

# Using Empirical Information in the Era of HIV/AIDS to Inform Mitigation and Rural Development Strategies: Selected Results from African Country Studies

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[http://www.aec.msu.edu/agecon/ls2/adult\\_death/index.htm](http://www.aec.msu.edu/agecon/ls2/adult_death/index.htm) )

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## HIV/AIDS epidemic and Agriculture in sub-Saharan Africa

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- Epidemic will have large effects on agriculture and rural welfare
- Role for Ag Economists
  - Anticipate micro and macro-level consequences
  - Anticipate implications for mitigation strategies and rural development
- Need for empirical information
  - Which individuals and HHs suffer from morbidity and mortality
  - How affected HHs respond

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## Current Understanding of HIV/AIDS' Effects on Rural Households: Theoretical literature

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- Prime-age adult mortality leads to reduction in available HH ag labor:
  - HH reduces area cultivated
  - HH shifts toward less labor-intensive crops, away from higher-value crops
- HH loses non-farm income sources
- Depletion of assets; loss of knowledge and land rights
- IMPLICATION:
  - Severe income and asset poverty among affected HHs
  - Respond with labor-saving ag technology and food aid

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## Current Understanding of HIV/AIDS' Effects on Rural Households: Micro-level empirical literature

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- Case studies & regional sample surveys
  - Often not quantitative or representative
  - Targeting high HIV prevalence areas limits extrapolation
  - Little attention to non-affected population or to counterfactuals
  - Limited for measurement of characteristics of affected individuals or HHs and effects of HIV-mortality

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## Literature which predicts/finds heterogeneous effects

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- Effects on rural households predicted/found to vary depending upon:
  - Labor requirements of cropping system, population density, local labor market size (Barnett)
  - % change in HH labor (Dorward)
  - Household position and gender of the deceased individual (Yamano & Jayne)
  - Initial HH income/asset level (Yamano & Jayne; Drimie; Dorward)

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## Paper Objectives

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1. Use large sample representative household survey to develop better micro-level understanding of affected individuals and households
2. Identify implications for design of HIV/AIDS mitigation and rural development policies

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## Methods

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- Add demographic and mortality component to ongoing nationally representative rural HH surveys
  - Ask HHs about individuals who died over past 3-4 years; cause of death (illness), symptoms, etc.
  - Use death of prime-age adult (age 15-49) by illness as rough proxy of HIV/AIDS death
- Cross-sectional data, longitudinal data where possible
- Undertaken with agricultural sector funding

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## Countries studied

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- Kenya (1997, 2000)
- Malawi (1990, 2002)
- Rwanda (2000, 2001, 2002)
- Mozambique (2002)
- Zambia (2000)

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## Methods

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- Compare *ex post* HH composition, land use, and income
  - affected vs non-affected HHs
- Relate findings to results from analysis of impacts of adult mortality
  - Kenya: Yamano and Jayne (2004)
  - Rwanda: Donovan and Bailey (2005)
  - Mozambique: Mather et al (2004)

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## Methods: Challenges/Caveats

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- Household dissolution due to AIDS-related mortality could bias results
  - Low household attrition rates
    - 5.6% (Kenya 1997-2000)
    - 14% (Malawi 1990-2002)
- Results here are short-run
  - Prime-age death occurred one to four years prior
  - Longer-term effects could be worse, especially for HHs headed by widows/widowers
- Inter-household effects not captured

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## Finding #1: Majority of deceased prime-age adults are not heads/spouses

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- % of prime-age deaths due to illness which are household heads/spouses:
  - 54% Malawi , 49% Rwanda, 46% Zambia, 44% Kenya, 27% Mozambique
- Magnitude of effect of prime-age death on rural HH income conditioned by:
  - gender & household position of deceased individual (Yamano & Jayne)
  - *initial* HH income/assets (Yamano & Jayne; Drimie)

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## Finding #2: Affected HHs do not uniformly have less *ex post* PA labor than non-affected HHs

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- Mean *ex post* no. of PA adults similar. Why?
  - Some affected HHs attract new PA members
    - more likely in the case of female death
  - Some affected HHs have more PA members *ex ante*
    - more likely in case of non-head/spouse death
- Yet HHs with 'head/spouse' death have lower *ex post* mean no. of PA adults than non-affected HHs

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### Finding #3: Average affected HH has similar *ex post* land/labor ratios and total income to non-affected HHs

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- Yet *ex post* income/capita is lower among HHs with a head/spouse death
- IMPLICATIONS:
  - Questions usefulness of homogeneous conceptualization of 'affected households'
  - Targeting of food aid or other assistance should be based on which affected HHs are most in need
    - those with head/spouse death, especially male

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### Cropping systems

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- Is HIV/AIDS causing shifts from high-value crops to roots/tubers?
- Macro evidence shows aggregate shifts
  - Decline in area cultivated to maize & increase in roots/tubers in eastern and southern Africa
  - Related to recent crop and input policy changes which have affected relative profitability of grains vs other crops
  - Also related to HIV/AIDS ?

