

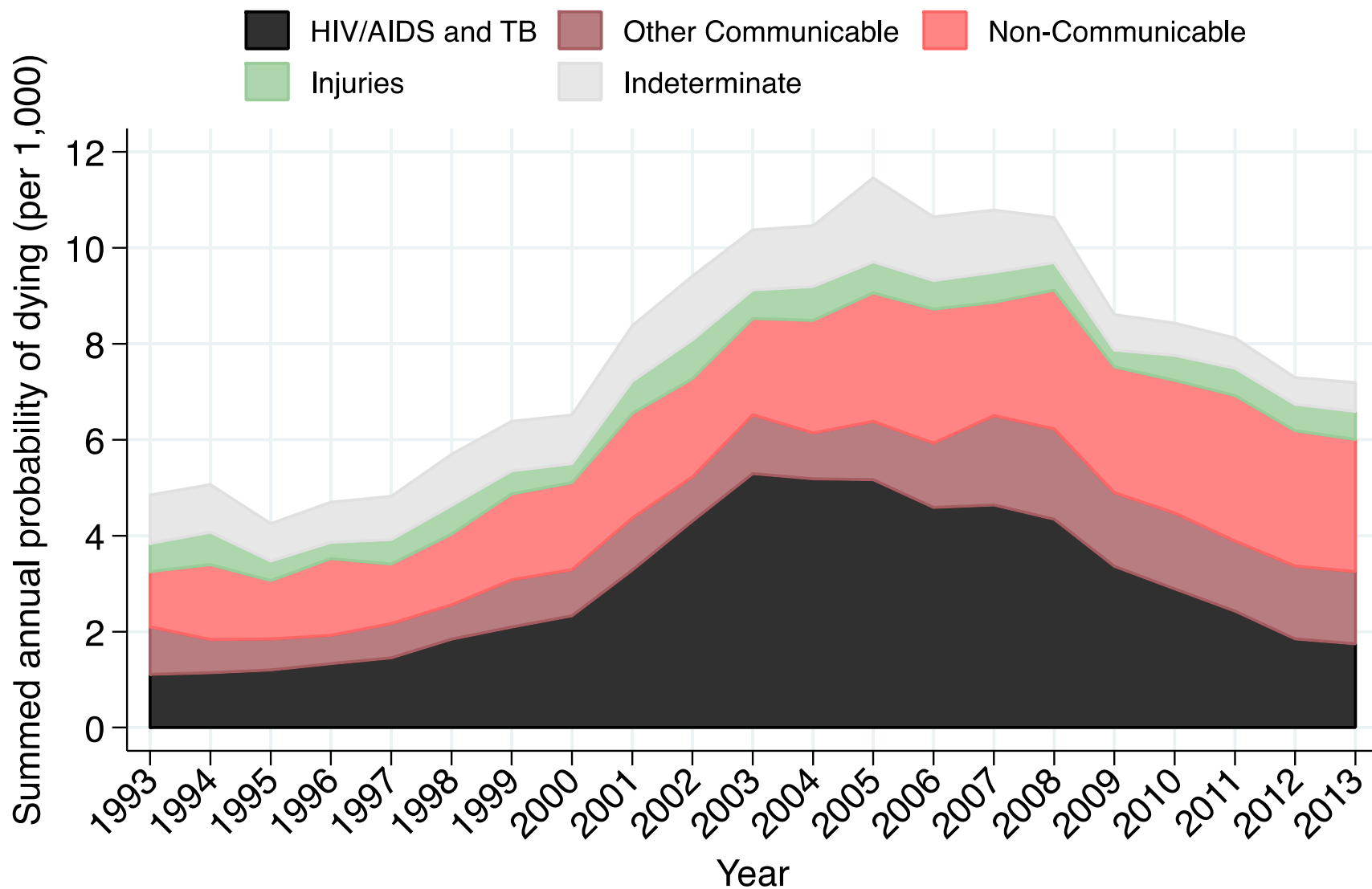
Multimorbidity in South Africa / LMICs: Prevention and management opportunities



Steve Tollman and Colleagues

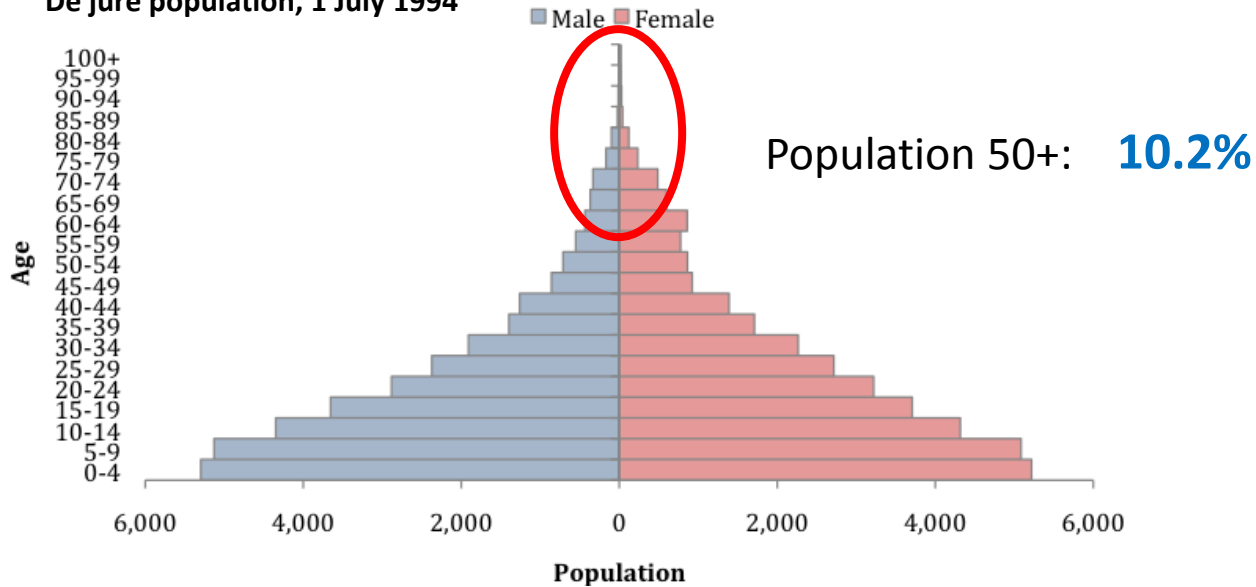
MRC/Wits Rural Public Health and Health Transitions Research Unit

