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Dimensions of Health and Well-being in South Africa: health, socioeconomic rank and inequality

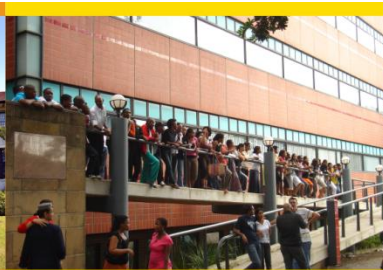
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ESSA 2017



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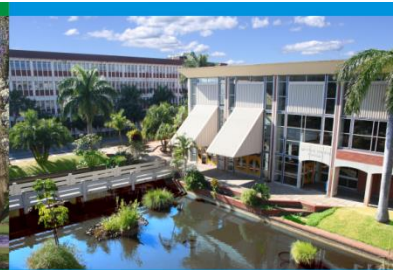
HOWARD COLLEGE CAMPUS



NELSON R MANDELA SCHOOL OF MEDICINE



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Background

Health, socioeconomic status (SES) and inequality in South Africa

- Broad welfare measures incorporate notions of development, health and happiness (life satisfaction). (E.g. Sen, 1999; Deaton, 2001; Stiglitz, Sen and Fitoussi, 2009)
- Inequality is another important and controversial welfare dimension, which is especially relevant in the South African context
- This research is part of a broader theme: to understand how do the different welfare dimensions relate to each other.

Cure health inequality by reducing income inequality

August 30, 2017 Guest Contributor Features, Opinion



The relationship between health and social context includes a range of factors influencing overall well-being. Social status, class, lifestyle, education, and environment primarily shape these factors. Age, gender, race, and ethnicity are structural variables of equal importance to health outcomes. Health is being facilitated or inhibited by the socioeconomic, cultural, and political backgrounds, in which one is born and raised.

In the last few decades, we have seen growing income inequality between the poor and rich. Since the



Unequal Scenes (Johnny Miller)

Papwa Sewgolum Golf Course, Durban



Background

Health, socioeconomic status (SES) and inequality in South Africa

- Health is an important dimension of broader welfare concepts.
 - Health is
“a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 1948).
- What are the links between material dimensions and health dimensions of welfare in South Africa?
 - A small but growing literature
 - Common thread: the poor carry a disproportionately higher burden of disease.
 - The educated and employed are less likely to suffer from chronic diseases (Alaba and Chola, 2013).
 - Further, even for diseases that are predominant among the more affluent, such as flu and diabetes, the concentration indices are falling over time (Ataguba *et al.*, 2011).

Background

Health, socioeconomic status (SES) and inequality in South Africa

- **Complication:**
 - Not only levels matter: a closer look reveals that relative income and inequality may also play important roles.
- **Another complication:**
 - Context and perceptions have been shown to matter considerably to assessments of health, satisfaction, and material well-being.

(E.g. Sen, 2002; Singh-Manoux *et al.*, 2005; Frank, 2005; Posel and Casale, 2011.)

- **Research question:** Are measured and perceived socioeconomic rank and inequality important correlates of health in South Africa?



Los Angeles, California
REUTERS/Lucy Nicholson

Literature Review

Are measured and perceived socioeconomic rank and inequality important correlates of health?

- Large body of evidence confirms the association between SES indicators (measured and perceived) and a wide range of mortality causes.

(e.g. Adler et al, 1994; Link and Phelan, 1995; the Whitehall I & II studies, discussed in Marmot et al, 1991)
- However, critics of “the gradient” highlight the multidimensional nature of SE factors.
 - Focus has shifted to exploring the diverse pathways of association with health (Case and Deaton, 2005; Cutler et al, 2008; Deaton, 2013).
- Deaton (2013: 266) explains that “...there is no general benefit from status *in and of itself*, and ... power and money are useless against the force of mortality without weapons to fight.”
(emphasis in the original text)

Literature Review

Are measured and perceived socioeconomic rank and inequality important correlates of health?

