An economist's perspective on what we know, can know & need to know about causes of health inequality

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A contemporary economist's view

Causality is what economists do

A chauvinist economist's view

Causality is what economists do better than others

A smug economist's view

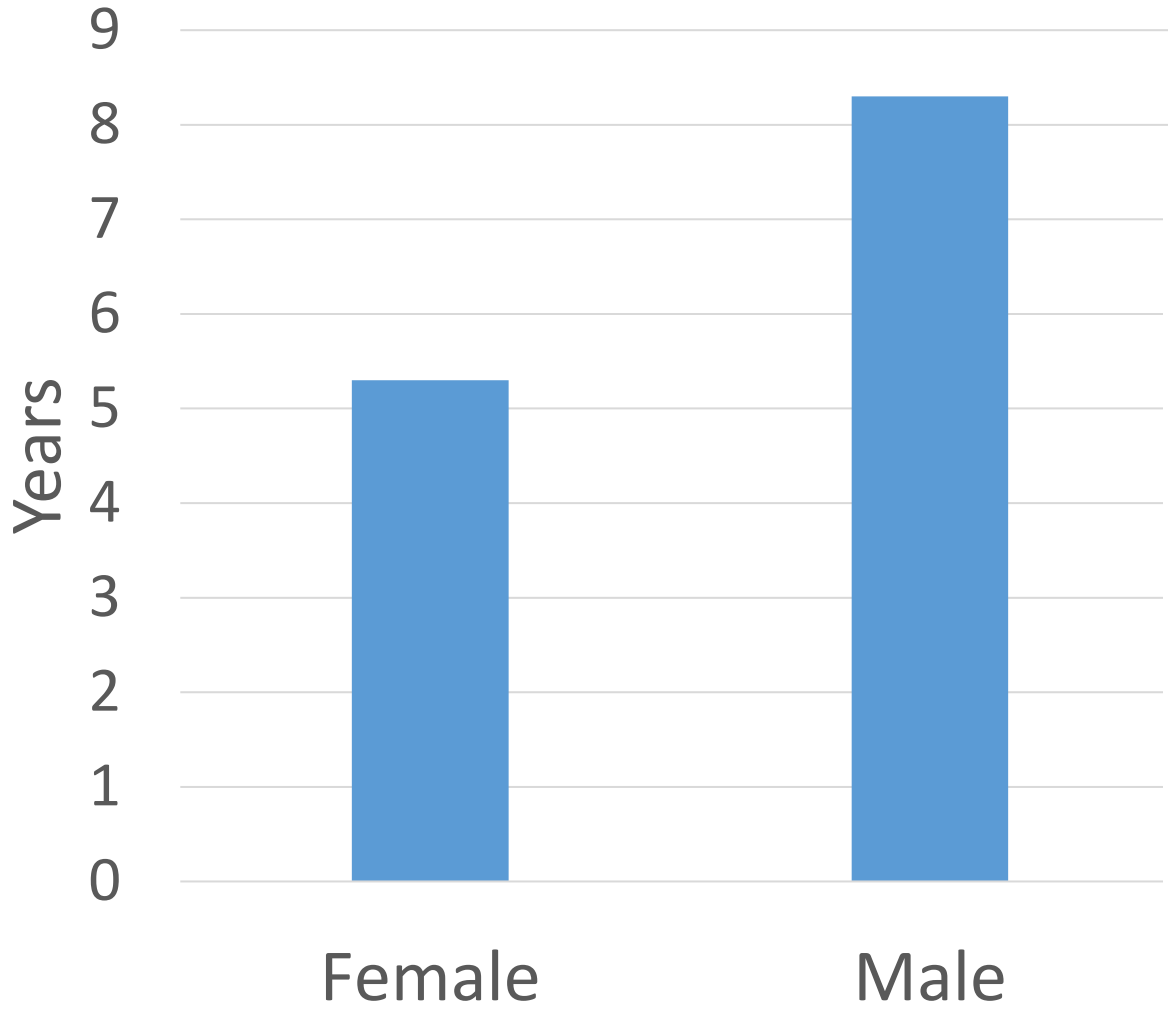
Causality is what I identify from my ever-so-clever strategy

A sceptical economist's view

Causality is what I partially identify from a less dubious strategy

Socioeconomic health inequality

Average gap in life expectancy (LE) at age 25 b/w high- and low-education groups across 21 OECD countries, 2016



