

HIV/AIDS and the Agricultural Sector: Toward Identifying Strategies to Improve Resistance and Resilience

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Effective Response to HIV/AIDS Requires Knowledge of How Households Respond to the Disease

- Three-pronged attack:
 - Prevention
 - Treatment
 - Mitigation
- All depend on solid information on how individuals and households adapt and respond
- 20+ years after the onset of the disease, the empirical foundation for the design of programs is still weak

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Effective Response to HIV/AIDS Requires Knowledge of:

- How individuals/households/communities respond to
 - AIDS-related death
 - Programs and policies designed to address the disease
- Responses occur on 3 levels:
 - Individual
 - household
 - community
- 20+ years after the onset of the disease, the empirical foundation for the design of programs is still weak

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Key Knowledge Gaps regarding strategies to reduce spread/impact of AIDS

- Is spread of AIDS exacerbated by poverty?
 - Does poverty encourage risky sexual behavior?
 - Does lack of self-esteem among men encourage sexual violence?
 - studies from 1980s / 1990s indicates that AIDS is affecting the relatively wealthy

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*Key Knowledge Gaps
regarding strategies to reduce spread/impact
of AIDS (2)*

- Resources are limited
- What strategies are effective in mitigating the spread and impacts of AIDS?
 - Focus on agricultural development and other traditional approaches to raising living standards?
 - Are special AIDS-mitigation strategies (beyond prevention and treatment) a better approach?

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*Key Knowledge Gaps
regarding strategies to reduce spread/impact
of AIDS (3)*

- Examples of AIDS mitigation strategies:
 - Food aid to hard-hit communities
 - Encourage cultivation of nutritious crops
 - Encourage agricultural practices that are labor saving
 - Providing skill training for young women

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Outline

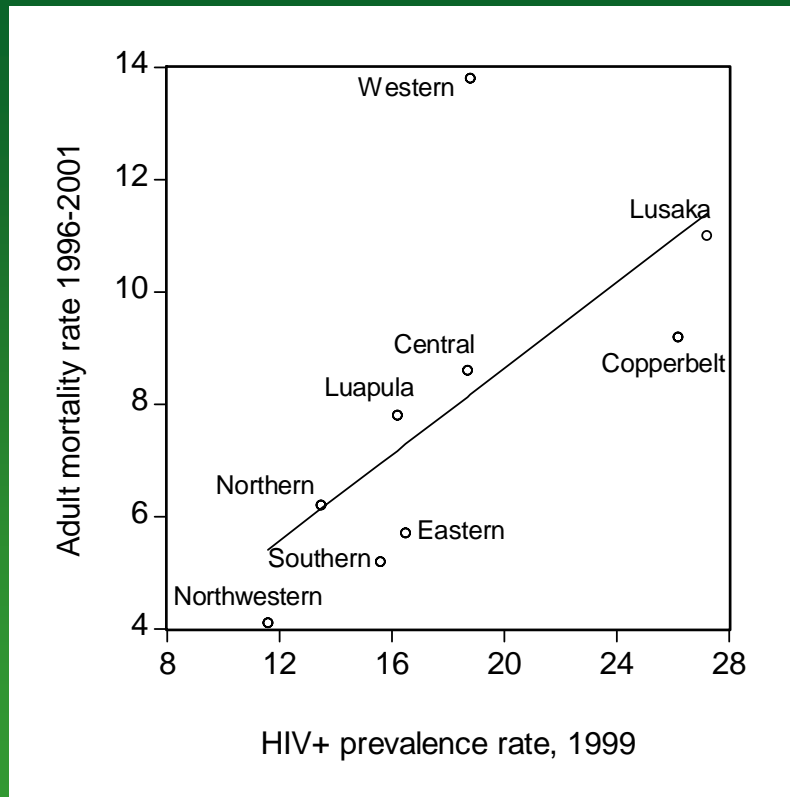
- PART I: what do we know about how households respond to prime-age death
- PART II: broader trends affecting the appropriateness of various responses to HIV/AIDS
- PART III: consideration of “response strategies” to improve resistance / resilience

