or standard enumerations area [SEA]) fixed-effects models on differenced outcomes were estimated to measure the relationship between mortality rates and area of land under cultivation, crop output, and per capita income at the community level, controlling for time-invariant unobservable characteristics and initial community conditions.

### Findings

We find that a rise in community mortality rates from 0 to 24% (i.e. the difference in mortality rates between the 25th and 75th percentile of all 393 communities) was associated with a 6% decline in the land area cultivated at the community level.

There is little evidence that communities are shifting their cropped area toward labor-saving crops such as cassava, as is sometimes contended. Although cassava cultivation is rising rapidly in many parts of southern Africa, other factors related to agricultural policy need to be considered when examining the impact of HIV and AIDS on crop cultivation patterns and the broader agricultural sector. We find little evidence of increasing marginal impacts on mean income or income per capita at the community level as community mortality rates rise.

This analysis showed that the effects of AIDS-related mortality on rural livelihoods are complex in that they depend significantly on initial community conditions such as the level of mean education, wealth, farm size, population density, connectedness with markets and infrastructure, and

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dependency ratios. For example, we find that communities with relatively high mean education levels are more adversely affected by adult mortality. This may be because educated adults tend to be relatively productive, and as they become sick and die, households and their wider kin networks are more severely affected.

Relatively wealthy communities, as measured by the mean value of productive assets, are better able to maintain their cereal production than poorer communities suffering similar mortality rates. Communities with bigger farms suffer greater declines in output per hectare than more densely populated communities with smaller farm sizes, suggesting that labor constraints may be less severe in the latter areas.

Lastly, mortality rates in the preceding three to eight years have a persistent negative impact on crop output per hectare, indicating a need to take into account communities' prior as well as current mortality rates in AIDS mitigation strategies.

## Conclusion

In general, the findings of this study offer cautious support for the view that prime age mortality is

adversely affecting agrarian-based economic systems in regions hard hit by the AIDS epidemic, yet the severity of these impacts varies greatly according to communities' specific characteristics and initial conditions. Our results find relatively small independent effects of prime-age mortality on community crop output, mean income, and income per capita. However, the estimated effects become large in some communities displaying particular initial community conditions. Consequently, our study cautions against sweeping generalizations about the impacts of AIDS on rural communities hard hit by the disease. These results provide important clues as to the factors influencing communities' resilience, or ability to withstand the impacts of increased AIDS-related mortality. In particular, we find that communities' initial levels of wealth, education, and population (a proxy for labor scarcity) influence the relationship between adult mortality rates and changes in community indicators of welfare. Further research from other areas and time periods is needed to build up a more solid empirical foundation to serve as a basis for the design of AIDS mitigation strategies.

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## About RENEWAL

RENEWAL is a growing regional "network-of-networks" in Sub-Saharan Africa. Currently active in five 'hub' countries (Malawi, Uganda, Zambia, South Africa, and Kenya), RENEWAL comprises national networks of food and nutrition-relevant organizations (public, private, and nongovernmental) together with partners in AIDS and public health. RENEWAL aims to enhance understanding of the worsening interactions between HIV/AIDS and food and nutrition security, and facilitate a comprehensive response to these interactions. Core objectives are (1) to reduce critical gaps in understanding how livelihoods, particularly those deriving from agriculture, (a) contribute to the further spread of HIV (susceptibility), and (b) are affected by HIV and AIDS (vulnerability); (2) to generate new policy-relevant knowledge on how households and communities may strengthen both their resistance to HIV transmission and their resilience to the impacts of AIDS, and (3) to enable relevant institutions (in particular, governments) to generate and to act upon realistic priorities for responding to the interactions of AIDS epidemics with food and nutrition insecurity.

RENEWAL is both a network and a process, with the process of network development being viewed as both a means and an end. The aim is to enhance and sustain impact through pro-actively establishing links between locally-prioritized research, capacity strengthening and policy communications.

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**Note: This brief is based on a RENEWAL working paper containing preliminary material and research results. These papers have not been subject to formal external reviews managed by IFPRI's Publications Review Committee, but have been reviewed by at least one internal or external researcher. They are circulated in order to stimulate discussion and critical comment.**

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