

**HIV/AIDS, Food Security and
the Role of the Natural Environment:
Evidence from the AHDSS in Rural South Africa**



Lori M. Hunter
University of Colorado at Boulder, USA

Wayne Twine
University of the Witwatersrand, South Africa

Presentation Outline

- Research Background, Framework, Questions
- Setting, Data & Methods
- Results
- Implications



Presentation Outline

- Research Background, Framework, Questions
- Setting, Data & Methods
- Results
- Implications



Background

- Two important trends related to population, health, environment
 - HIV/AIDS
 - Environmental change
- Little empirical examination of association

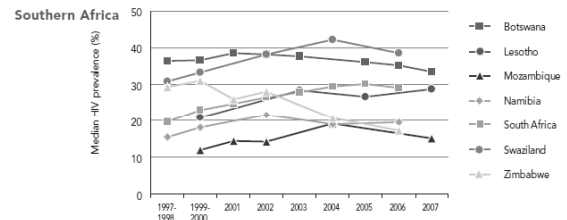


A global view of HIV infection
33 million people [30–36 million] living with HIV, 2007



Source: UNAIDS 2008

FIGURE 2.9 HIV prevalence (%) among pregnant women attending antenatal clinics in sub-Saharan Africa, 1997–2007



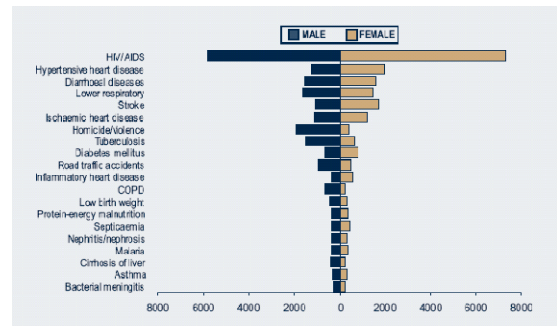
Source: UNAIDS 2008

Background

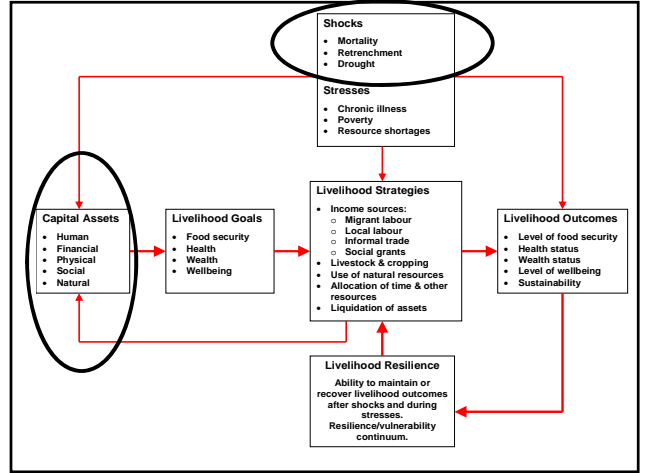
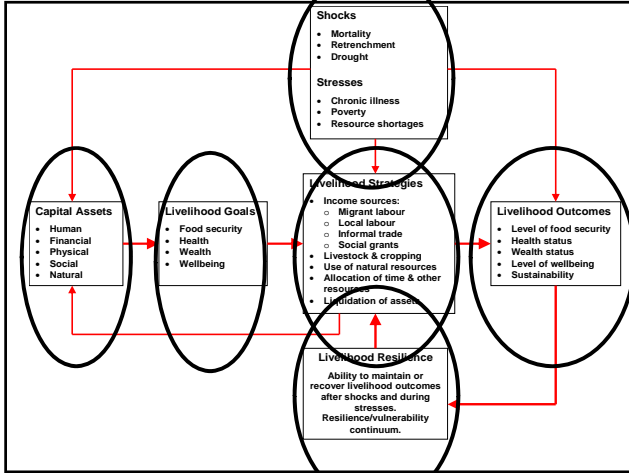


- HIV/AIDS in South Africa
 - single highest cause of mortality
 - Limpopo Province 13%
 - Perhaps 20%+ Bushbuckridge