The aim is to test three hypotheses about the relationship between material dimensions of wellbeing and health:

- Absolute income hypothesis (“the gradient”):
 - health improves with average income but at a decreasing rate – there is a ‘curvilinear’ relationship between income and health (Grossman, 1972).
- Relative income hypothesis (“the class gradient in disease”):
 - an individual’s relative (not absolute) income or social rank is related to health (Marmot *et al.*, 1991; Wilkinson, 1998; Frank, 2005).
- Income inequality hypothesis:
 - income differentials and/or a wide dispersions of income are detrimental to health (Wilkinson, 1996).

Methodology and data

- Four waves of the National Income Dynamics Study (NIDS) is a nationally representative panel survey in South Africa.
 - data on a range of both health and socioeconomic indicators is collected through a nationally-representative panel survey.

Key variables for this study:

- Self-rated health (SRH) status question (five levels):
 - “J1: How would you describe your health at present?
Would you say it is excellent, very good, good, fair, or poor?”
- Here we use *four-level SRH*
 - the bottom two categories (fair and poor) are collapsed into one.
- Socioeconomic indicators (measured SES):
 - household expenditure per capita; rank, relative deprivation, various measures of inequality

Methodology and data

The Data: NIDS

- Other control variables:
 - education (categories for ‘no education’; ‘completed primary’, ‘completed secondary’ and ‘some level of tertiary education’);
 - race: excludes Indian/Asian category due to small sample sizes;
 - marital status;
 - number of children under 7 years old living in the household;
 - geo type (urban, traditional, farms)
- Variable used for perceived rank and to generate perceived inequality measure
Five-level income comparison question (perceived SES):
M2. “How would you classify your household in terms of income, compared with other households in your village/suburb?”

Responses are ordered on five levels, which relate to average income:

1 = “Much above average income”

2 = “Above average income”

3 = “Average income”

4 = “Below average income”

5 = “Much below average income”.

Methodology

Socioeconomic status and inequality indicators

- Measured relative rank
 - Relative income / income position using a relative deprivation measure (Chakravarty et al, 1995)
 - at district level,
 - using per-capita household expenditure as a proxy:

$$dy(F) = \mu[1 - F_1(y)] - y[1 - F(y)]$$

- where μ is mean income,
 - $F_1(y)$ is the cumulative proportion of total income at the income y and
 - $F(y)$ is the cumulative proportion of the population up to the individual with income y (where the population is ranked by income)
- Measured inequality
 - Gini coefficient at district level based on per-capita household expenditure

Methodology

- Perceived inequality measure – Cowell and Flachaire (2012)
 - Measuring inequality using categorical variables presents a number of problems.
 - A metric designed for ordered categorical data by Cowell and Flachaire (2012) is be applied to the five level income comparison variable (M2).
 - For ‘downward-looking’ status, the Cowell and Flachaire metric is:

$$I_{\alpha} = \frac{1}{1-\alpha} \left[\sum_{i=1}^K p_i \left[\sum_{j=1}^i p_j \right]^{\alpha} - 1 \right] \quad \text{if } \alpha \neq 0,1$$

$$I_{\alpha} = - \sum_{i=1}^K p_i \log \left[\sum_{j=1}^i p_j \right] \quad \text{if } \alpha=0$$

where

α is the sensitivity of inequality metric to high-status inequality.

