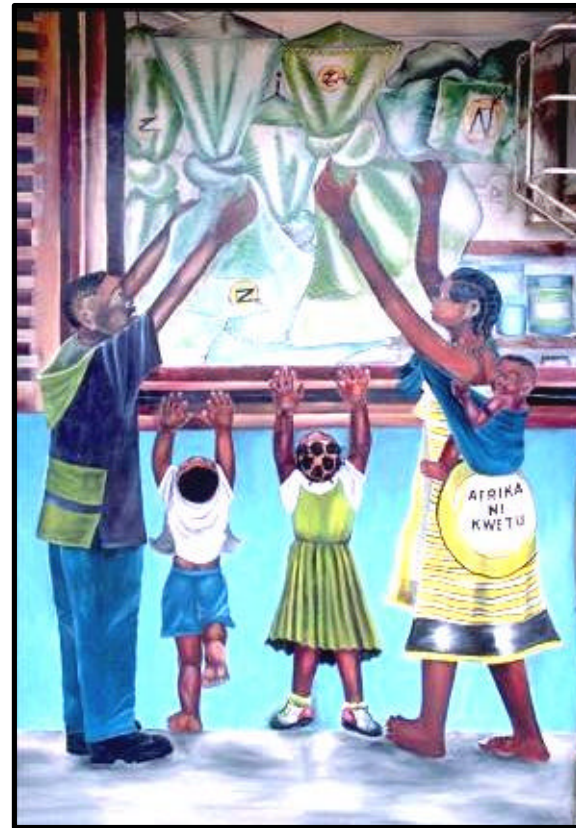


Mosquito nets, poverty and equity in rural southern Tanzania



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1. Ifakara Health Research & Development Centre, Tanzania

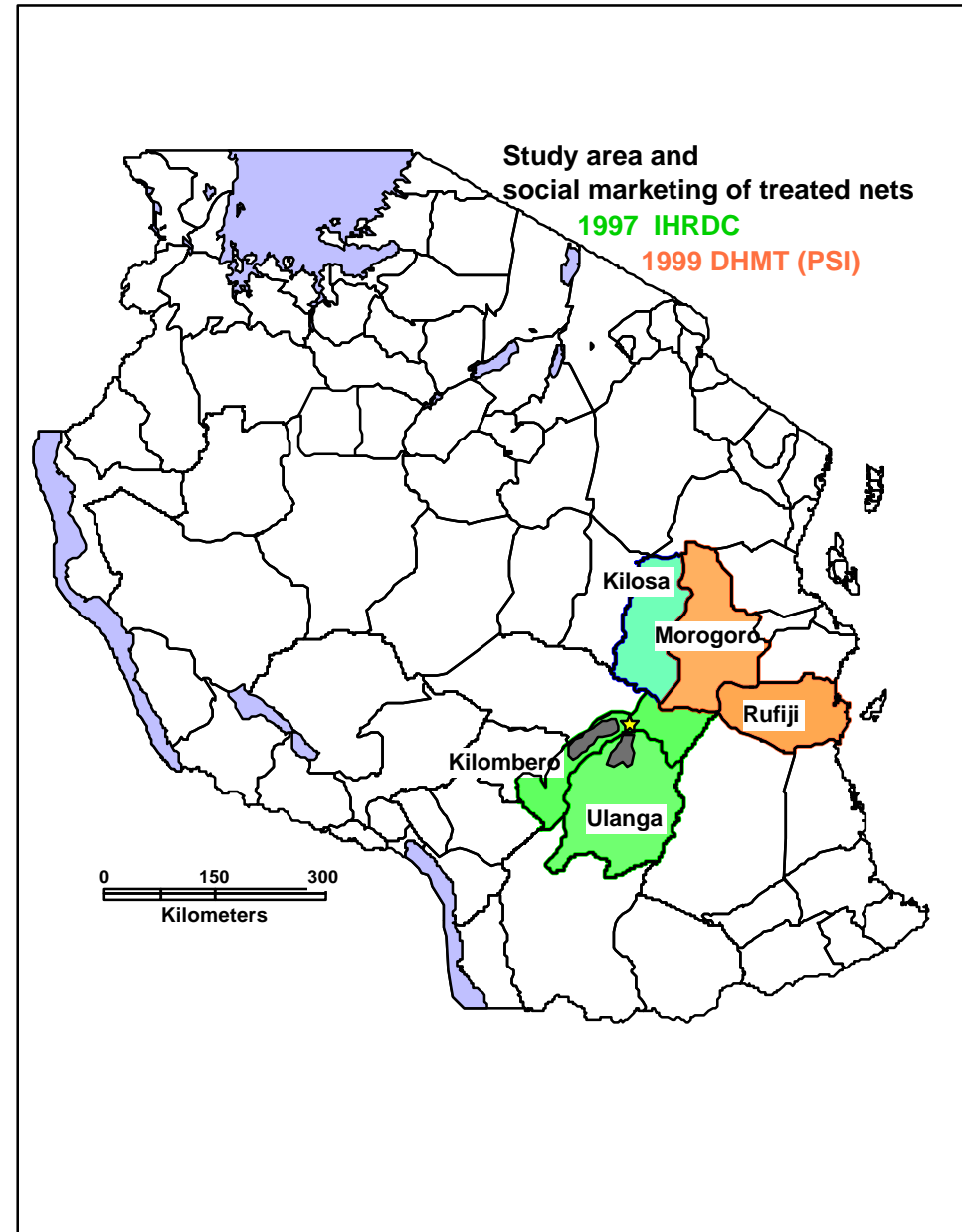
2. Tanzania Essential Health Information Project, Ministry of Health, Tanzania

3. Swiss Tropical Institute, Switzerland

4. University of Pelotas, Brazil

Malaria and mosquito nets

- Malaria in Tanzania
 - anaemia & death in children
- Treated mosquito nets
 - efficacy (trials): 19% ↓ child mortality
 - effectiveness: 27% ↓ child mortality in users
 - untreated nets - lesser impact
- Private sector ↑ active, selling ordinary, untreated nets
 - e.g. >1/3 rural households near Ifakara had nets in 1997
- Social marketing - subsidised prices
 - KINET: 2 districts from June 1997
 - ~20% district-wide coverage after 2y
 - >50% coverage in initial area after 3y
 - DHMT (PSI materials): 2 districts from early 1999
 - PSI now in every region