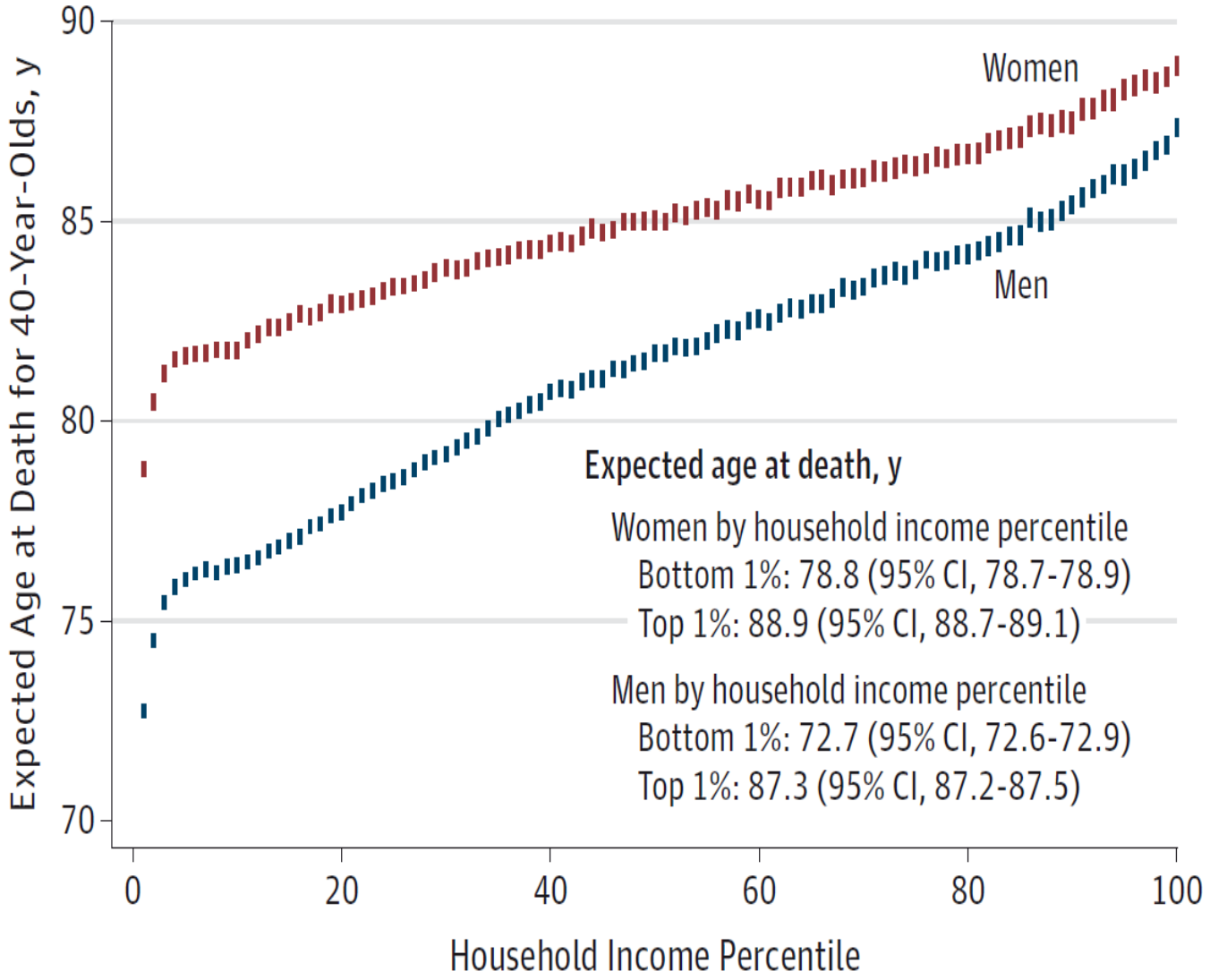
Gap ↑ by ~ 0.5 year, 2011 – 2016

Lübker & Murtin, *BMC Public Health* 2023

Life expectancy increases with income in the U.S.