K is the number of categories

p_i is the proportion of observations in category i

Methodology

Socioeconomic status and inequality indicators

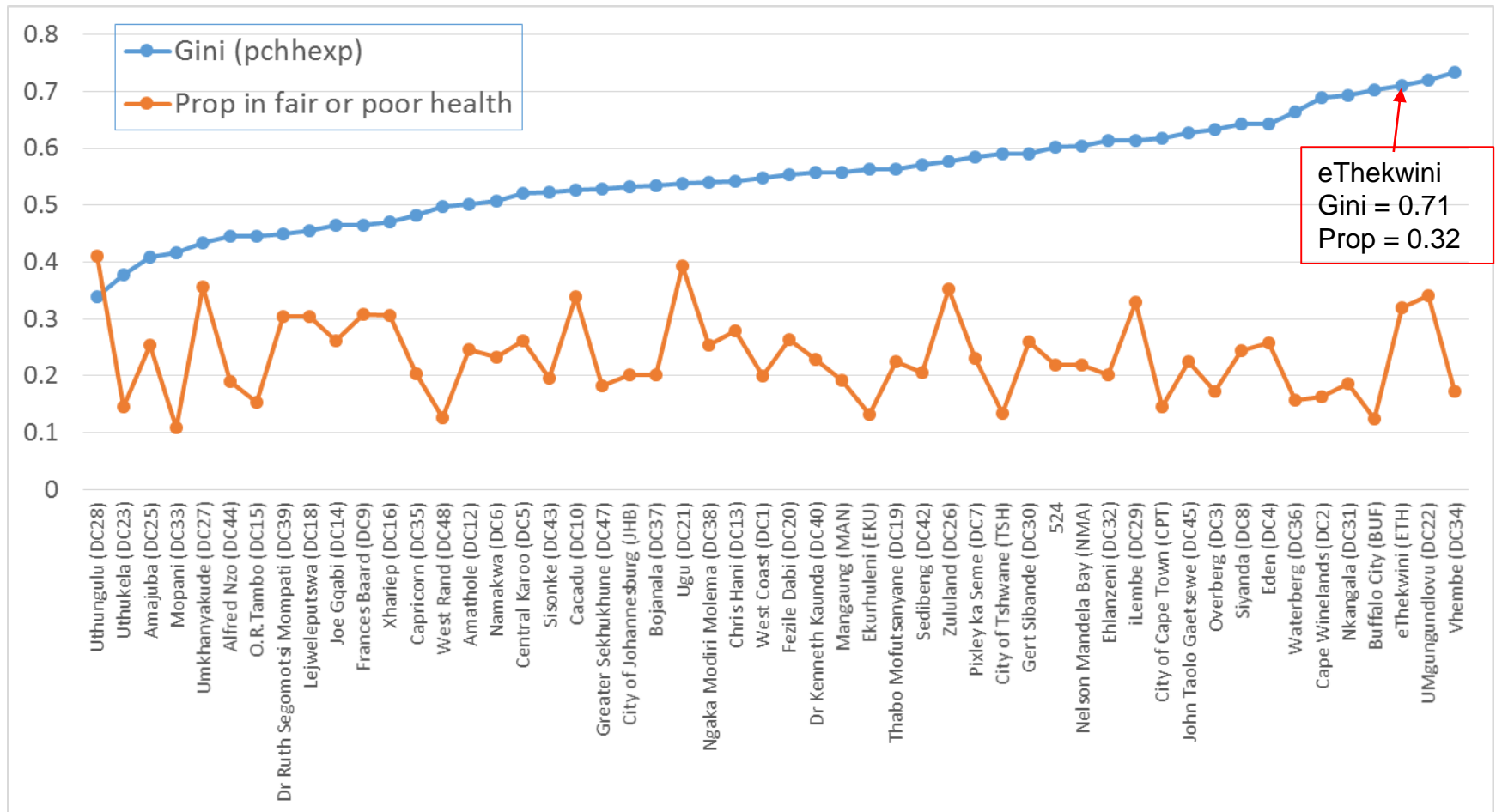
Hypothesis	Measured indicators of SES/inequality using household expenditure per capita	Perceived Indicators of SES/inequality
Absolute income hypothesis	Household expenditure per capita	
Relative income hypothesis	Relative deprivation at (municipal) district level	Perceived rank relative to average income in village (question M2)
Income inequality hypothesis	Gini coefficient at (municipal) district level based on per capita hh expenditure	Cowell and Flachaire (2012) inequality measure based on perceived rank (question M2)

Summary stats

Variable	Mean	
	Men	Women
SRH		
<i>Fair or poor</i>	0.121	0.172
<i>Good</i>	0.247	0.281
<i>V. good</i>	0.285	0.277
<i>Excellent</i>	0.347	0.269
Rel. dep.	0.483	0.530
Perc. inc.		
<i>Much above avg.</i>	0.036	0.034
<i>Above avg.</i>	0.081	0.073
<i>Average</i>	0.408	0.387
<i>Below avg.</i>	0.297	0.313
<i>Much above avg.</i>	0.179	0.193
Gini (district)	0.556	0.554
Perc. Ineq.	0.576	0.576
Log PC HH Exp.	6.631	6.437
District avg. PC HH exp.	0.127	0.121
Age	37.690	41.020

