



# The relationship between spatial inequality and attitudes to inequality in South Africa

David McLennan & Michael Noble  
University of Oxford

Ben Roberts, Temba Masilela & Hope Magidimisha  
Human Sciences Research Council

Are people's attitudes to inequality influenced by their exposure to inequality?

# Outline

- Key research questions
- Data preparation
- Model development
- Results
- Conclusions and policy implications

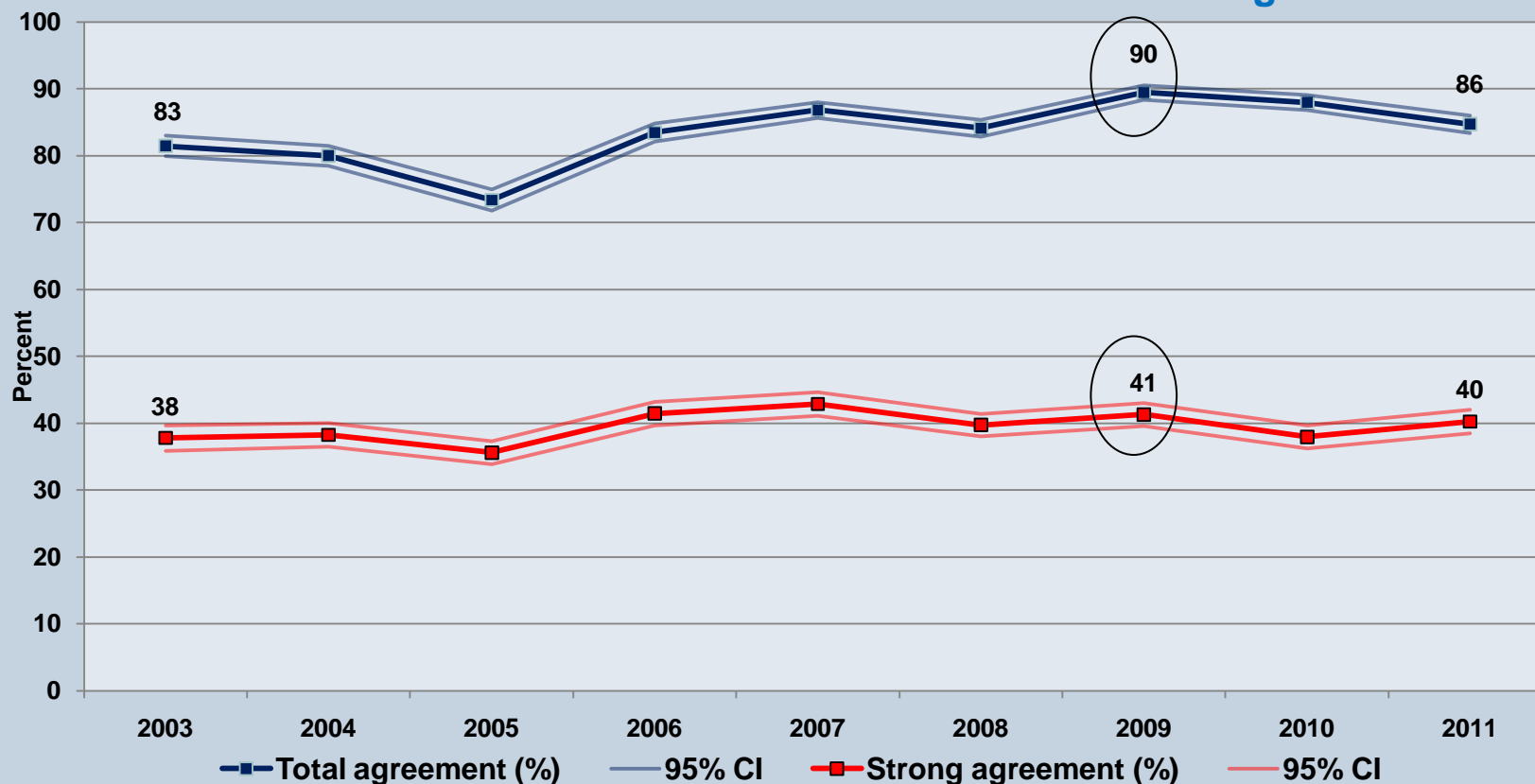
# Key research questions

- SASAS 2009, Q186: “To what extent do you agree or disagree that differences in income in South Africa are too large?”
- SASAS 2009, Q187: “To what extent do you agree or disagree that it is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes?”

What role, if any, does exposure to inequality play in shaping people’s responses to these two questions?

# Aversion to Income Inequality

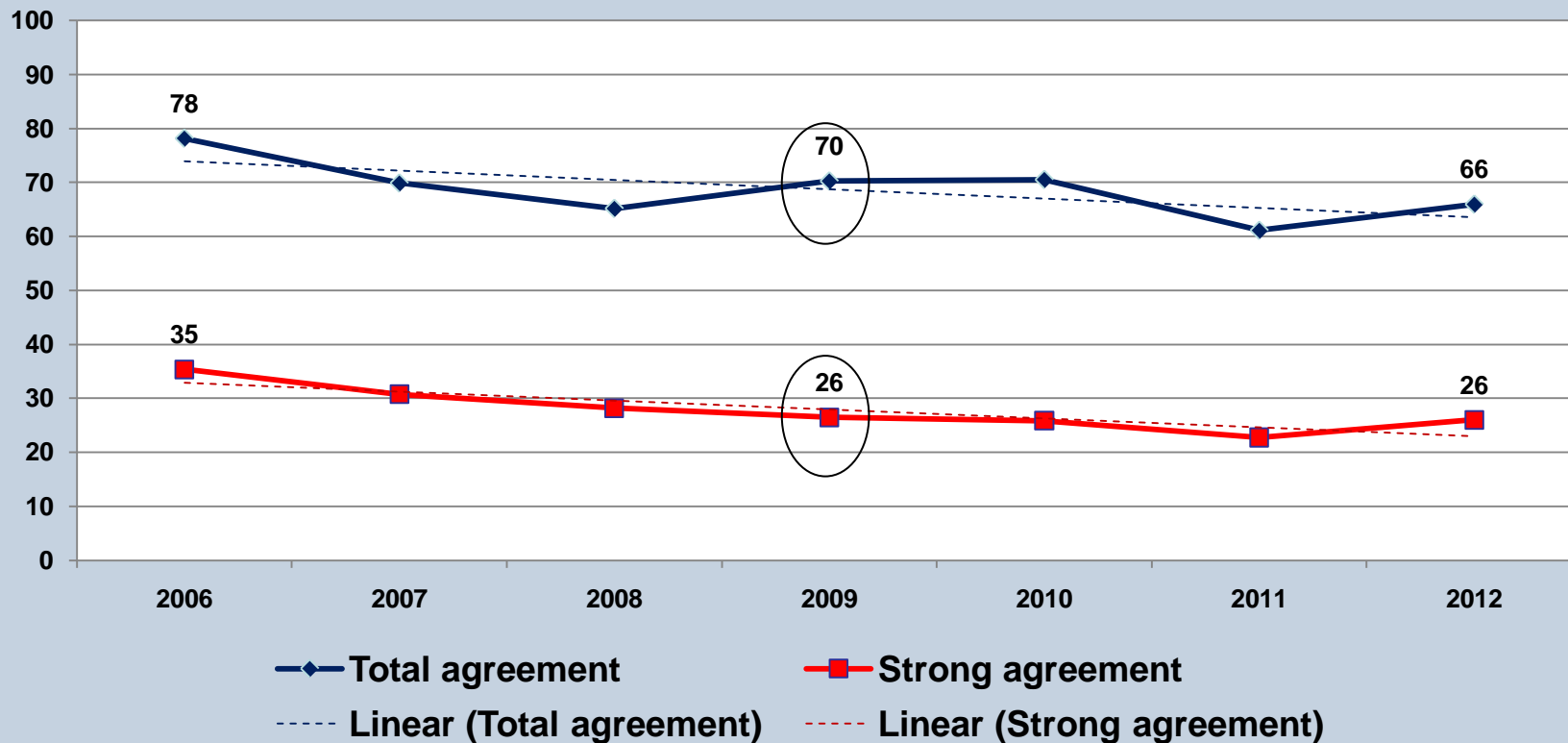
“Income differences in South Africa are too large”



Source: HSRC SASAS 2003-2011

# Preferences for Redistribution

“It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes”



