GROWING INEQUITIES IN MATERNAL HEALTH IN SOUTH AFRICA: A COMPARISON OF SERIAL NATIONAL HOUSEHOLD SURVEYS

Oral Presentation at OWSD 5th General Assembly and International Conference on Women in Science and Technology for the Developing World

Proceedings of Women in Science and Technology for the Developing World
Fifth General Assembly and International Conference

16-19 May 2016, Kuwait

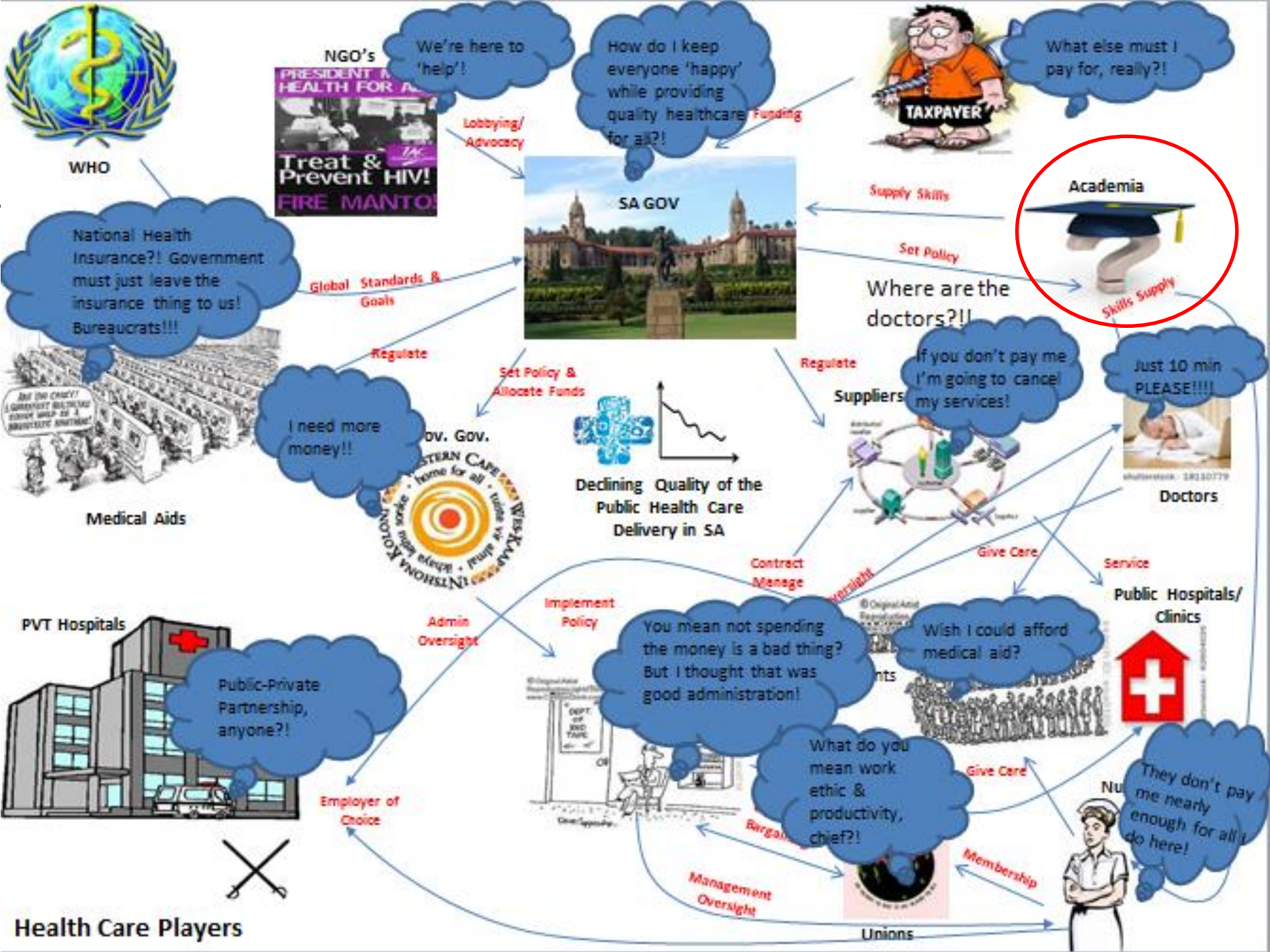
Dr Njeri Wabiri; nwabiri@hsrc.ac.za
Human Sciences Research Council
Co authors: Matthew Cherish (Wits), Olive Shisana, Duane Blaauw(Wits)