Colliding epidemics: mortality and cause-of-death composition

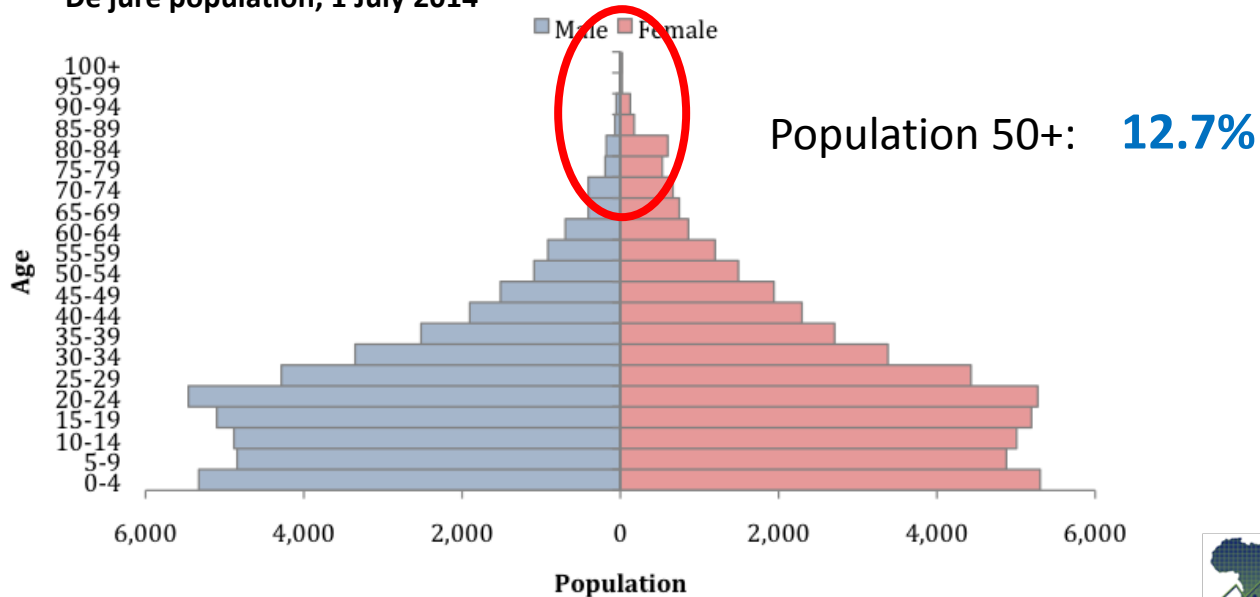


A rural Southern African population: 1994 and 2014

De jure population, 1 July 1994

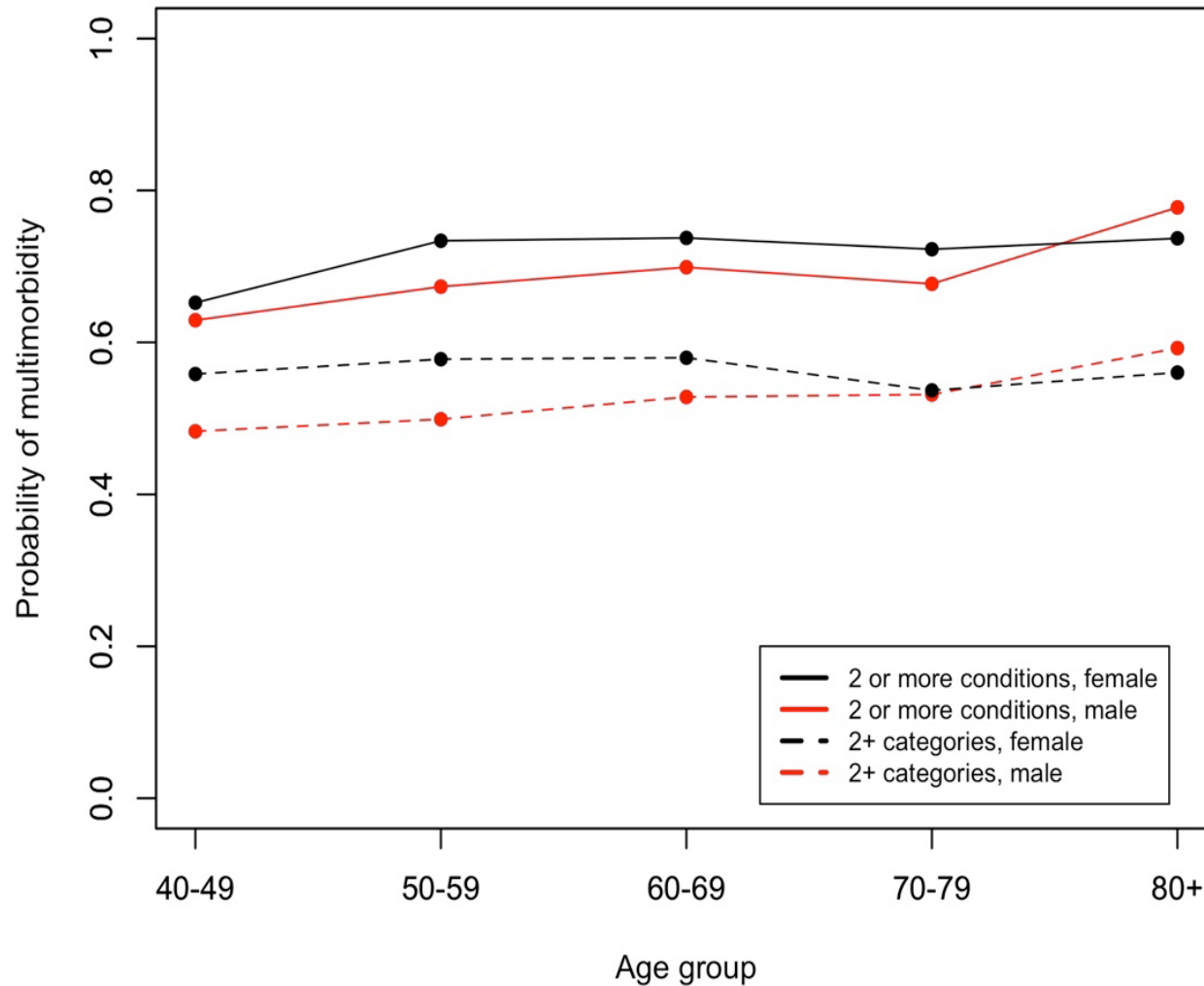


De jure population, 1 July 2014



Probability of multimorbidity by age (2015)

> than 1 *condition* or *category* of conditions (Chang, Salomon et al)

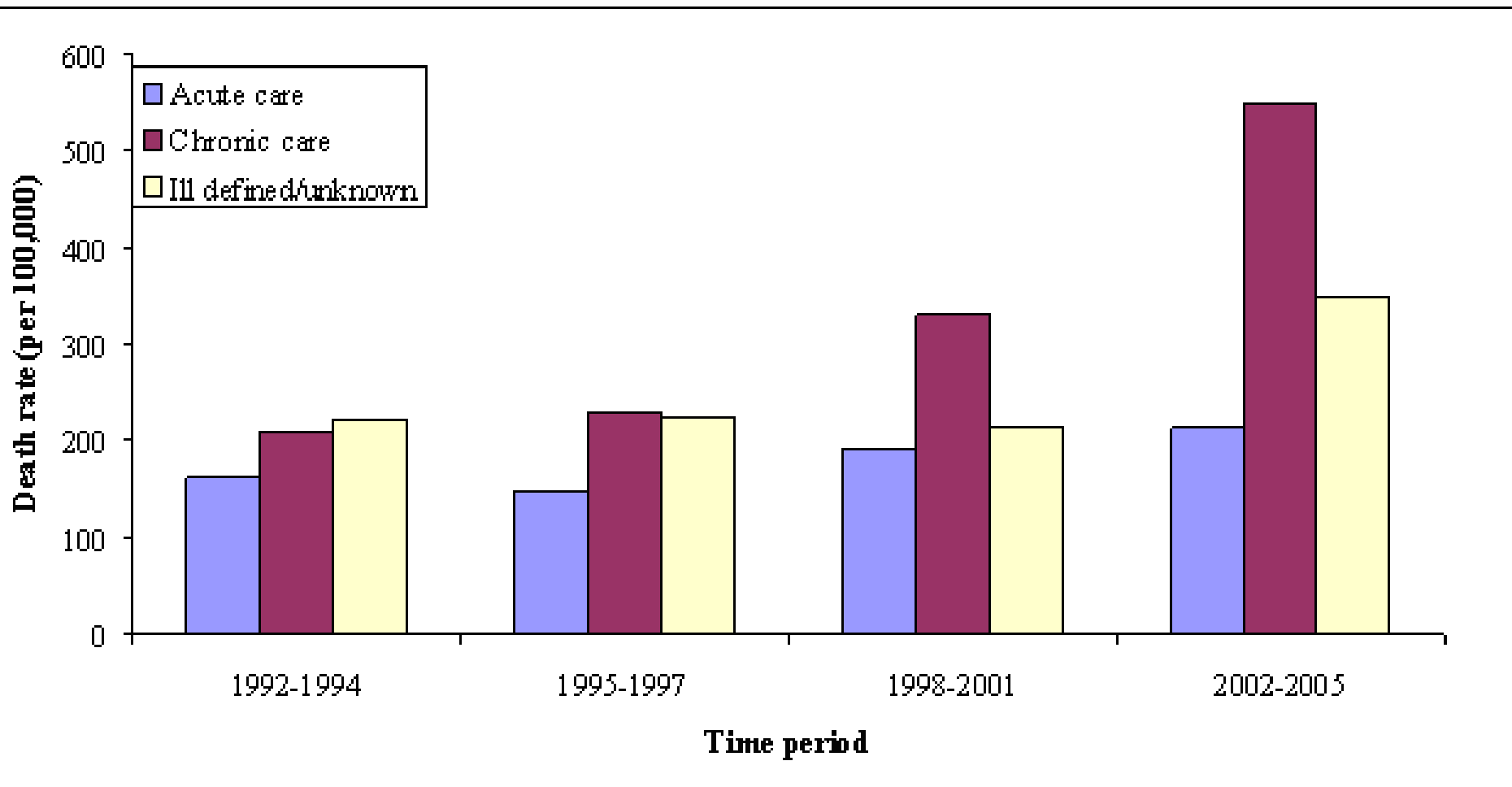


Households with older women: child fostering and orphans

	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

'Demand' for chronic care

Mortality by type of care, 1992-2005





Nurse-managed rural health services



Presence of concordant / discordant conditions if hypertension or diabetes or HIV+ (2015)