Source: HSRC SASAS 2006-2012

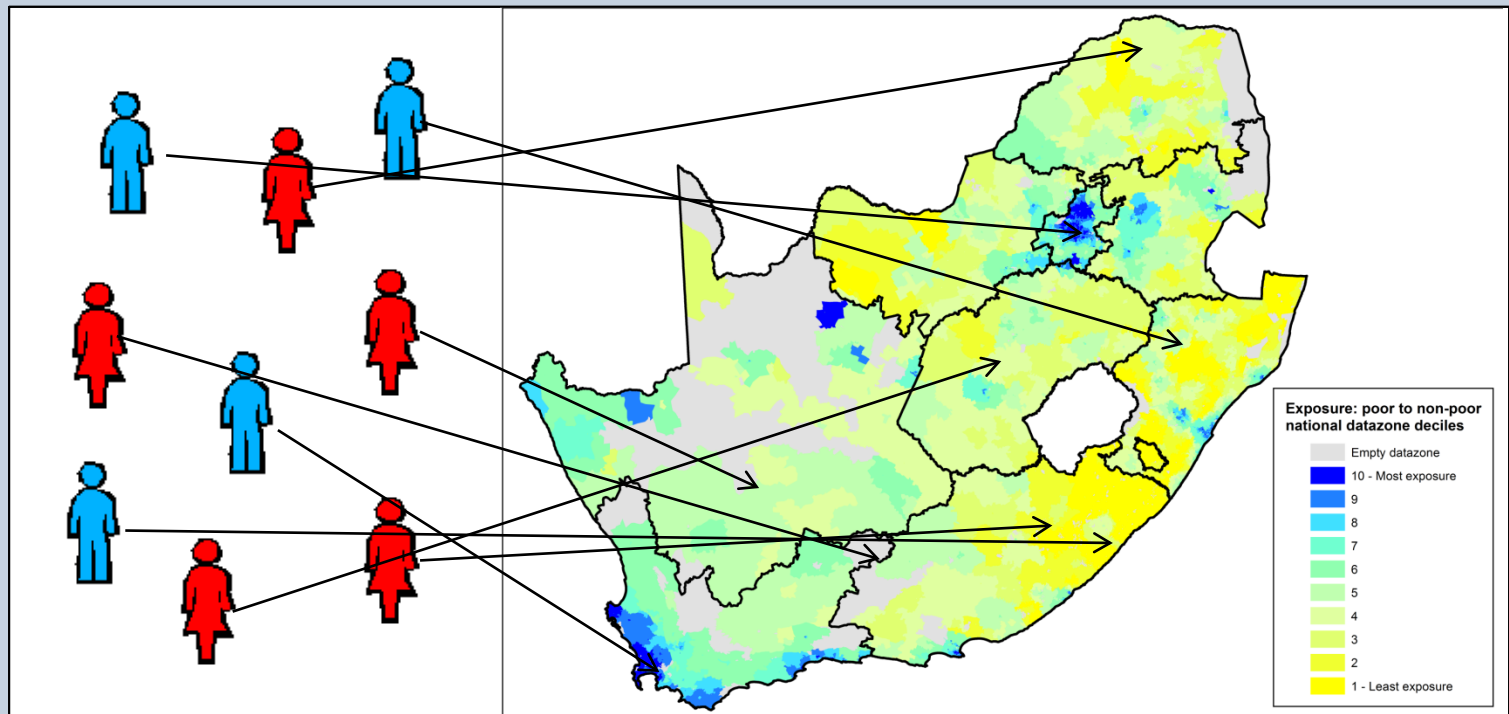
# Model matrix

		Poor/non-poor perspective	
		poor	non-poor
Dependent variable	ineqavr	Model A	Model B
	govredr	Model C	Model D

# Data preparation

- 1) Data linkage [ SASAS ← Exposure ]
- 2) Selecting control variables
- 3) Splitting linked dataset into two subsets:  
poor respondents / non-poor respondents

# Data linkage



# Selecting control variables

- SASAS 2009 questionnaire reviewed for potentially important control variables.
- A 'manageable' number of potentially important variables were identified and extracted to generate base modelling dataset.
- Variables spanned themes such as: demographics; objective personal life status; subjective personal life status and dynamics; perceptions of inter-group societal tensions; views on individualistic vs structural factors underpinning success; political views; and geographical identifiers.

	Variable name	Variable type	Variable description
→	uniqueid	----	Individual survey respondent unique identifier code
→	benchwgt	----	Composite survey weight
→	ineqavr	Ordinal	Q186. To what extent do you agree or disagree that differences in income in South Africa are too large?
→	govredr	Ordinal	Q187. To what extent do you agree or disagree that it is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes?
→	age	Numerical	Q238. Age of respondent in completed years.
→	agesq	Numerical	Derived 'Aged squared' indicator, based on Q238
→	race	Categorical	Respondent's population group (taken from 'respondent selection procedure' questions).
→	marstat	Categorical	Q239. What is your current marital status?
→	hhper	Numerical	Number of persons in this household (taken from 'respondent selection procedure' questions)
→	assetindex	Numerical	Derived 'Asset Index' indicator, based on 25 separate items (Q267-Q300): e.g. Q281. Does your household have a washing machine (in working order)?
→	edu	Categorical	Q242. What is the highest level of education that you have ever completed?
→	empl	Categorical	Q246. What is your current employment status?
→	spoor	Ordinal	Q151. Would you say that you and your family are... e.g. 'wealthy/very comfortable'
→	topbott00	Numerical	Derived indicator (transformed to 0-100 scale) based on Q198. In our society there are groups which tend to be towards the top and groups which tend to be towards the bottom. Where would you put yourself on a scale of 1 to 10, where 10 is the top and 1 the bottom?
→	ssocmobic	Ordinal	Q2. In the last 5 years, has life improved, stayed the same or gotten worse for people like you?
→	futmob	Ordinal	Q3. Do you think that life will improve, stay the same or get worse in the next 5 years for people like you?
→	jobprest	Ordinal	Q200. Please think about your present job (or your last one if you don't have one now). If you compare this job to the job your father had when you were 15, would you say that the level of status of your job is (or was)... e.g. 'Much higher than your father's'
→	classconind	Numerical	Derived 'Class conflict index' indicator, based on multiple separate items, e.g. Q195. In your opinion, in South Africa how much conflict is there between the working class and the middle class?
→	groupdis	Ordinal	Q59. Would you describe yourself as being a member of a group that is discriminated against in this country?
→	meritind	Numerical	Derived 'Merit factor index', based on multiple separate items, e.g. Q164. How important is hard work for getting ahead in life?
→	exogind	Numerical	Derived 'Exogenous factors index', based on multiple separate items, e.g. 160. How important is coming from a wealthy family for getting ahead in life?
→	q68r	Ordinal	Q168. How important is a person's race for getting ahead in life?
→	polideol	Categorical	Q235. In political matters, people talk of 'the left' and 'the right' or 'liberal' and 'conservative'. Where would you place your views on this scale?
→	anc	Ordinal	Derived 'ANC voter' indicator based on Q231. If there were a national election tomorrow, for which party would you vote?
→	geotype	Categorical	Statistics South Africa Census 2001 enumeration area Geotype classification
→	dz_code	----	Datazone unique identifier code
→	mun_name	----	Municipality name
→	prov	----	Province name
→	exposure_of_poor	Ratio	aLDPxyi* exposure to inequality measure developed above in Chapter 2
→	exposure_of_rich	Ratio	aLDPxyi* exposure to inequality measure developed above in Chapter 2
→	inc	Ratio	Proportion of datazone population that is classified as being deprived on the 'Income and Material Deprivation Domain' of the SAIMD 2001 at datazone level

# Splitting SASAS into poor / non-poor subsets

- The exposure measures utilise the dichotomous classification of ‘poor’ / ‘non-poor’ as defined for the Income and Material Deprivation Domain of the South African Index of Multiple Deprivation 2001 at Datazone level (SAIMD 2001) (Noble et al, 2009).
- According to the SAIMD 2001, across South Africa as a whole, 73% of the population is classified as deprived (i.e. ‘poor’) on the Income and Material Deprivation Domain, with the remaining 27% of the population regarded as being not deprived (i.e. ‘non-poor’) on this domain.
- The ‘exposure\_of\_poor’ explanatory variable is only relevant for ‘poor’ SASAS respondents.
- The ‘exposure\_of\_rich’ explanatory variable is only relevant for ‘non-poor’ SASAS respondents.

# Splitting SASAS into poor / non-poor subsets

- SASAS 2009 contained 3156 respondent cases.
- Modelling requires split of 73% 'poor' and 27% 'non-poor'.
- SASAS does contain a question on income, but many missing cases mean this is not a reliable variable.
- SASAS contains a series of questions relating to material asset ownership → derived 'assetindex' enabling respondents to be ranked from 'lowest asset ownership' to 'highest asset ownership'.
- 73% lowest asset ownership → 'poor' SASAS subgroup (2110 cases, based upon cumulative benchweight values).
- 27% highest asset ownership → 'non-poor' SASAS subgroup (1036 cases, based upon cumulative benchweight values).

# Model development

- The two dependent variables ('ineqavr' and 'govredr') are both on 5-point ordinal scales.
- Cumulative link ordered logit regression models required.
- Tests showed that multilevel models required due to the geographical stratification employed in the SASAS sampling method.
- All models developed and implemented in the R statistical software package using the 'clmm' function from the ordinal library.

# Model development

- Four models produced:
- Each model started with the full complement of (model-appropriate) explanatory variables listed above.
- Multilevel component consisted of three nested levels:
  - Individual respondent
  - Datazone
  - Local municipality
- Ordinal and categorical variables treated as factors, while numeric and ratio variables were standardised by subtracting the mean and dividing by the standard deviation.

		Poor/non-poor perspective	
		poor	non-poor
Dependent variable	ineqavr	Model A	Model B
	govredr	Model C	Model D

# Model development

Greenland, S. (1989) 'Modelling and variable selection in epidemiologic analysis', *American Journal of Public Health*, Vol. 79, No. 3, pp 340-349.

- Start with full complement of explanatory variables in base modelling file.
- Sequentially drop one variable at a time based upon the likelihood ratio (LR) test p-value until each variable remaining in the model had an LR p-value  $< 0.05$ .
  - Except: the explanatory variables relating to experience of inequality ('exposure\_of\_poor' or 'exposure\_of\_rich') and neighbourhood poverty rate ('inc') and the interaction term between them would be retained in the model regardless of LR test p-value.
- Sequentially add interaction terms containing exposure or poverty rate if the associated LR test p-value for the interaction was  $< 0.05$ .