Background …

- South Africa is one of the most inequitable countries in the world (Gini coefficient was 0.65)
- Wealthiest 10% of population account for over half of country's income (World Bank 2014)
- Indices of health, especially of maternal health, are also markedly unequal. Maternal mortality varies considerably between provinces
  - 2013 and 2014, institutional-level maternal mortality rates (MMR; maternal deaths per 100,000 live births) were 68.6 in the Western Cape, 184.9 in the North West Province (three-fold higher)[2].
- HIV epidemic among pregnant women (ANC Survey)
  - marked differences in HIV prevalence at a district level, ranging from 1.5% to 40.7%, around a national average of 29.2%[3].

…background

- Nationally, MMR decreased from 176.2 in the 2008–2010 triennium to 146.7 by 2012[4, 5], attributed to reduction in HIV related deaths.
- Wide scale-up of antiretroviral treatment (ART) across the country[5, 6].
- 80% of antenatal clients who are eligible for ART have initiated treatment, approaching the national target of 90%[2];
- However, avoidable maternal deaths due to haemorrhage have risen (from 14% in 2011) in the past years, due to deficiencies in the quality of maternal health services:
  - patient transport,
  - availability of intensive care units
  - staff training in emergency obstetric care
  - suboptimal care is notable in 2/3 of maternal deaths


WHO
NGO's
We're here to 'help'!
How do I keep everyone 'happy' while providing quality healthcare for all?!
What else must I pay for, really?!
TAXPAYER
Lobbying/ Advocacy
Funding
SA GOV
Supply Skills
Academia
Set Policy
Skills Supply
National Health Insurance?! Government must just leave the insurance thing to us! Bureaucrats!!!
Global Standards & Goals
Where are the doctors?!!
Regulate
Set Policy & Allocate Funds
Regulate
I need more money!!
Prov. Gov.
Suppliers
If you don't pay me I'm going to cancel my services!
Just 10 min PLEASE!!!!
Doctors
Medical Aids
Declining Quality of the Public Health Care Delivery in SA
Contract Manage
Give Care
Service
Public Hospitals/ Clinics
PVT Hospitals
Admin Oversight
Implement Policy
You mean not spending the money is a bad thing? But I thought that was good administration!
Wish I could afford medical aid?
Public-Private Partnership, anyone?!
What do you mean work ethic & productivity, chief?!
They don't pay me nearly enough for all I do here!
Employer of Choice
Give Care
Bargaining
Membership
Management Oversight
Unions
Health Care Players

What's available?

- Free maternity care SA: per-capital health care budget highest in the region
- Health service data from District monitoring systems guides improvements in the quality of services
- But we lack data on population-level access to maternal health services, disaggregated by population group, and assessed over time
- Analysis of 2008 survey highlighted marked socio-economic inequalities in maternal health
- Current study documents how maternal health inequalities changed between 2008-2012.
  - Uses two South African National HIV Prevalence, Incidence, Behaviour and Communication Surveys[9, 10] done by HSRC in 2008 and 2012