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Characteristics of MSU household surveys

Country	Sample size	Year(s) of surveys	Panel or cross-sectional
Kenya	n=1422 n=1266	1997, 2000, 2002	Panel
Malawi	n=420 n=372	1990, 2002	Panel
Mozambique	n=4908	2002	Cross-section
Rwanda	n=1395	2002	Cross-section
Zambia	n=6922	2000	Panel

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Finding #1

Afflicted households/individuals are not random

- Early 1990s: positively correlated with income, wealth, education, mobility
- Still the case in some countries (e.g., Zambia)
- Recent evidence in other countries: increasingly concentrated among the poor (e.g., Kenya, South Africa)

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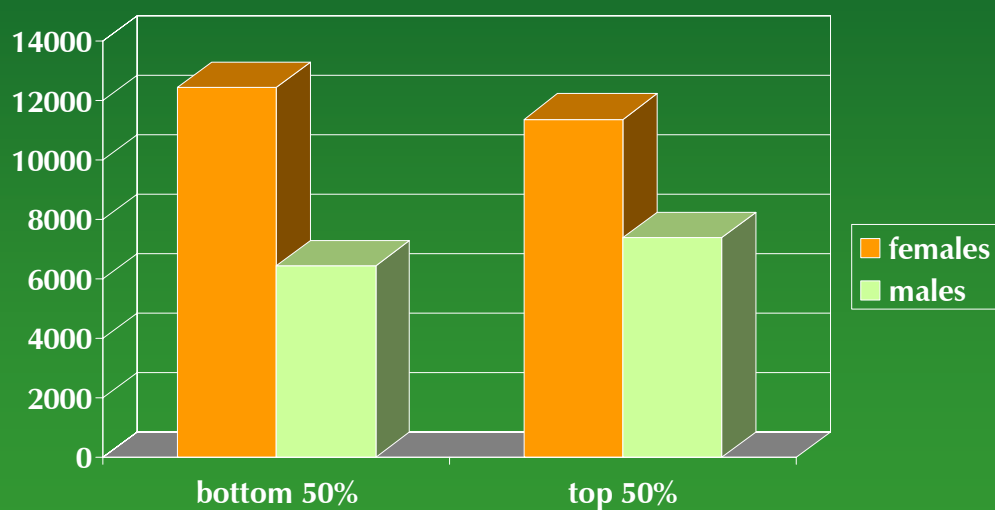
Per Capita Income Status of Afflicted Households (ex ante) – Kenya, 2000

	Deceased prime-age males	Deceased prime-age females
Poorest 25%	50.0	34.1
2 nd quartile	19.6	14.6
3 rd quartile	15.2	34.1
Wealthiest 25%	15.2	17.2

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Finding 2: 60% of PA mortality is women

Prevalence of PA mortality, by sex and income, Zambia, 2001-2004



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Finding #3: Certain factors affect the magnitude of impacts on households

- Strong evidence that impacts depend on:
 - Initial level of household vulnerability (assets, wealth)
 - Sex of the deceased
 - Position in household of deceased
 - Ability of household to attract new members
 - Characteristics of adults remaining in household (e.g, skills, education level)

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Gender Effects of Mortality on Crop Cultivation

- In Kenya:
 - Death of male head → - 0.9 acre to cash crops (e.g., sugarcane, horticulture)
 - Death of female head → - 1.8 acre to cereals, tubers

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Finding #4: Household Composition Responds to Death in Household

- Death of adults other than head/spouse:
 - Tends to draw additional members into household
- Death of head/spouse
 - Less ability to draw additional members
 - More likely that other young members will leave household

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Finding 5: Loss of Cash Likely to Have the Greatest Impact on Crop Production