# Model development – final specifications

```
Model_A <- clmm(ineqvavr ~ exposP + log_incS + (log_incS:exposP) + edu + hhperS + spoor +  
  groupdis + ssocmobc + jobprest + futmob + classconindS + meritindS + exogindS + q168rS +  
  anc + prov + (exposP:ssocmobc) + (exposP:futmob) + (log_incS:hhperS) +  
  (1|mun_name/dz_code), weights = 2120*wt, data = poor_i, Hess = T, na.action = na.omit)
```

```
Model_B <- clmm(ineqvavr ~ exposR + log_incS + (log_incS:exposR) + race + edu + empl + spoor +  
  groupdis + ssocmobc + jobprest + classconindS + topbott100S + prov + (exposR:race) +  
  (exposR:spoor) + (log_incS:ssocmobc) + (1|mun_name/dz_code), weights = 1036*wt,  
  data = rich_i, Hess = T, na.action = na.omit)
```

```
Model_C <- clmm(govredr ~ exposP + log_incS + (log_incS:exposP) + empl + spoor + groupdis +  
  jobprest + classconindS + meritindS + exogindS + q168rS + polideol + ineqavrS +  
  (exposP:empl) + (exposP:spoor) + (1 | mun_name/dz_code), weights = 2120*wt,  
  data = poor_g, Hess = T, na.action = na.omit)
```

```
Model_D <- clmm(govredr ~ exposR + log_incS + (log_incS:exposR) + marstat + ssocmobc +  
  futmob + anc + polideol + assetindexS + ineqavrS + (exposR:polideol) +  
  (1|mun_name/dz_code), weights = 1036*wt, data = rich_g, Hess = T, na.action = na.omit)
```

Note: the dependent and independent variables are described above (with the adapted notation of suffixing continuous variables with an upper-case 'S' to signify that the variable has been standardised, and renaming the variable 'exposure\_of\_poor' to 'exposP' and the variable 'exposure\_of\_rich' to 'exposR').

# Results

The focus in this presentation is on Models A & C (i.e. attitudes towards inequality amongst the 'poor' subgroup of the population).

The accompanying project research report contains the full series of results from all four models.

# Results: Model A

## *Inequality aversion amongst the poor subgroup*

Parameter	Estimate	Std. Error	z value	P(> z )	Sig.	OR	OR 95% CI lower	OR 95% CI upper	Group LR test pval
<b>(A) Respondent's personal and household characteristics</b>									
<i>Educational attainment (Ref=No schooling; N=165)</i> 0.0000									
Primary (N=472)	0.62	0.23	2.64	0.0084	**	1.85	1.17	2.93	
Grades 8-11 or equivalent (N=853)	1.06	0.23	4.70	0.0000	***	2.89	1.86	4.51	
Matric or equivalent (N=547)	0.71	0.23	3.03	0.0024	**	2.03	1.28	3.20	
Tertiary (N=83)	0.61	0.34	1.81	0.0710	.	1.84	0.95	3.58	
Household size (i.e. number of persons in the household)	-0.07	0.05	-1.54	0.1200	.	0.93	0.85	1.02	
ANC voter (N=1440)	-0.42	0.14	-3.05	0.0023	**	0.66	0.50	0.86	
<b>(B) Respondent's attitudes and views</b>									
<i>Self-rated poverty status (Ref='Wealthy/very comfortable'; N=78)</i> 0.0170									
Reasonably comfortable (N=317)	0.06	0.30	0.21	0.8300	.	1.07	0.59	1.92	
Just getting by (N=882)	0.26	0.28	0.93	0.3500	.	1.30	0.75	2.23	
Poor (N=597)	0.34	0.29	1.17	0.2400	.	1.40	0.80	2.47	
Very poor (N=246)	0.80	0.32	2.47	0.0140	*	2.23	1.18	4.20	
<i>Perceived mobility history (Ref='Upward mobility'; N=697)</i> 0.0037									
No mobility (N=863)	-0.09	0.12	-0.69	0.4900	.	0.92	0.72	1.17	
Downward mobility (N=560)	0.34	0.14	2.42	0.0160	*	1.40	1.07	1.85	
<i>Expected future social mobility over next 5 years (Ref='Improve'; N=995)</i> 0.0700									
Stay the same (N=552)	-0.19	0.13	-1.46	0.1400	.	0.83	0.65	1.07	
Worsen (N=425)	0.18	0.15	1.21	0.2200	.	1.20	0.89	1.62	
Uncertain (N=148)	0.25	0.23	1.08	0.2800	.	1.28	0.82	2.00	
Higher job prestige than father (N=496)	0.37	0.12	3.03	0.0025	**	1.45	1.14	1.84	
Perceived class conflict index	0.11	0.06	1.96	0.0500	.	1.12	1.00	1.25	
Perceived group discrimination (N=425)	0.35	0.13	2.69	0.0072	**	1.42	1.10	1.84	
Perceived importance of 'merit' factors for getting ahead in life	0.45	0.06	7.99	0.0000	***	1.56	1.40	1.74	
Perceived importance of 'exogenous' factors for getting ahead in life	0.15	0.06	2.50	0.0120	*	1.16	1.03	1.31	
Perceived importance of 'race' for getting ahead in life	-0.18	0.06	-3.10	0.0019	**	0.83	0.74	0.94	
<b>(C) Geographical location variables</b>									
<i>Province of residence (Ref='Western Cape'; N=249)</i> 0.0087									
Eastern Cape (N=338)	-0.46	0.43	-1.07	0.2800	.	0.63	0.27	1.46	
Northern Cape (N=160)	0.11	0.50	0.21	0.8300	.	1.11	0.42	2.95	
Free State (N=141)	0.45	0.48	0.92	0.3500	.	1.56	0.61	4.04	
KwaZulu Natal (N=380)	0.30	0.40	0.75	0.4500	.	1.35	0.61	2.98	
North West (N=117)	-0.21	0.45	-0.47	0.6400	.	0.81	0.34	1.96	
Gauteng (N=278)	-0.29	0.39	-0.75	0.4500	.	0.75	0.35	1.61	
Mpumalanga (N=191)	0.67	0.45	1.49	0.1400	.	1.95	0.81	4.70	
Limpopo (N=266)	0.69	0.44	1.55	0.1200	.	1.99	0.83	4.76	
<b>(D) Neighbourhood level poverty and exposure variables and interactions</b>									
Neighbourhood poverty rate	0.12	0.11	1.13	0.2600	.	1.13	0.91	1.40	
Exposure to inequality	0.25	0.17	1.50	0.1300	.	1.29	0.93	1.79	
Neighbourhood poverty rate * Exposure to inequality	0.01	0.08	0.09	0.9300	.	1.01	0.86	1.17	
Neighbourhood poverty rate * Household size	-0.13	0.05	-2.58	0.0099	**	0.87	0.79	0.97	
<i>Exposure to inequality * Perceived social mobility history (Ref='Upward mobility')</i> 0.0120									
Exposure * No mobility	-0.09	0.12	-0.76	0.4500	.	0.91	0.72	1.15	
Exposure * Downward mobility	-0.38	0.13	-2.84	0.0044	**	0.68	0.52	0.89	
<i>Exposure to inequality * Expected future social mobility (Ref='Improve')</i> 0.0037									
Exposure * Stay the same	0.13	0.13	1.00	0.3200	.	1.13	0.89	1.45	
Exposure * Worsen	0.04	0.14	0.31	0.7600	.	1.05	0.79	1.39	
Exposure * Uncertain	-0.65	0.20	-3.18	0.0014	**	0.52	0.35	0.78	

Respondent's personal and household characteristics

Respondent's attitudes and views

Geographical location

Neighbourhood-level poverty and exposure variables, plus relevant interactions

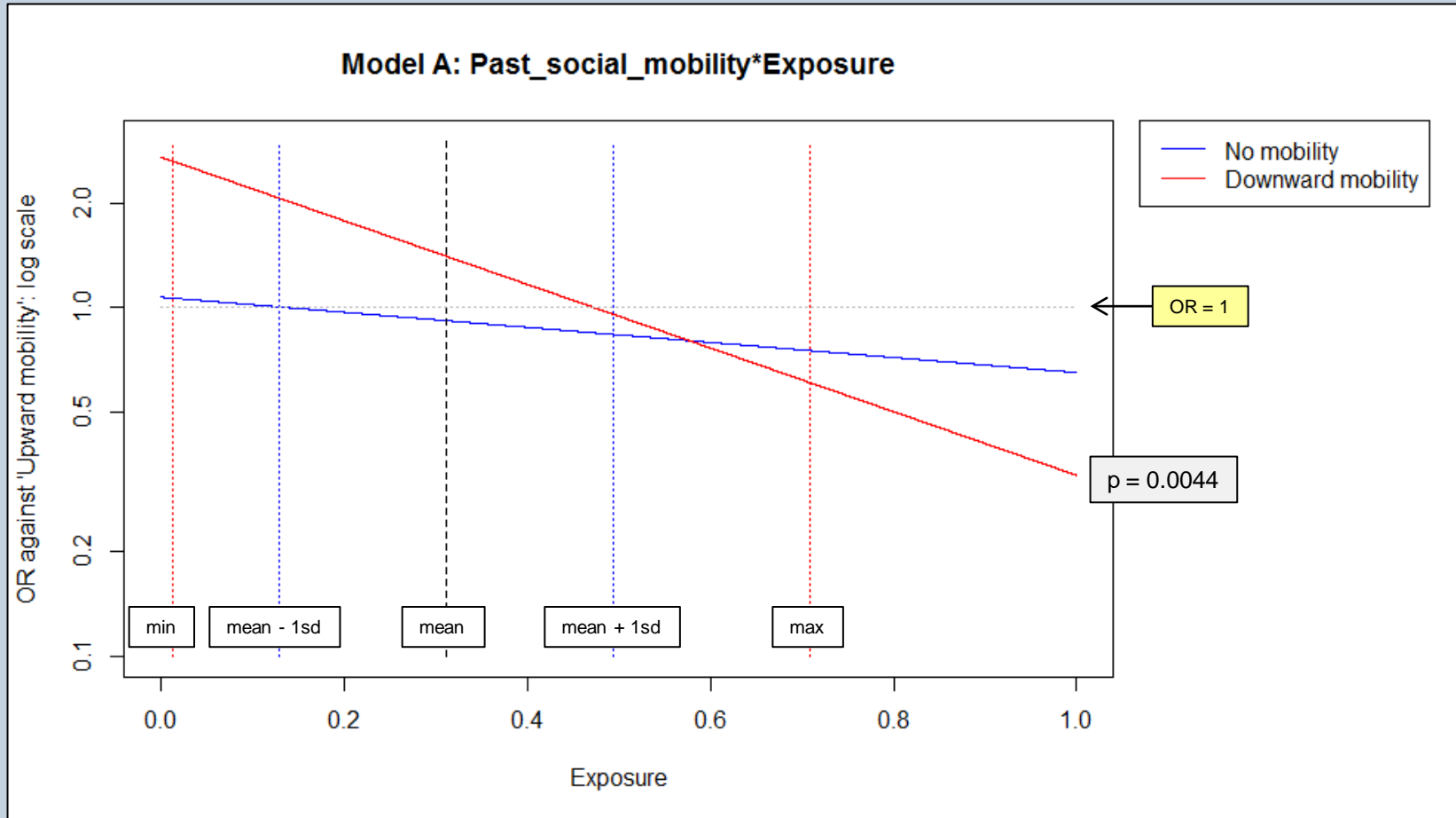
# Model A: neighbourhood-level poverty and exposure variables, plus relevant interactions