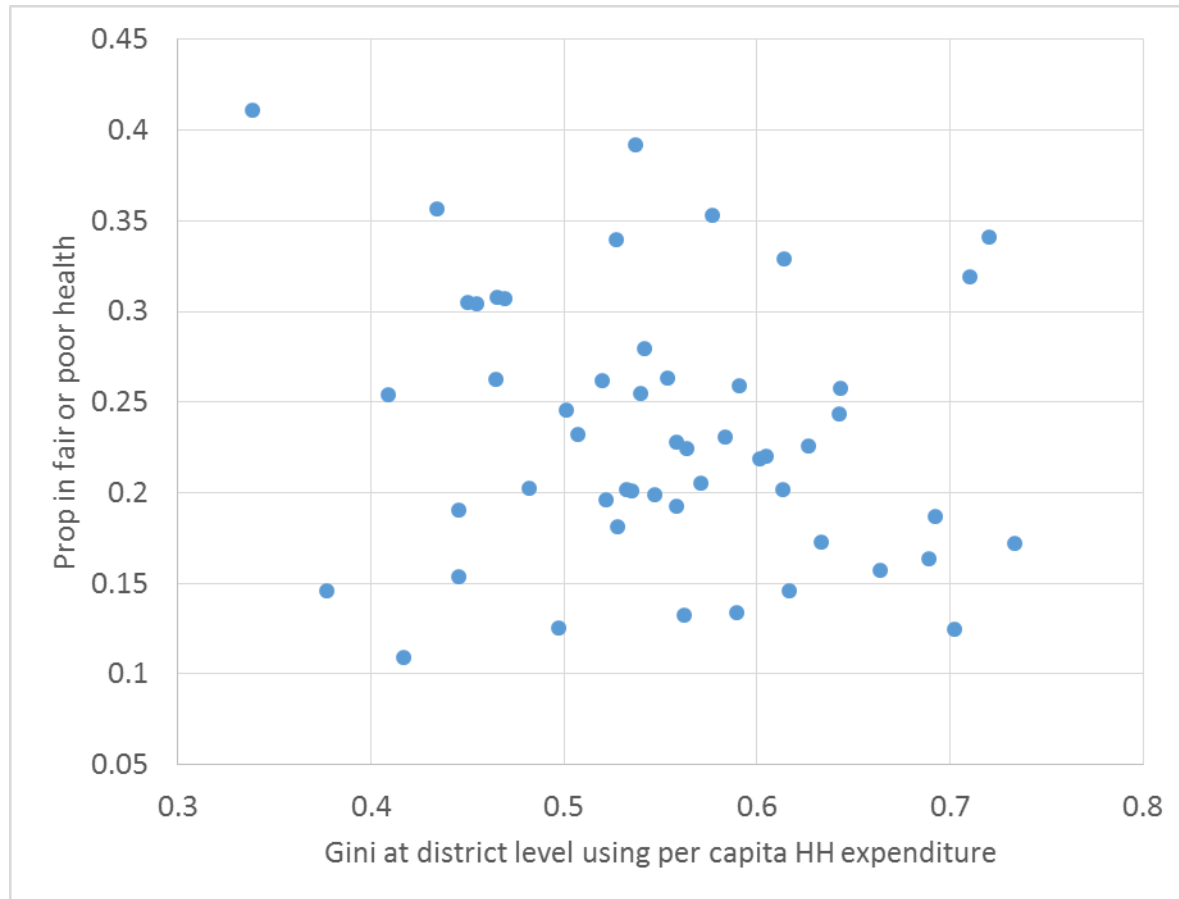
Variable	Mean	
	Men	Women
Race		
<i>African</i>	0.816	0.827
<i>Coloured</i>	0.143	0.139
<i>White</i>	0.040	0.034
Marital status		
<i>Single</i>	0.564	0.493
<i>Married/cohab.</i>	0.389	0.337
<i>Div./Sep./Wid.</i>	0.047	0.170
Children < 7 yrs	0.694	1.008
Education		
<i>None</i>	0.239	0.295
<i>Primary</i>	0.490	0.453
<i>Secondary</i>	0.251	0.233
<i>Tertiary</i>	0.020	0.019
Geo type		
<i>Urban</i>	0.525	0.490
<i>Traditional</i>	0.395	0.449
<i>Farms</i>	0.080	0.061