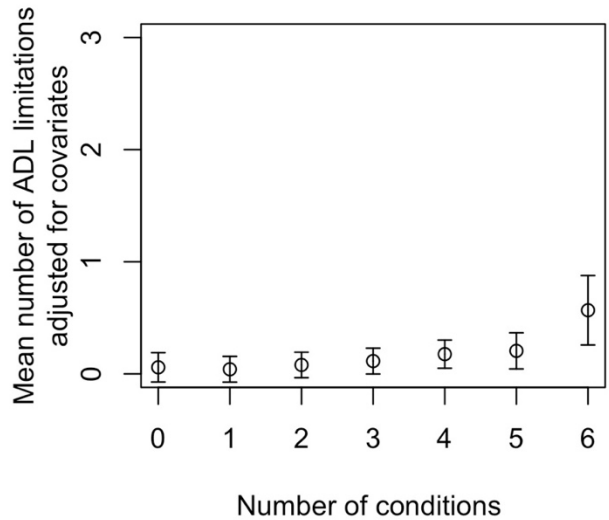
	Hypertension	Diabetes	HIV+
Presence of index condition n (%)	2789 (63%)	514 (12)	1006 (23)
Other cardiometabolic	1553 (55%)	477 (91)	724 (71)
Mental disorders	642 (23%)	132 (25)	208 (20)
HIV	478 (17%)	78 (15)	---

Comparing HIV+ people to persons with HT and diabetes:

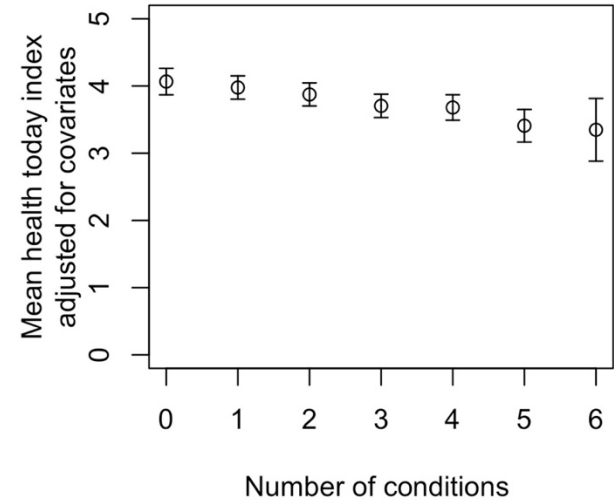
- Younger
- Poorer
- Separated / deserted

Impact of multimorbidity on physical and mental function, 2015

ADL limitations by number of conditions

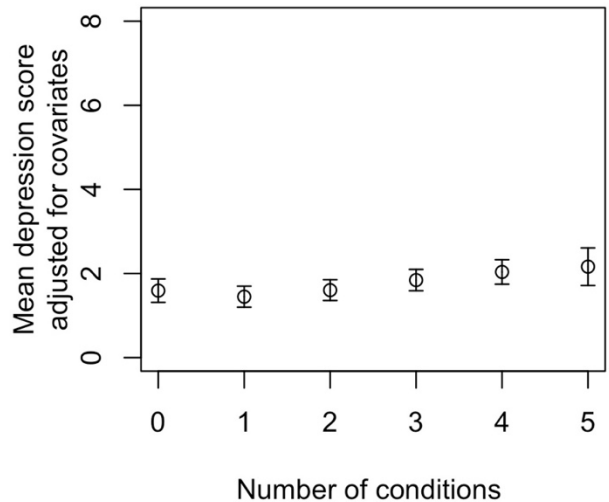


Health today index by number of conditions

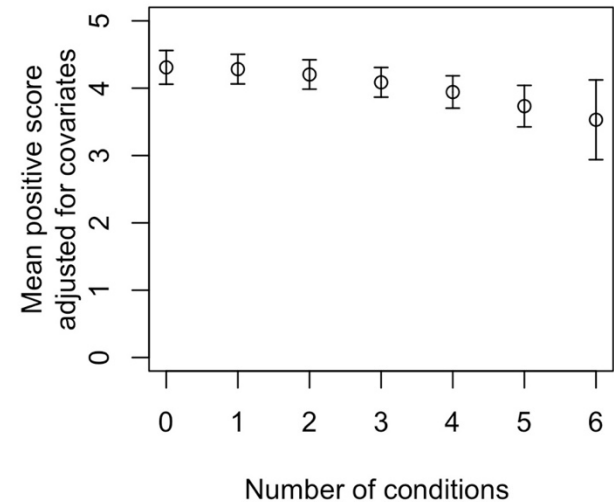


Function declines with number of conditions

Depression score by number of conditions



Positive wellbeing score by number of conditions



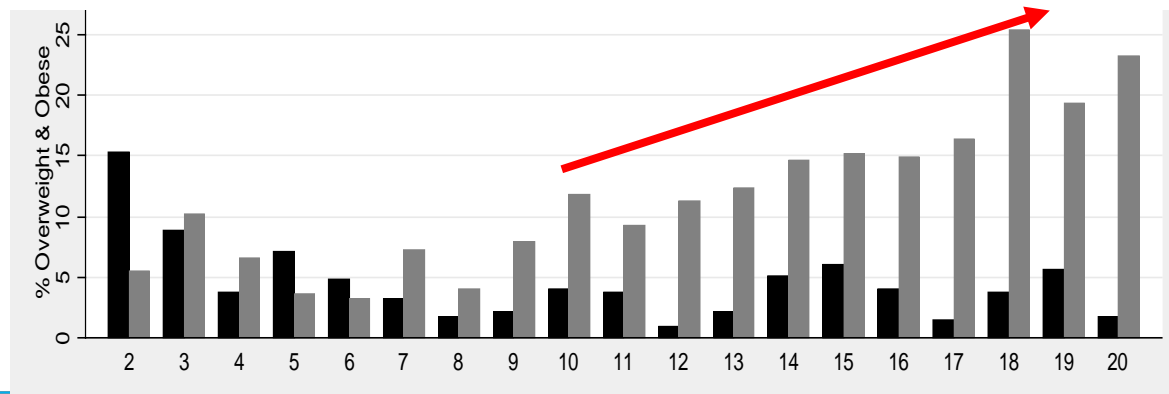
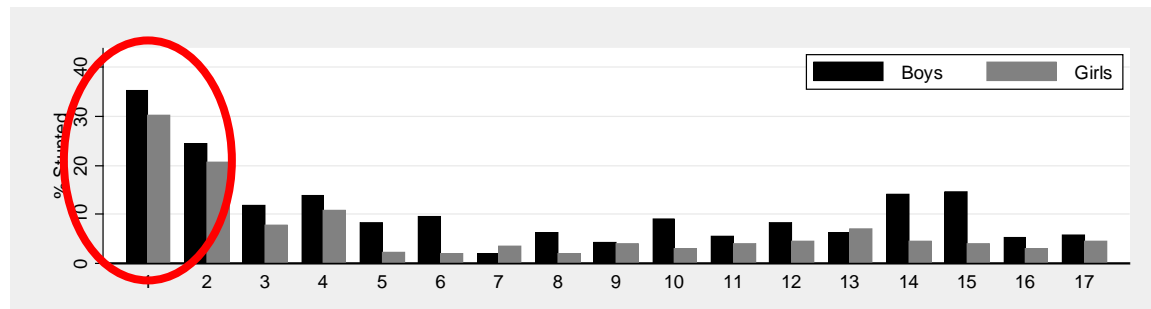


RESEARCH ARTICLE

Open Access

The prevalence of stunting, overweight and obesity, and metabolic disease risk in rural South African children

Elizabeth W Kimani-Murage^{1*}, Kathleen Kahn^{1,2}, John M Pettifor³, Stephen M Tollman^{1,2}, David B Dunger⁴, Xavier F Gómez-Olivé¹, Shane A Norris³



Depression and HIV

(Pearson et al, in preparation)