Parameter	Estimate	Std. Error	z value	Pr(> z )	Sig.	OR	OR 95% CI lower	OR 95% CI upper	Group LR test pval
<b>(D) Neighbourhood level poverty and exposure variables and interactions</b>									
Neighbourhood poverty rate	0.12	0.11	1.13	0.2600		1.13	0.91	1.40	
Exposure to inequality	0.25	0.17	1.50	0.1300		1.29	0.93	1.79	
Neighbourhood poverty rate * Exposure to inequality	0.01	0.08	0.09	0.9300		1.01	0.86	1.17	
Neighbourhood poverty rate * Household size	-0.13	0.05	-2.58	0.0099	**	0.87	0.79	0.97	
<i>Exposure to inequality * Perceived social mobility history (Ref='Upward mobility')</i>									0.0120
Exposure * No mobility	-0.09	0.12	-0.76	0.4500		0.91	0.72	1.15	
Exposure * Downward mobility	-0.38	0.13	-2.84	0.0044	**	0.68	0.52	0.89	
<i>Exposure to inequality * Expected future social mobility (Ref='Improve')</i>									0.0037
Exposure * Stay the same	0.13	0.13	1.00	0.3200		1.13	0.89	1.45	
Exposure * Worsen	0.04	0.14	0.31	0.7600		1.05	0.79	1.39	
Exposure * Uncertain	-0.65	0.20	-3.18	0.0014	**	0.52	0.35	0.78	

\* significant at  $p < 0.05$ ; \*\* significant at  $p < 0.01$ ; \*\*\* significant at  $p < 0.001$

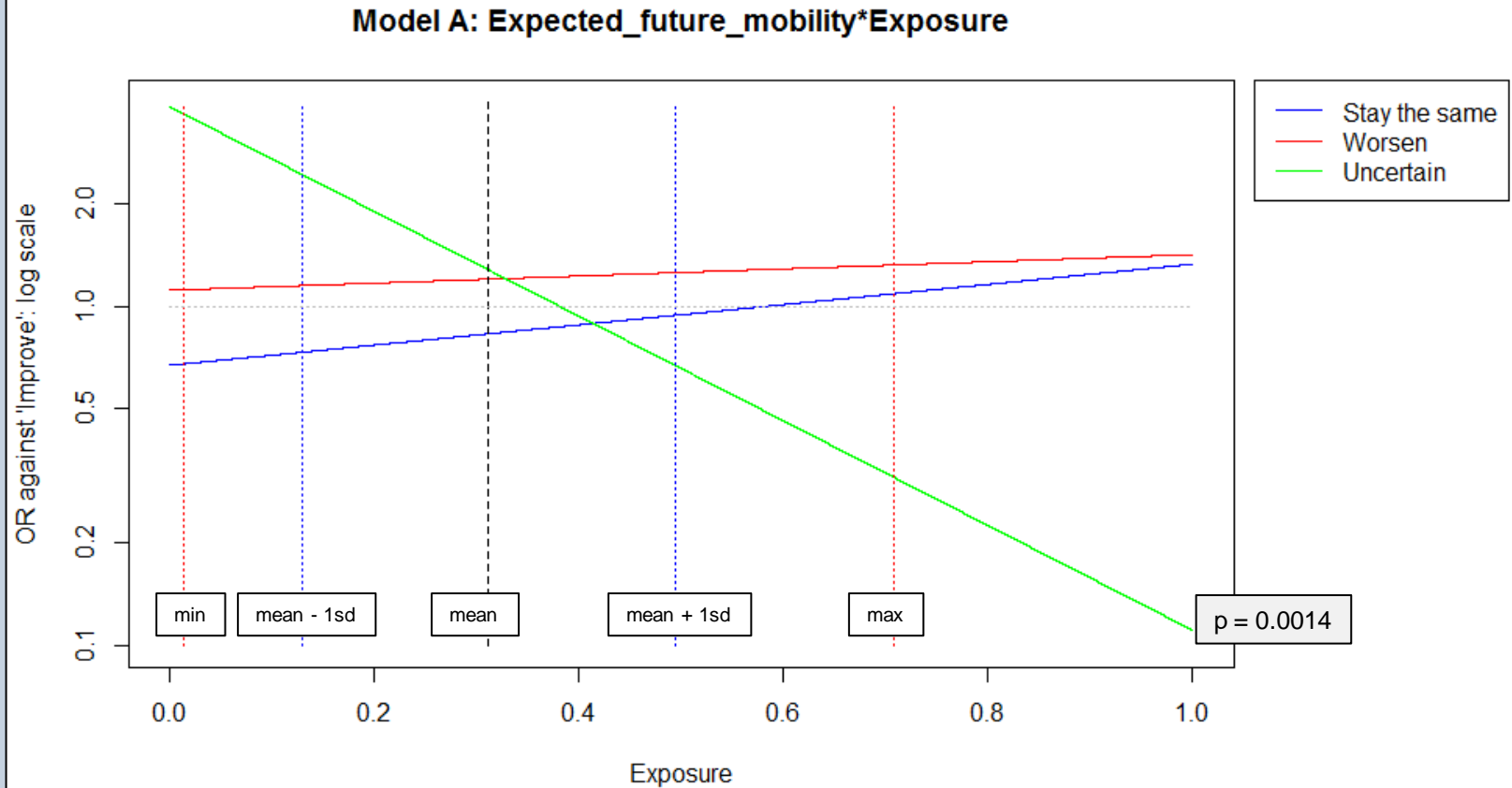
# Model A: inequality aversion, poor subgroup

*Exposure to inequality \* Perceived social mobility history*



# Model A: inequality aversion, poor subgroup

*Exposure to inequality \* Expected future social mobility*



# Summary: Model A

## Model A: inequality aversion from perspective of the 'poor'

- In Model A, the only two statistically significant interaction terms shown in the figures both exhibit negative associations with exposure, meaning that, as exposure increases, respondents in these two groups show progressively less aversion to income inequality than the respective reference groups.

# Results: Model C

Agreement amongst the poor subgroup that the government has a responsibility for income redistribution

Parameter	Estimate	Std. Error	z value	Pr(> z )	Sig.	OR	OR 95% CI lower	OR 95% CI upper	Group LR test pval
<b>(A) Respondent's personal and household characteristics</b>									
<i>Employment status (Ref=Employed full time; N=498)</i> 0.0024									
Employed part time (N=150)	0.64	0.22	2.86	0.0042	**	1.90	1.22	2.94	
Unemployed, seeking work (N=688)	-0.07	0.15	-0.48	0.6300		0.93	0.70	1.25	
Unemployed not looking for work (N=230)	0.54	0.20	2.68	0.0073	**	1.71	1.16	2.53	
Pensioner (N=213)	0.15	0.20	0.76	0.4500		1.17	0.79	1.73	
Student/learner (N=201)	0.24	0.19	1.26	0.2100		1.27	0.88	1.85	
Permanently sick/disabled (N=47)	-0.11	0.36	-0.29	0.7700		0.90	0.44	1.84	
Other employment status (N=93)	-0.05	0.28	-0.18	0.8500		0.95	0.55	1.65	
<b>(B) Respondent's attitudes and views</b>									
<i>Inequality aversion</i> 0.0000									
Left-right ideology (Ref=Liberal; N=801)									0.0000
Moderate (N=567)	-0.47	0.12	-3.82	0.0001	***	0.62	0.49	0.79	
Conservative (N=316)	-0.80	0.15	-5.26	0.0000	***	0.45	0.33	0.60	
Uncertain (N=436)	-0.29	0.15	-1.94	0.0520		0.75	0.56	1.00	
<i>Self-rated poverty status (Ref=Wealthy/very comfortable; N=78)</i> 0.0001									
Reasonably comfortable (N=317)	-0.46	0.31	-1.50	0.1300		0.63	0.35	1.15	
Just getting by (N=882)	-0.83	0.29	-2.91	0.0036	**	0.43	0.25	0.76	
Poor (N=597)	-0.63	0.29	-2.15	0.0310	*	0.53	0.30	0.95	
Very poor (N=246)	-0.11	0.33	-0.33	0.7400		0.90	0.47	1.71	
Higher job prestige than father (N=496)	-0.29	0.12	-2.43	0.0150	*	0.75	0.59	0.94	
Perceived class conflict index	0.19	0.06	3.37	0.0008	***	1.21	1.08	1.35	
Perceived group discrimination (N=425)	0.30	0.13	2.37	0.0180	*	1.35	1.05	1.73	
Perceived importance of 'merit' factors for getting ahead in life	0.20	0.05	3.72	0.0002	***	1.22	1.10	1.35	
Perceived importance of 'exogenous' factors for getting ahead in life	0.17	0.06	3.12	0.0018	**	1.19	1.07	1.32	
Perceived importance of 'race' for getting ahead in life	-0.13	0.05	-2.39	0.0170	*	0.88	0.79	0.98	
<b>(C) Geographical location variables</b>									
N/A									
<b>(D) Neighbourhood level poverty and exposure variables and interactions</b>									
<i>Neighbourhood poverty rate</i>									
Neighbourhood poverty rate	0.01	0.11	0.12	0.9000		1.01	0.82	1.25	
Exposure to inequality	-0.49	0.29	-1.69	0.0920		0.61	0.35	1.08	
Neighbourhood poverty rate * Exposure to inequality	-0.11	0.08	-1.38	0.1700		0.90	0.77	1.05	
<i>Exposure * Employment status (Ref=Employed full time)</i> 0.0045									
Exposure * Employed part time	0.75	0.22	3.32	0.0009	***	2.11	1.36	3.27	
Exposure * Unemployed, seeking work	0.12	0.15	0.84	0.4000		1.13	0.85	1.51	
Exposure * Unemployed not looking for work	0.40	0.19	2.07	0.0390	*	1.50	1.02	2.19	
Exposure * Pensioner	0.18	0.19	0.93	0.3500		1.20	0.82	1.74	
Exposure * Student/learner	0.18	0.18	0.96	0.3300		1.19	0.83	1.70	
Exposure * Permanently sick/disabled	0.90	0.39	2.32	0.0200	*	2.45	1.15	5.23	
Exposure * Other employment status	0.67	0.28	2.45	0.0140	*	1.96	1.14	3.37	
<i>Exposure * Self-rated poverty status (Ref=Wealthy/very comfortable)</i> 0.0020									
Exposure * Reasonably comfortable	0.02	0.28	0.08	0.9300		1.02	0.59	1.78	
Exposure * Just getting by	0.58	0.26	2.19	0.0290	*	1.78	1.06	2.99	
Exposure * Poor	0.32	0.27	1.19	0.2300		1.38	0.81	2.33	
Exposure * Very poor	0.36	0.30	1.19	0.2300		1.44	0.79	2.60	