- Drawing non-resident members back to the farm can cut off off-farm income streams
 - Kenya: death of head or spouse associated with \$120 and \$260 per year reduction in off-farm income

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Finding 6: Effects Most Severe on the Poor

- Very few significant effects detected among households in top half of asset distribution
- Effects on ag production and non-farm income were larger and more highly significant among the poor

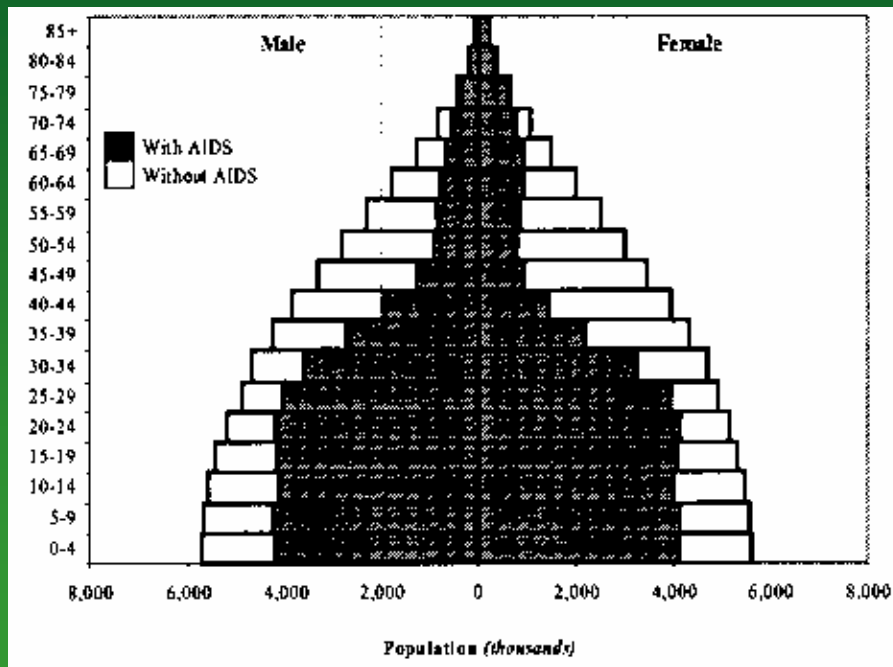
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Part 2: Major Exogenous Trends Influencing Policy Options for AIDS Mitigation

- Population growth trends
- Decreasing farm size
- Rural → urban migration (“push” effect)
 - underemployment in burgeoning informal sector
- Partial dismantling of fertilizer + maize production subsidies in E. and S. Africa

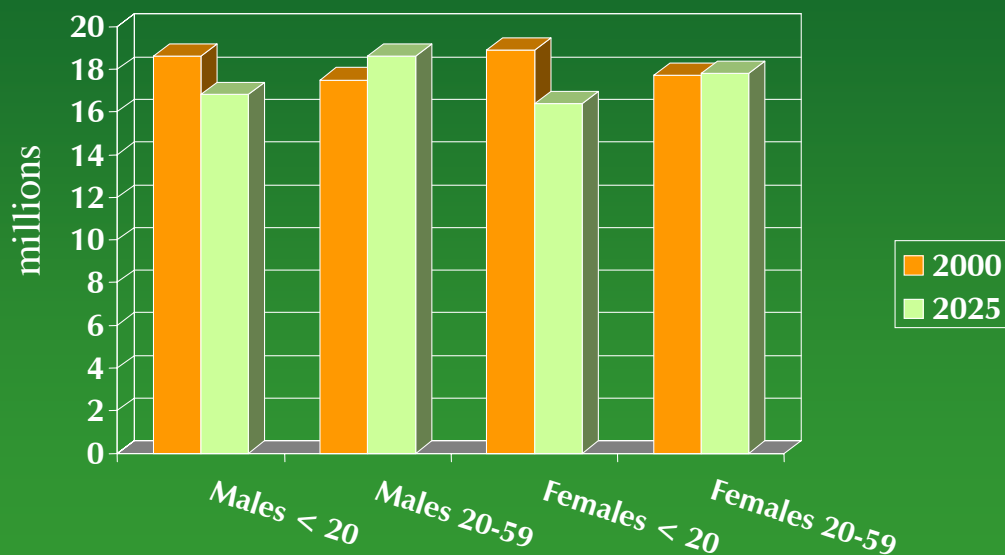
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Projected Population in the 7 Most Highly Affected Countries, "With AIDS" vs. No-AIDS Scenario, by Sex and Age Group, 2025.



