
The role of health and socio-demographic surveillance in low, mid-come countries

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Health & Socio-demographic Surveillance System (HDSS)

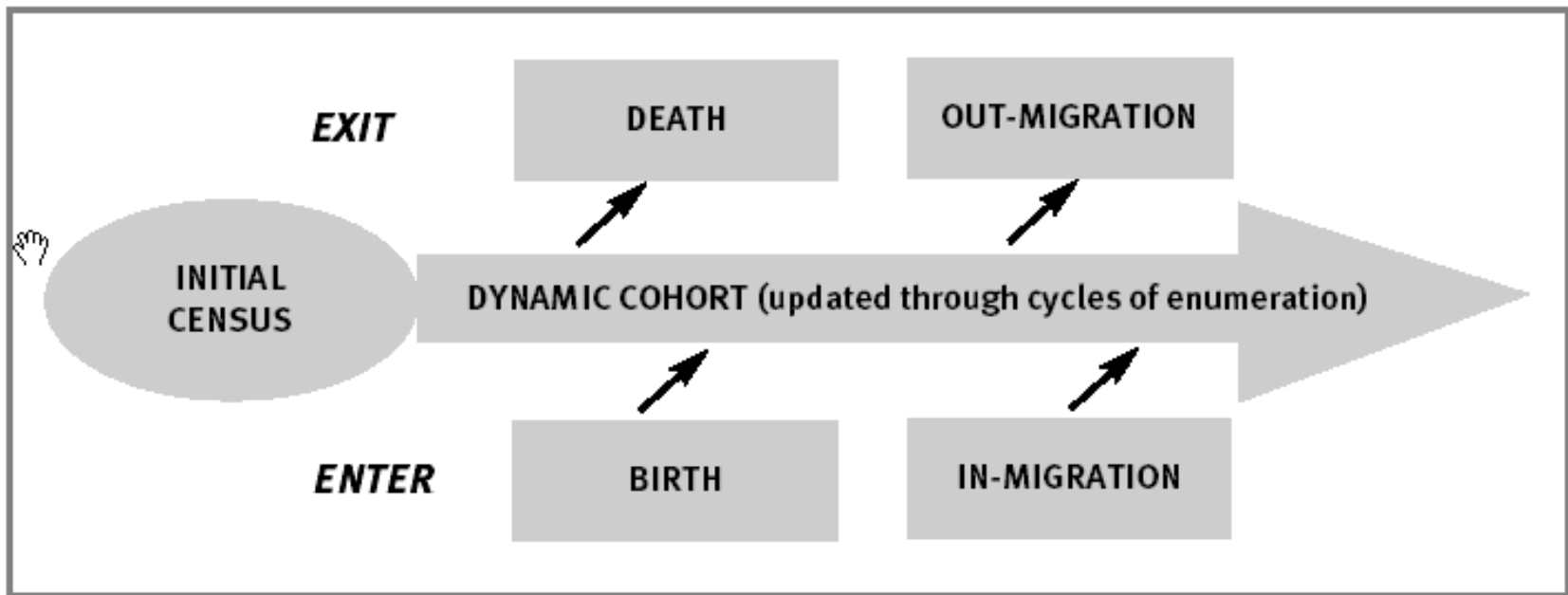
Continuous monitoring of a geographically-defined population, with timely production of data on all vital events (births, deaths, migrations)

Additional information on:
cause of death, morbidity, disability & function, unions, lifestyle, food security, economic & social activity



Defining and registering a population
Following community over time
Recording all vital events

Prospective monitoring of demographic and health events



Cross-sectional modules

- Education (updated 1992, 1997, 2002, 2006 and new individuals)
- Assets (2001, 2003, 2005, 2007)

- Cough (1999 – one screening question)
- Stroke (2001 – two screening questions)

- Child Care Grants (2002, 2005)
- Vital Documents (2005 – one screening question)

- Health Care Utilisation (2003, 2006)
- Food Security (2004, 2007)

- Temporary migrations (2002, 2007)
- Labour participation (2000 and 2004)

- Marital status – current and historical (2005, 2007)
- Pregnancy status (2006)
- Father status (2007)



Ways in which HDSS supports R & D

- **Sampling frame**
 - powerful and versatile

- **Census as a screening tool**

- **Triangulation** with other data sources

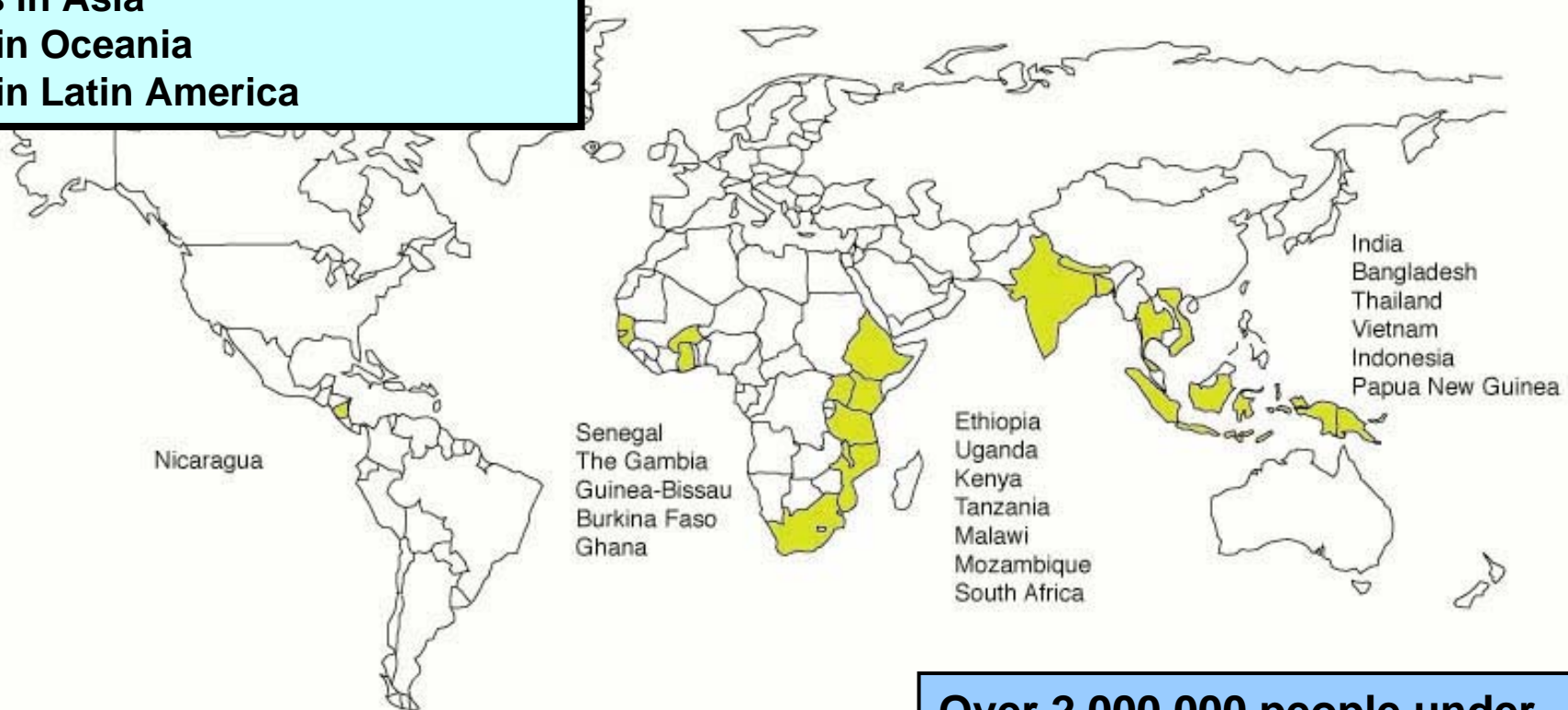
- **Multi-level analyses**
 - individual, household, community