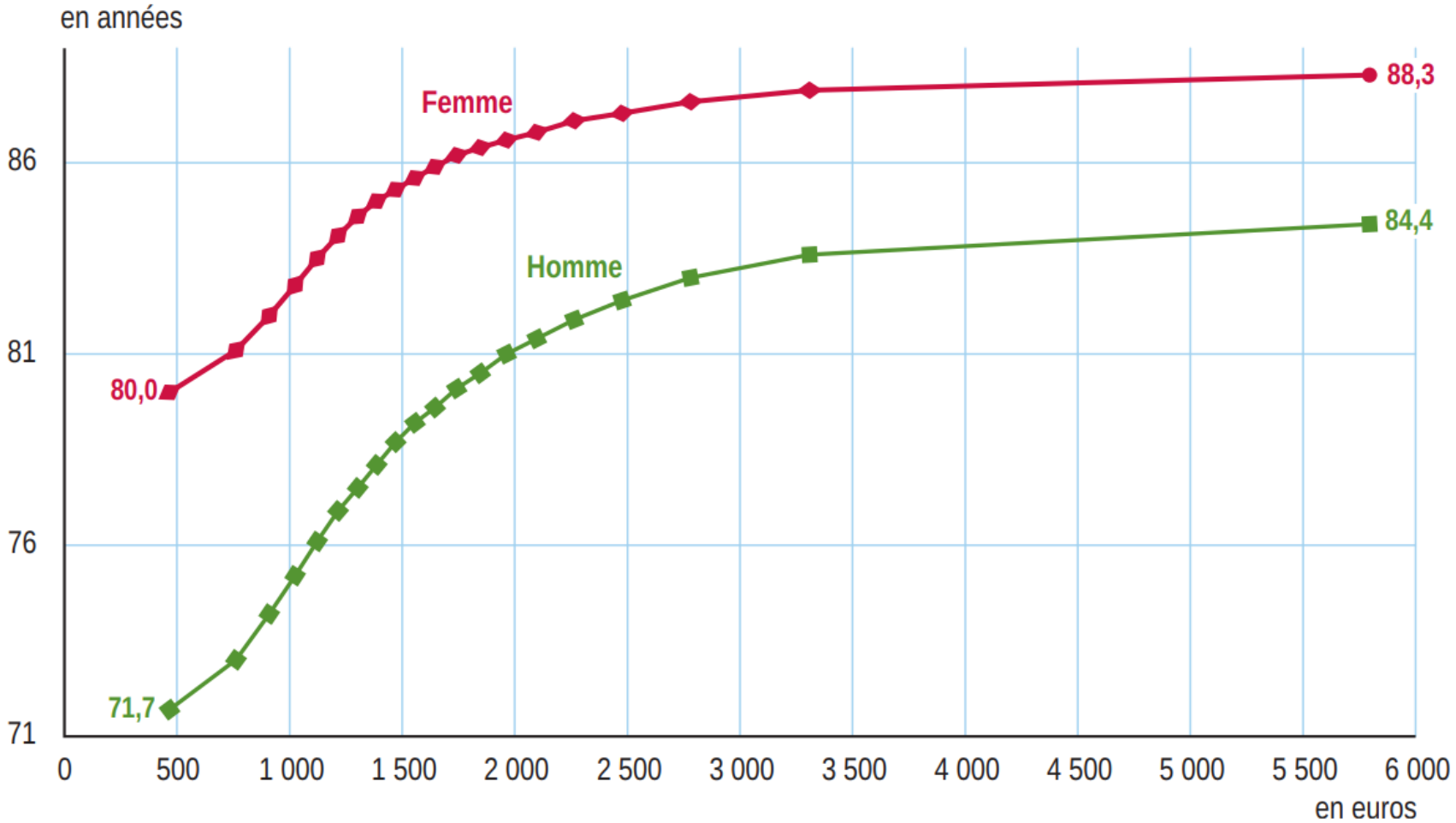
Figure 2. Race- and Ethnicity-Adjusted Life Expectancy for 40-Year-Olds by Household Income Percentile, 2001-2014

Annual ↑ LE in top income quartile > 2× ↑ LE in bottom quartile



Chetty et al. *JAMA* 2016

1 Espérance de vie à la naissance par sexe et niveau de vie mensuel



Note : en abscisse, chaque point correspond à la moyenne des niveaux de vie mensuels d'un vingtile. Chaque vingtile comprend 5 % de la population.
Lecture : en 2012-2016, parmi les 5 % les plus aisés, dont le niveau de vie moyen est de 5 800 euros par mois, l'espérance de vie à la naissance des hommes est de 84,4 ans.
Champ : France hors Mayotte.
Source : Insee-DGFIP-Cnaf-Cnav-CCMSA, Échantillon démographique permanent.

N. Blanpain (2018)
INSEE Premire No. 1687
https://www.insee.fr/fr/statistiques/3319895

Fig. 2. Remaining disability-free life expectancy at age 50 by gender and education.

Stonkute et al. (2023) SSM – Population Health https://doi.org/10.1016/j.ssmph.2023.101470

The usual narrative

Health inequalities are substantial, ubiquitous and persistent

To reduce them, we need to know their causes

3 questions about the causes of health inequality

What **do** we know?