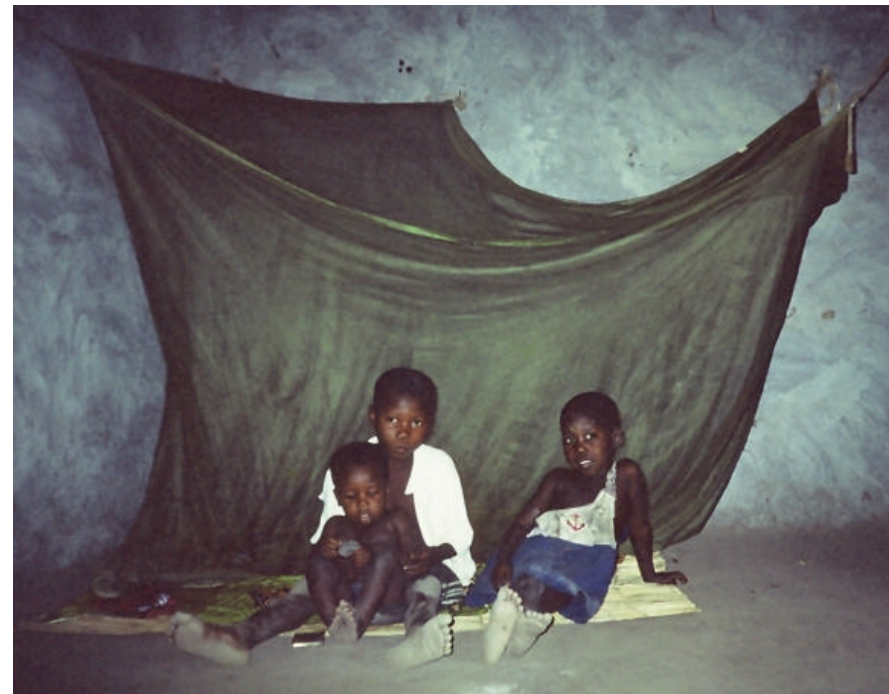


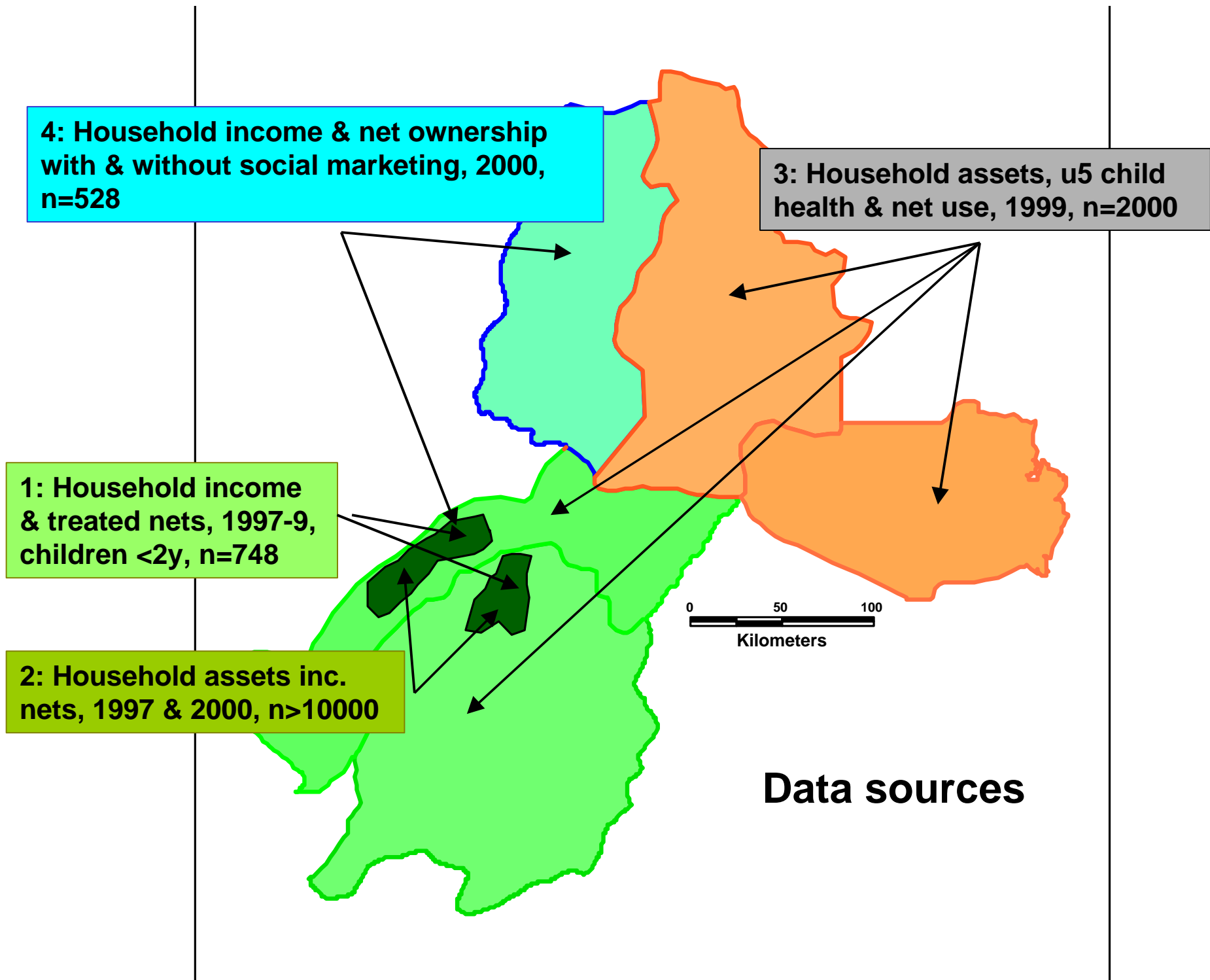
Aim



- Within a poor rural African setting, describe inequalities in:
 - use of all types of nets
 - anaemia and fever
 - care-seeking and treatment for fever
- Hypothesis: social marketing of treated nets decreases equity