Gini at district level (on per capita hh expenditure) vs proportion in fair or poor health (Wave 1 - 2008)



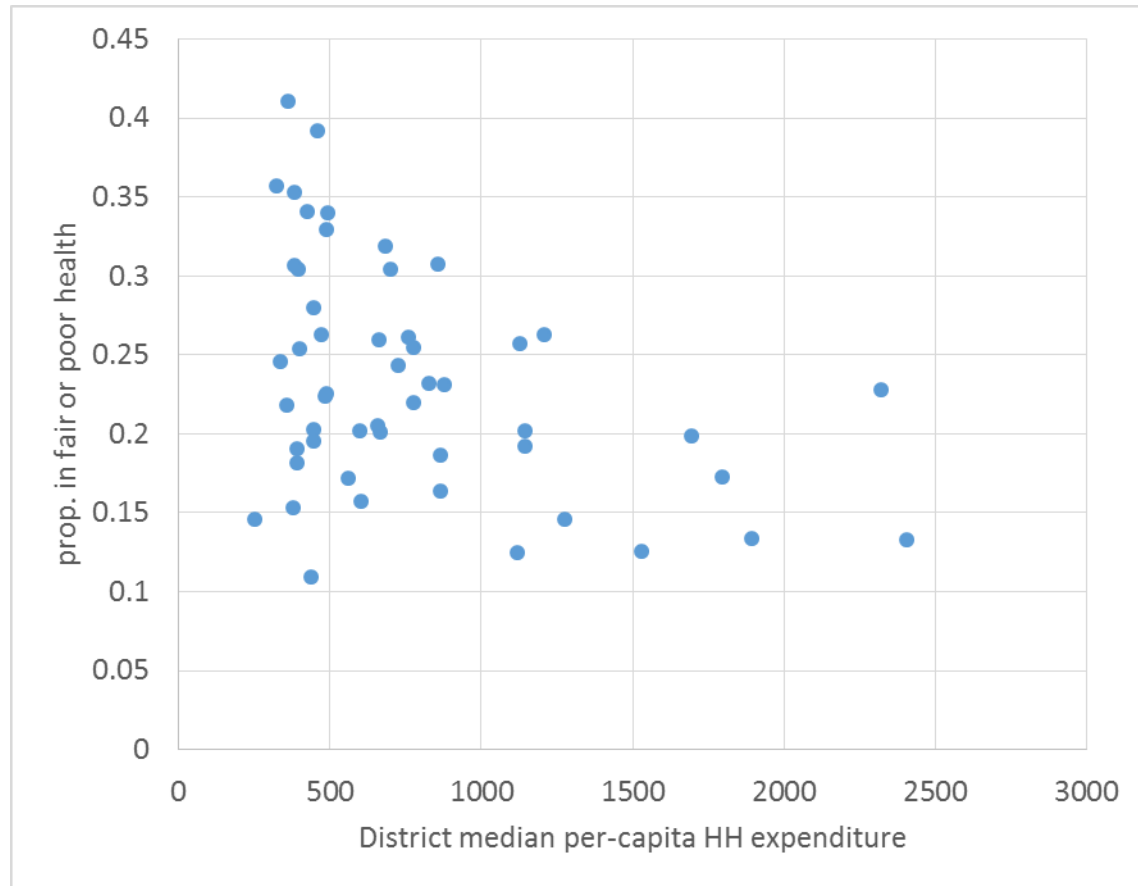
Gini at district level (on per capita hh expenditure) vs proportion in fair or poor health (Wave 1 - 2008)