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Population Size, 2000 vs. 2025 (projected) Seven Most Highly Afflicted Countries



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Trend #2: Evidence of population shifting into agriculture, 1990 and 2000 Census, Zambia

Population Characteristics	1990	2000	% increase
Total population	7,383,097	9,885,591	33.9
Rural population	4,497,391	6,458,729	43.6
Urban population	2,885,706	3,426,862	18.7
Population of agricultural households – total	3,591,588	7,181,807	100.0
Population of agricultural households - rural	3,521,498	5,965,504	69.4
Population of agricultural households – urban	70,090	1,216,303	1637
Population of non-agricultural households – rural	975,893	493,225	-49.5

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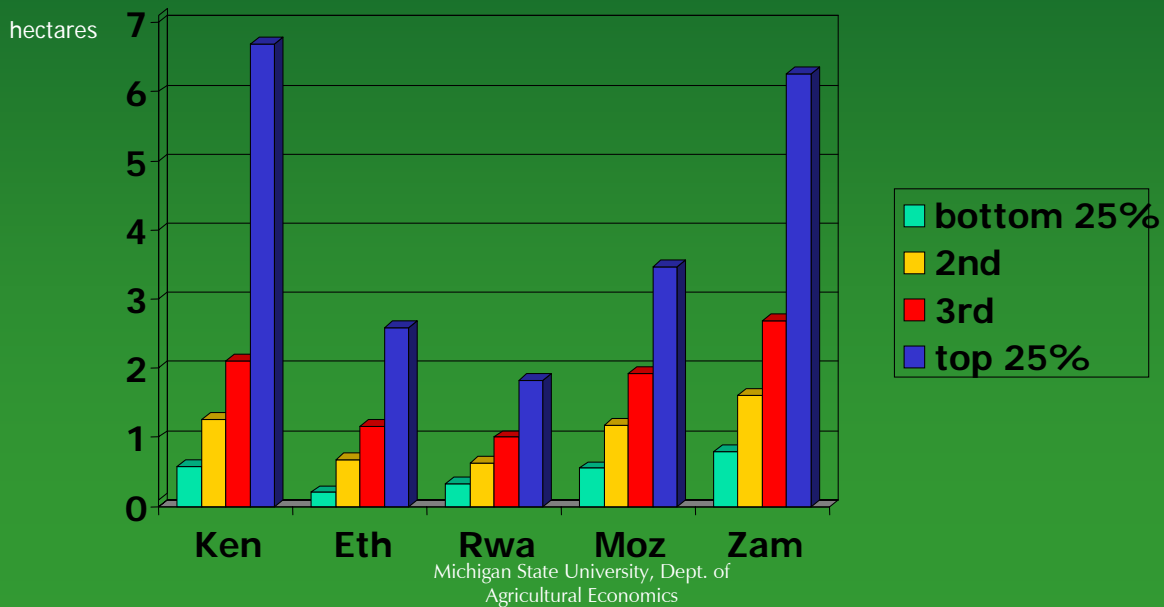
Trend #3: Decreasing Farm Size

Table 1. Land to Person Ratio (10 year average) in Selected Countries (hectares per person)