- **Design efficient**
 - Population already enumerated
 - Control and experimental groups within site
 - Extends analytic possibilities

- **Cost efficient**
 - Start up costs lower



Currently 37 sites in 19 countries
22 sites in Africa
9 sites in Asia
1 site in Oceania
1 site in Latin America

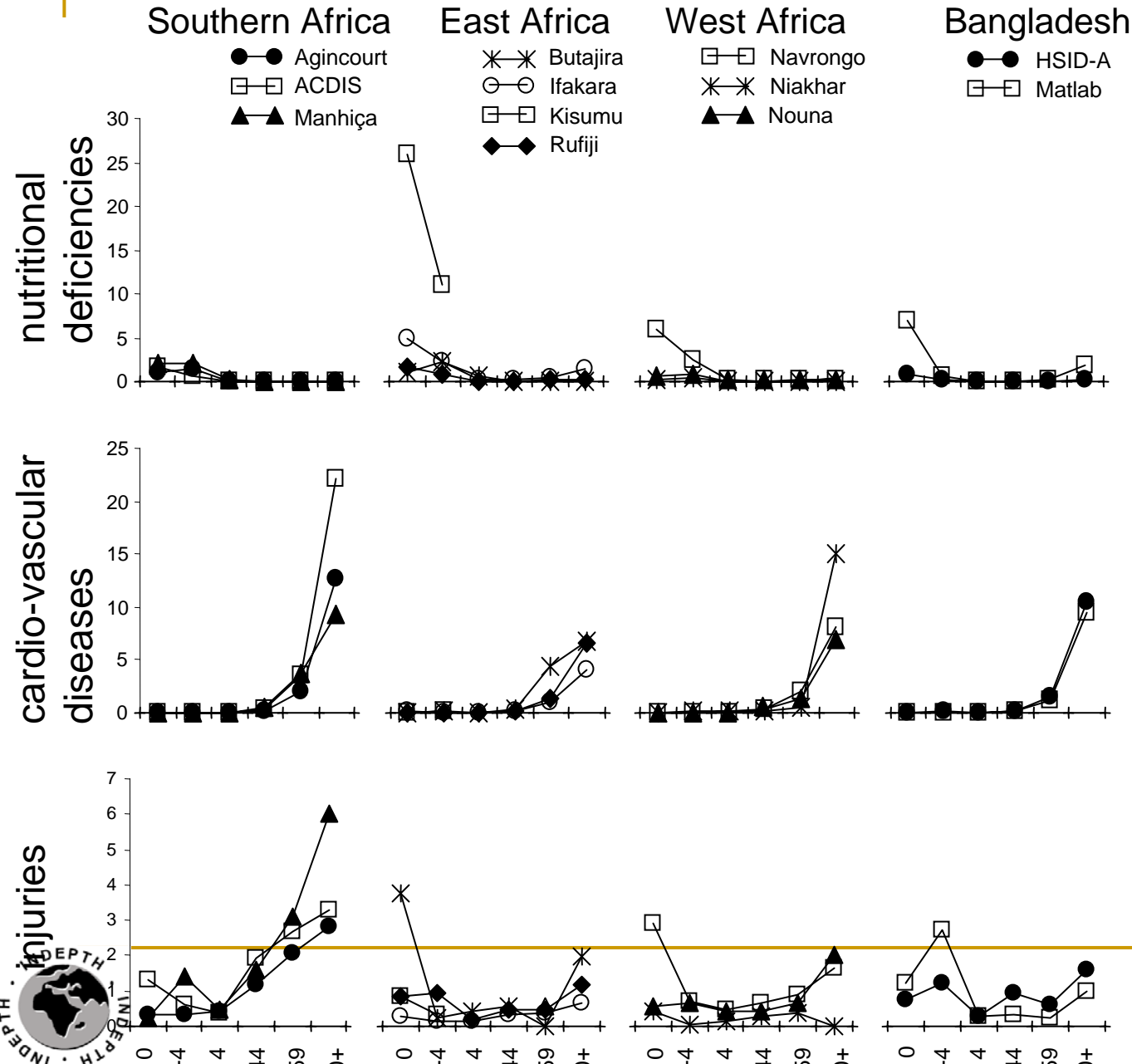