Study relevance

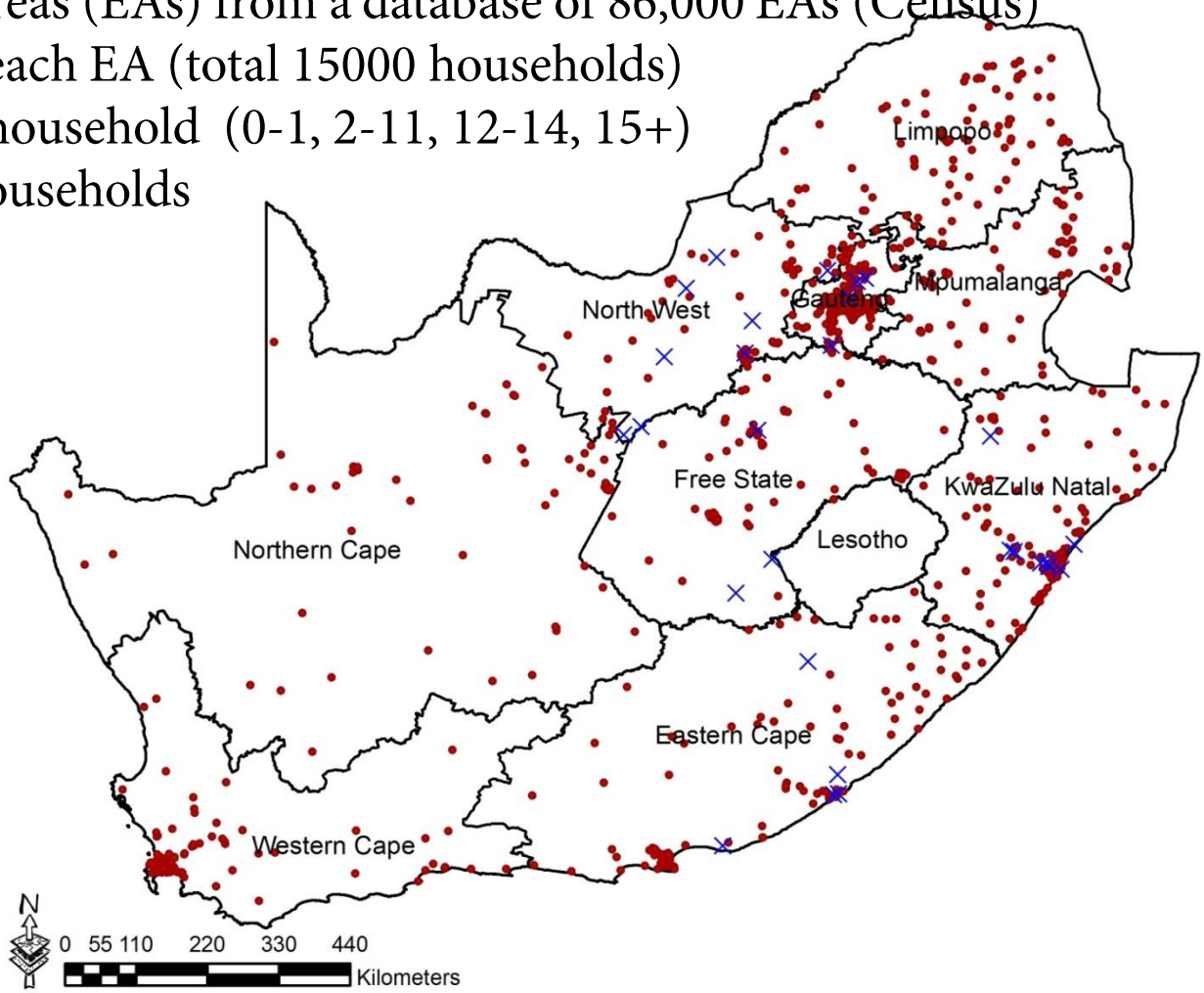
- Determine the distribution and outcomes of maternal health services over time

- Establish extent to which South Africa has achieved its commitments to improving maternal health (sustainable development goals) Millennium Development Goals

Survey design

Multistage stratified sampling (Province (9), locality(4) and race(4))

- PSU: 1000 Enumeration Areas (EAs) from a database of 86,000 EAs (Census)
- SSU: 15 households from each EA (total 15000 households)
- USU: 2008- 4 persons per household (0-1, 2-11, 12-14, 15+)
  2012- all person in households



Survey design

- Study approved by
  - Human Science's Research Council's Research Ethics Committee (HSRC REC)
  - Human Subjects Review from the Centre for Disease Control (CDC) and Prevention's Global AIDS Programme

Study Data & Methods

- Two groups of women aged 15-55 years:
  - those who had been pregnant in the preceding two years of the survey
  - those interviewed as the parent or guardian of a child below 2 years.