Corr = -0.18646



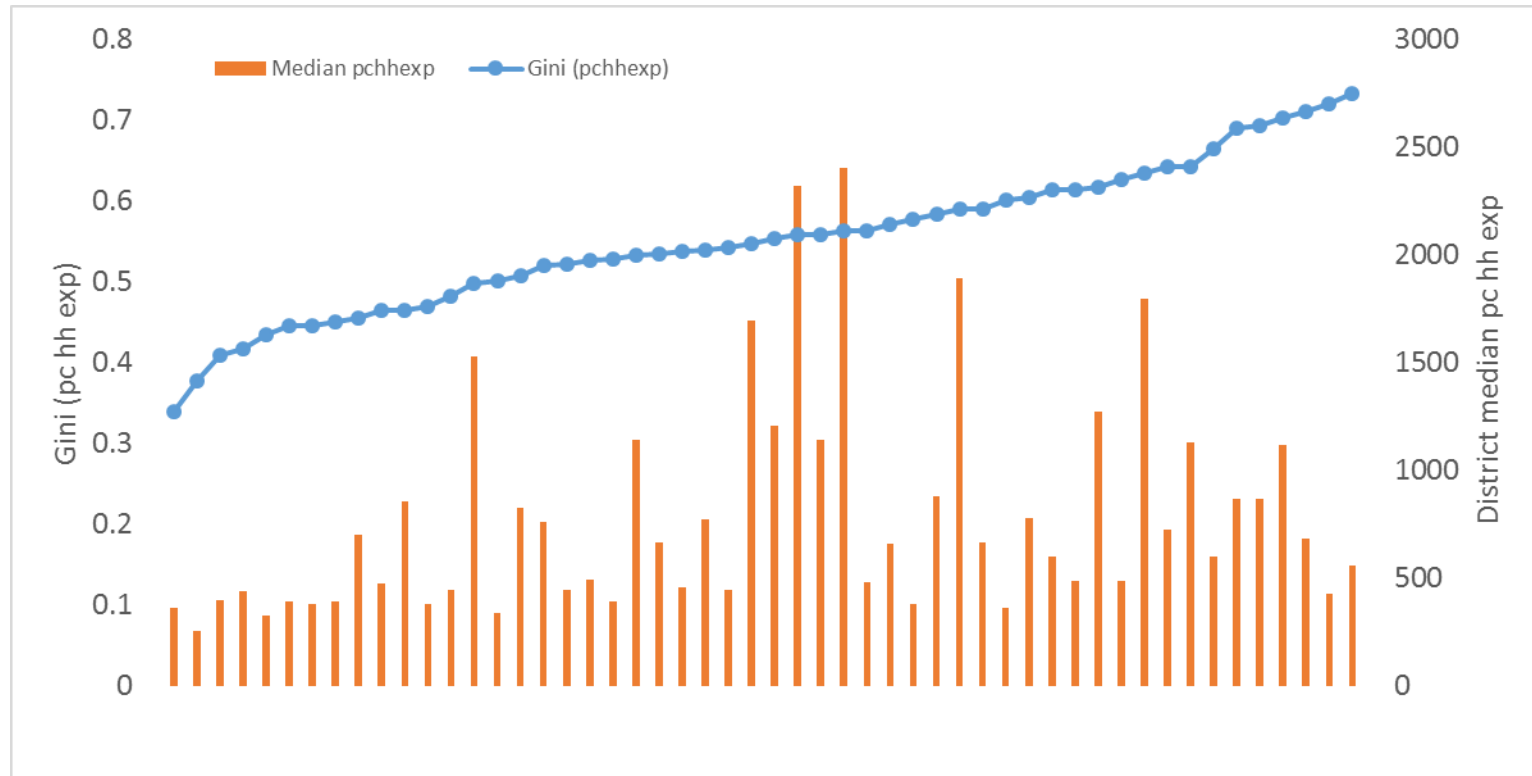
District median per capita hh expenditure vs proportion in fair or poor health

Corr = -0.403



Gini and median per capita hh expenditure at district level (Wave 1 – 2008)

Corr = 0.261



Results

Panel ordered probit models with four waves of NIDS panel

- Abbreviations
 - POP – pooled ordered probit
 - REOP – random effects ordered probit
 - FEOP – fixed effects ordered probit
- Separate models for men and women