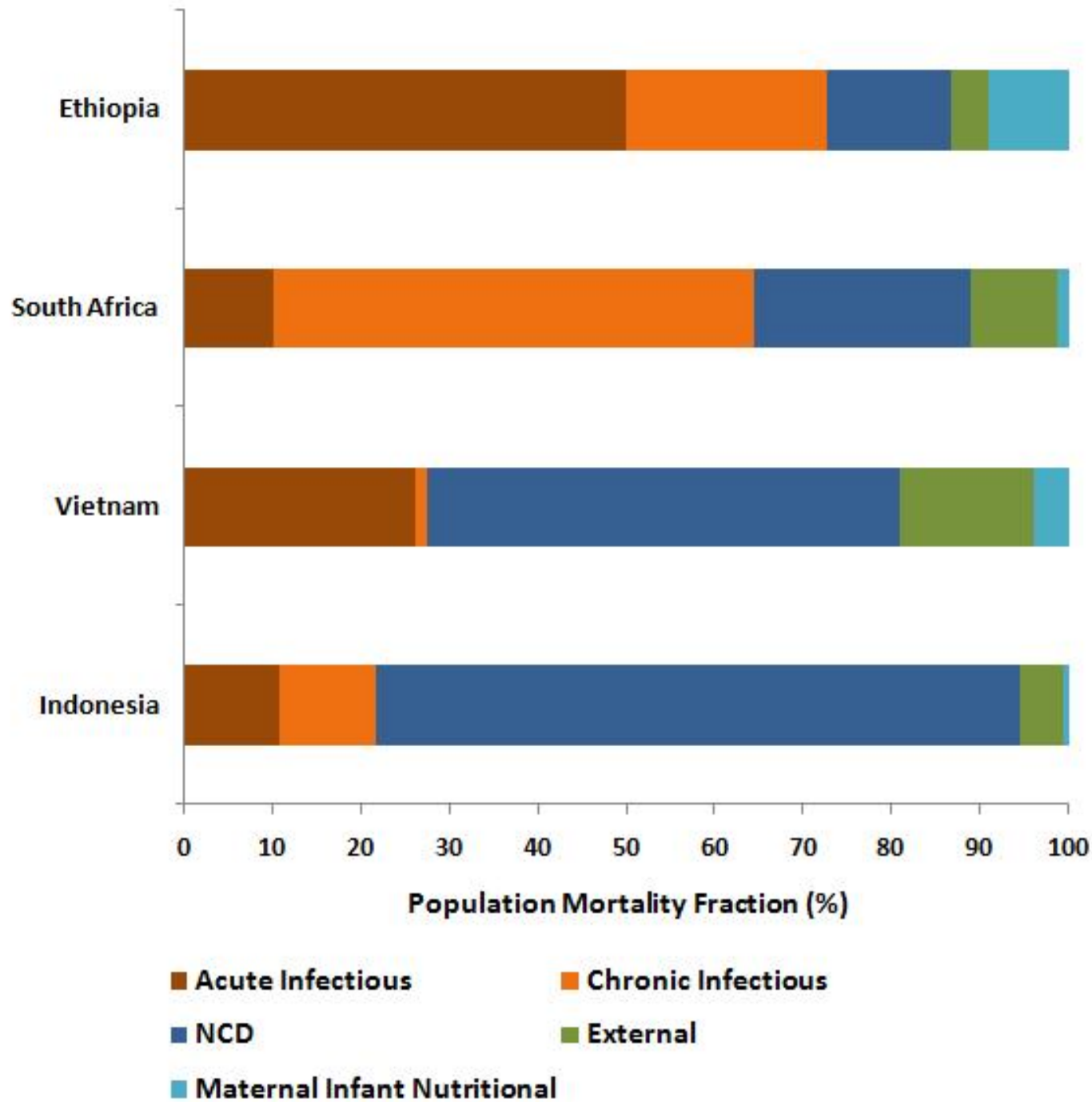
Over 2,000,000 people under surveillance

*Countries with Demographic Surveillance System (DSS)
Field Sites participating in the INDEPTH Network*



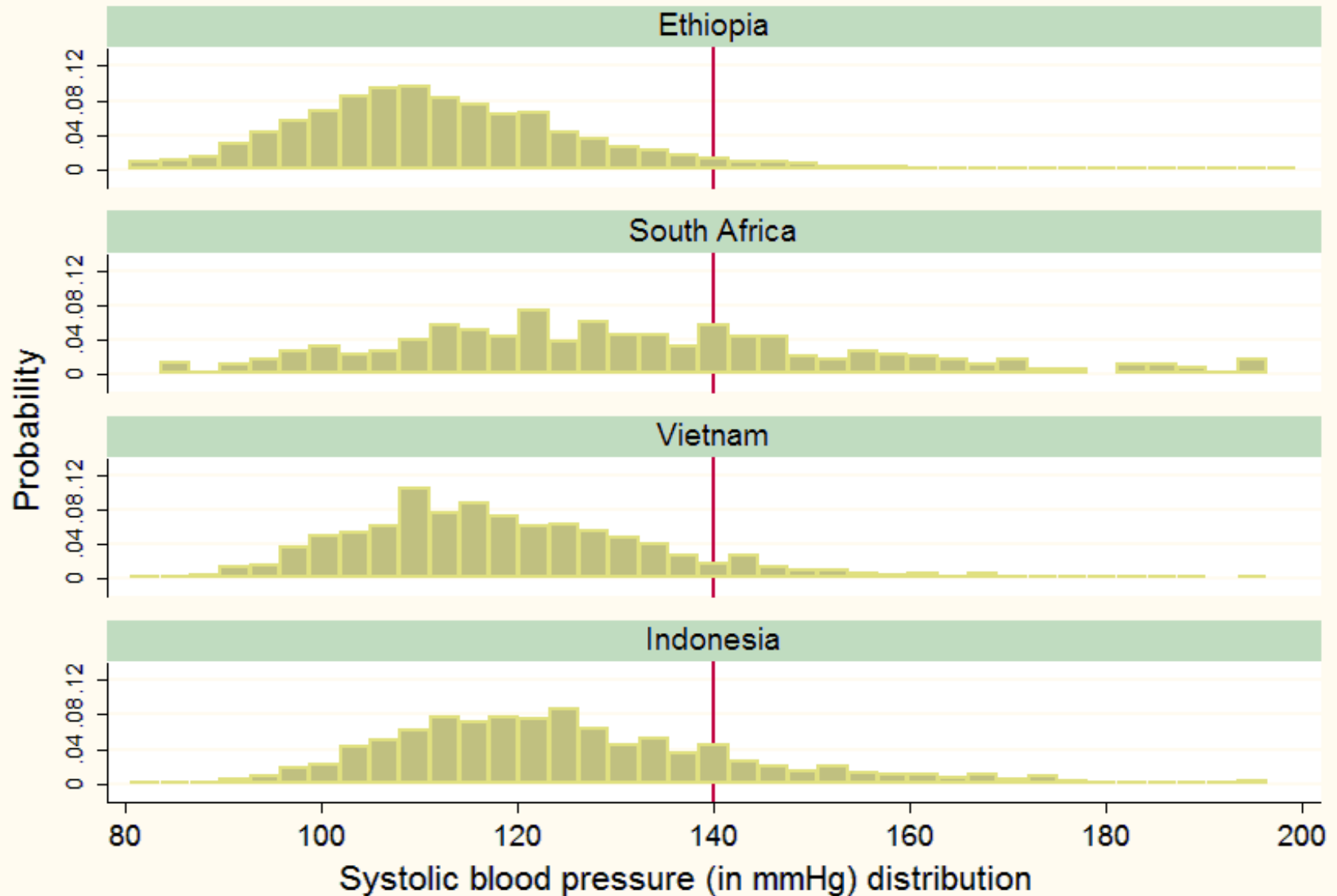
Cause-specific mortality by age for non-communicable diseases: sub-Saharan Africa and Bangladesh (1999-2003)