Variables

- Access to maternal health services
  - Utilisation of antenatal clinics;
  - HIV testing;
  - Skilled attendant at birth (SBA); Doctor present at birth
- Maternal health status outcomes (proxy indicators)
  - Self reported health status (poor to excellent)
  - Planned pregnancy,
  - Multiparity (five or more children),
  - Prevalence of HIV infection

- Selected based on their links with pregnancy outcomes for women and children[17].
- Socio-economic quartiles (SEQ) derived using multiple correspondence analysis.
- Demographics: Age, Race, Education, Employment, Marital status

Measure of absolute inequality- SII

- **Slope Index of Inequality (SII)-** quantify absolute inequalities ,

$$g(Y) = \beta_0 + \beta_1 rscore + \beta_2 survey + \varepsilon$$

  - $g(Y)=Y$: identity link function(Binomial regression)
  - Measures absolute effect on health outcome of moving from the poorest to the wealthiest.
  - Positive SII represent inequality in favour of the wealthy, while a negative SII is inequality in favour of poor.

Measures of relative inequality- RII

- **Relative Index of Inequality (RII)-** magnitude of relative inequalities [20–22] (log-binomial regression)

$$g(Y) = \beta_0 + \beta_1 rscore + \beta_2 survey + \varepsilon$$

  - ***g(Y)=log(Y)*** log-link function (log-binomial regression)
  - Measures likelihood of having an outcome, relative to one's SES level.
  - Increases from zero, with higher values indicating higher inequality.
  - RII >1 implies outcome is more prevalent among wealthy women (more coverage for wealthy women)

Measures of relative inequality- CI

- Concentration Index (CI) :quantify the magnitude of relative inequalities
  - ranges from –1 to 1, Zero represents perfect equality,
  - CI>0 indicate richer individuals have greater coverage (or good health outcomes) [34].
  - CI <0 – outcome more prevalent among poor

Linear trends in RII and SII

- Decline in both SII and RII is the best evidence of progress in closing the inequality gap;
- Differences in SIIs and RIIs between the two surveys suggest reduction or increase in wealth related outcome inequalities. The linear trend indicates if the reduction is significant
- Linear trends, across 2008 and 2012: tested by estimating the p-value for an interaction term between women's rank score: 0 (poorest) to 1(wealthiest) [8]and years since baseline, i.e. 2008 survey coded 1, 2012 coded 2

$$g(Y) = \beta_0 + \beta_1 rscore + \beta_2 survey + \beta_3 rscore * survey + \varepsilon$$

- Positive and significant coefficients, greater than one, indicate widening RII (SII) inequalities over time
- ArcGIS used to show the map geographical variation relative inequalities for
  - antenatal services; skilled birth attendant; planned pregnancy ; health status.