- Measures used:
 - **Reaching the poor:** coverage in poorest group
 - **Equity:** poorest/least poor coverage ratio
- Four data sources



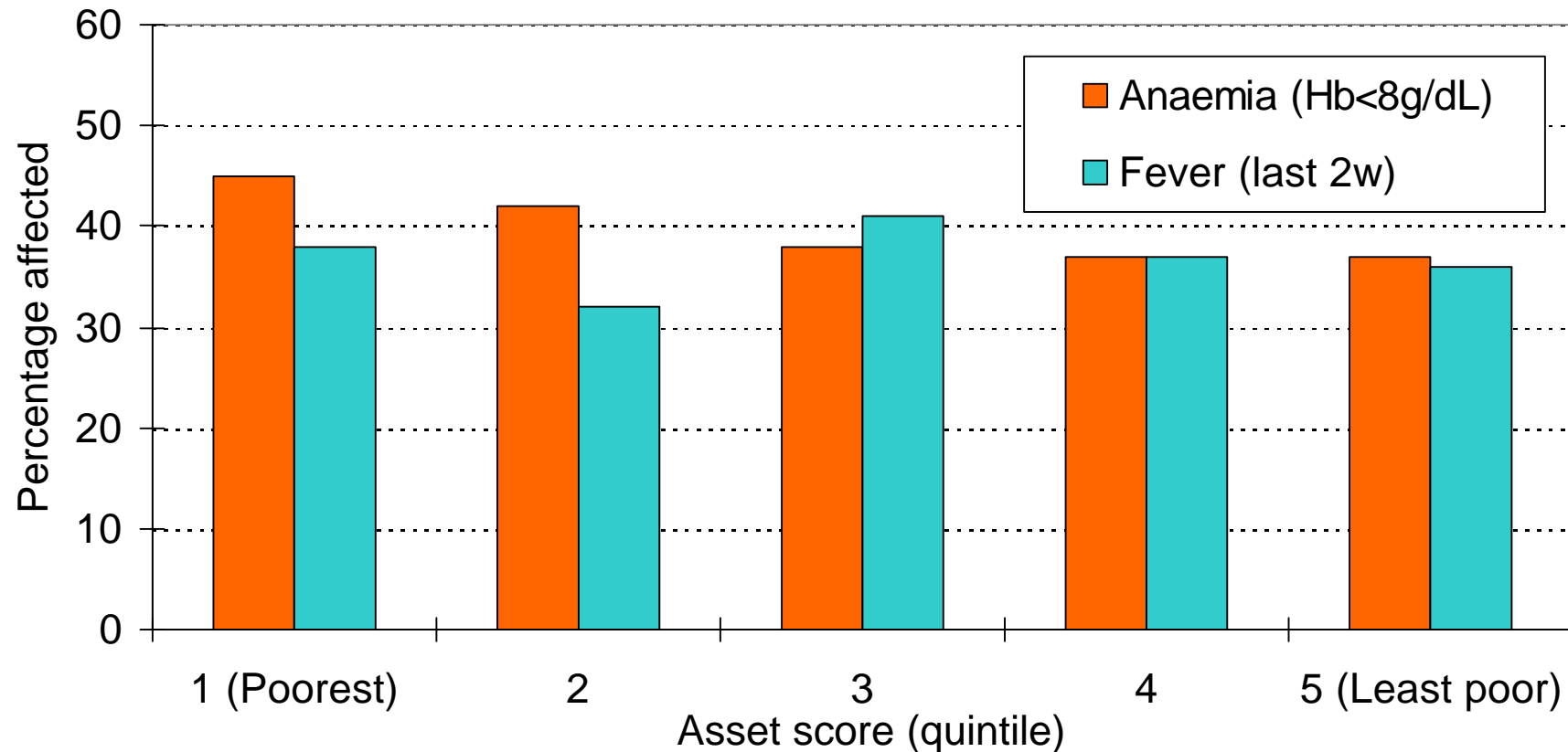


Poverty and equity: methods

- **1: Household income & treated nets, 1997-9, children <2y**
 - Household income in previous month & harvest last year, valued
 - Split into quartiles
- **2: Household assets, 1997 & 2000 (Ifakara DSS, 2000):**
 - bicycle, radio, tin roof, animals, ducks/chickens
 - household head occupation
 - farmer, mason, business, petty trader, fisherman, driver, government employee
 - house rented or owned
 - Principal components analysis, socio-economic status score for each household, split into quintiles
 - Each district separately
 - 1997 data: first 5 assets above, and beds
- **3: Household assets, child health & net use, 1999:**
 - Principal components as in (2) above
- **4: Household income & net ownership +/- social marketing, 2000:**
 - Production over previous year valued
 - Split into quartiles