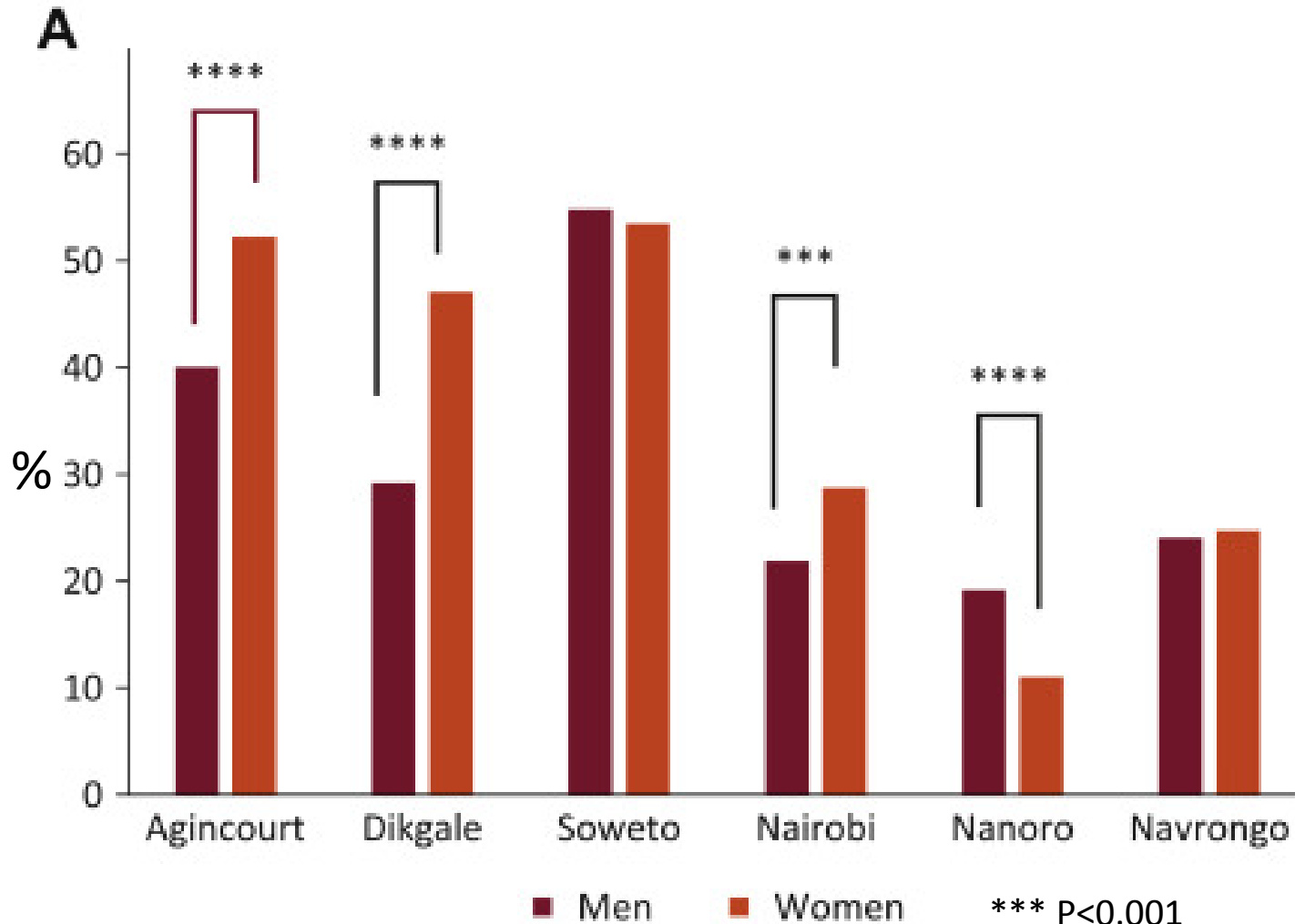
- Depression measured using CES-D
 - 20 items; past week symptoms: restless sleep, poor appetite, feeling lonely
- **Moderate to severe depression significantly associated with**
 - Incident HIV (RR: 2.41 [1.18 - 4.89])
 - HSV-2 (RR: 1.89 [1.11 - 3.18])
 - Pregnancy (RR: 1.69 [1.29 - 2.30])
- Suggests a likely common mechanism
- Depression is modifiable – interventions could help reduce risk



Progression in cardiovascular risk: adults 50+ rural South Africa

	2003 N=402		2007 N=425		2010/11 N=1475		2015 N=5059	
	Male	Female	Male	Female	Male	Female	Male	Female
Abdominal obesity (%)	26	67	28	74	34	84	35	84
Hypertension (%)	50	56	57	57	64	69	58	66