Results

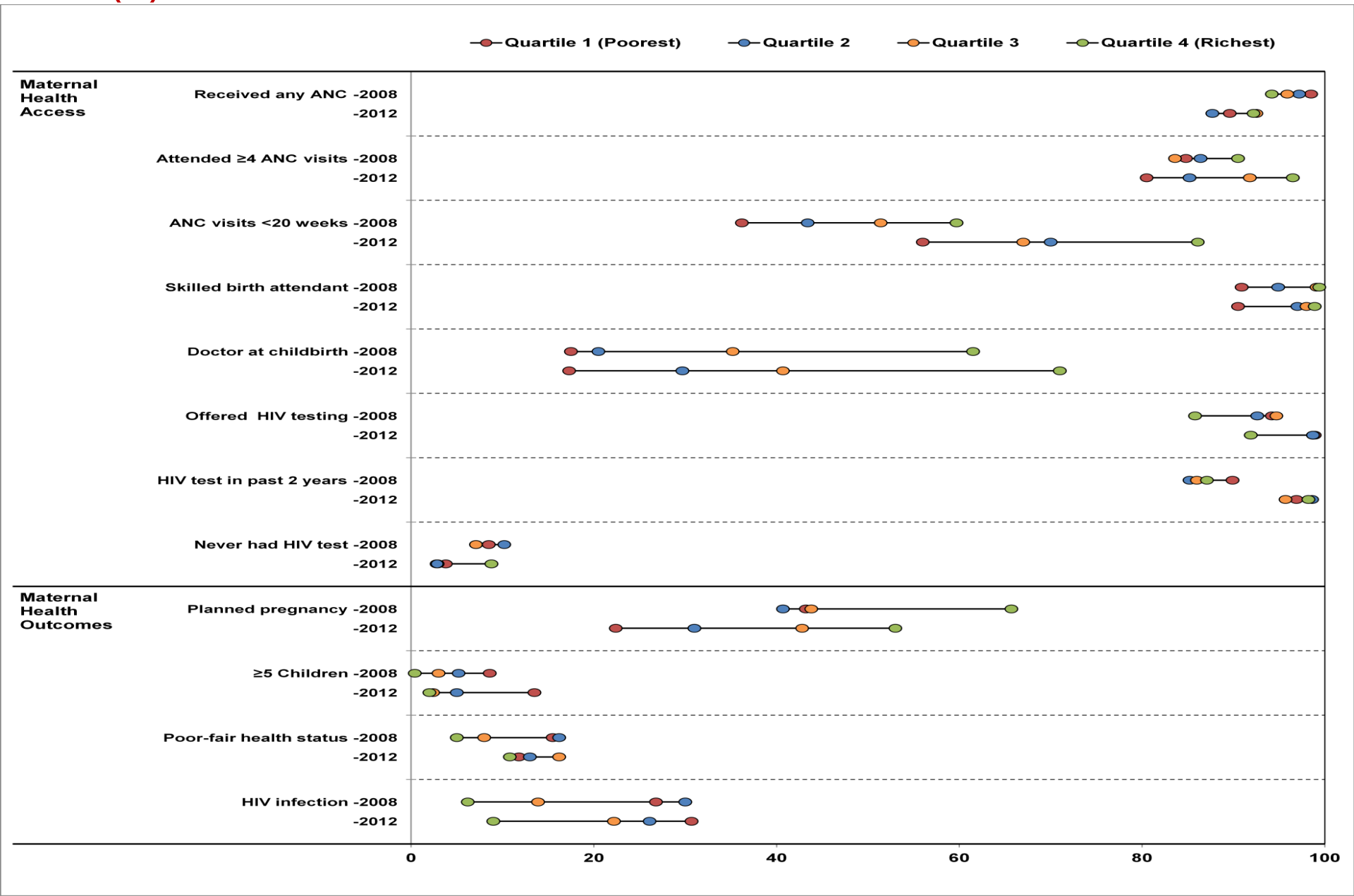
2008

- 56.0% of people interviewed were women aged 15-55 years (8292/14,798), of which
  - 13.5% (1121/8292) had been pregnant in the preceding two years,
  - 5.8% (1310/8292) were a parent of a child born in the past two years.

2012

- 53.5% of people interviewed were women aged 15-55 years (13,187/24,659) of which
  - 12.5% (1648/13,187) had been pregnant and/or were the parent of a child born in the past two years.

Time differentials in coverage of maternal health services and health status in South Africa (%)