Fever and severe anaemia

Four districts combined: 2-week morbidity history in children <5y



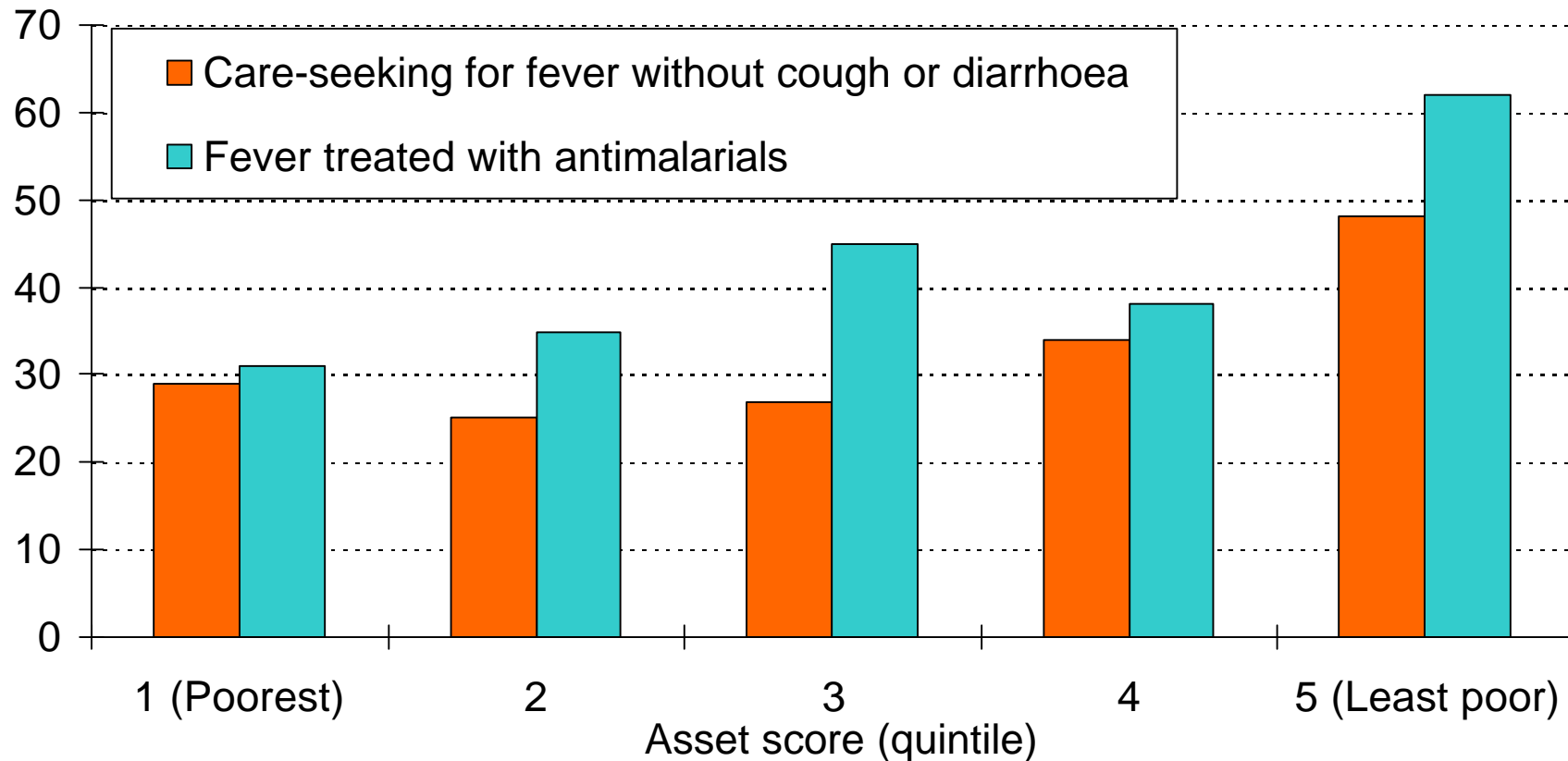
Affecting the poor:
Fever affects poorest/least poor alike
Anaemia affects >90% of all children
Severe anaemia: 45% in poorest group

Equity:
Poor/least poor ratio
Fever - 1.06
Anaemia* - 1.22

* P < 0.05

Fever: careseeking & treatment

Four districts combined: 2-week morbidity history in children <5y



Reaching the poor:

Care-seeking for fever - 29%
Fever treatment - 31%
in poorest group

Equity:

Poorest/least poor ratio
Care-seeking for fever - 0.60
Appropriate treatment for fever* - 0.50

* P<0.05

Social marketing of treated nets in Kilombero & Ulanga



- Initial research - perceptions etc
- **Products**
 - Dark green rectangular high-quality nets, pre-treated with a synthetic pyrethroid insecticide, sized according to local preferences
 - Home treatment kits of insecticide sachet, gloves, instructions



Median monthly household expenditure <\$20 on non-food items

- **Prices**
 - Nets: approx \$ 5 retail, Insecticide: approx \$ 0.5
 - Subsidy ~ \$1 per item
 - Discount voucher for pregnant women and young children <\$1, available through MCH clinics
- **Place:** on sale in every village - private and public mix
- **Promotion**
 - posters, mobile videos, MCH clinic sessions, T-shirts, theatre groups, sports sponsorship, ...