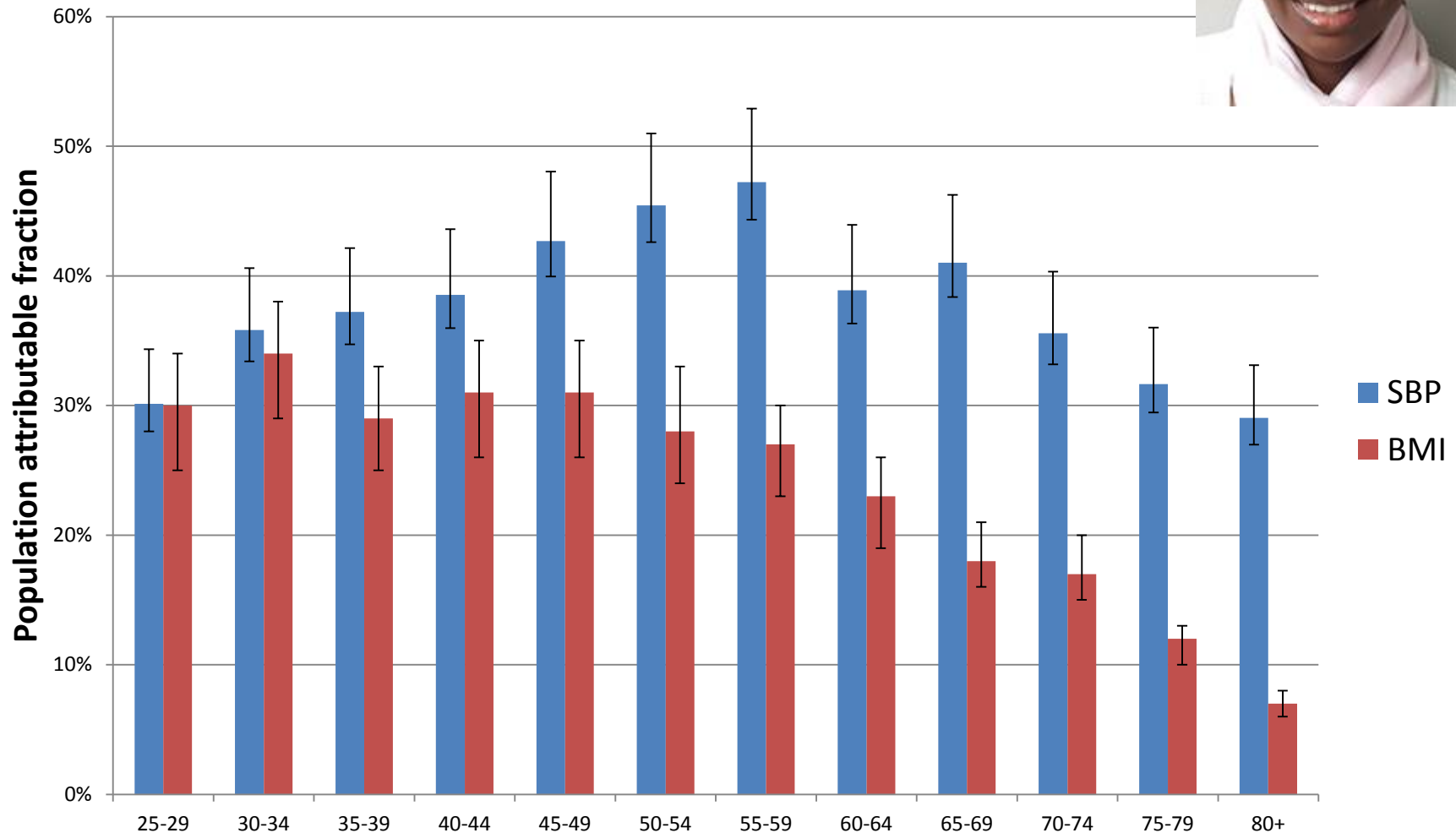
Hypertension transition: S-E-W Africa



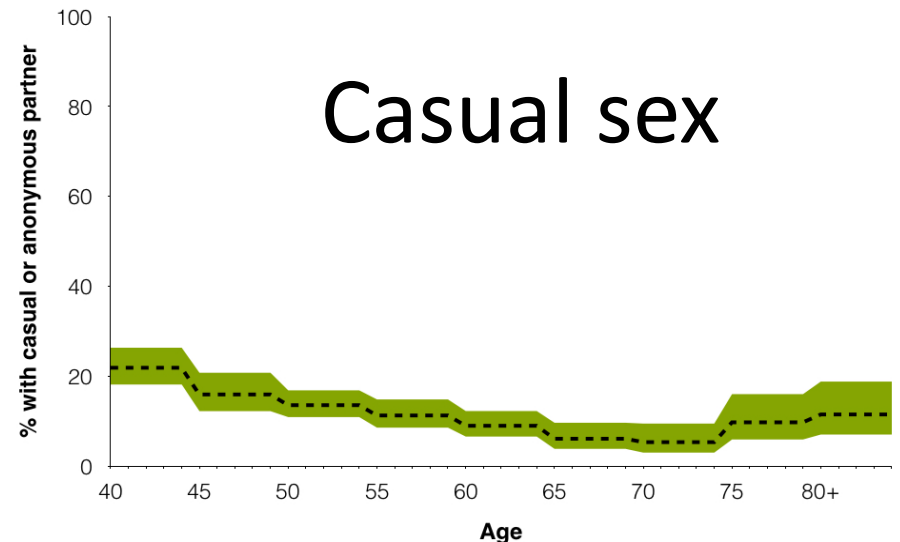
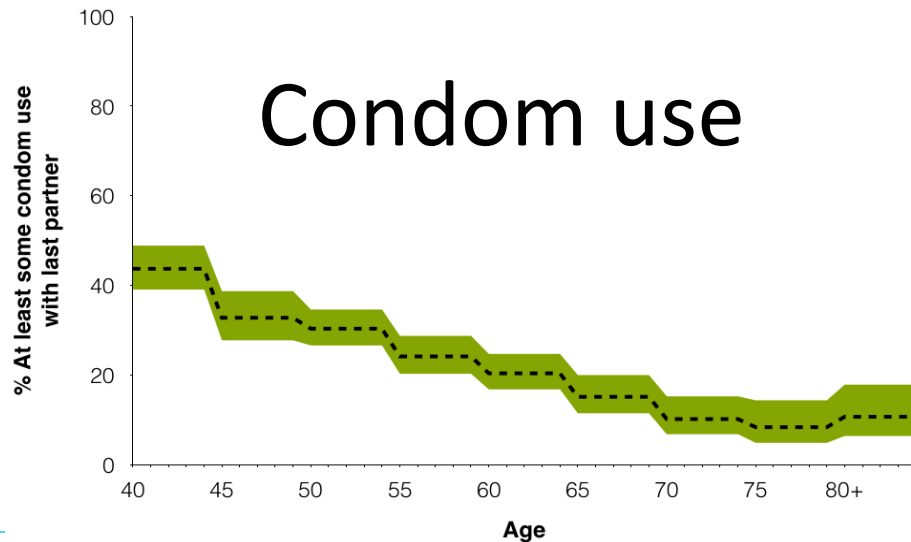
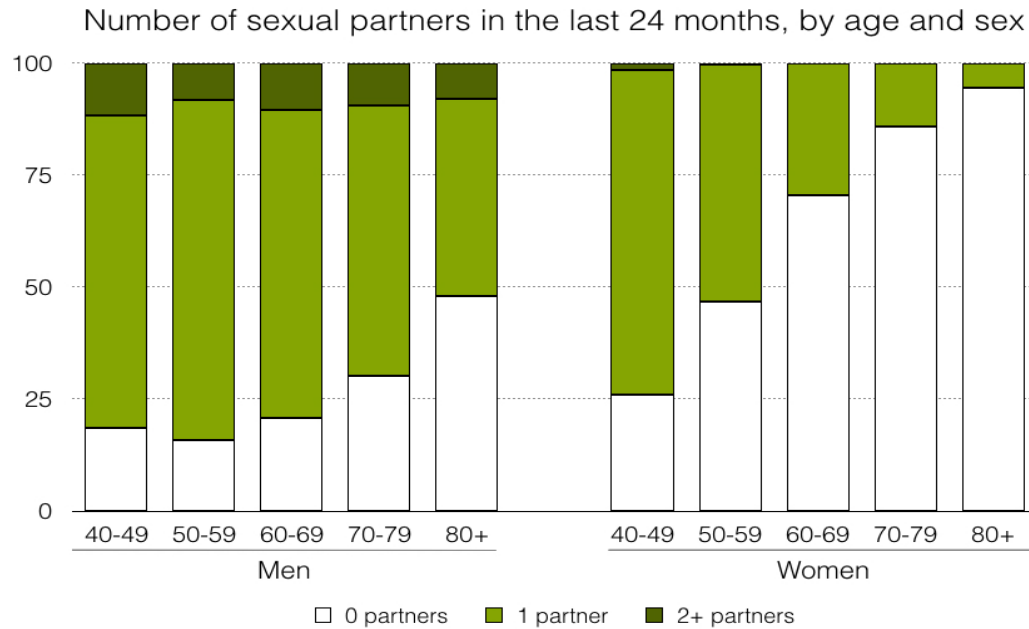
Gómez-Olivé, Ali et al. 2017 Global Heart

Stroke-related mortality attributable to BP and BMI in rural women

(Maredza et al, BMC PH, 2016)



Sex partners in past 2 years (2015)



ART advantage?

Effect of antiretroviral therapy on other care

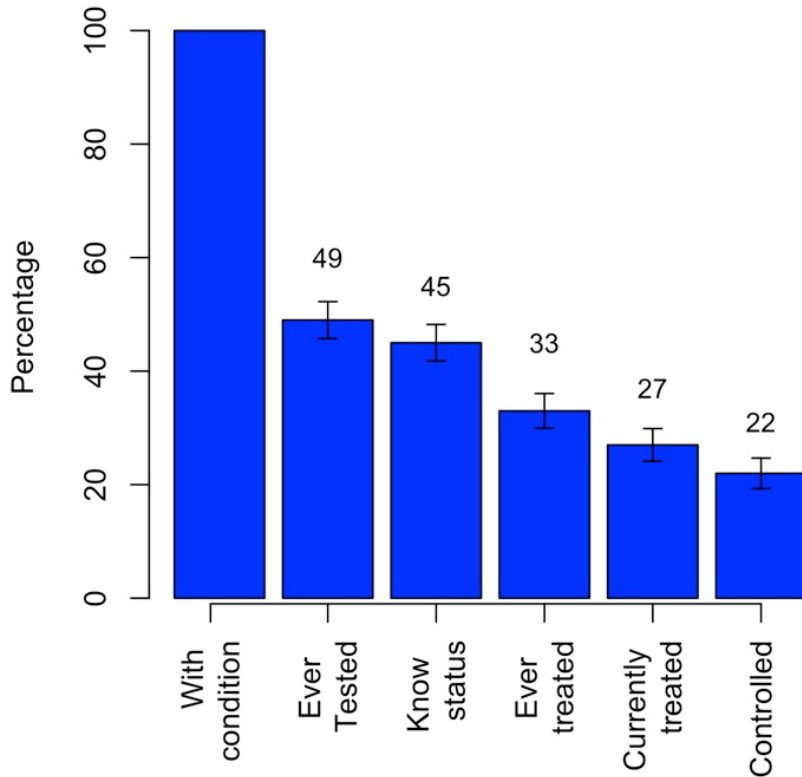
	Ever Use of ART Odds Ratio + 95% CI
Ever Measured BP	1.6 (1.110 – 2.298)
Ever Measured Blood Sugar	1.9 (1.369 – 2.603)
Advised to Change Diet	3.2 (1.798 – 5.671)
Advised to Exercise	2.6 (1.258 – 5.539)

N for all models = 3310 controlling for age, gender, BMI, education and HIV-status

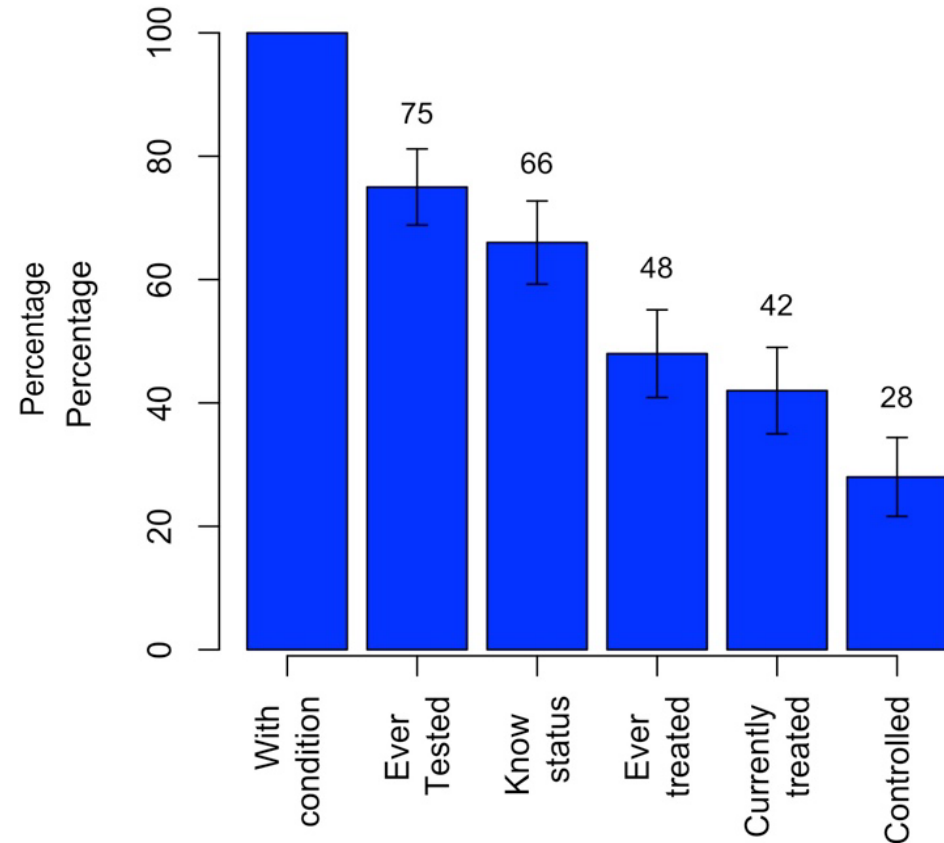
Manne-Goehler et al 2015

Proportion reaching each stage in *continuum-of-care for hypertension*

Hypertension only (n=953)