Respondent's personal and household characteristics

Respondent's attitudes and views

Neighbourhood-level poverty and exposure variables, plus relevant interactions

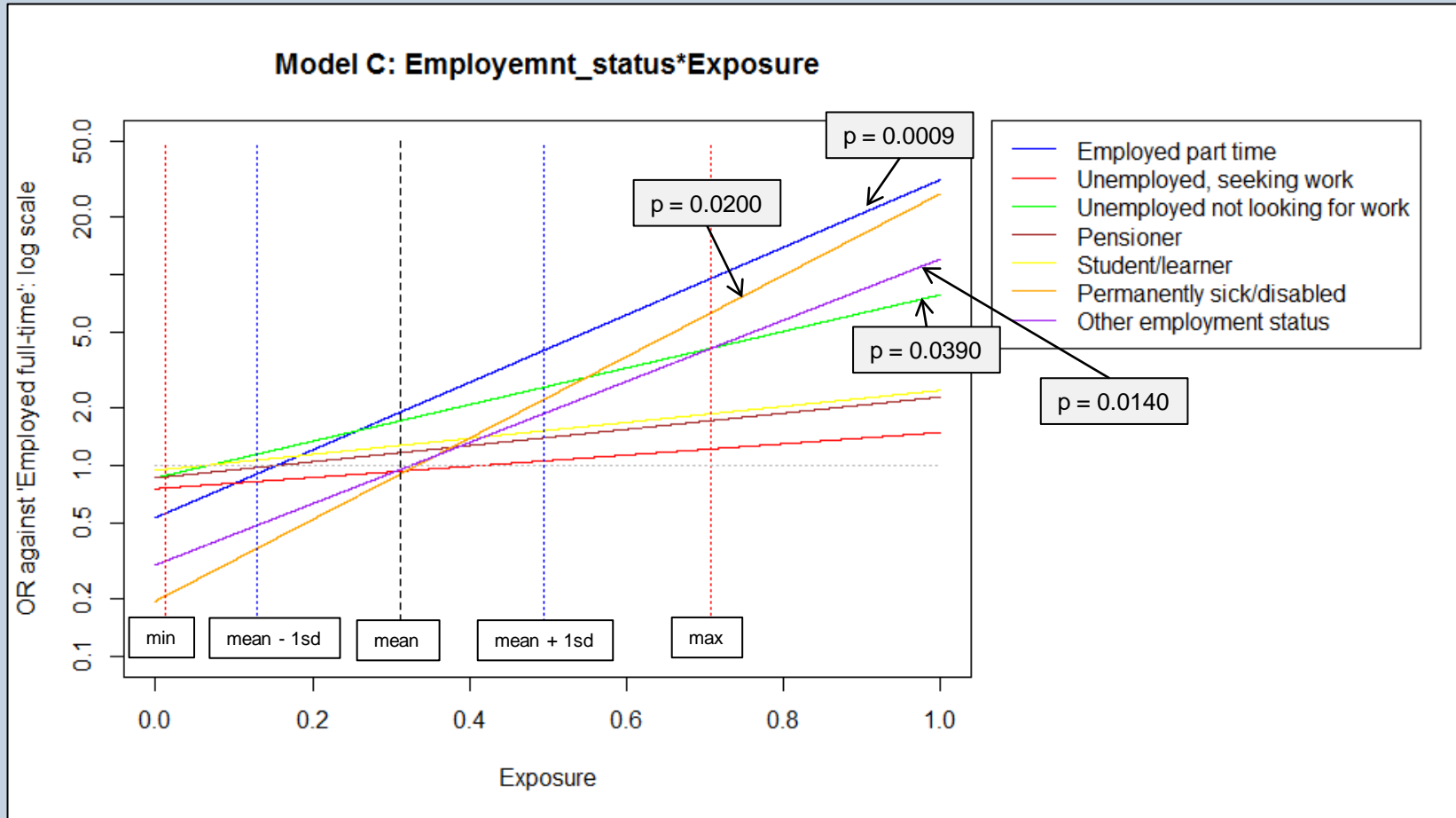
# Model C: neighbourhood-level poverty and exposure variables, plus relevant interactions

Parameter	Estimate	Std. Error	z value	Pr(> z )	Sig.	OR	OR 95% CI lower	OR 95% CI upper	Group LR test pval
<b>(D) Neighbourhood level poverty and exposure variables and interactions</b>									
Neighbourhood poverty rate	0.01	0.11	0.12	0.9000		1.01	0.82	1.25	
Exposure to inequality	-0.49	0.29	-1.69	0.0920	.	0.61	0.35	1.08	
Neighbourhood poverty rate * Exposure to inequality	-0.11	0.08	-1.38	0.1700		0.90	0.77	1.05	
<i>Exposure * Employment status (Ref='Employed full time')</i>									0.0045
Exposure * Employed part time	0.75	0.22	3.32	0.0009	***	2.11	1.36	3.27	
Exposure * Unemployed, seeking work	0.12	0.15	0.84	0.4000		1.13	0.85	1.51	
Exposure * Unemployed not looking for work	0.40	0.19	2.07	0.0390	*	1.50	1.02	2.19	
Exposure * Pensioner	0.18	0.19	0.93	0.3500		1.20	0.82	1.74	
Exposure * Student/learner	0.18	0.18	0.96	0.3300		1.19	0.83	1.70	
Exposure * Permanently sick/disabled	0.90	0.39	2.32	0.0200	*	2.45	1.15	5.23	
Exposure * Other employment status	0.67	0.28	2.45	0.0140	*	1.96	1.14	3.37	
<i>Exposure * Self-rated poverty status (Ref='Wealthy/very comfortable')</i>									0.0020
Exposure * Reasonably comfortable	0.02	0.28	0.08	0.9300		1.02	0.59	1.78	
Exposure * Just getting by	0.58	0.26	2.19	0.0290	*	1.78	1.06	2.99	
Exposure * Poor	0.32	0.27	1.19	0.2300		1.38	0.81	2.33	
Exposure * Very poor	0.36	0.30	1.19	0.2300		1.44	0.79	2.60	

\* significant at  $p < 0.05$ ; \*\* significant at  $p < 0.01$ ; \*\*\* significant at  $p < 0.001$