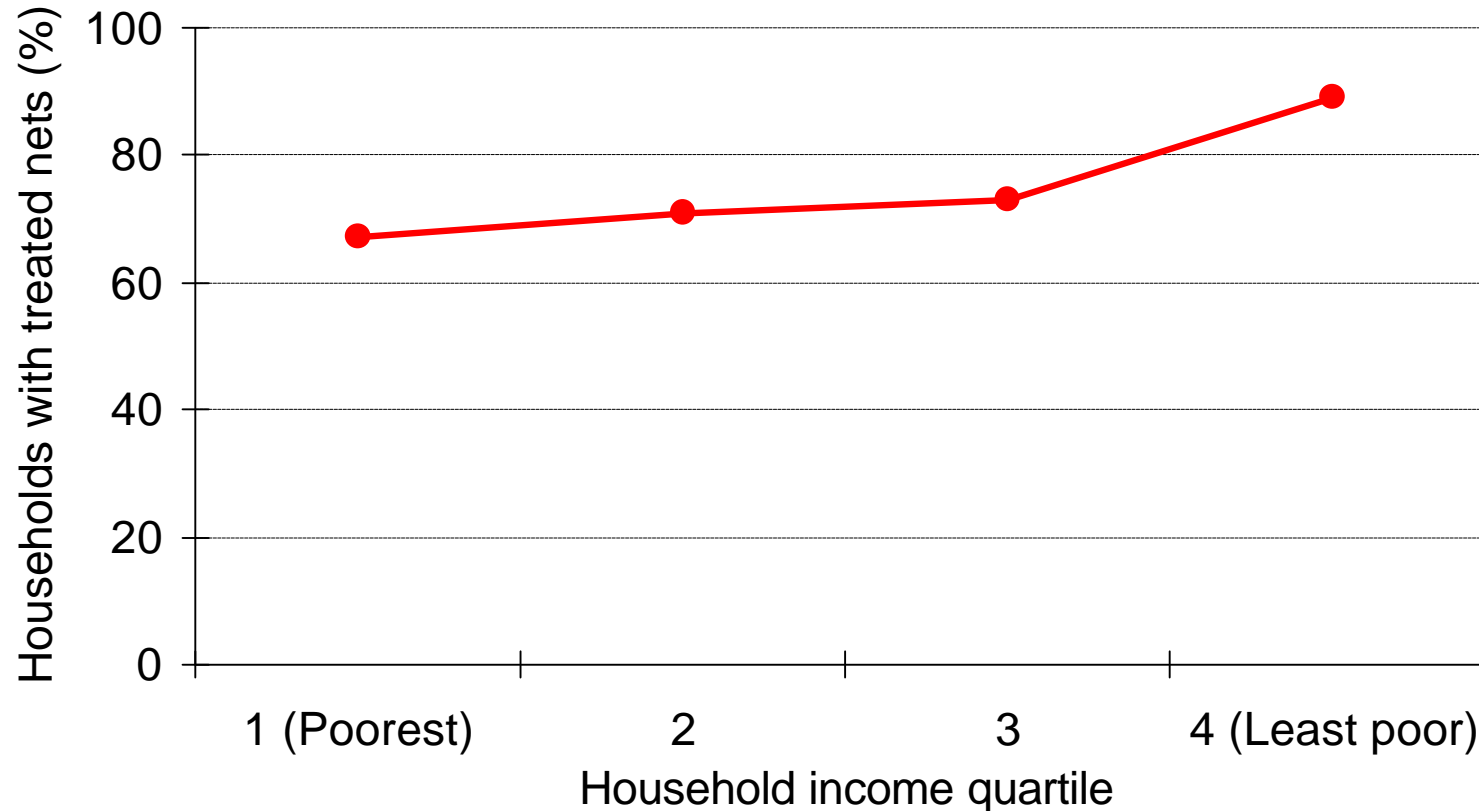
Net coverage: a note of caution

Month (1999)	Age	Area	Definition	Coverage Estimate
Jul-Aug	0-4 y	All villages in 2 districts	Treated net used last night	19%
Jul-Aug	0-4 y	25 villages	Treated net used last night	37%
May-Aug	0-11m	25 villages	Treated net used last night	40%
Jun-Aug	0-23m	25 villages	Family owns a treated net	61%

... coverage depends on how you define it!

Household ownership of nets and income

Children <2 years, 25 villages of Kilombero & Ulanga, 97-99, any type of net



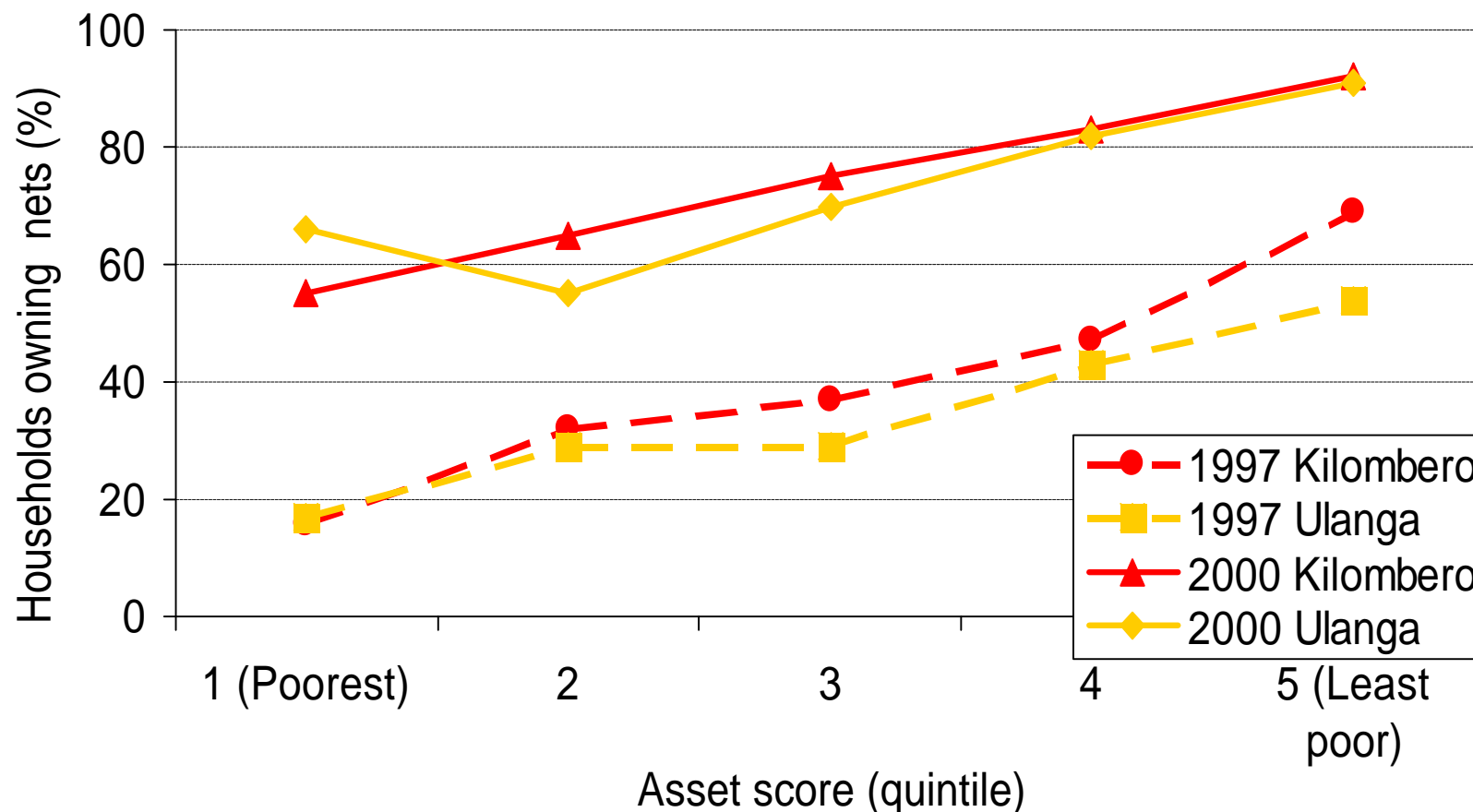
Reaching the poor:
67% coverage
in poorest group