	1960-69	1970-79	1980-89	1990-99
<i>Africa</i>				
Ethiopia	0.51	0.45	0.36	0.25
Kenya	0.46	0.35	0.28	0.23
Mozambique	0.39	0.37	0.30	0.25
Rwanda	0.22	0.21	0.20	0.16
Zambia	1.41	1.10	0.89	0.78
Zimbabwe	0.73	0.66	0.58	0.53

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Farm Size Distribution – Smallholder Sector only

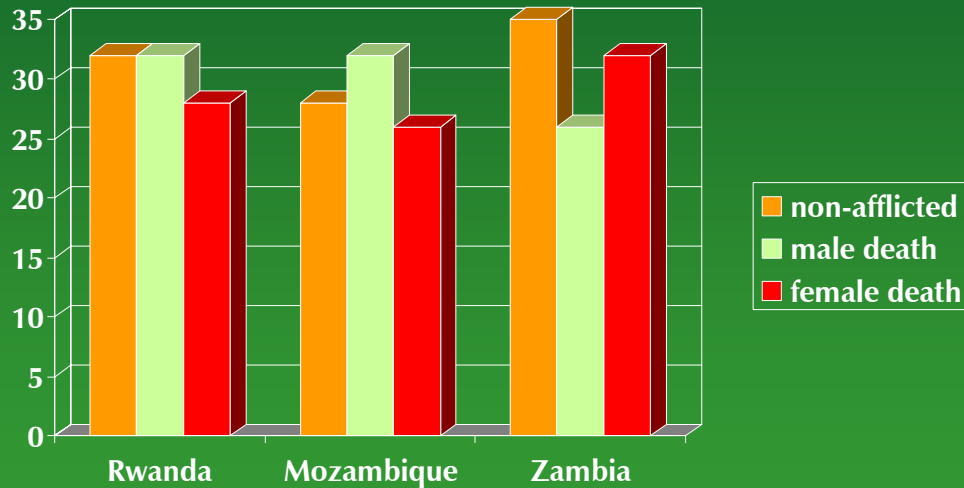


Implications - I

- Not clear that afflicted households need or should be urged to use:
 - labor-saving crop technologies
- Why?
 - crops / techniques that reduce labor input per acre may sacrifice income and food produced per acre
 - Must take into account population density and extent of under-employed labor
 - Conventional wisdom hasn't adequately recognized the effect of underemployment in informal sector on urban → rural labor migration

Is the Cassava Boom Related to AIDS-related Labor Shortages?

% of area cultivated



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Implications - II

- Not clear that afflicted households should be urged to grow:
 - “more nutritious” foods
- Why?
 - Crops that maximize nutrition / kg produced
≠
 - maximize nutrition / acre or income / acre
 - need to take account of which crops provide greatest return to land / labor in a given area

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	Nutritional units / kg produced	Kgs produced per acre	Nutritional units per acre
Crop X	10	100	1,000
Crop Y	5	250	1,250

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PART 3: What To Do?

1. Assist in creation of *capital assets* in agricultural production
 - Loss of cash likely to be *the* greatest threat to maintenance (or improvement) in agricultural productivity
 - Contracts with private agents to provide veterinary, dipping, insemination services, and draft equipment to farmers in smallholder areas

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What To Do? (continued)

2. Promote *out-grower arrangements* for interlocked credit-input-crop sale, with specific arrangements for female-headed households
 - e.g., remove restriction on title deed
 - Use the cash crop scheme as mechanism for firm to recover input loans for food crops
 - Will help improve afflicted households' access to cash inputs

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What To Do? (continued)

3. Need to Overcome Gender Barriers to Women's Participation in Training Programs for Cash Crops
 - Experience with master farmer training of cash crop husbandry practices for women

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What to do? (continued)

4. Widow Inheritance, common in Nyanza Province, needs more public campaign attention.
5. Skill training programs targeted at young women and widows may reduce economic need for risky behaviors
 - “do you want us to die now or die later”?
 - BUT: evidence is not showing that female mortality is inversely related to income/wealth

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What to do? (continued)

6. Modify rules governing women's rights and access to resources
 - e.g. work with communities to recognize that it is in the communities' interest for widows to retain access to land after husband's death
 - Will require shifts in consciousness
 - Recognition that communities' resilience to AIDS will require more equality for vulnerable groups.