Broad mortality categories: comparison of 4 countries

Blood pressure: comparison of 4 countries



INDEPTH-WHO physical & cognitive function in older adults

2006/7

| Site | Study population | | Physical and cognitive evaluation | |
|-------------------------|------------------|---------|-----------------------------------|------------------|
| | Site pop | Pop 50+ | SAGE-INDEPTH summary | Full SAGE survey |
| AFRICA | | | | |
| Agincourt, South Africa | 70 000 | 8 429 | X | X |
| Ifakara, Tanzania | 60 000 | 6 600 | X | |
| Nairobi, Kenya | 68 746 | 2 771 | X | |
| Navrongo, Ghana | 144 187 | 22 952 | X | X |
| ASIA | | | | |
| Filabavi, Vietnam | 50 000 | 8 500 | X | |
| Matlab, Bangladesh | 212 328 | 33 797 | X | |
| Purworejo, Indonesia | 52 500 | 14 200 | X | |
| Vadu, India | 68 354 | 8 754 | X | X |



| Navrongo | Ifakara | Nairobi | Agincourt |
|-----------------|-----------------|-----------------|-----------------|
| -2.18 | -3.28 | -3.28 | -2.35 |
| Sleep/energy | Pain/discomfort | Vision | Sleep/energy |
| -1.96 | -3.1 | -3.09 | -2.23 |
| Mobility | Mobility | Pain/discomfort | Pain/discomfort |
| -1.91 | -2.36 | -2.82 | -2.13 |
| Affect | Vision | Sleep/energy | Cognition |
| -1.84 | -2.25 | -2.62 | -2.05 |
| Pain/discomfort | Sleep/energy | Affect | Affect |
| -1.81 | -2.21 | -2.5 | -1.6 |
| Cognition | Cognition | Mobility | Vision |
| -1.51 | -1.91 | -2.37 | -1.6 |
| Interpersonal | Affect | Cognition | Mobility |
| -1.39 | -0.59 | -1.91 | -1.34 |
| Vision | Interpersonal | Interpersonal | Interpersonal |
| -0.6 | -0.24 | -0.18 | -0.72 |
| Self-care | Self-care | Self-care | Self-care |

Health score was used as outcome variables, and the regression analyses were adjusted to sex, age, education level, socio-economic quintiles, and marital status in each site.



| Vadu | Matlab | Filabavi | Purworejo |
|-----------------|-----------------|-----------------|-----------------|
| -2.78 | -1.84 | -2.36 | -3.71 |
| Vision | Mobility | Mobility | Pain/discomfort |
| -2.5 | -1.69 | -2.33 | -3.19 |
| Pain/discomfort | Pain/discomfort | Sleep/energy | Cognition |
| -2.37 | -1.69 | -2.24 | -2.9 |
| Mobility | Affect | Pain/discomfort | Vision |
| -2.33 | -1.51 | -1.99 | -2.5 |
| Interpersonal | Sleep/energy | Cognition | Sleep/energy |
| -2.28 | -1.45 | -1.68 | -2.26 |
| Affect | Vision | Affect | Affect |
| -2.08 | -1.39 | -1.57 | -2.23 |
| Cognition | Cognition | Vision | Mobility |
| -1.45 | -1.31 | -1.17 | -1.16 |
| Self-care | Interpersonal | Interpersonal | Interpersonal |
| -1.44 | -1.11 | -0.27 | 0.8 |
| Sleep/energy | Self-care | Self-care | Self-care |

Health score was used as outcome variables, and the regression analyses were adjusted to sex, age, education level, socio-economic quintiles, and marital status in each site.



Association: Self-reported health & Mortality

| Predictors of death | Agincourt | Filabavi | Ifakara | Matlab | Nairobi | Purworejo | Vadu |
|---------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Poor SRH | 1.8 (1.39-2.33) | 1.18 (0.89-1.56) | 3.64 (2.77-4.79) | 3.58 (2.3-5.6) | 1.51 (0.93-2.44) | 4.8 (3.47-6.63) | 4.54 (3.19-6.47) |
| Moderate SRH | 1.44 (1.15-1.8) | 1.03 (0.8-1.32) | 1.81 (1.42-2.31) | 1.51 (0.93-2.44) | 1.1 (0.7-1.73) | 1.92 (1.55-2.38) | 1.34 (1.04-1.73) |
| Good SRH | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Outcome: Death (M and F)

Independent variable: Self-rated health

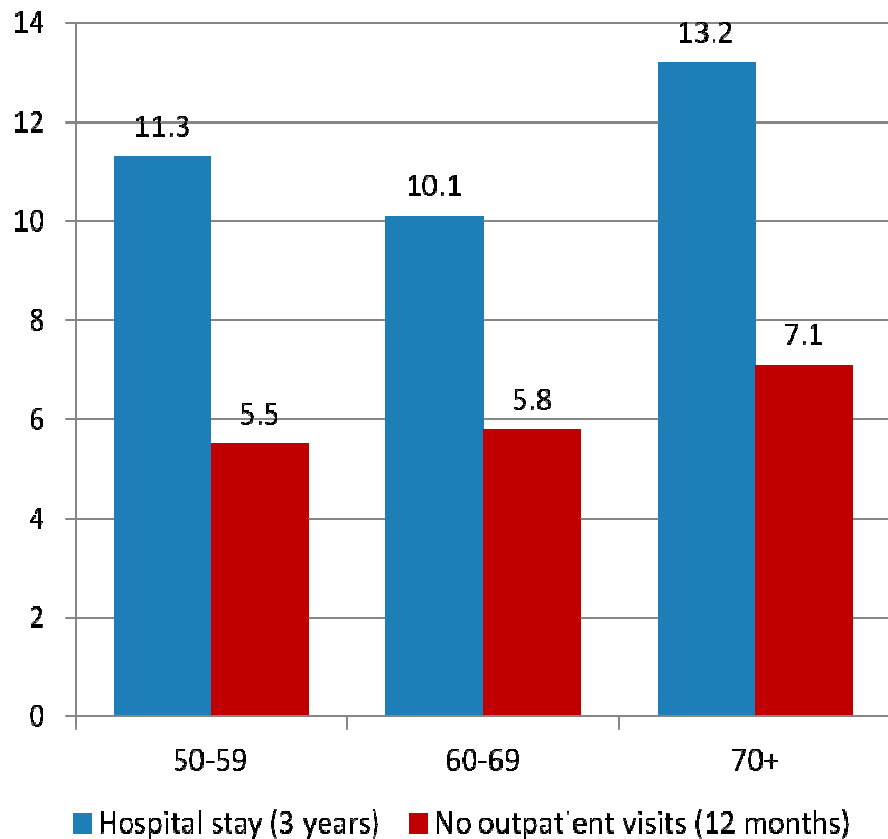
Analysis: Univariate Poisson regression

Numbers represent relative risk (95% confidence interval)