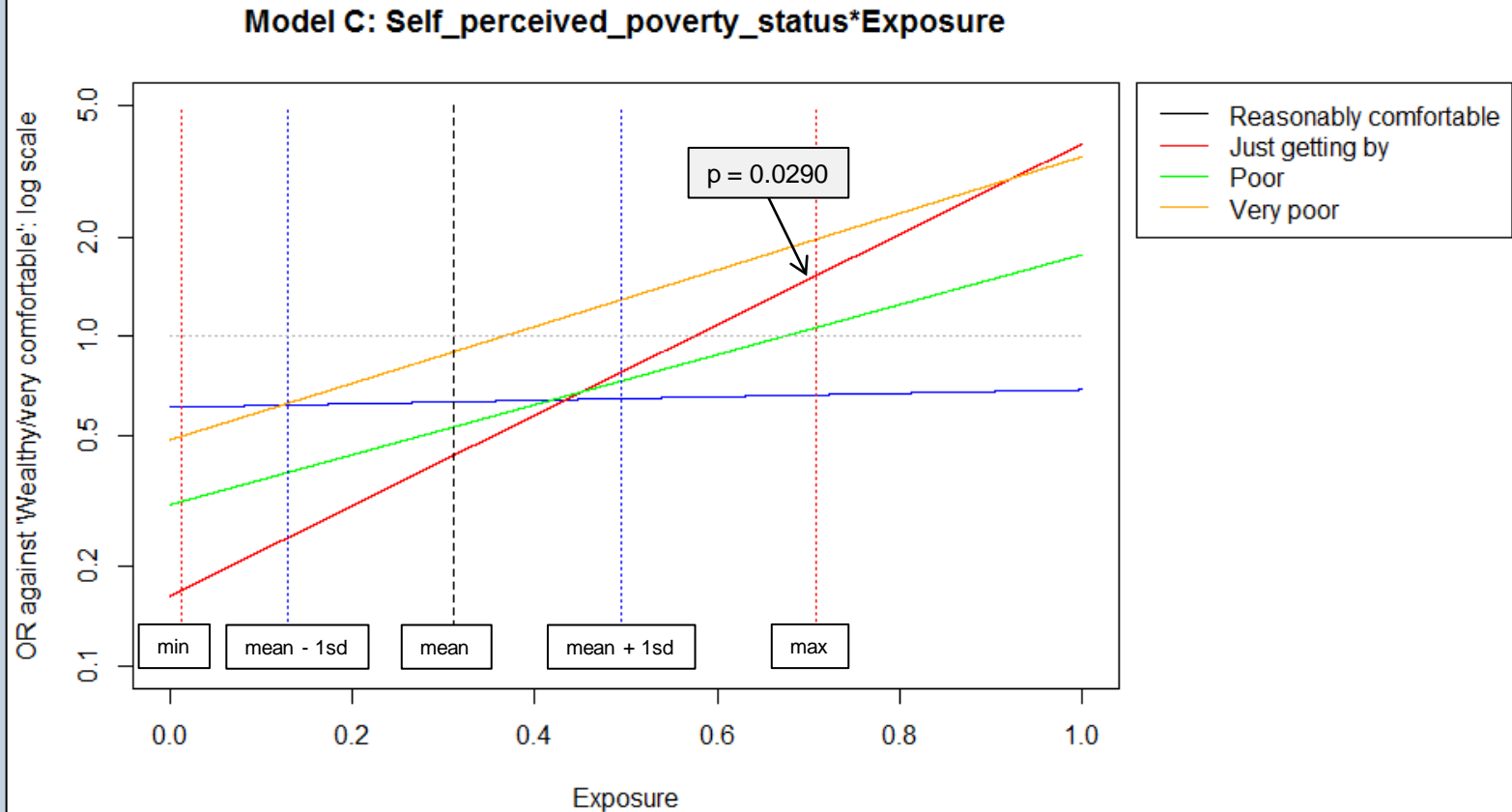
# Model C: government redistribution, poor subgroup

*Exposure to inequality \* Employment status*



# Model C: government redistribution, poor subgroup

*Exposure to inequality \* Self-perceived poverty status*



# Summary: Model C

## Model C: support for government role in income redistribution, from perspective of the 'poor'

- In Model C, all five of the **statistically significant interactions** shown in the figures exhibit **positive associations with exposure**, meaning that, as exposure increases, respondents of these five groups become progressively more supportive of government's role in income redistribution relative to the reference categories.
- However, all these five interactions suggest that **at the lowest actually observed exposure level, people in these groups are less supportive than the respective reference group** (although the odds ratios for some of the employment status groups are only slightly below 1 at the low-exposure extreme).

# Conclusions

- Statistical models designed to test whether exposure to socioeconomic inequality affects attitudes to inequality and options for redress.
- Basic hypothesis: exposure to inequality -> heightened awareness of inequality -> increased sense of social injustice -> greater aversion to income inequality & stronger belief that the government has a responsibility to reduce inequality through income redistribution.
- Models demonstrated that exposure to inequality *does* seem to exert some effect on people's attitudes to inequality and options for redress, but the effects are primarily observable through the interaction of exposure with other explanatory variables.
- Limitation of the data: there is generally a strong consensus amongst survey respondents that inequality is too high and that the government has a responsibility to reduce it through income distribution. Therefore not a great deal of discrimination between response categories on our two dependent variables.
- Recommendation: consider including additional new SASAS questions to provide greater discrimination between response categories.

# Conclusions

- ESRC Pathfinder Inequality project: experimental in conception and fairly focused in scope
- Apart from **contributing to a better understanding of inequality** based on the development of new small area inequality measures and an in-depth examination of attitudes towards in inequality in the country...
- ...the study is an **example of the utility of combining different types of data** to produce new insights about the intersection of inequality, space and social beliefs.
- Clearly a **need for further experimentation of this type** to produce policy-relevant evidence on the interplay between spatial inequality and citizen attitudes, as well as other aspects of social life and its dynamics.



David McLennan (Oxford):

[david.mclennan@spi.ox.ac.uk](mailto:david.mclennan@spi.ox.ac.uk)

Ben Roberts (HSRC):

[BRoberts@hsrc.ac.za](mailto:BRoberts@hsrc.ac.za)

# Results: Model B

## Inequality aversion amongst the non-poor subgroup

Parameter	Estimate	Std. Error	z value	Pr(> z )	Sig.	OR	OR 95% CI lower	OR 95% CI upper	Group LR test pval
<b>(A) Respondent's personal and household characteristics</b>									
<i>Educational attainment (Ref=No schooling; N=8)</i> 0.0099									
Primary (N=33)	-0.56	1.86	-0.30	0.7600		0.57	0.02	21.89	
Grades 8-11 or equivalent (N=246)	-0.84	1.80	-0.47	0.6400		0.43	0.01	14.57	
Matric or equivalent (N=389)	-0.50	1.79	-0.28	0.7800		0.61	0.02	20.14	
Tertiary (N=360)	0.02	1.79	0.01	0.9900		1.02	0.03	34.33	
<i>Employment status (Ref=Employed full time; N=483)</i> 0.0000									
Employed part time (N=52)	-0.93	0.34	-2.73	0.0063	**	0.40	0.20	0.77	
Unemployed, seeking work (N=111)	-0.20	0.28	-0.70	0.4800		0.82	0.47	1.43	
Unemployed not looking for work (N=106)	1.16	0.30	3.83	0.0001	***	3.20	1.76	5.80	
Pensioner (N=113)	0.29	0.30	0.99	0.3200		1.34	0.75	2.41	
Student/learner (N=127)	-0.39	0.24	-1.62	0.1100		0.68	0.42	1.09	
Permanently sick/disabled (N=12)	0.58	0.98	0.59	0.5500		1.78	0.26	12.08	
Other employment status (N=32)	-0.38	0.38	-1.01	0.3100		0.69	0.33	1.43	
<i>Population Group (Ref=Black; N=263)</i> 0.0002									
Coloured (N=194)	0.26	0.30	0.87	0.3800		1.29	0.72	2.31	
Indian (N=250)	0.01	0.35	0.02	0.9800		1.01	0.51	1.99	
White (N=329)	-0.83	0.23	-3.57	0.0004	***	0.43	0.28	0.69	
<b>(B) Respondent's attitudes and views</b>									
<i>Self-rated poverty status (ref=Wealthy/very comfortable; N=231)</i> 0.0000									
Reasonably comfortable (N=505)	0.40	0.20	2.03	0.0420	*	1.49	1.01	2.18	
Just getting by (N=276)	0.95	0.25	3.85	0.0001	***	2.57	1.59	4.16	
Poor (N=22)	1.88	0.50	3.77	0.0002	***	6.57	2.47	17.48	
Very poor (N=2)	-3.69	3.65	-1.01	0.3100		0.03	0.00	32.06	
<i>Subjective social class position</i> 0.0170									
Perceived social mobility history (Ref=Upward mobility; N=430)	0.38	0.10	3.80	0.0002	***	1.46	1.20	1.78	
No mobility (N=366)	0.38	0.18	2.15	0.0310	*	1.46	1.03	2.07	
Downward mobility (N=240)	0.56	0.21	2.62	0.0088	**	1.75	1.15	2.67	
Higher job prestige than father (N=391)	0.34	0.17	2.00	0.0450	*	1.40	1.01	1.95	
Perceived class conflict index	0.47	0.08	5.72	0.0000	***	1.59	1.36	1.87	
Perceived group discrimination (N=269)	0.52	0.20	2.58	0.0098	**	1.68	1.13	2.48	
<b>(C) Geographical location variables</b>									
<i>Province of residence (Ref=Western Cape; N=180)</i> 0.0001									
Eastern Cape (N=91)	-0.72	0.49	-1.48	0.1400		0.49	0.19	1.26	
Northern Cape (N=75)	-0.43	0.57	-0.77	0.4400		0.65	0.21	1.97	
Free State (N=96)	-0.94	0.52	-1.81	0.0700	.	0.39	0.14	1.08	
KwaZulu Natal (N=237)	0.54	0.41	1.33	0.1800		1.72	0.77	3.82	
North West (N=10)	-0.01	0.82	-0.01	0.9900		0.99	0.20	4.91	
Gauteng (N=269)	-0.78	0.33	-2.39	0.0170	*	0.46	0.24	0.87	
Mpumalanga (N=46)	1.70	0.60	2.82	0.0048	**	5.48	1.68	17.88	
Limpopo (N=32)	-0.95	0.70	-1.36	0.1700		0.39	0.10	1.52	
<b>(D) Neighbourhood level poverty and exposure variables and interactions</b>									
<i>Neighbourhood poverty rate</i> 0.0025									
Neighbourhood poverty rate	-0.32	0.14	-2.21	0.0270	*	0.73	0.55	0.97	
Exposure to inequality	0.27	0.23	1.20	0.2300		1.31	0.84	2.04	
Neighbourhood poverty rate * Exposure to inequality	-0.08	0.07	-1.14	0.2600		0.93	0.81	1.06	
<i>Neighbourhood poverty rate * Perceived social mobility history (Ref=Upward mobility)</i> 0.0025									
Neighbourhood poverty rate * No mobility	0.04	0.15	0.26	0.8000		1.04	0.77	1.40	
Neighbourhood poverty rate * Downward mobility	0.61	0.19	3.22	0.0013	**	1.84	1.27	2.67	
<i>Exposure * Population Group (Ref=Black)</i> 0.0052									
Exposure * Coloured	0.03	0.24	0.12	0.9000		1.03	0.64	1.66	
Exposure * Indian	-0.74	0.37	-2.01	0.0440	*	0.48	0.23	0.98	
Exposure * White	-0.61	0.20	-3.01	0.0026	**	0.54	0.37	0.81	
<i>Exposure * Self-rated poverty status (ref=Wealthy/very comfortable)</i> 0.0001									
Exposure * Reasonably comfortable	0.15	0.17	0.85	0.4000		1.16	0.83	1.62	
Exposure * Just getting by	0.72	0.21	3.41	0.0006	***	2.05	1.36	3.10	
Exposure * Poor	-1.56	0.61	-2.56	0.0100	*	0.21	0.06	0.69	
Exposure * Very poor	-3.00	3.05	-0.98	0.3300		0.05	0.00	19.69	