Inequalities in maternal health access

Variable	Range (Q4-Q1)		Slope of index inequality (95% CI)			Relative index of inequality (95% CI)			Concentration Index	
	2008	2012	2008	2012	Change in equity (P)	2008	2012	Change in equity (P)	2008	2012
Received any ANC	**-4.3**	**2.6**	**-0.047** (-0.094 - -0.001)	**0.051** (-0.027 - 0.130)	**0.030**	**0.951** (0.904 - 1.000)	**1.056** (0.971 - 1.149)	**0.037**	**-0.005**	**0.015**
Attended ≥4 ANC visits	**5.7**	**16.0**	**0.024** (-0.084 - 0.132)	**0.209*** (0.129 - 0.288)	**0.005**	**1.027** (0.909 - 1.160)	**1.271*** (1.139 - 1.417)	**0.008**	**0.011**	**0.033**
ANC visit <20 weeks gestation	23.5	30.1	0.274*** (0.106 - 0.442)	0.312*** (0.165 - 0.460)	0.741	1.831*** (1.268 - 2.644)	1.593*** (1.278 - 1.984)	0.525	0.116	0.077
Skilled birth attendant	8.5	8.4	0.121*** (0.066 - 0.176)	0.113** (0.020 - 0.207)	0.888	1.135*** (1.071 - 1.202)	1.124** (1.021 - 1.238)	0.869	0.017	0.018
Doctor attended childbirth	44	53.7	0.401*** (0.270 - 0.531)	0.587*** (0.449 - 0.724)	0.063	5.285*** (2.971 - 9.398)	5.802*** (3.856 - 8.728)	0.797	0.300	0.268

Inequalities in maternal health access

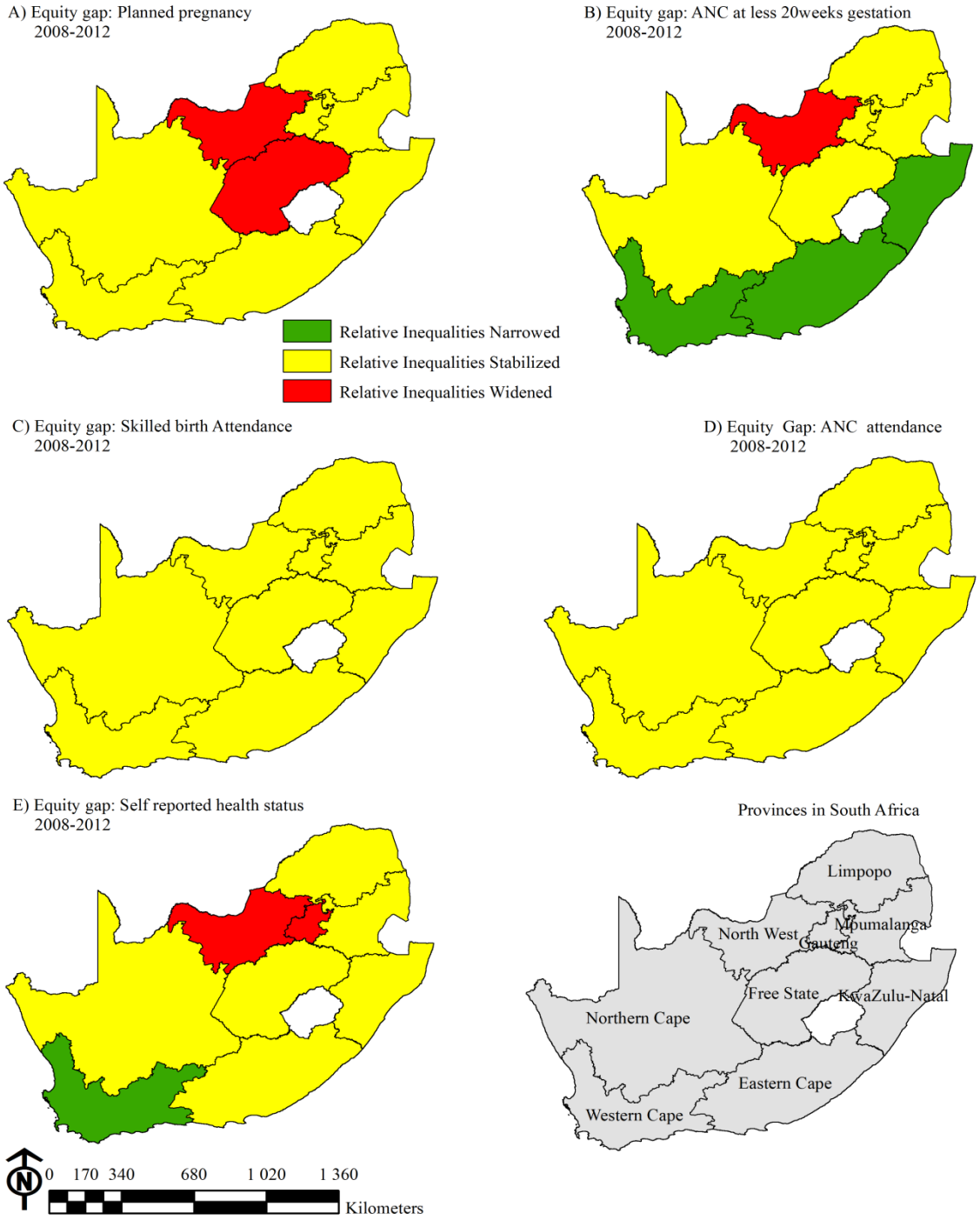
	2008	2012	2008	2012	Change in equity (P-value)	2008	2012	Change in equity (P-value)	2008	2012
Offered HIV testing in pregnancy	-8.4	-7.0	-0.042 (-0.106 - 0.021)	-0.042 (-0.093 - 0.009)	0.999	0.951 (0.880 - 1.028)	0.940 (0.862 - 1.024)	0.833	-0.007	-0.004
HIV test in past 2 years	-2.8	1.3	-0.050 (-0.152 - 0.051)	-0.004 (-0.049 - 0.041)	0.419	0.943 (0.838 - 1.061)	0.996 (0.951 - 1.042)	0.405	0.000	-0.006