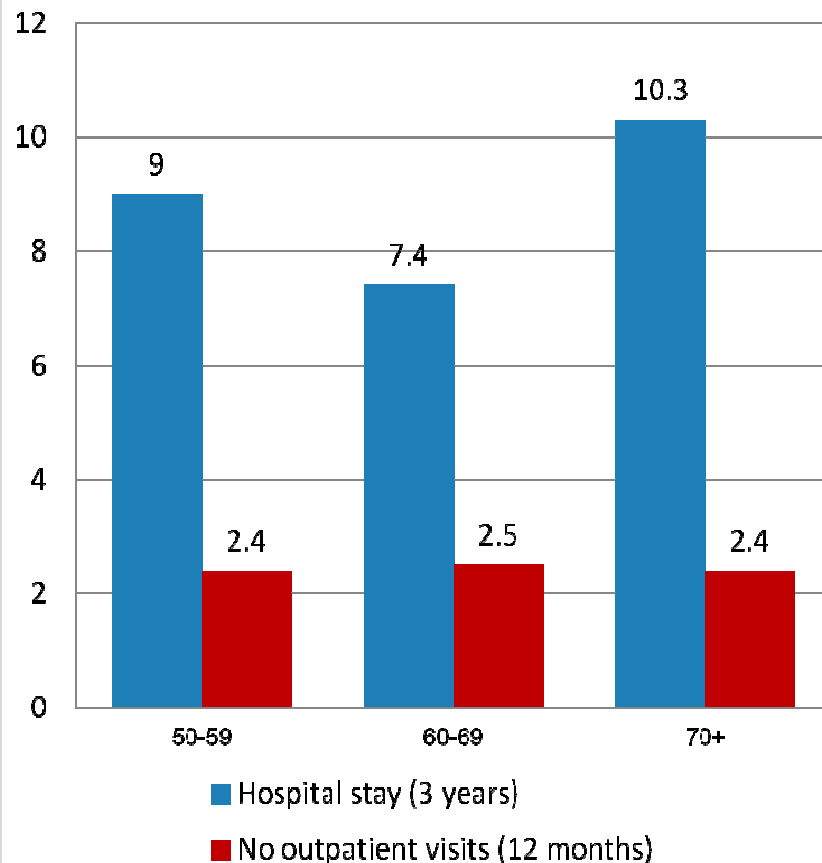


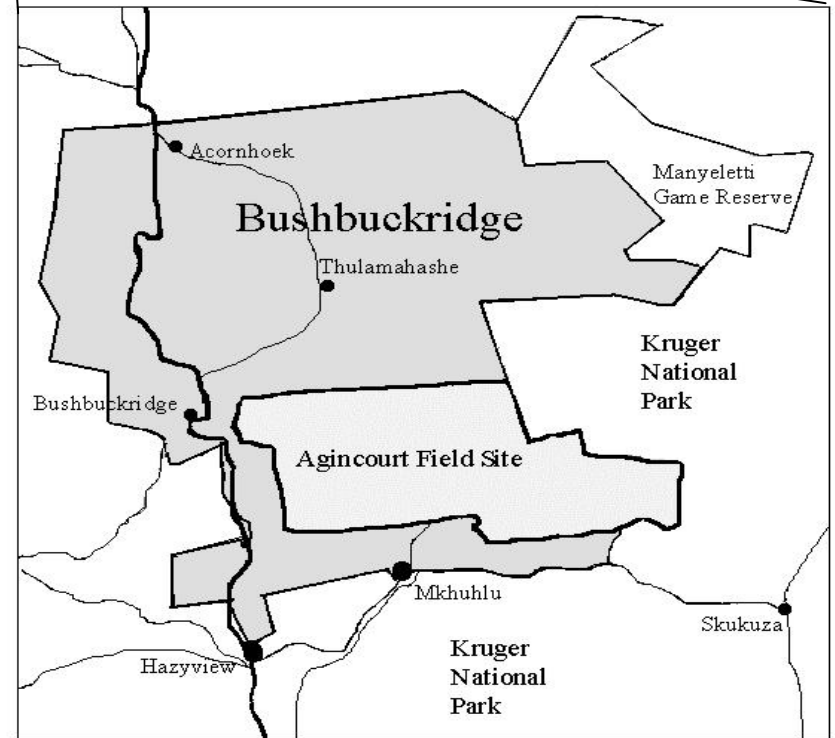
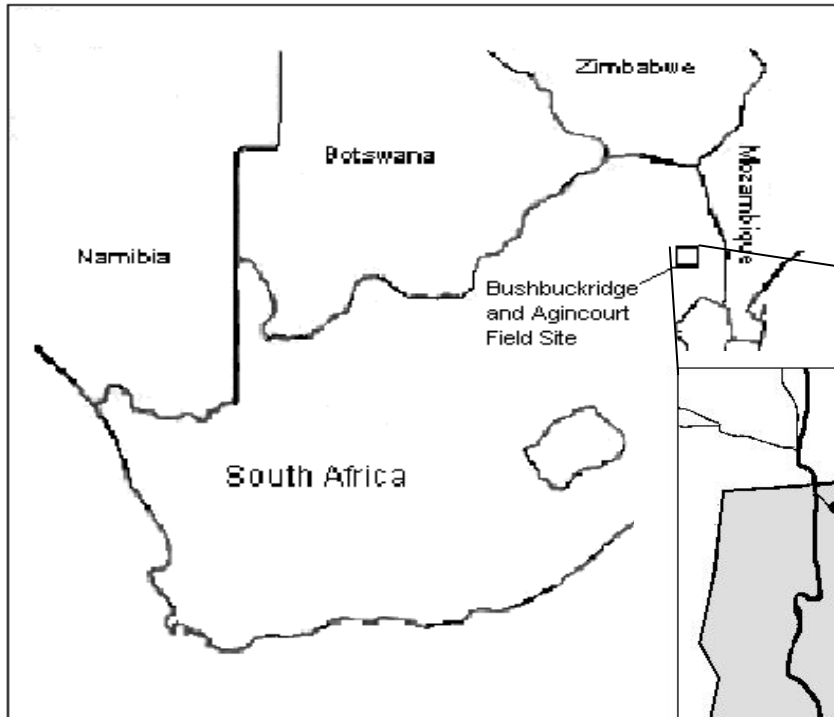
Health care utilization by age