Respondent's personal and household characteristics

Respondent's attitudes and views

Geographical location

Neighbourhood-level poverty and exposure variables, plus relevant interactions

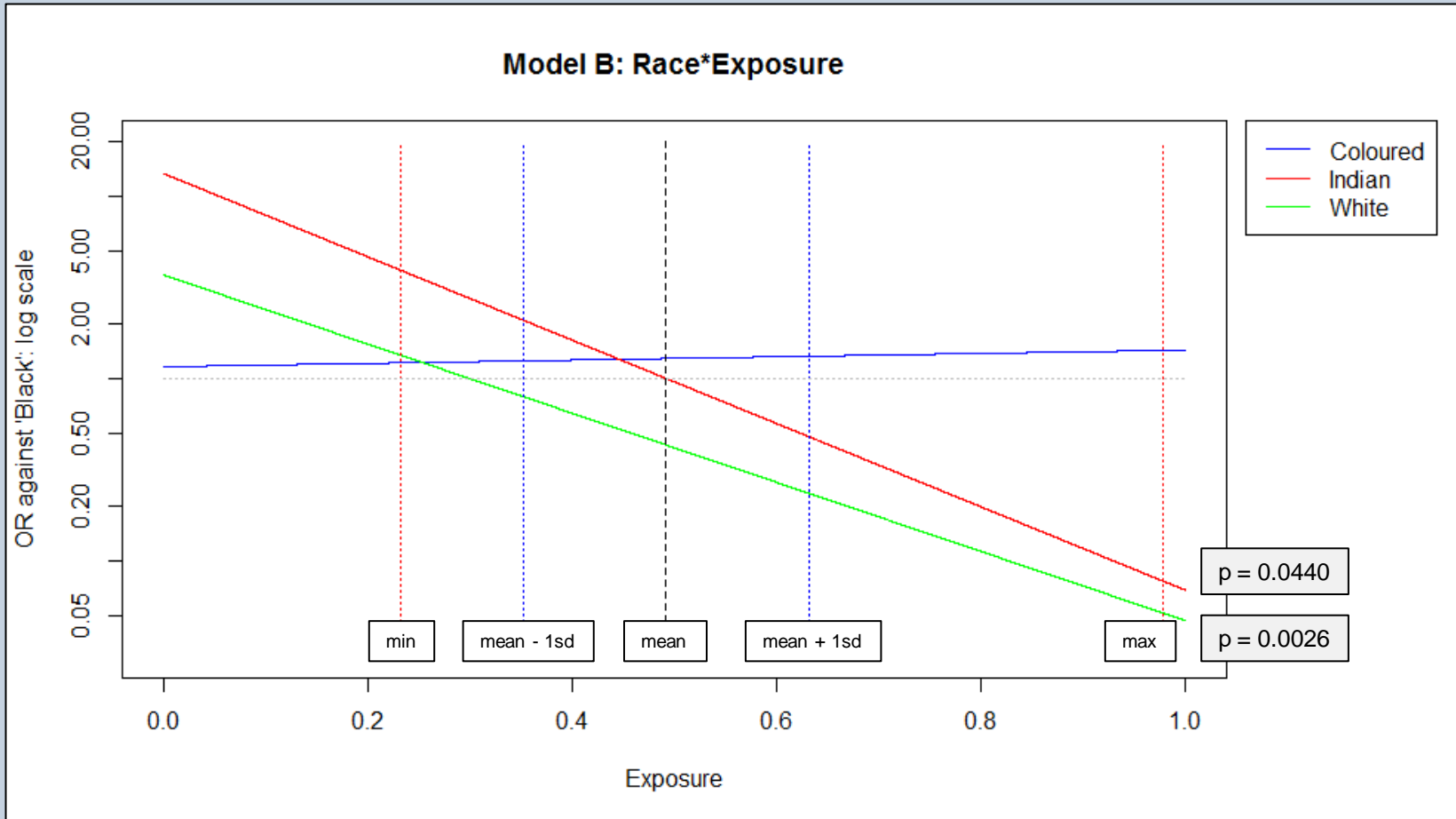
# Model B: neighbourhood-level poverty and exposure variables, plus relevant interactions

Parameter	Estimate	Std. Error	z value	Pr(> z )	Sig.	OR	OR 95% CI lower	OR 95% CI upper	Group LR test pval
<b>(D) Neighbourhood level poverty and exposure variables and interactions</b>									
Neighbourhood poverty rate	-0.32	0.14	-2.21	0.0270	*	0.73	0.55	0.97	
Exposure to inequality	0.27	0.23	1.20	0.2300		1.31	0.84	2.04	
Neighbourhood poverty rate * Exposure to inequality	-0.08	0.07	-1.14	0.2600		0.93	0.81	1.06	
<i>Neighbourhood poverty rate * Perceived social mobility history (Ref='Upward mobility')</i>									0.0025
Neighbourhood poverty rate * No mobility	0.04	0.15	0.26	0.8000		1.04	0.77	1.40	
Neighbourhood poverty rate * Downward mobility	0.61	0.19	3.22	0.0013	**	1.84	1.27	2.67	
<i>Exposure * Population Group (Ref='Black')</i>									0.0052
Exposure * Coloured	0.03	0.24	0.12	0.9000		1.03	0.64	1.66	
Exposure * Indian	-0.74	0.37	-2.01	0.0440	*	0.48	0.23	0.98	
Exposure * White	-0.61	0.20	-3.01	0.0026	**	0.54	0.37	0.81	
<i>Exposure * Self-rated poverty status (ref='Wealthy/very comfortable')</i>									0.0001
Exposure * Reasonably comfortable	0.15	0.17	0.85	0.4000		1.16	0.83	1.62	
Exposure * Just getting by	0.72	0.21	3.41	0.0006	***	2.05	1.36	3.10	
Exposure * Poor	-1.56	0.61	-2.56	0.0100	*	0.21	0.06	0.69	
Exposure * Very poor	-3.00	3.05	-0.98	0.3300		0.05	0.00	19.69	

\* significant at  $p < 0.05$ ; \*\* significant at  $p < 0.01$ ; \*\*\* significant at  $p < 0.001$

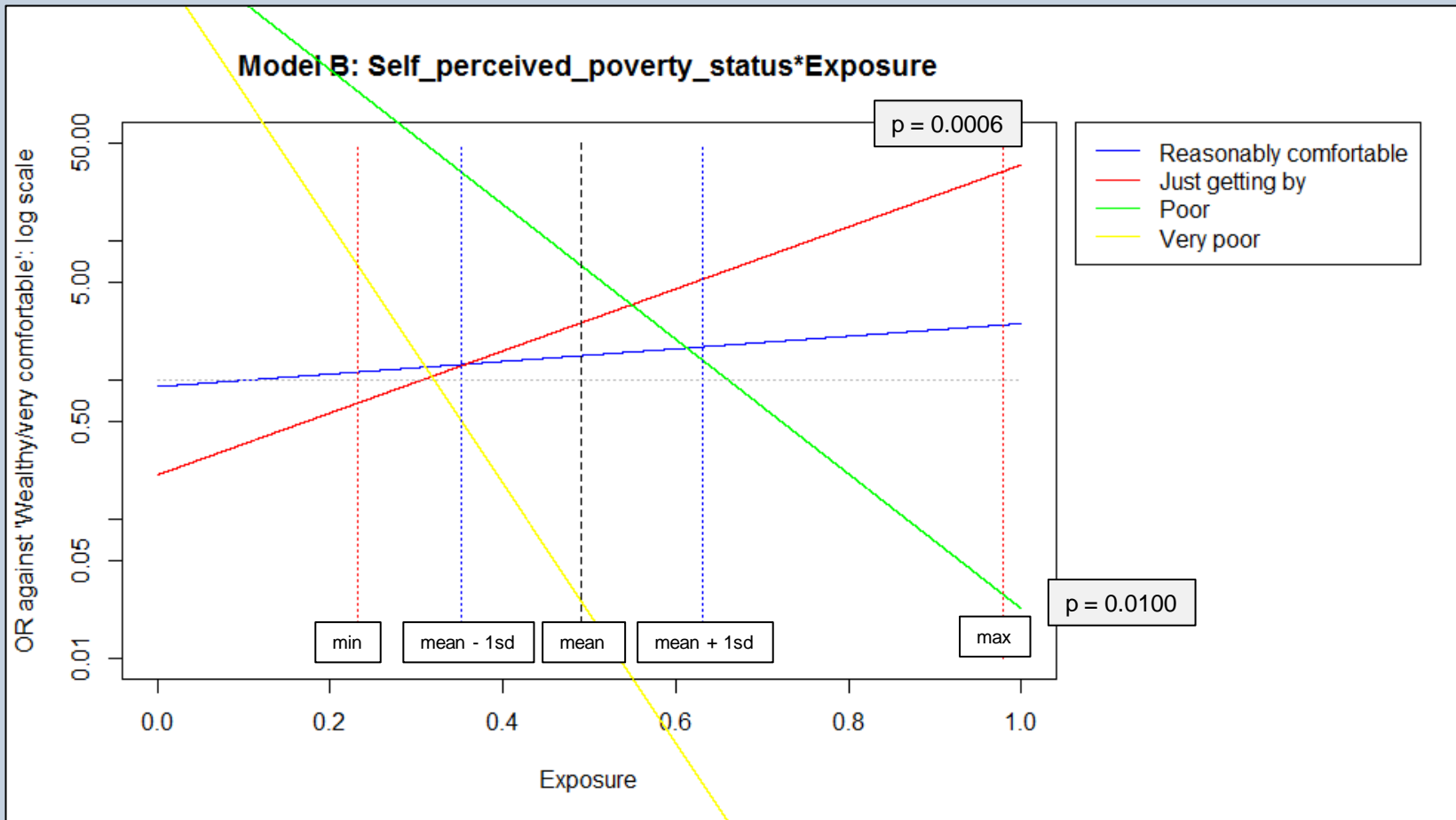
# Model B: inequality aversion, non-poor subgroup