Notes:

- FE models contain within-individual means of time-varying explanatory variables (not shown)
- All models control for: age, age squared, geo type, race, marital status, number of children in household, education (not shown)
- All contain wave dummy variables (not shown)

Socioeconomic status and inequality indicators

Hypothesis	Measured indicators of SES/inequality using household expenditure per capita	Perceived Indicators of SES/inequality
Absolute income hypothesis	Household expenditure per capita	
Relative income hypothesis	Relative deprivation at (municipal) district level	Perceived rank relative to average income in neighbourhood / village (question M2)
Income inequality hypothesis	Gini coefficient at (municipal) district level based on per capita hh expenditure	Cowell and Flachaire (2012) inequality measure based on perceived rank (question M2)

Measured relative rank (Relative deprivation)

Dependent var:	POP	POP	REOP	REOP	FEOP	FEOP
4-level SRH	Men	Women	Men	Women	Men	Women
Gini (district) PC HH expenditure	0.175	0.077	0.201	-0.018	0.317	0.014
	(0.198)	(0.156)	(0.207)	(0.172)	(0.210)	(0.175)
Relative deprivation	-0.184***	0.029	-0.138**	0.024	0.104	0.145**
	(0.065)	(0.058)	(0.065)	(0.057)	(0.084)	(0.073)
District avg expenditure	0.820***	0.473**	0.801***	0.478**	0.811***	0.488**
	(0.236)	(0.220)	(0.263)	(0.237)	(0.265)	(0.241)
PC HH expenditure	0.058	0.147*	0.046	0.079	-0.060	-0.109
	(0.074)	(0.080)	(0.066)	(0.081)	(0.090)	(0.082)
PC HH expenditure squared	0.007	-0.020*	-0.001	-0.006	0.009	0.018*
	(0.014)	(0.012)	(0.010)	(0.012)	(0.013)	(0.010)

Controls for age, age squared, race, marital status, number of children in household, education, geo type, and wave dummy variables not shown.

Perceived relative rank

Dependent var:	POP	POP	REOP	REOP	FEOP	FEOP
4-level SRH	Men	Women	Men	Women	Men	Women
Gini (district) PC HH expenditure	-0.101	0.102	-0.150	0.046	-0.039	-0.006
	(0.136)	(0.106)	(0.145)	(0.112)	(0.147)	(0.114)
Perc rank: "Above average income"	-0.112**	-0.139***	-0.115**	-0.155***	-0.124**	-0.155***
	(0.049)	(0.043)	(0.053)	(0.046)	(0.053)	(0.046)
Perc rank: "Average income"	-0.173***	-0.257***	-0.190***	-0.281***	-0.197***	-0.270***
	(0.044)	(0.038)	(0.047)	(0.041)	(0.047)	(0.041)
Perc rank: "Below average income"	-0.240***	-0.313***	-0.254***	-0.330***	-0.247***	-0.316***
	(0.045)	(0.038)	(0.048)	(0.041)	(0.048)	(0.041)
Perc rank: "Much below average income"	-0.286***	-0.331***	-0.290***	-0.346***	-0.276***	-0.332***
	(0.046)	(0.040)	(0.050)	(0.042)	(0.050)	(0.042)
District avg expenditure	0.565***	0.126	0.574***	0.116	0.743***	0.175
	(0.169)	(0.147)	(0.180)	(0.155)	(0.184)	(0.160)
PC HH expenditure (R'000s)	0.046	0.167***	0.029	0.145**	-0.114*	-0.076
	(0.044)	(0.054)	(0.047)	(0.056)	(0.068)	(0.072)
PC HH expenditure squared	-0.003	-0.028**	-0.002	-0.025**	0.010	0.002
	(0.006)	(0.011)	(0.007)	(0.012)	(0.010)	(0.015)

Controls for race, marital status, number of children in household, education, geo type, and wave dummy variables not shown.