Equity:
Poorest/least poor
coverage ratio: * 0.75

* P<0.05

Household net ownership before social marketing & 3y later

Ifakara DSS



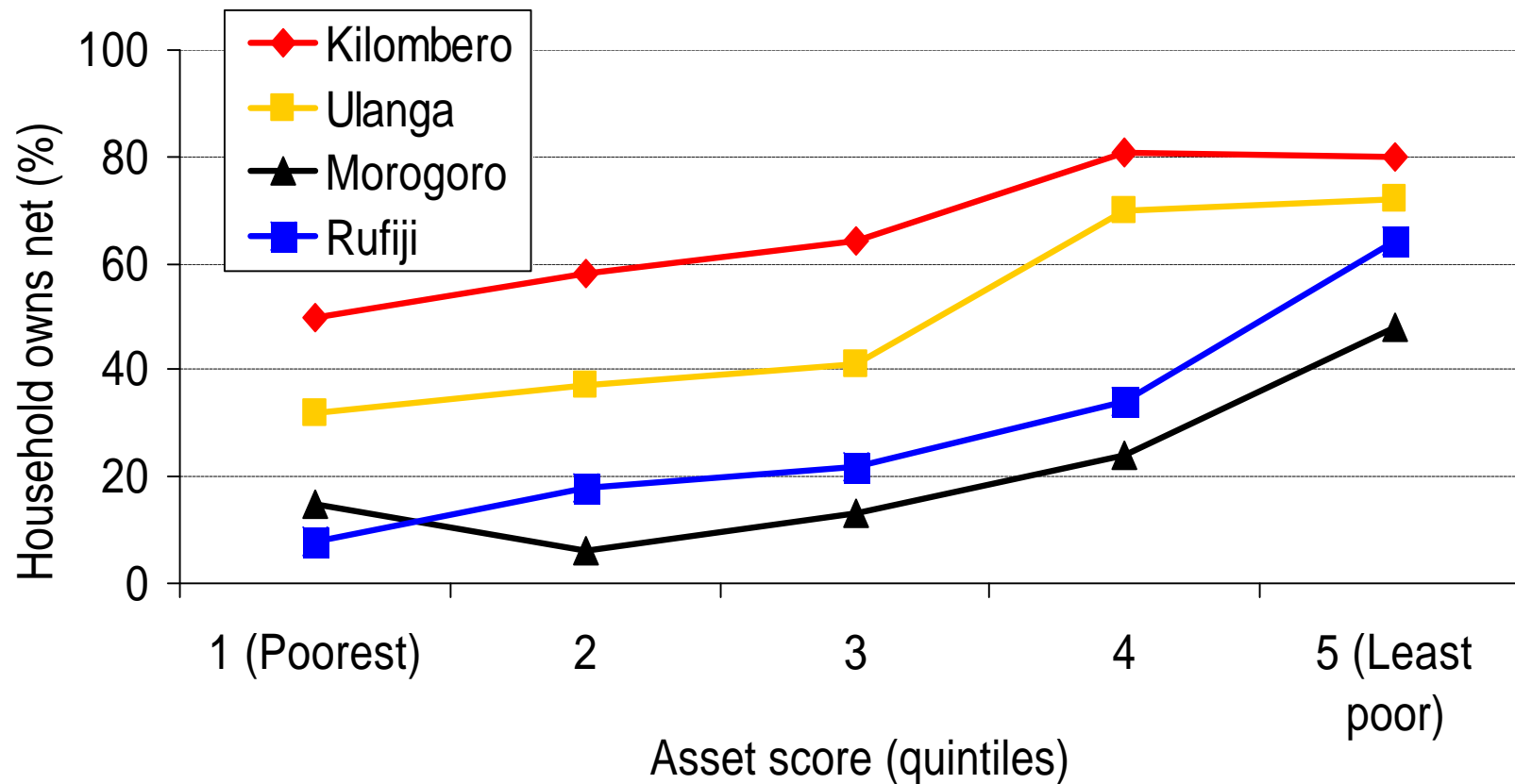
Reaching the poor:
 16-17% coverage (baseline)
 55-66% coverage (after 3 years)
 in poorest group

Equity:
 Poorest/least poor coverage ratio*
 0.54-0.69 (baseline)
 0.60-0.73 (after 3 years)

* P<0.05

District-wide household net ownership

All nets, treated or untreated, 1999



Reaching the poor:

Kilombero - 50% coverage
Ulanga - 32% coverage
Morogoro - 15% coverage
Rufiji - 8% coverage
in poorest group

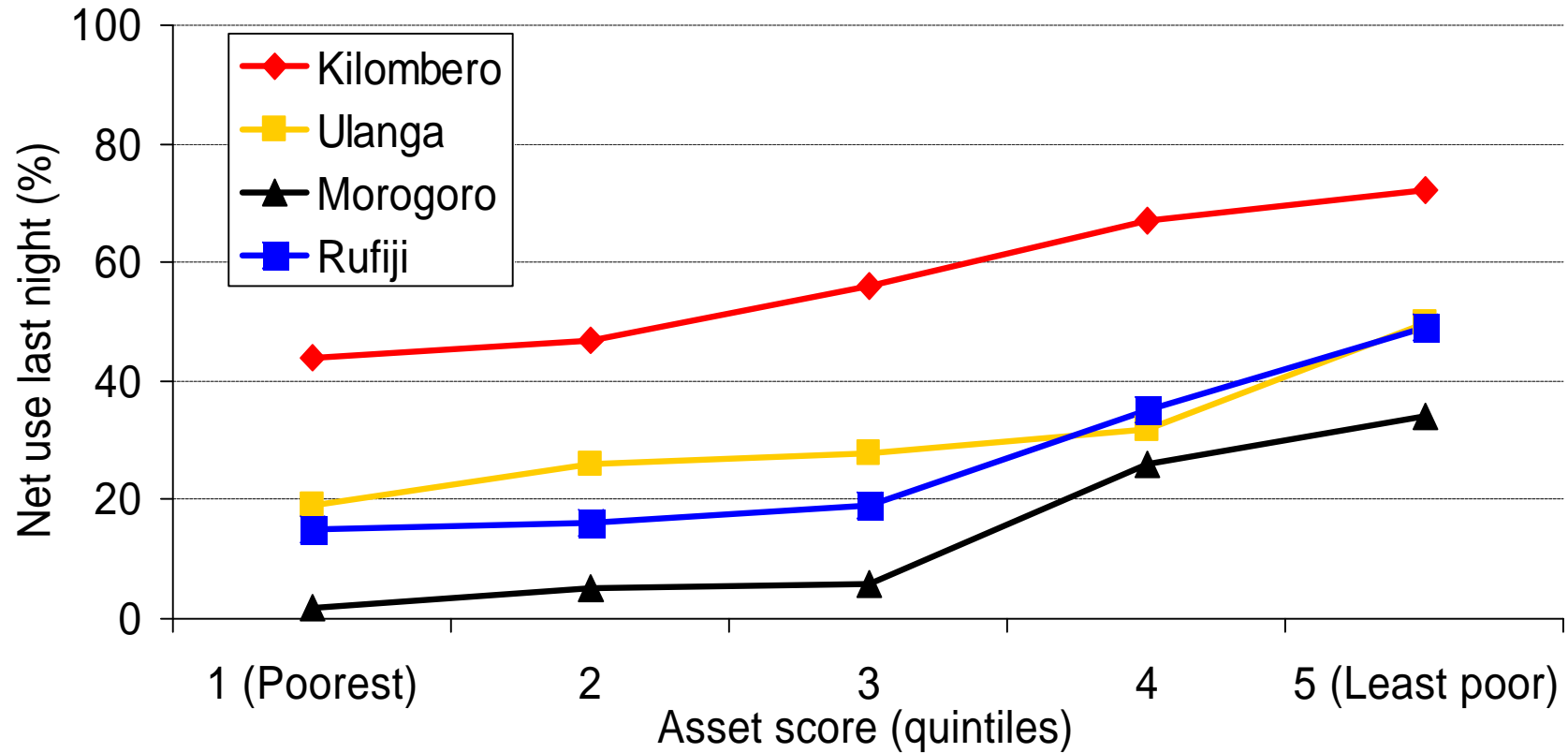
Equity:

Poorest/least poor coverage ratio*
0.63 (Kilombero)
0.44 (Ulanga)
0.31 (Morogoro)
0.13 (Rufiji)

* P<0.05

District-wide net use in children <5y

All nets, treated or untreated, 1999



Reaching the poor:

Kilombero - 44% coverage
Ulanga - 19% coverage
Morogoro - 2% coverage
Rufiji - 15% coverage
in poorest group

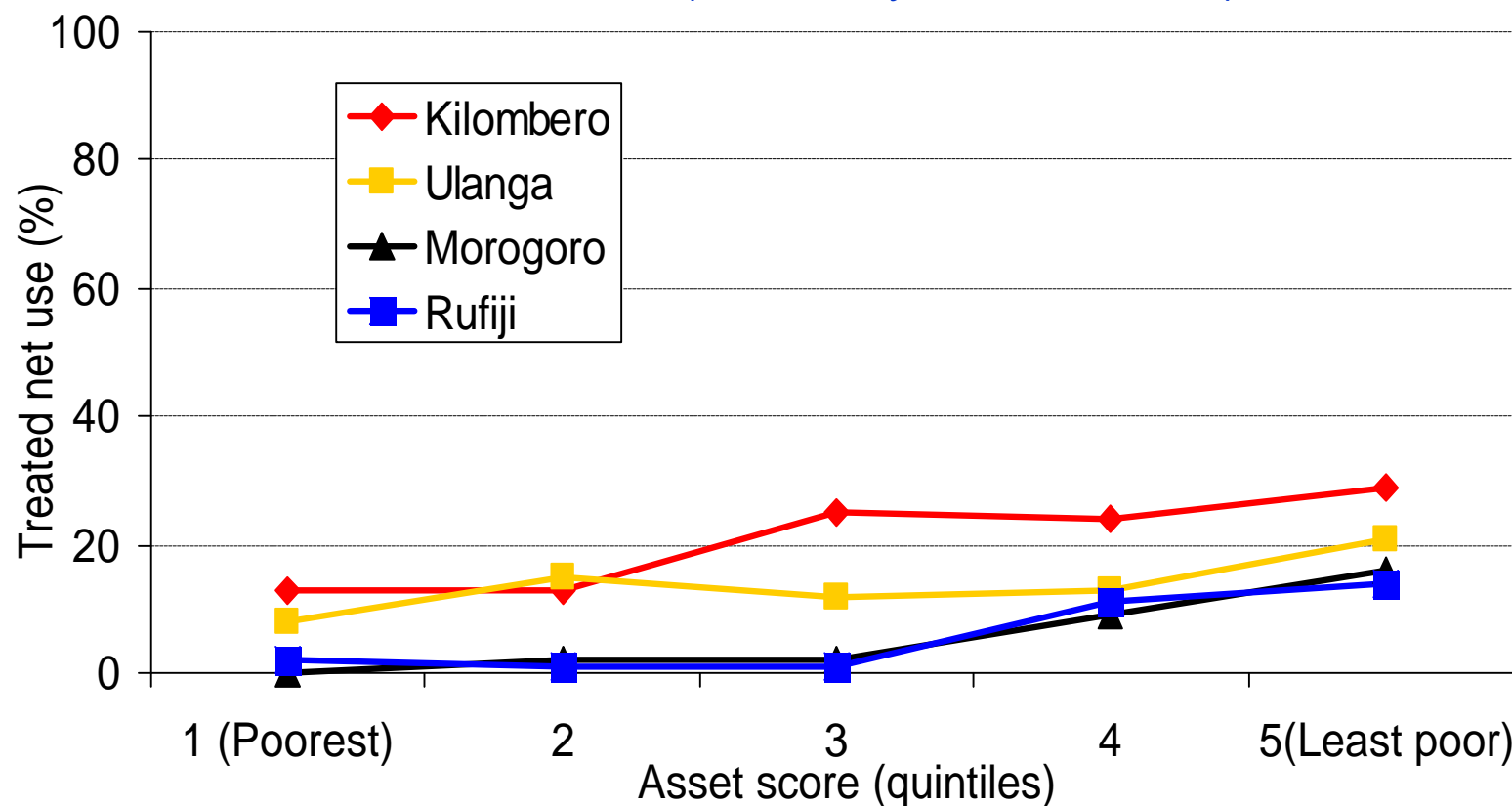
Equity:

Poorest/least poor coverage ratio*
0.61 (Kilombero)
0.38 (Ulanga)
0.06 (Morogoro)
0.31 (Rufiji)