Twenty leading single causes of death, by sex, Limpopo 2000



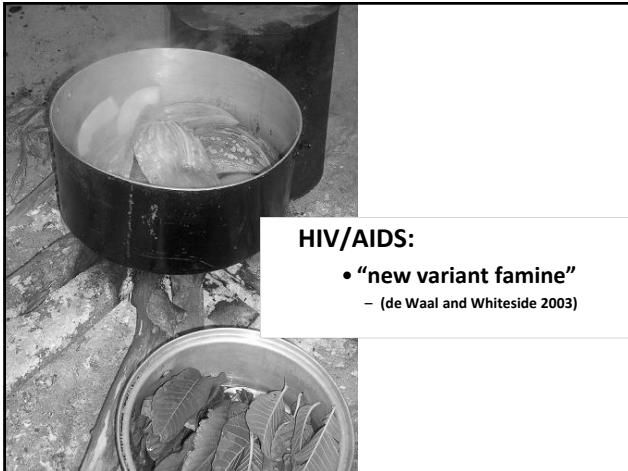
MRC South Africa National Burden of Disease Study, 2000





“All dimensions of food security ... availability, stability, access and use of food ... are affected where the prevalence of HIV/AIDS is high.”

South Africa's
Human Research Sciences Council



Hypothesized Impact Pathways between AIDS, Natural Resources Use/Reliance, and Food Security

- Diversion of labor (Jackson 2002)
- Less intergenerational knowledge transfer (Haddad and Gillespie 2001)
- Less effective communal resource management (Haddad and Gillespie 2001)
- Lowered productivity (Barnett and Blaikie 1992)
- Less labor-intensive crops (Haddad and Gillespie 2001)
- Loss of remittances (Rugalema and Kyanyne 2002)
- Undermining of social support (Mtika 2001)
- Sale of productive land/equipment (van Liere 2002).



Special Issue: HIV/AIDS and Environment

Demarcating Forest, Containing Disease: Land and HIV/AIDS in Southern Zambia (Frank and Unruh)

AIDS, Kitchen Gardens, and Natural Resource Management: Insights from a Village in Western Kenya (Murphy)

Wild Food Use in Household Food Security Responses to HIV/AIDS (Kashula)

Mitigating an Elephantine Epidemic: Gendered Space for HIV/AIDS Outreach through Namibian Conservancies (DeMotts)

The Integration of Support for HIV and AIDS and Livelihood Security: District Level Institutional Analysis in Southern Africa (Ziervogel and Drimie)

Using Innovation to Address HIV/AIDS and Environment Links: Organizational Case Studies from Zimbabwe, Uganda and Malawi (deSouza et al.)



Special Issue: HIV/AIDS and Environment

Demarcating Forest, Containing Disease: Land and HIV/AIDS in Southern Zambia (Frank and Unruh)

AIDS, Kitchen Gardens, and Natural Resource Management: Insights from a Village in Western Kenya (Murphy)

Wild Food Use in Household Food Security Responses to HIV/AIDS (Kashula)

Mitigating an Elephantine Epidemic: Gendered Space for HIV/AIDS Outreach through Namibian Conservancies (DeMotts)

The Integration of Support for HIV and AIDS and Livelihood Security: District Level Institutional Analysis in Southern Africa (Ziervogel and Drimie)

Using Innovation to Address HIV/AIDS and Environment Links: Organizational Case Studies from Zimbabwe, Uganda and Malawi (deSouza et al.)

What's still missing?

Three Projects



- Focus on fuelwood/water
- AHPU DSS (e.g., VAs)
- Survey (n=240; stratified by mortality experience)
- Interviews
- Focus on NR and food security
 - Broad coverage, cause of death
- AHPU DSS (e.g., VAs)
- Food
 - Focus on NR and food security
 - Detailed NR, cause of death
 - AHPU DSS (e.g., VAs)
 - Survey (n=290, 2 mortality groups, no-mort); 15 mort interviews
- N = 1

Research Questions



- 1) Do households that experience prime-age adult mortality have lower food security than households without prime-age adult mortality experience?
- 2) Is prime-age adult mortality experience associated with households' use of homestead gardens?
- 3) Are households that experience adult mortality more dependent upon wild local vegetation and meat sources than households without adult mortality experience?
- 4) Is AIDS mortality a unique form of mortality shock with regard to these outcomes?