*Exposure to inequality \* Race*



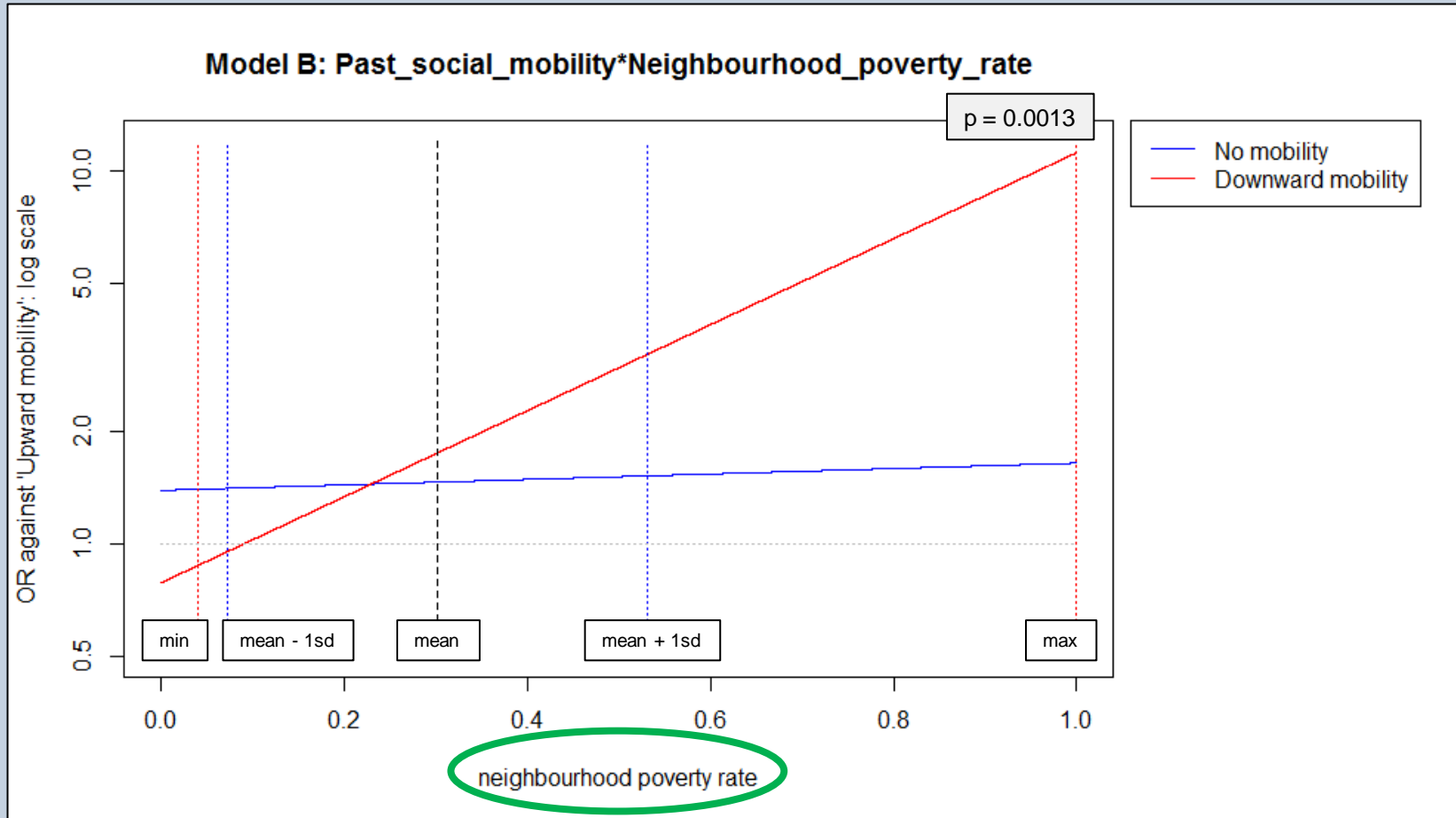
# Model B: inequality aversion, non-poor subgroup

*Exposure to inequality \* Self-perceived poverty status*



# Model B: inequality aversion, non-poor subgroup

*Neighbourhood poverty rate \* Perceived social mobility history*



# Results: Model D

*Agreement amongst the non-poor subgroup that the government has a responsibility for income redistribution*

Parameter	Estimate	Std. Error	z value	Pr(> z )	Sig.	OR	OR 95% CI lower	OR 95% CI upper	Group LR test pval
<b>(A) Respondent's personal and household characteristics</b>									
<i>Marital status (Ref='Married'; N=600)</i>									
Widowed (N=60)	1.10	0.43	2.58	0.0098	**	3.00	1.30	6.89	0.0000
Separated / divorced (N=49)	-1.08	0.34	-3.20	0.0014	**	0.34	0.17	0.66	
Never married (N=327)	0.40	0.16	2.50	0.0130	*	1.50	1.09	2.05	
Household Asset Index	-0.44	0.08	-5.31	0.0000	***	0.64	0.55	0.76	
ANC voter (N=326)	0.46	0.17	2.73	0.0063	**	1.58	1.14	2.20	
<b>(B) Respondent's attitudes and views</b>									
<i>Inequality aversion</i>									
Left-right ideology (Ref='Liberal'; N=324)	0.45	0.07	6.21	0.0000	***	1.56	1.36	1.80	0.0260
Moderate (N=346)	-0.05	0.18	-0.26	0.7900		0.95	0.67	1.35	
Conservative (N=201)	-0.30	0.22	-1.34	0.1800		0.74	0.48	1.15	
Uncertain (N=165)	0.45	0.21	2.11	0.0350	*	1.57	1.03	2.39	
<i>Perceived social mobility history (Ref='Upward mobility'; N=430)</i>									
No mobility (N=366)	0.28	0.17	1.68	0.0930	.	1.32	0.95	1.83	0.0019
Downward mobility (N=240)	0.66	0.19	3.53	0.0004	***	1.93	1.34	2.78	
<i>Expected future social mobility over next 5 years (Ref='Improve'; N=491)</i>									
Stay the same (N=255)	0.43	0.18	2.45	0.0140	*	1.54	1.09	2.17	0.0100
Worsen (N=211)	0.64	0.22	2.95	0.0032	**	1.90	1.24	2.91	
Uncertain (N=79)	0.30	0.28	1.07	0.2900		1.35	0.78	2.34	
<b>(C) Geographical location variables</b>									
N/A									
<b>(D) Neighbourhood level poverty and exposure variables and interactions</b>									
Neighbourhood poverty rate	0.25	0.13	1.95	0.0510	.	1.29	1.00	1.66	
Exposure to inequality	-0.12	0.20	-0.62	0.5300		0.88	0.60	1.30	
Neighbourhood poverty rate * Exposure to inequality	0.14	0.07	2.02	0.0440	*	1.15	1.00	1.33	
<i>Exposure * Left-right ideology (Ref='Liberal')</i>									
Exposure * Moderate	-0.35	0.17	-2.05	0.0400	*	0.71	0.51	0.98	0.0000
Exposure * Conservative	-0.69	0.21	-3.24	0.0012	**	0.50	0.33	0.76	
Exposure * Uncertain	0.39	0.18	2.09	0.0360	*	1.47	1.02	2.11	

Respondent's personal and household characteristics

Respondent's attitudes and views

Neighbourhood-level poverty and exposure variables, plus relevant interactions

# Model D: neighbourhood-level poverty and exposure variables, plus relevant interactions

Parameter	Estimate	Std. Error	z value	Pr(> z )	Sig.	OR	OR 95% CI lower	OR 95% CI upper	Group LR test pval
<b>(D) Neighbourhood level poverty and exposure variables and interactions</b>									
Neighbourhood poverty rate	0.25	0.13	1.95	0.0510	.	1.29	1.00	1.66	
Exposure to inequality	-0.12	0.20	-0.62	0.5300		0.88	0.60	1.30	
Neighbourhood poverty rate * Exposure to inequality	0.14	0.07	2.02	0.0440	*	1.15	1.00	1.33	
<i>Exposure * Left-right ideology (Ref='Liberal')</i>									<i>0.0000</i>
Exposure * Moderate	-0.35	0.17	-2.05	0.0400	*	0.71	0.51	0.98	
Exposure * Conservative	-0.69	0.21	-3.24	0.0012	**	0.50	0.33	0.76	
Exposure * Uncertain	0.39	0.18	2.09	0.0360	*	1.47	1.02	2.11	

\* significant at  $p < 0.05$ ; \*\* significant at  $p < 0.01$ ; \*\*\* significant at  $p < 0.001$

# Model D: gov redistribution, non-poor subgroup

*Exposure to inequality \* Political ideology*