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Need for appropriate balance between:

- Investing in long-term productivity growth (education, infrastructure, markets)
vs
- Targeted assistance to affected HHs
- Poverty and HIV/AIDS are mutually reinforcing → hence pro-poor productivity growth is crucial
- Resources are scarce: which investments provide greatest benefits?

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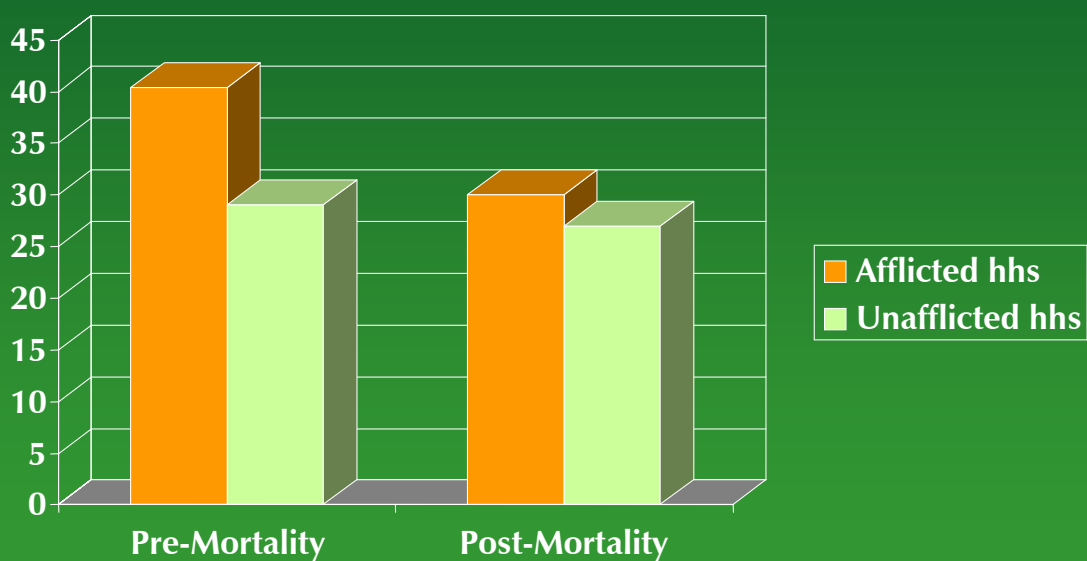
“Difference-in-Difference” Approach

	1997	2000	Difference
Households not afflicted	x_1	x_2	Δx
Afflicted households	y_1	y_2	Δy
difference			$\Delta y - \Delta x$

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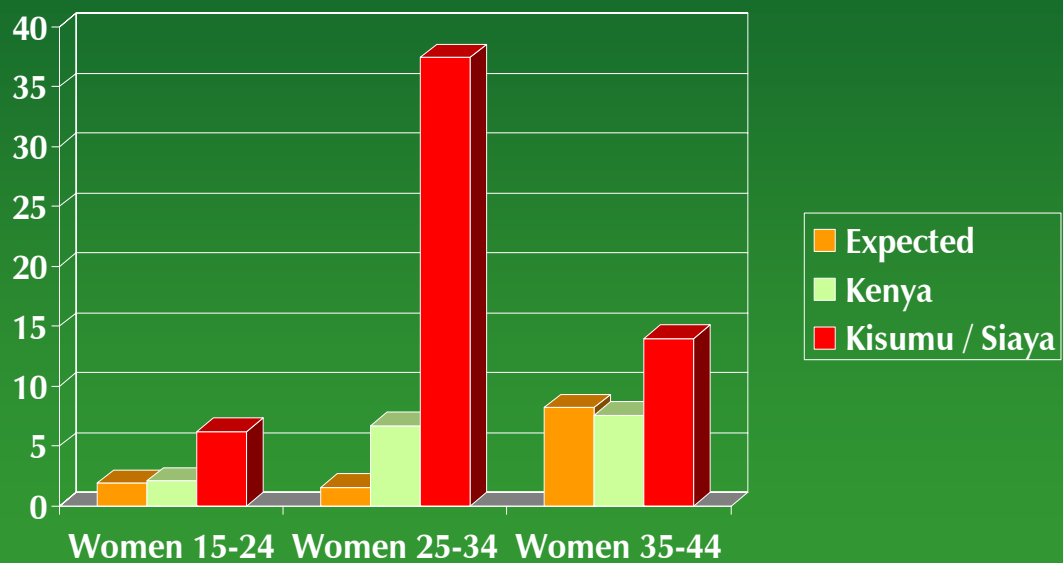
Importance of panel (longitudinal) analysis

