Measuring the Effects of Prime-Age Adult Mortality on Rural Households in Kenya

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Current Understanding of HIV/AIDS on Rural Households

• Micro-level foundation for understanding the effects of AIDS
  – Remains very weak

• Macro-level studies
  – only as accurate as their underlying assumptions about household behavioral responses
Objectives

1. To Estimate Impact of Adult Death on:
   • Household Composition
   • Agricultural Production
   • Non-farm income
   • Assets
2. To identify strategies for agricultural research, health policy, and NGO targeting

Data - I

• Two-year panel (1997 and 2000)
  – 22 districts (excluded pastoral areas)
  – 1,422 / 1,500 households revisited
  – attrition rate: 5.2%
  – Kisesa/Tanz study (Urassa et al) found 42% of households “dissolved” within one year after death of male head-of-hh
Data - II

• 9,177 individuals in 1997
  – Of these, 6,856 were identified in 2000
  – 145 passed away (1.6%)
• 2,357 new members between 1997→2000
  – 55 passed away (2.3%)

Data - III

• 200 cases of mortality
  – 160 > age 15
  – 9 accidents/violence
• 151 disease-related deaths
  – 76 were in “prime-age” range
    • 15-49 years for women
    • 20-54 years for men
"Difference-in-Difference" Approach

<table>
<thead>
<tr>
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<th>1997</th>
<th>2000</th>
<th>Difference</th>
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</thead>
<tbody>
<tr>
<td>Households not afflicted</td>
<td>$x_1$</td>
<td>$x_2$</td>
<td>$\Delta x$</td>
</tr>
<tr>
<td>Afflicted households</td>
<td>$y_1$</td>
<td>$y_2$</td>
<td>$\Delta y$</td>
</tr>
<tr>
<td>difference</td>
<td></td>
<td></td>
<td>$\Delta y - \Delta x$</td>
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</tbody>
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Estimation Model

$$\Delta Y_i = D_i^M \times M + D_i^F \times F + D_i^E \times E + V \times $ + $\epsilon_i$$
Adult Mortality Rates - Women

- Expected
- Kenya
- Kisumu / Siaya

Women 15-24 Women 25-34 Women 35-44
Finding 1: Important Gender Differences in Prevalence of Adult Death

- Afflicted Men
  - 49% were in highest income quartile
  - About half were household heads

- Afflicted Women
  - Not correlated with income
  - Likely to be daughters in households

- However, many NGOs target low-income people (e.g., ag. wage laborers)

- IMPLICATION: Campaigns Need to Also Target High-Income, High-Status Men
Finding 2: Effect on Household Composition Depends on Who Dies

• Head-of-household death $\rightarrow$ - 1.5 members
  – Older daughters more likely to leave
    • In 60% of these cases: marriage
    • Major loss in adult labor
• Female head/spouse death $\rightarrow$ - 2.1 members
  – Young boys and girls leave the household
• Death of other adults $\rightarrow$ hh often gained new adult member; these hhs incur less of an economic shock

Finding 3: Gender Effects of Mortality on Crop Cultivation

• Death of male head $\rightarrow$ - 0.9 acre to sugarcane, horticultural crops
• Death of female head $\rightarrow$ - 1.8 acre to cereals, tubers
Finding 4: Effects of Farm Production Sensitive to Specification of “Prime-Age,” Gender, Position in HH

- Death of Male hh-head $\rightarrow$ 68% reduction in value of crop output
- Death of Female head/spouse $\rightarrow$ less dramatic but still negative effects
- Why Male Head Effects on Ag are Greater?
  - High frequency of females leaving after male hh-head dies
  - Loss of female ag. labor to caregiving
  - Loss of higher-return crops
- Insignificant effects in case of death of other hh member

Finding 5: Greatest decline in farm assets among hhs suffering male hh-head mortality

- Mainly sell off small animals and farm equipment
- Cattle assets actually increase after male head dies (bride dowry from daughters leaving)
Finding 6: Loss of non-farm income greatest among households losing female spouse

1997 off-farm income (Ksh)

- Male hh head
- Female head/spouse
- Other p.a. male
- Other p.a. female

Finding 7: Little Indication that Households are Able to Recover Quickly

- Economic status of afflicted hh is equally severe regardless of when male and female head mortality occurred between 1997 and 2000.
Implications

• Need Special Targeting Assistance to Households Incurring Prime-Age Male Head of Household Mortality
• Need to Overcome Gender Barriers to Women’s Participation in Training Programs for Cash Crops

Implications - 2

• Access to concessional credit may reduce need for newly single female-headed hhs to sell off productive assets or resort to risky activity to survive
Implication - 3

• Widow Inheritance, common in Nyanza Province, needs more public campaign attention.
• Targeting strategies aimed at young widows may reduce economic need for widow inheritance and associated risky behaviors

Implication - 4

• For many households, prime-age death increases demand for labor-saving ag. tech
• For severely land constrained households, this may not be so
• More study needed on viability of alternative crop technologies for households facing labor and capital shocks from prime-age death
On-Going Activities

• Working with NGOs to help target assistance to households most affected by adult mortality
• New work on child education