Measured inequality

Dependent var:	POP	POP	REOP	REOP	FEOP	FEOP
4-level SRH	Men	Women	Men	Women	Men	Women
Gini (district) PC HH expenditure	0.086	0.089	0.143	-0.009	0.182	0.006
	(0.195)	(0.154)	(0.206)	(0.171)	(0.207)	(0.169)
District avg expenditure	0.688***	0.497**	0.700***	0.498**	0.132	0.198
	(0.229)	(0.211)	(0.257)	(0.230)	(0.410)	(0.349)
PC HH expenditure	0.119*	0.137*	0.085	0.071	-0.073	-0.128
	(0.066)	(0.076)	(0.062)	(0.078)	(0.088)	(0.082)
PC HH expenditure squared	-0.001	-0.019*	-0.005	-0.005	0.011	0.020**
	(0.012)	(0.011)	(0.008)	(0.011)	(0.013)	(0.010)

Controls for race, marital status, number of children in household, education, geo type, and wave dummy variables not shown.

Perceived inequality

Dependent var:	POP	POP	REOP	REOP	FEOP	FEOP
4-level SRH	Men	Women	Men	Women	Men	Women
Perceived inequality	-0.025 (0.249)	-0.444** (0.196)	0.082 (0.240)	-0.445** (0.192)	0.131 (0.239)	-0.469** (0.190)
District avg expenditure	0.723*** (0.204)	0.519*** (0.184)	0.763*** (0.227)	0.484** (0.199)	0.226 (0.385)	0.216 (0.333)
PC HH expenditure	0.120* (0.066)	0.141* (0.076)	0.086 (0.062)	0.074 (0.078)	-0.073 (0.089)	-0.125 (0.081)
PC HH expenditure squared	-0.001 (0.012)	-0.019* (0.011)	-0.005 (0.008)	-0.005 (0.011)	0.011 (0.013)	0.020* (0.010)

Controls for race, marital status, number of children in household, education, geo type, and wave dummy variables not shown.

Are measured and perceived socioeconomic rank and inequality important correlates of health?

Possible mechanisms:

- Large dispersions of income/resources:
 - cause disinvestments in human capital (Kaplan et al, 1996)
 - erode social capital (Kawachi and Kennedy, 1997, 1999)
 - lead to stressful social comparisons (Cohen et al, 1991; James, 1998);
 - psycho-social impact of low SES (Wilkinson, 1999).
 - positional goods lead to negative externalities, akin to those in arms races (Frank, 2007).
- Both measured and perceived rank and inequality may be related to health (e.g. Lorgelly and Lindley, 2008; Singh-Manoux et al, 2005).
- But not much South African evidence so far that measured inequality is linked to health.

Conclusion

Women

- Some evidence in support of:
 - the absolute income hypothesis and
 - the relative income hypothesis – but unexpected result
- Perceptions matter
 - rank and inequality perceptions have stronger ties with health compared to measured rank or inequality.
 - larger impact than for women than men
- But there is little evidence for the income inequality hypothesis.

Conclusion

Men

- No evidence for
 - absolute income hypothesis
 - relative income hypothesis (relative deprivation)
 - that is, after controlling for other factors
- Perceived inequality has a negative effect

Conclusion

Some thoughts

- Inequality of opportunity vs. inequality of outcome
 - Here, we see only inequality of outcome.
 - Districts with higher inequality may present better economic opportunities
- Inequality and poverty dynamics differ
 - Intuition about these moving in tandem is most often wrong.
 - Progress in reducing poverty likely to widen inequality in short- to medium-term.

Thank you!

Unequal Scenes (Johnny Miller)
Hout Bay / Imizamo Yethu, Cape Town



Literature Review

Are measured and perceived socioeconomic rank and inequality important correlates of health?

- The notion of “the gradient” is understood broadly to mean that the poorest suffer the worst health

(World Health Organization, 2008).

- In the Whitehall I study of British civil servants, it was referred to as “the class gradient in disease”

(Marmot et al, 1978: 244):

- Men in the lowest ranking occupations (of civil service) had 3.6 times higher mortality rate due to coronary heart disease, compared to men in the highest ranking occupations.

Literature Review

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 - lead to stressful social comparisons (Cohen et al, 1991; James, 1998);
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