SAGE National



Agincourt HDSS





Agincourt HDSS

South Africa

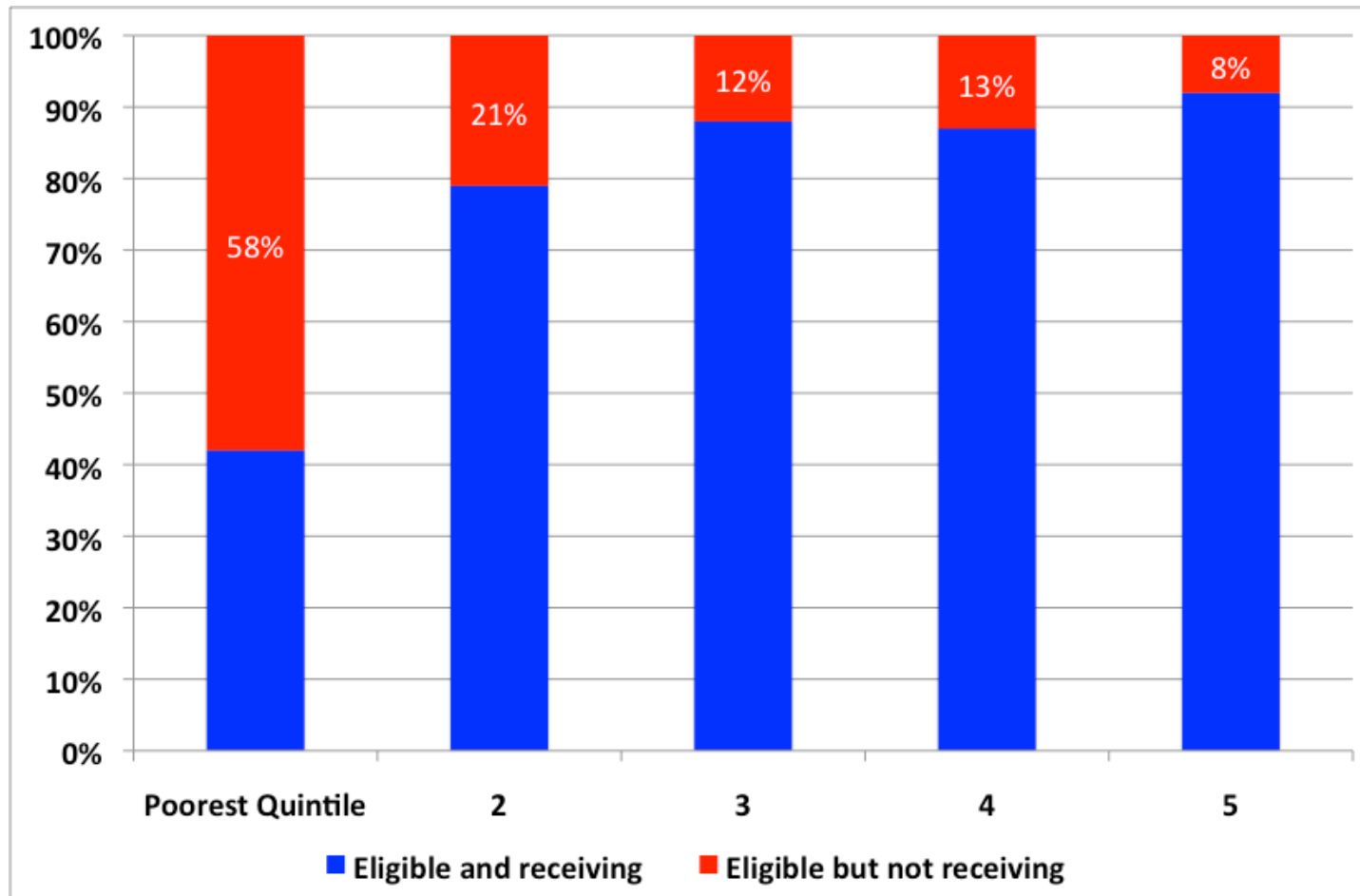


Households with children fostered children and orphans 2003

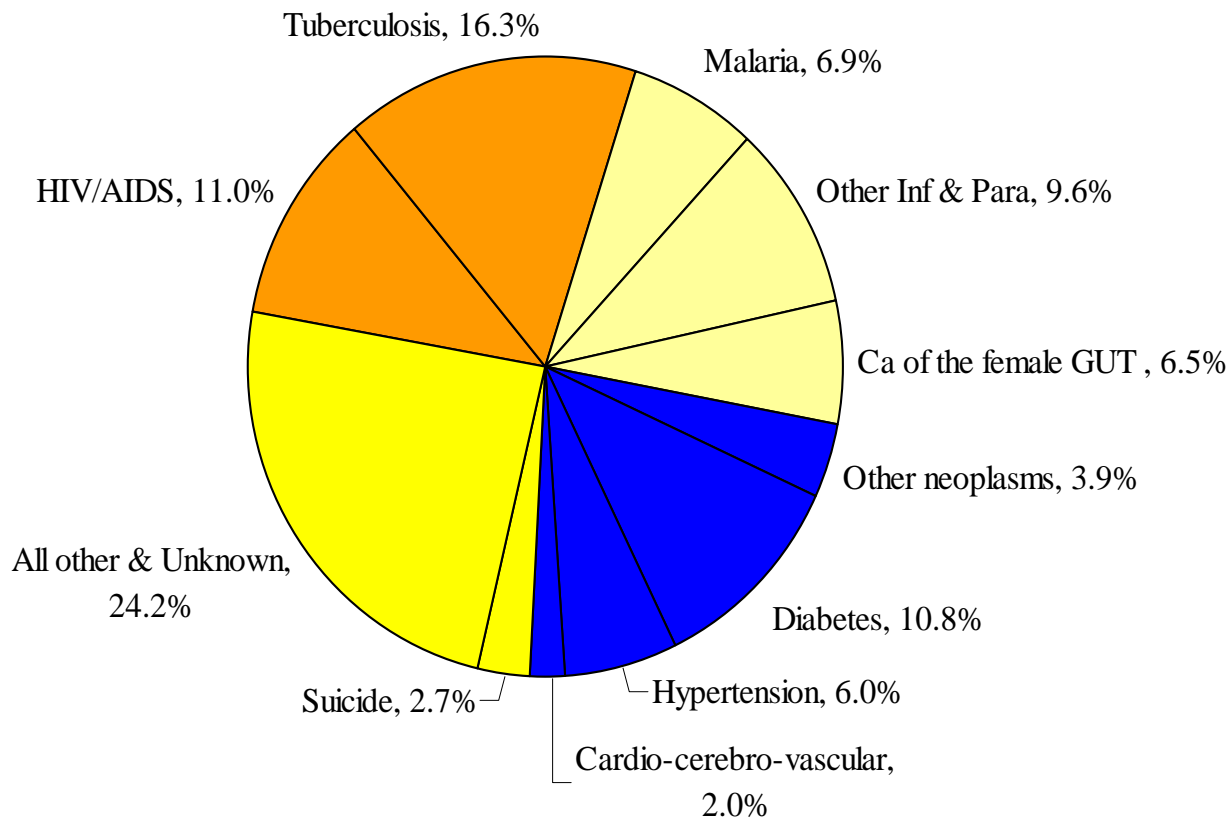
| | All Households | Households with NO woman 60+ | Households with woman 60+ |
|---|----------------|---------------------------------|------------------------------|
| Households with at least one child under 15 | 77.7% | 77.8% | 76.2% |
| Household with at least one fostered child | 15.4% | 12.1% | 26.5%* |
| Household with at least one maternal orphan | 5.5% | 4.7% | 15.9%* |
| Total N | 11,665 | 8,994 | 2,671 |