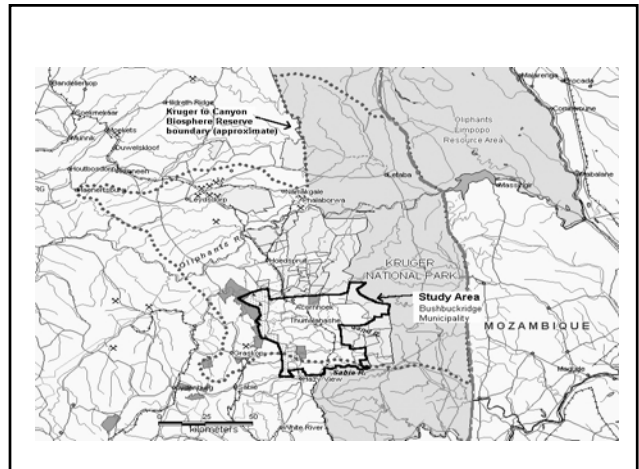
Presentation Outline


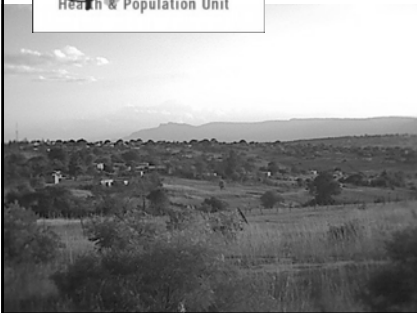
- Research Background, Framework, Questions
- Setting, Data & Methods
- Results
- Implications





Presentation Outline

- Research Background, Framework, Questions
- Setting, Data & Methods
- Results
- Implications







- Wits School of Public Health, Health and Population Division
- 21 villages
- 11,000 HHs
- Baseline: 1992

- Household-level data
- Individual-level data
- Verbal autopsies
- Demographic foundation

- Water, fuelwood primary concerns
- Although electrified, vast majority use wood
- Environment significantly modified



Food security

- **Household not had enough to eat in last month?**
 - If so, how many days?
- **Sufficient production from fields/gardens?**
 - If not, why not?
- **Regularly supplement diet from bush?**

Mortality

- Mortality-impacted household categorized by cause of death and gender/household role of deceased
 - HIV, non-HIV
 - Male head, wife, female head, “other” male or female

Control variables

- HH size, composition, assets
- Head characteristics
- Livelihood strategy
- Vegetation access

Models

- Mortality only
 - HIV/AIDS-related or not
- All households
 - Adult mortality or not
- All households
 - Disaggregated by gender/position of deceased

Presentation Outline

- Research Background, Framework, Questions
- Setting, Data & Methods
- Results
- Implications



Presentation Outline

- Research Background, Framework, Questions
- Setting, Data & Methods
- Results
- Implications



Presentation Outline

- Research Background, Framework, Questions
- Setting, Data & Methods
- Results
- Implications



First, qualitative insight

Tsakani's employed adult son recently passed away.

He *"would remember us every month end, buying groceries and a sac of maize meal"* Since his income has not been replaced, she explains that *"there is a serious gap now."*



Elliott's wife passed away and he now lives with his daughter.



"We stopped purchasing ... most of the time we rely on the garden."

Zodwa's deceased husband worked at a game reserve.

"there is a big change now because we no longer have food, we just get assisted by the relatives and we depend more now on the field."



Meslina's sister was a waitress.



"We used to buy groceries like beef and chicken but now we can only afford mixed portions, no longer tinned stuff and other things. So you find that we rely on the field or borrow some money from neighbors."

Qualitative data clearly reveal increased role of natural resources in maintenance of food security



"Locusts are now our beef."