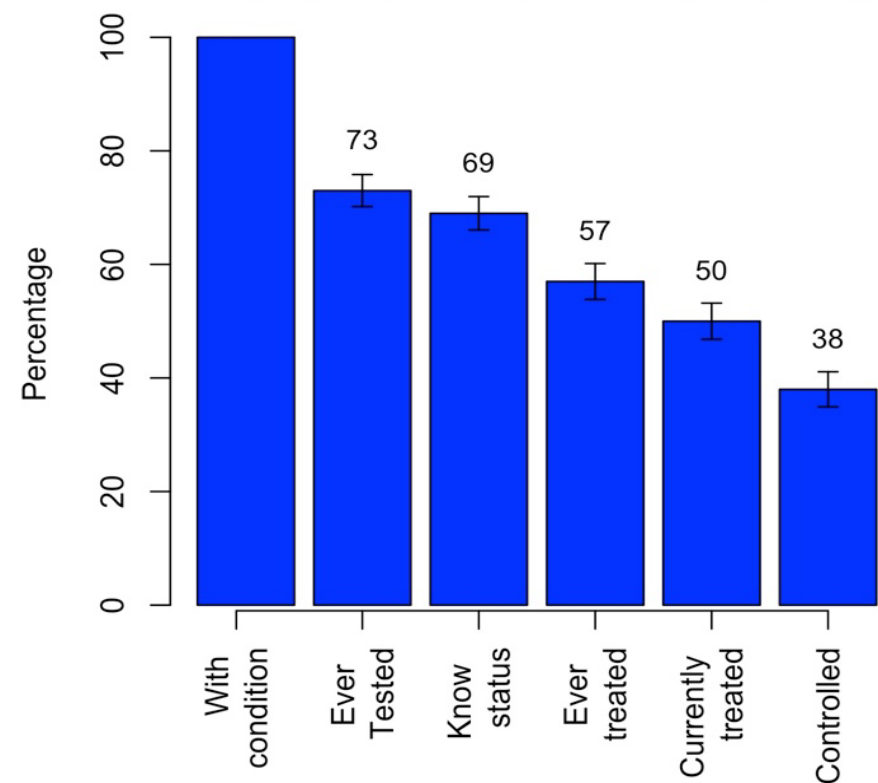
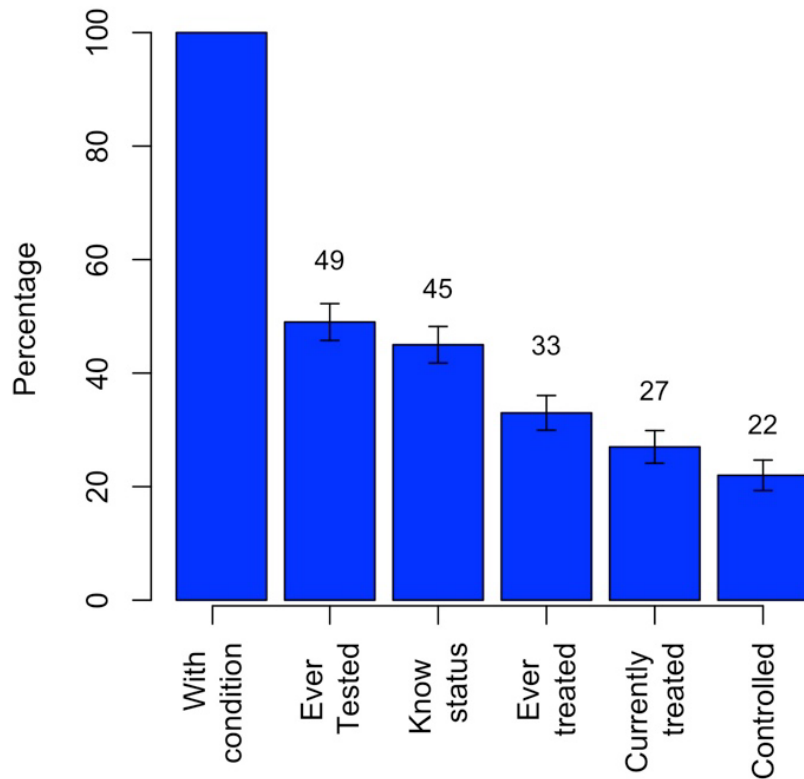
Hypertension and HIV (n=199)



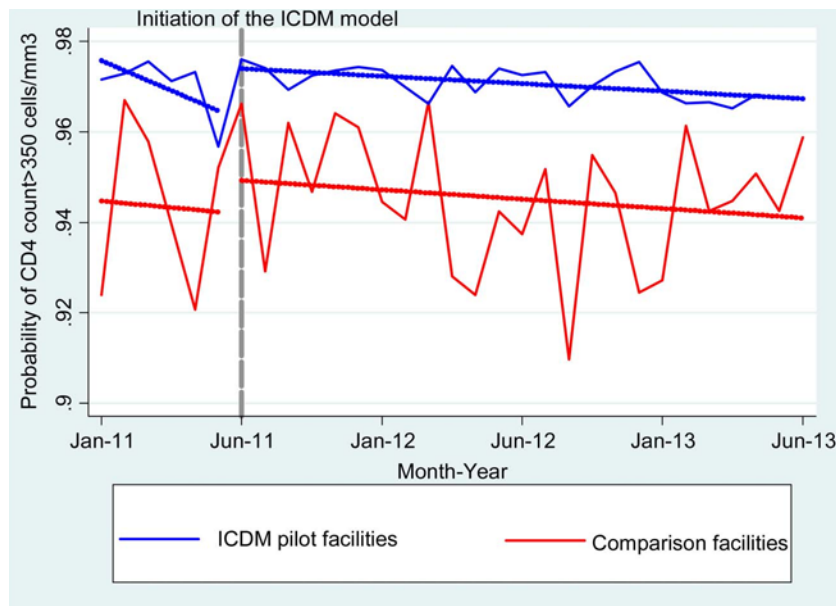
Proportion who reach each stage in continuum-of-care for hypertension

Hypertension only (n=953)

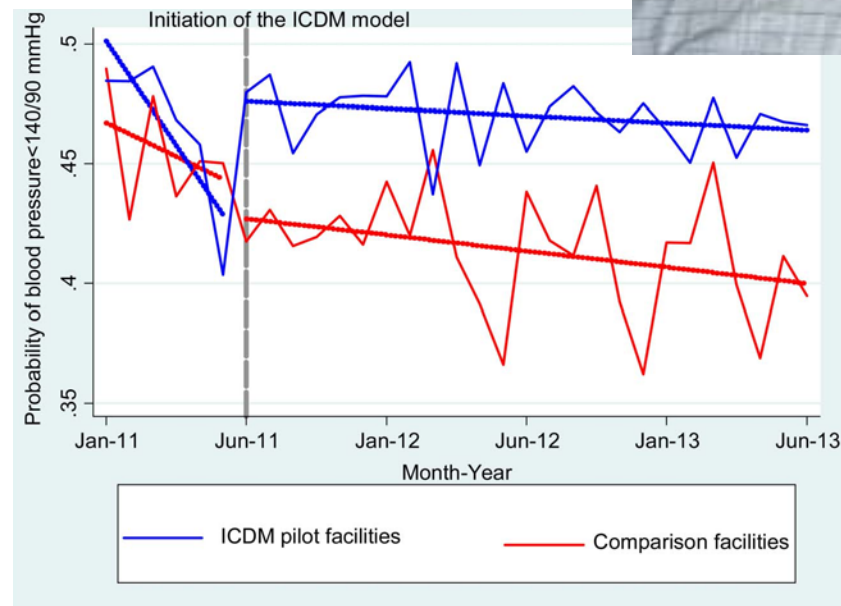
Hypertension and CMD (n=988)