Inequalities in maternal outcomes

Variable	Range (Q4-Q1)		Slope of index inequality (95% CI)			Relative index of inequality (95% CI)			Concentration Index	
	2008	2012	2008	2012	Change in equity (P)	2008	2012	Change in equity (P)	2008	2012
Planned pregnancy	22.5	30.6	0.134 (-0.032 - 0.301)	0.391*** (0.258 - 0.524)	0.009	1.391 (0.929 - 2.084)	2.999*** (2.096 - 4.292)	0.004	0.078	0.161
Five or more children	-8.2	-11.5	-0.099*** (-0.139 - -0.060)	-0.117*** (-0.162 - -0.073)	0.548	0.129*** (0.033 - 0.497)	0.045*** (0.014 - 0.144)	0.255	-0.326	-0.324
Poor-fair health status	-10.5	-1.0	-0.150*** (-0.234 - -0.066)	0.022 (-0.068 - 0.112)	0.004	0.331*** (0.167 - 0.654)	1.165 (0.631 - 2.151)	0.004	-0.043	-0.040
HIV infection	-20.6	-21.7	-0.281*** (-0.427 - -0.136)	-0.251*** (-0.372 - -0.129)	0.38	0.340*** (0.178 - 0.649)	0.372*** (0.224 - 0.620)	0.821	-0.193	-0.213

Geographical variations:RII

- Inequalities for planned pregnancy were significantly wider in the Free State and North West provinces in 2012 compared to 2008 (have high MMR)
- Overall decline in planned pregnancy from 44.6% in 2008 to 34.7% in 2012,.
- Eastern Cape Province still has the poorest access to services for many measures,
- Compared with the national average, Eastern Cape,
  - 9.0% fewer women had four or more ANC visits;
  - 18.0% less attended ANC before 20 weeks of pregnancy;
  - SBA coverage was 8.2% lower.
  - HIV prevalence rose from 18.6 to 25.1%.



Conclusions/ Recommendations

- Substantial disparities persist
- declines in the overall coverage of ANC services and in planned pregnancy.
- The extraordinary high levels of inequalities noted in 2008 persist
- study indicates a diminishing effectiveness of family planning services in South Africa. Increases in unintended pregnancy, especially among young women and scholars, as well as a widening of inequalities in this outcome, show that initiatives to reinvigorate these services are long overdue.
- Growing resources for family planning would lower maternal, neonatal and infant mortality, and assist in reaching the MTCT elimination targets (nearly 70% of pregnancies among HIV-infected women were unplanned in both surveys)[42].

Conclusions/ Recommendations

- Low levels planned pregnancy, antenatal clinic access and having a doctor present at childbirth among poor women is of concern.

- Policy makers should carefully balance efforts to increase service access nationally, against the need for programs targeting underserved population groups.