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## Finding #4: Mixed evidence on effect of adult mortality on cropping systems

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- *Ex post* comparison
  - Similar *ex post* % of area cultivated to roots & tubers between affected and non-affected HHs
  - Yet higher *ex post* % among HHs with head/spouse death
- Impact analysis
  - death of male head/spouse -- reduction in cash crop area (Kenya)
  - death of female head/spouse -- reduction in cereal crop area (Kenya)
  - illness or death of PA adult -- reduction in coffee production, increase in sweet potato production (Rwanda)

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## Finding #4: Mixed evidence on effect of adult mortality on cropping systems

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- IMPLICATION #1: Where gender is a main determinant in activity/crop participation, loss of participating adult (male) may leave HH without access
  - Need to address gender bias in ag production and marketing knowledge
- IMPLICATION #2: Questions blanket recommendations of prioritizing labor-saving ag technologies (LSTs) for 'affected households'
  - ag labor may not necessarily become the limiting constraint to ag production
  - higher returns to investing in LSTs for domestic tasks (water/fuel gathering; cereal processing)

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## Conclusion-1

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- Mitigation strategies:
  - heterogeneity of affected HH *ex post* assets and income demonstrates need to improve understanding of which HHs are hardest-hit
  - Social safety nets needed to protect hardest-hit
- Resources are limited -- What is appropriate balance between:
  - Investing in Long-Term Productivity (e.g. education, ag. technology, market infrastructure)
  - vs.
  - Investing in targeted assistance and technologies to AIDS-affected households and communities

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## Conclusion-2

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- 'Good development practice' could improve welfare of both affected and poor non-affected households (Rural development / Mitigation):
  - Improved land tenure
  - LSTs for water/fuel, food processing
  - Redressing gender bias in crop marketing & education
  - Development/dissemination of improved food crop varieties

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## Recommendations for Future Empirical Research

- Insights possible by combining demographic, mortality, production, income and related data from representative sample and comparing affected and non-affected hhs
- Time-use studies of rural adults and children
  - vital for cost-benefit assessment of alternative LSTs
- Investigate linkages between affected HHs and communities
  - Financial/in-kind support from social network
  - indirect effects of HIV/AIDS
  - how HIV/AIDS affects social support networks

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## Finding #1: Head/Spouse deaths represent a minority of overall prime-age deaths

Country	Household Position	All Adults		Male Adults		Female Adults	
		Non-Afflicted	Deceased due to illness	Non-Afflicted	Deceased due to illness	Non-Afflicted	Deceased due to illness
		---- column % ----	---- column % ----	---- column % ----	---- column % ----	---- column % ----	---- column % ----
Kenya	Head/Spouse	29	44	24	59	34	27
	Other	<u>71</u>	<u>56</u>	<u>76</u>	<u>41</u>	<u>67</u>	<u>73</u>
		100	100	100	100	100	100
Malawi	Head/Spouse	47	54	38	55	54	54
	Other	<u>53</u>	<u>46</u>	<u>62</u>	<u>45</u>	<u>46</u>	<u>46</u>
		100	100	100	100	100	100
Mozambique	Head/Spouse	65	27	60	40	69	13
	Other	<u>35</u>	<u>73</u>	<u>40</u>	<u>60</u>	<u>31</u>	<u>87</u>
		100	100	100	100	100	100
Rwanda	Head/Spouse	51	49	47	56	53	44
	Other	<u>49</u>	<u>51</u>	<u>53</u>	<u>44</u>	<u>47</u>	<u>56</u>
		100	100	100	100	100	100
Zambia	Head/Spouse	69	46	62	49	76	44
	Other	<u>31</u>	<u>54</u>	<u>39</u>	<u>51</u>	<u>24</u>	<u>56</u>
		100	100	100	100	100	100

## Finding #1b: Support for Method Used: Panel Data Show Low Household Dissolution Rates

### Attrition, Household Dissolution, and PA Mortality Within Panel Datasets

Country	Panel Survey Time Period	Attrition Rate (%)	% attrition HH that dissolved due to death (%)	% total sample HH that dissolved (%)	% total sample HH with PA death (%)
Kenya	1997-2000 (4 years)	5.6	11	0.6	5.8
Malawi	1990-2002 (13 years)	14	13	1.8	17.1
Rwanda	2000-2002 (3 years)	4	12.5	0.5	6.0

\* Kenya HH dissolution includes all causes

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