Introducing integrated care: DOH pilot vs standard clinics



Monthly probability of having a CD4 count >350 cells/mm³

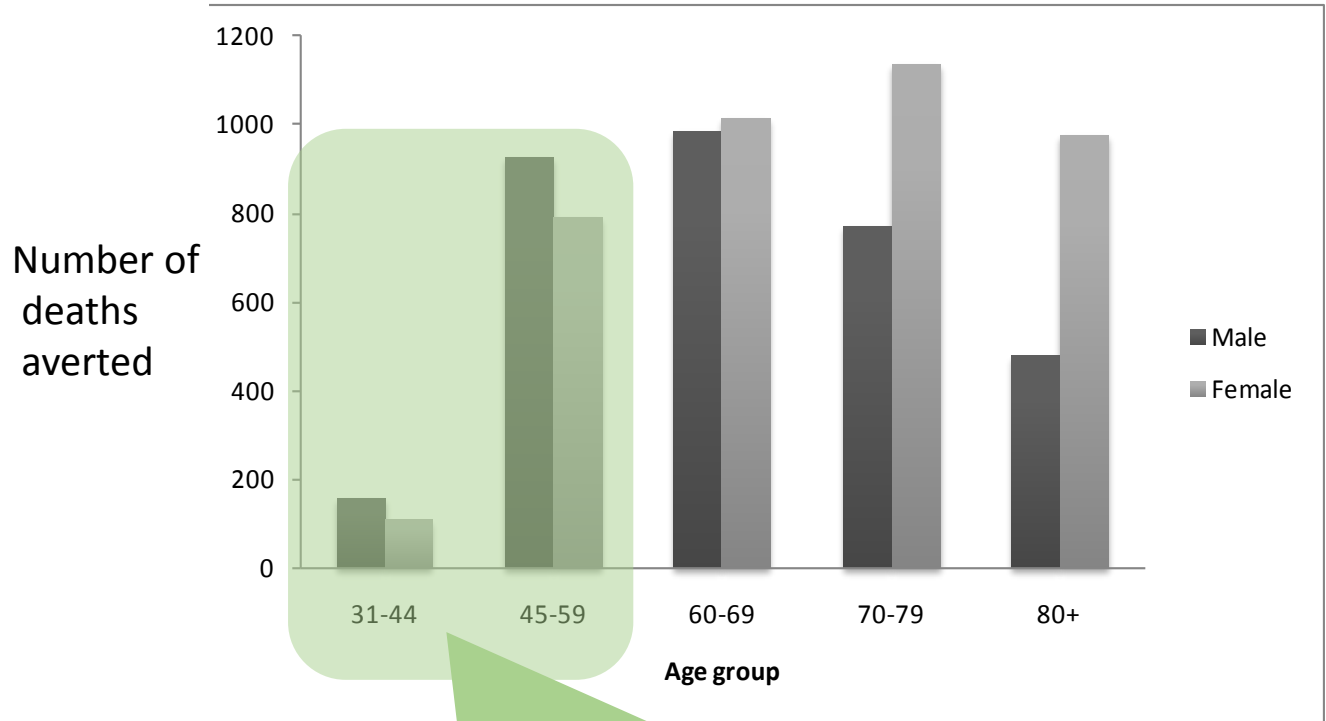


Monthly probability of having a BP >140/90 mm Hg

Study showed a small but significant improvement in control of patient CD4 count and BP

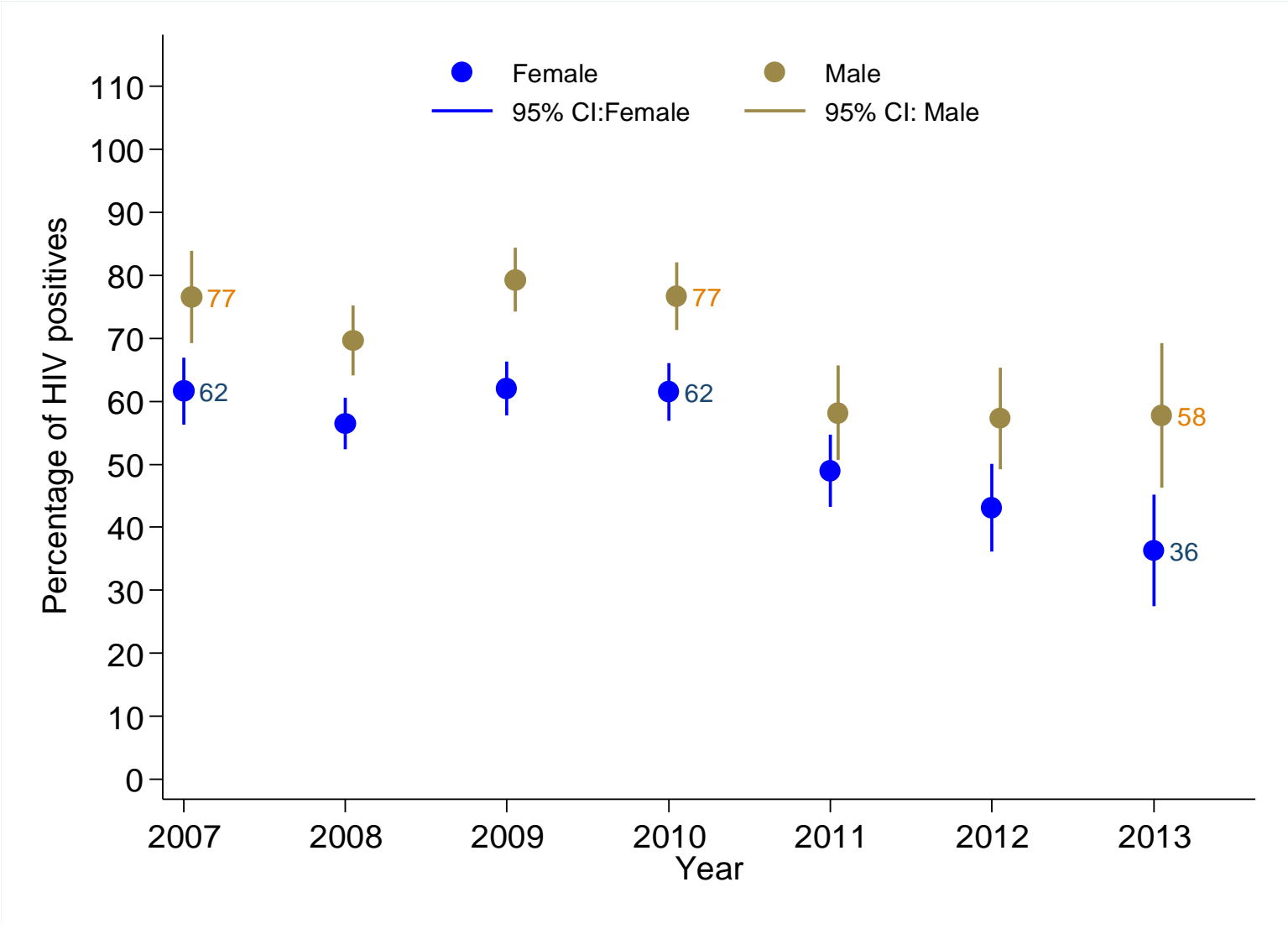
But control of BP in pilot clinics was suboptimal ie the Dept. of Health's purpose in initiating the ICDM mode - to leverage HIV programmes to scale-up NCD services - is yet to be achieved

Case for salt regulation: decreasing salt in bread can save ~6400 lives from stroke each year



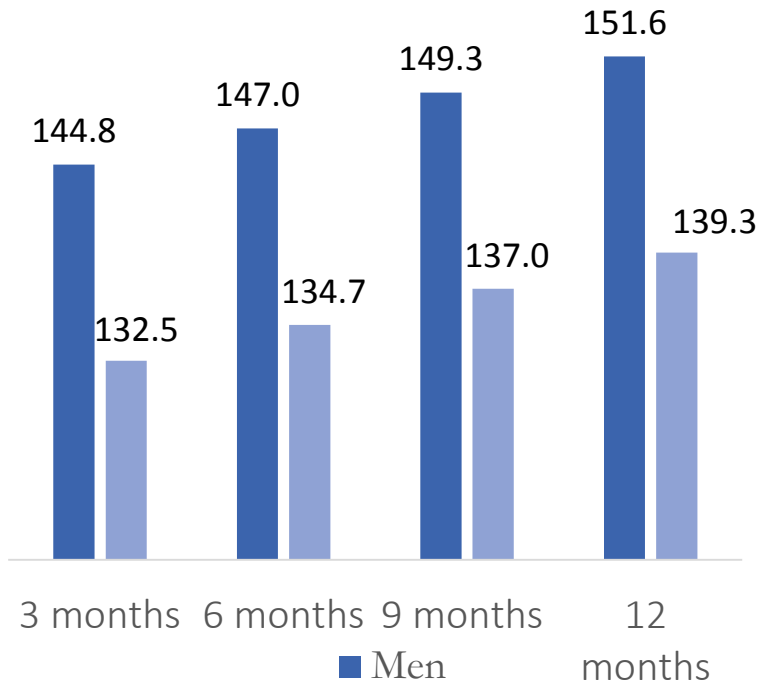
Preventing premature deaths among people under 60 provides large economic savings ZAR 300 mill/yr