Of those eligible, poorest least likely to access pension



Causes of deaths responsible for the mortality increase among women aged 50-64, Agincourt, South Africa 1992-2003



Top five causes of death, 50-64 years Agincourt 1992-2005

| 1992-1994 | | 1995-1997 | | 1998-2001 | | 2002-2005 | |
|------------------|---------|------------------|---------|-------------------|---------|------------------|---------|
| 50-64 | n = 105 | | n = 154 | | n = 217 | | n = 453 |
| Vascular disease | (19) | HIV/TB | (16) | HIV/TB | (18) | HIV/TB | (28) |
| Liver disease | (8) | Vascular disease | (6) | Vascular disease | (12) | Vascular disease | (7) |
| Other cardiac | (7) | Other cardiac | (6) | Other NCDs | (5) | Other cardiac | (7) |
| Other NCDs | (7) | Other NCDs | (6) | Neoplasms | (5) | Other NCDs | (6) |
| Neoplasms | (6) | Assault | (6) | Fem gen neoplasms | (5) | Neoplasms | (5) |

All NCDs

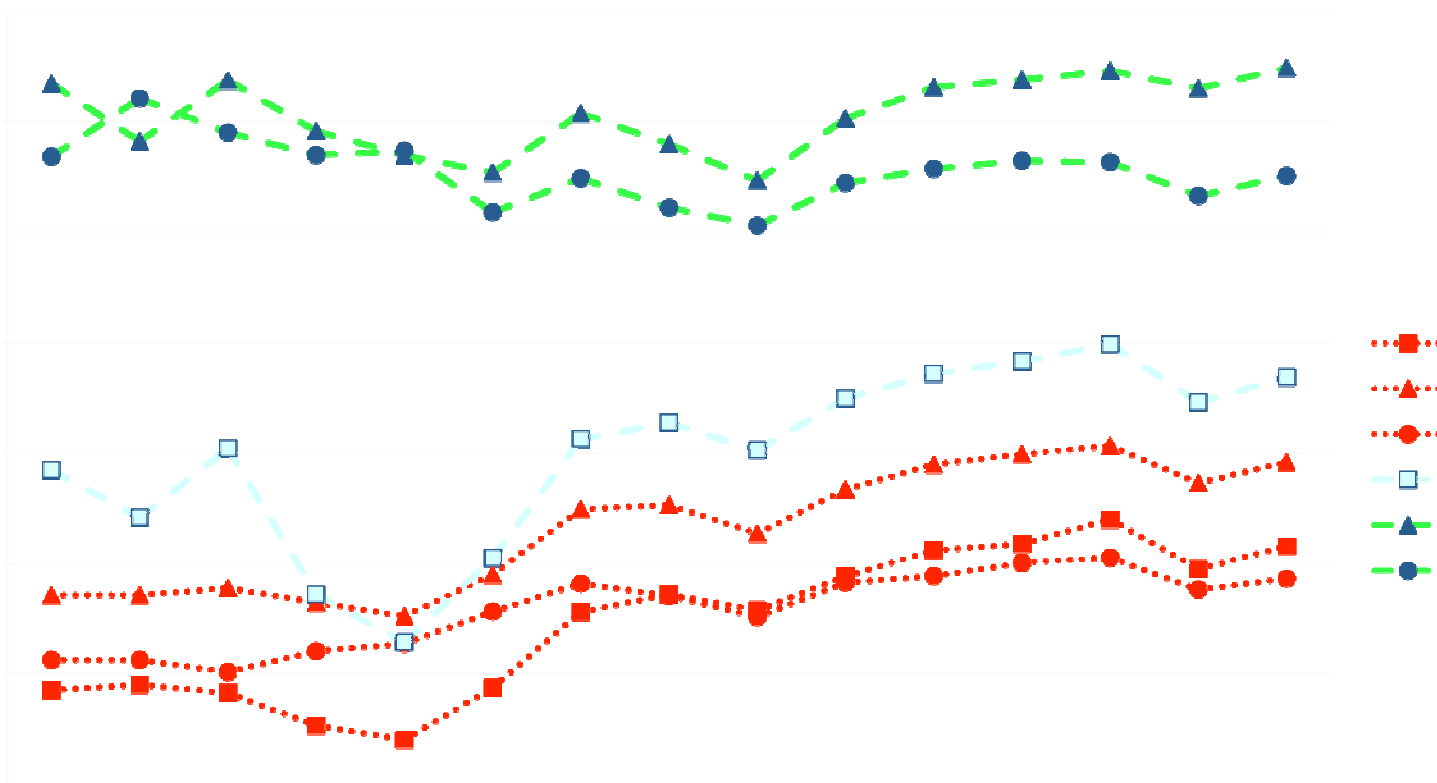