* P<0.05

District-wide treated net use in children <5y

Ever-treated nets (ie. socially-marketed nets), 1999



Reaching the poor:

Kilombero - 13% coverage
Ulanga - 8% coverage
Morogoro - 0% coverage
Rufiji - 2% coverage
in poorest group

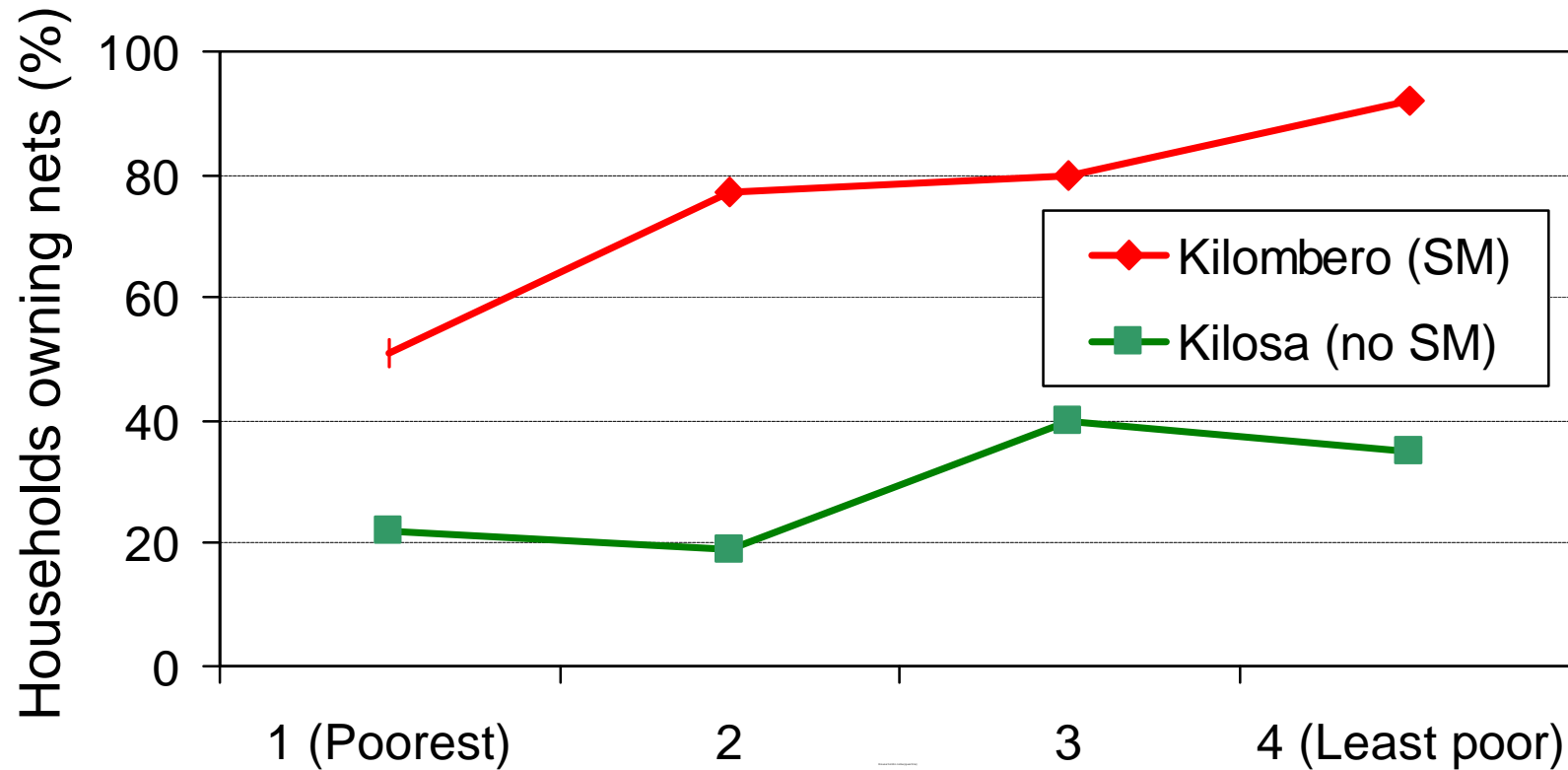
Equity:

Poorest/least poor coverage ratio
0.45 (Kilombero)
0.38 (Ulanga*)
0 (Morogoro*)
0.14 (Rufiji*)

* P<0.05

Household net ownership with & without social marketing

Kilombero DSS area and comparison area in Kilosa District, 2000



Reaching the poor:
Kilombero - 51% coverage
Kilosa - 22% coverage
in poorest group

Equity:
Poorest/least poor coverage ratio*
0.55 (Kilombero) 0.63 (Kilosa)

* P<0.05

Key messages

Fever

- Fever affects poorer and less poor equally
- Care-seeking and treatment: poorest/least poor ratio 0.5-0.6

Anaemia

- Affects >90% of children <5y
- Roughly 2/3 due to malaria
- 45% of poorest have severe anaemia
- Poorest/least poor ratio of 1.2

Nets - with social marketing and active private sector:

- Poorest/least poor ratio up to 0.7
- Up to two-thirds of the poorest households own a net
- No evidence of social marketing decreasing equity
- Net treatment challenge
 - long-lasting treatment

- Outlook for other areas
 - May not apply in more heterogeneous area
 - eg peri-urban, or if less perceived mosquito nuisance
 - Not all social marketing is the same

Collaborating groups

- WHO/CAH - part of Multi-Country Evaluation of IMCI effectiveness, costs and impact, IMCI MCE
- Ifakara Health Research & Development Centre
 - Ifakara Demographic Surveillance System
- INDEPTH
- Tanzania Essential Health Interventions Project
- Swiss Tropical Institute

Funding

- KINET Project: Swiss Agency for Development and Co-operation and Government of Tanzania
- Ifakara DSS: Swiss Tropical Institute, Swiss National Science Foundation, USAID, WHO/CAH
- Four-district child health survey in 1999: WHO/CAH (baseline survey for Tanzania component IMCI MCE)



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INDEPTH: Chapters on Ifakara, Rufiji, Morogoro

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Other papers in preparation