Gender: presenting to clinics for HIV care 2007-2013 (%)

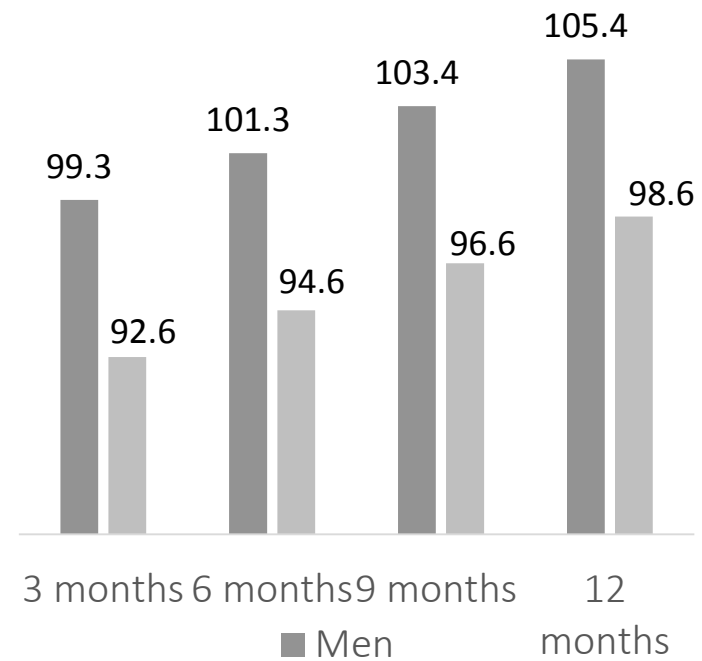


Labour migration: Time 'away' associated with hypertension *Issue: linkage to care...*

Predicted values of **systolic BP** (mm/Hg)
by months away and sex (N=194)



Predicted values of **diastolic BP** (mm/Hg)
by months away and sex (N=194)

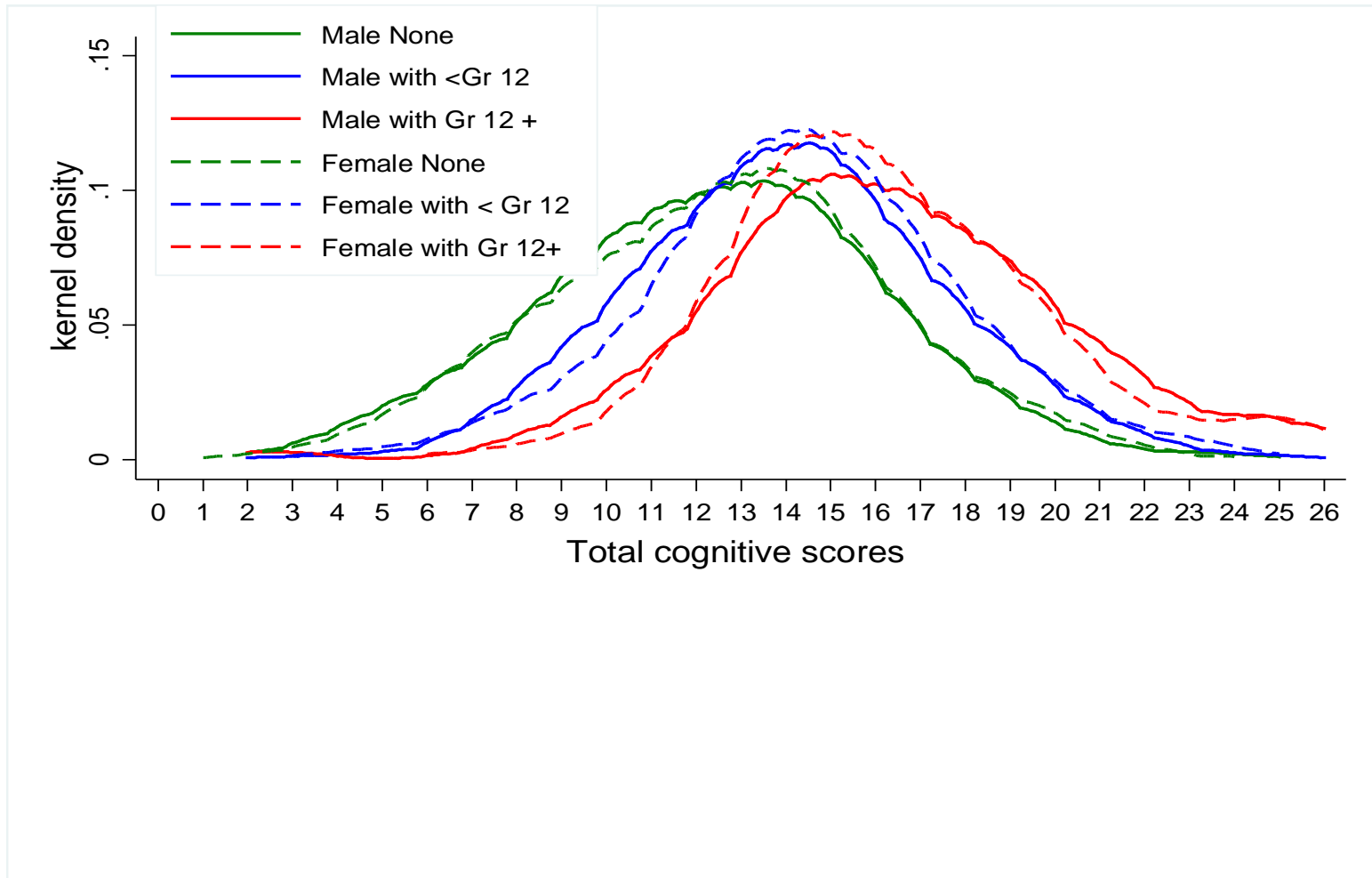


Source: MHFUS Pilot Data

Unless specified, covariates held at means

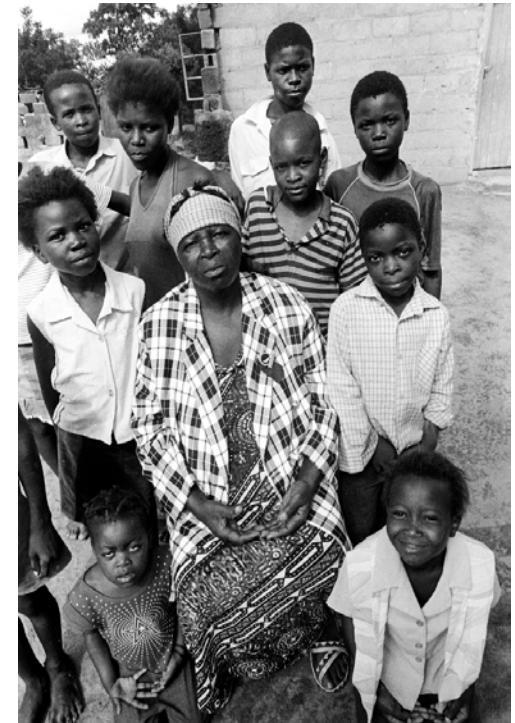
Cognitive change... decline... dementias: Cognitive scores by education (40 years+)

Agincourt, 2015



OLDER ADULTS: Function, wellbeing and mortality

Influencing survival	Relative Risk
Single	1.52
Lower QOL (self-report)	1.59
Poorest households	1.85
Reduced function (self-report)	2.40
Female	0.34



- **Individual wellbeing ‘improves’ at pension age**
 - Age 60 - 69: better quality-of-life (esp. women)
- **Households with pension-age woman cope better**
 - Orphans and fostering, Girl schooling, Food security

Engagement / Participation: Health topics selected

Health topic	Causes of mortality
Substance / alcohol use-abuse	Motor vehicle accidents Suicide STI HIV Depression Chronic diseases
Water shortages	Diarrhoea Vomiting Dehydration Malnutrition

Photo-voice



Funder acknowledgments

- **MRC, Wits University, NRF, Treasury and Depts. of Health and Science & Technology -*South Africa***
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- **NIH -*USA*:**
 - National Institute on Aging
 - National Human Genome Research Institute
 - National Institute for Mental Health
 - National Institute of Allergy and Infectious Diseases
 - National Institute of Child Health and Human Development
 - Fogarty International Center
- **Bill & Melinda Gates Foundation, *USA***
- **Sida -*Sweden***
- **Population Council, USAID and Hewlett Foundation -*USA***