**Emergence
HIV/AIDS**

**Persistence NCDs despite
overwhelming HIV/AIDS**

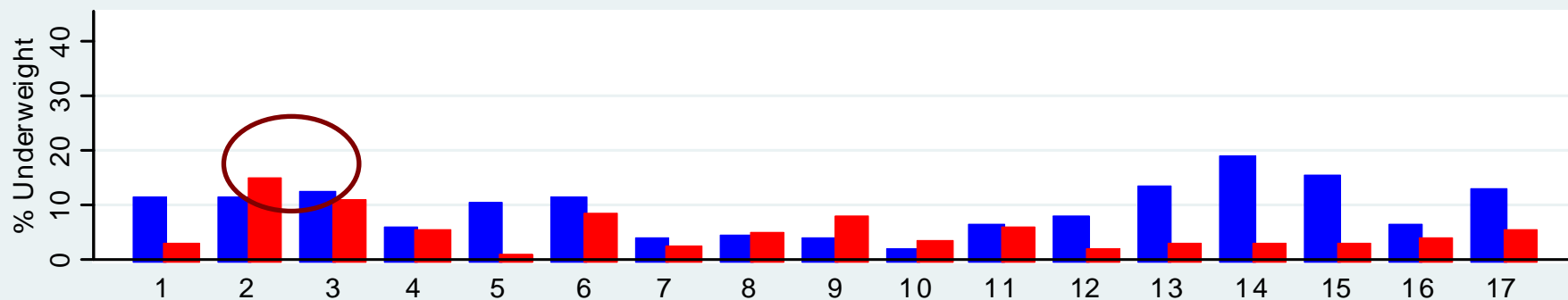
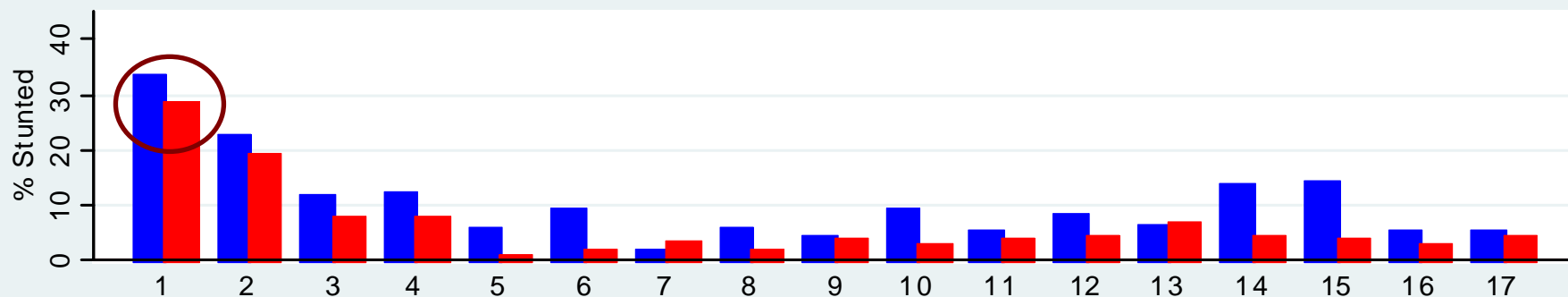
Assault



Trends in proportion of temporary migrants, Agincourt, 1992 - 2008



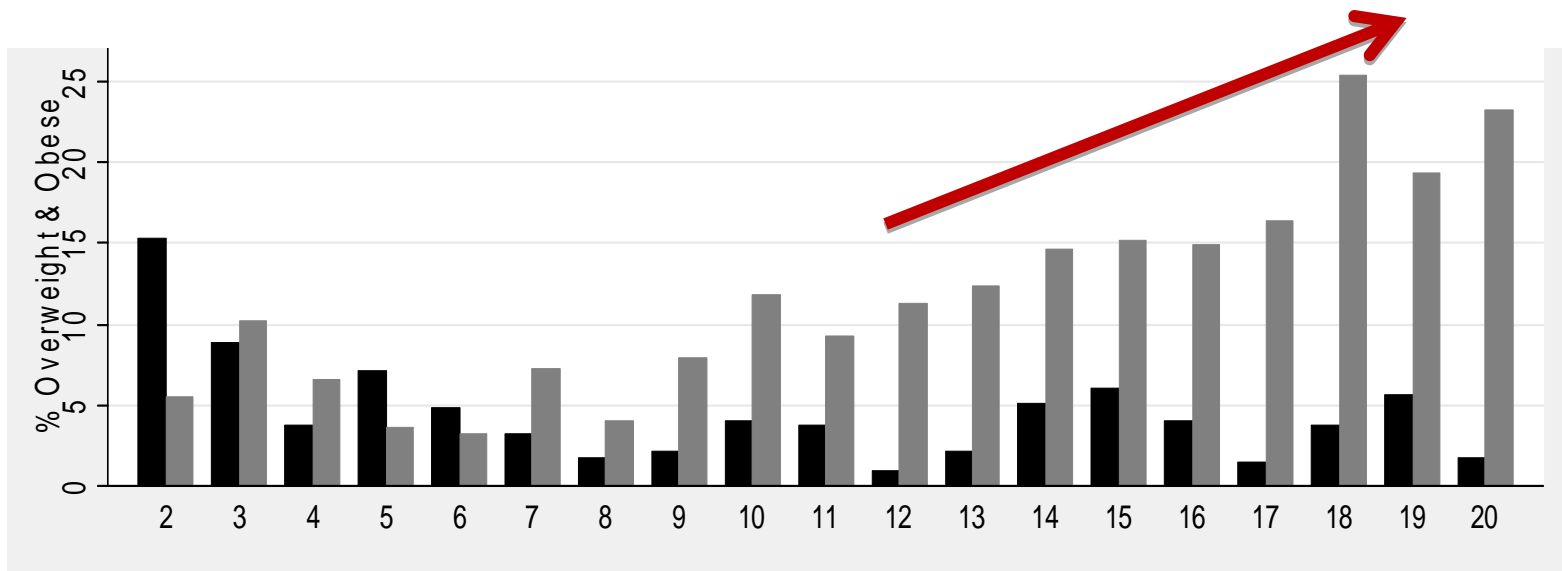
Stunting & underweight for 1-17y olds



BOYS

GIRLS

Overweight & obese prevalence in Agincourt, 2007



Complex Health Transitions in sub-SA

- Middle (parental) generation ill, dying from AIDS
Expanding social roles for older adults
 - Nursing care for ill and dying (their children)
 - Child care (grand-children)
 - Schooling, Income generation etc

- Co-existing infectious disease and NCDs
 - Older adults face increasing cardiovascular risk and associated chronic illness
 - Effective chronic care services needed; concurrently rapid scale-up of VCT and ART in high HIV settings; maintain mother and child health services