Household
income



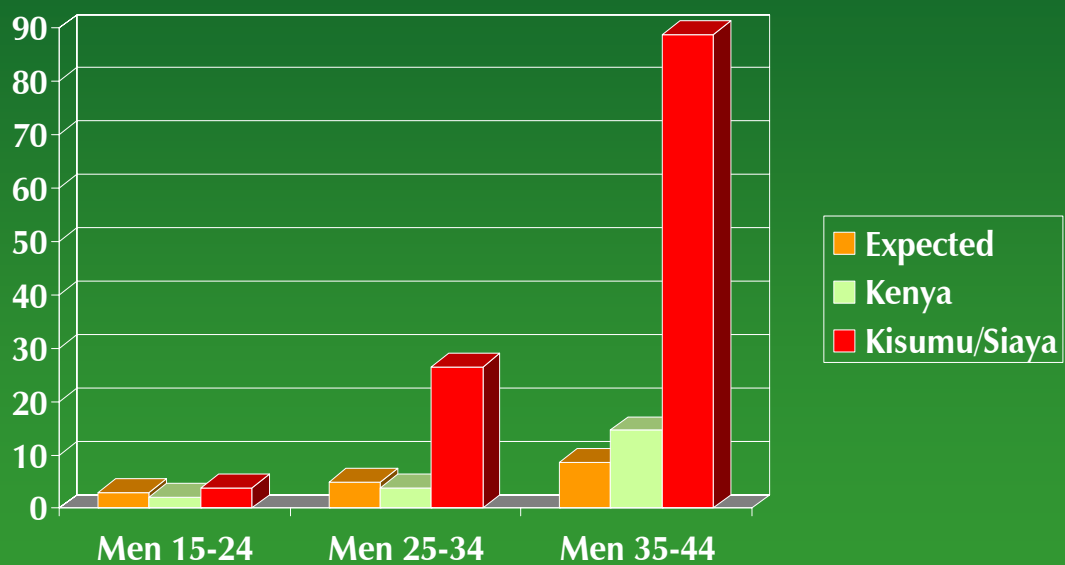
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Adult Mortality Rates - Women



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Adult Mortality Rates - Men



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Is the “Cassava Boom” related to HIV/AIDS?

Table 10. Percentage of Area Cultivated to Roots & Tubers by Country for Households With and With a PA Death

Country	Non-Affected HHS	HH with Male Death	HH with Female Death
	---- mean value ----		
Kenya (1997 ex ante)	23.4%	28.3%	21.0%
Kenya (2000 ex post)	22.0%	34.5%	16.2%
Mozambique (2002 ex post)*	28.0%	32.0%	26.0%
Rwanda (2002 ex post)	32.0%	32.0%	28.0%
Zambia (2000 ex post)*	35.0%	26.0%	32.0%

Notes:

* for Moz and Zambia, this is % of cultivated area in cassava, only including households which grow cassava

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