Levels of food security and environmental dependence

Variable	Mean
Food security	
Food insecure in last month	0.37
Number of times food insecure in past month	3.01
Dependence on homestead gardens	
Grow crops other than maize or mealies on plot	0.59
Fields/plot produced enough to feed household over past year	0.17
Fields/plot did not produce enough to feed household due to lack	0.11
Dependence on wild local vegetation	
Supplement food intake by gathering from bush	0.52
Number of times consumed wild herbs last year	114.03
Number of times consumed wild fruit last year	64.44

Table 1. Logistic Regressions and Linear Regressions for the Effects of HIV/AIDS-related Adult Mortality on

	Had enough food in past month			Times hungry in past month		
	OR	OR	OR	b	b	b
Food security				0.41	0.44	0.45
Mortality				0.14	0.15	0.15
HIV/AIDS-related mortality	1.03	1.07	1.05	0.00	0.00	0.00
Household sociodemographic characteristics	1.00	1.01	1.00	0.13	0.10	0.10
Household size	1.00	0.83	1.00	0.64	0.63	0.64
Sex ratio				0.05	0.06	0.06
Old age				0.17	0.17	0.17
Young age						
Control						
Agriculture						
Unemployment						
Control						
Household sociodemographic characteristics						
Household size	1.52	1.14	1.07	0.45	0.54	0.54
Sex ratio				0.21	0.21	0.21
Old age composition				4.76	6.22	6.22
Young age composition				2.24	2.24	2.24
Common goods						
Agriculture						
Control						
Dependence on wild food vegetation						
Mortality	1.17	1.11	1.29	-3.37	1.02	-0.85
Male head - AIDS	0.76	0.65	0.67	1.98	3.17	-4.24
Male head - non-AIDS	0.64	0.57	0.54	0.26	0.34	0.37
Female head - AIDS	0.55	0.51	0.48	1.78	1.91	2.88
Female head - non-AIDS	0.89	0.82	0.80	3.15	15.31	10.70
Male - AIDS	0.81	0.81	0.83	17.55	1.26	-2.56
Male - non-AIDS	1.03	0.92	0.89	14.64	15.31	10.70
Female - AIDS	0.81	0.82	0.83	1.46	-4.09	0.36
Female - non-AIDS	1.20	1.08	1.07	-0.81	-0.91	-0.25
Household sociodemographic characteristics						
Household size	1.00	1.00	1.00	0.97	0.91	0.22
Sex ratio	1.00	1.00	1.00	0.00	0.00	0.00
Old age composition	1.00	1.00	1.00	1.05	1.64	3.33

Multivariate Results

- Mortality of head (male or female) associated with
 - greater experience of hunger
 - lessened supplementation with wild foods
- AIDS not consistently unique shock
 - Only in case of perceived labor shortages



Multivariate

Inconsistent with qualitative data

- Mortality of head (male or female) associated with
 - greater experience of hunger
 - lessened supplementation with wild foods
- AIDS not consistently unique shock
 - Only in case of perceived labor shortages



Presentation Outline

- Research Background, Framework, Questions
- Setting, Data & Methods
- Results
- Implications



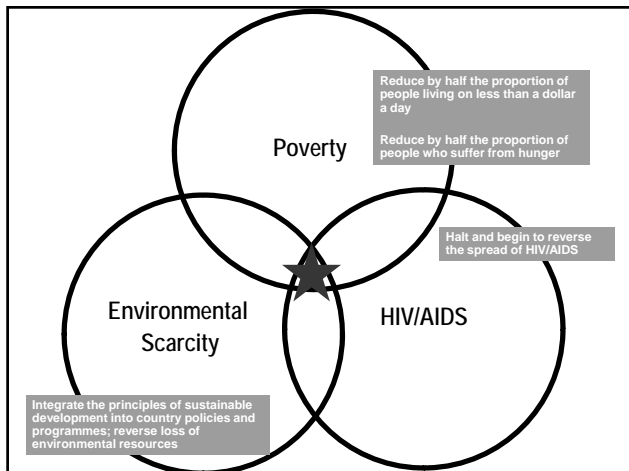
Presentation Outline

- Research Background, Framework, Questions
- Setting, Data & Methods
- Results
- Implications



The Goals

1. Eradicate extreme poverty and hunger → Reduce by half the proportion of people living on less than a dollar a day
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases → Halt and begin to reverse the spread of HIV/AIDS
7. Ensure environmental sustainability
8. Develop a global partnership for development → Integrate the principles of sustainable development into country policies and programmes; reverse loss of environmental resources



Implications

- Consider environmental dimensions of AIDS pandemic & ways in which env change will shape coping strategies
- Vulnerability must be broadly defined
 - Not necessarily specific to HIV/AIDS