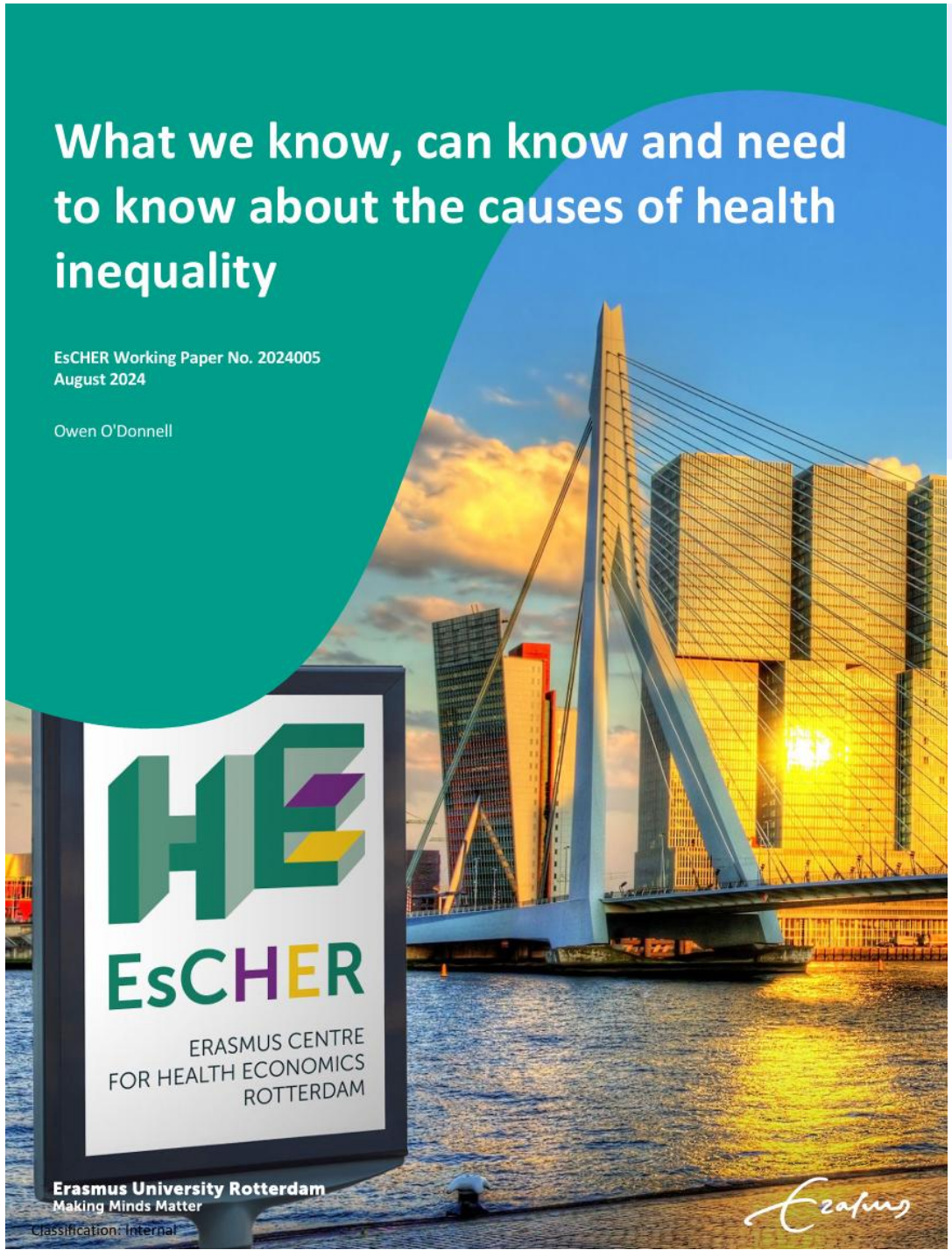
Not that much

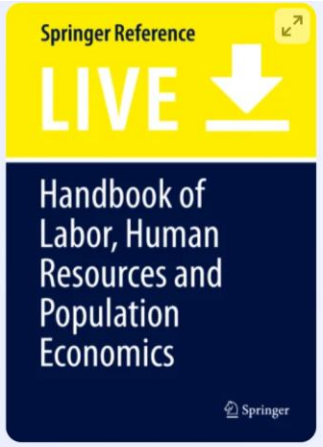
What **can** we know?

Not much more

What do we **need** to know?

Not as much as we think





Handbook of Labor, Human Resources and Population Economics

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Overview

Editors: Klaus F. Zimmermann

Health policy 142 (2024) 105018

Contents lists available at ScienceDirect

Health policy

journal homepage: www.elsevier.com/locate/healthpol

Health and health system effects on poverty: A narrative review of global evidence

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What do we know about the causes of health inequality?

Nothing for sure

Insights from theory and data

Using economic theory and causal inference, what plausibly causes socioeconomic inequality in health?

Focus on health inequality by education, income and wealth, although …

Confine attention to high-income countries

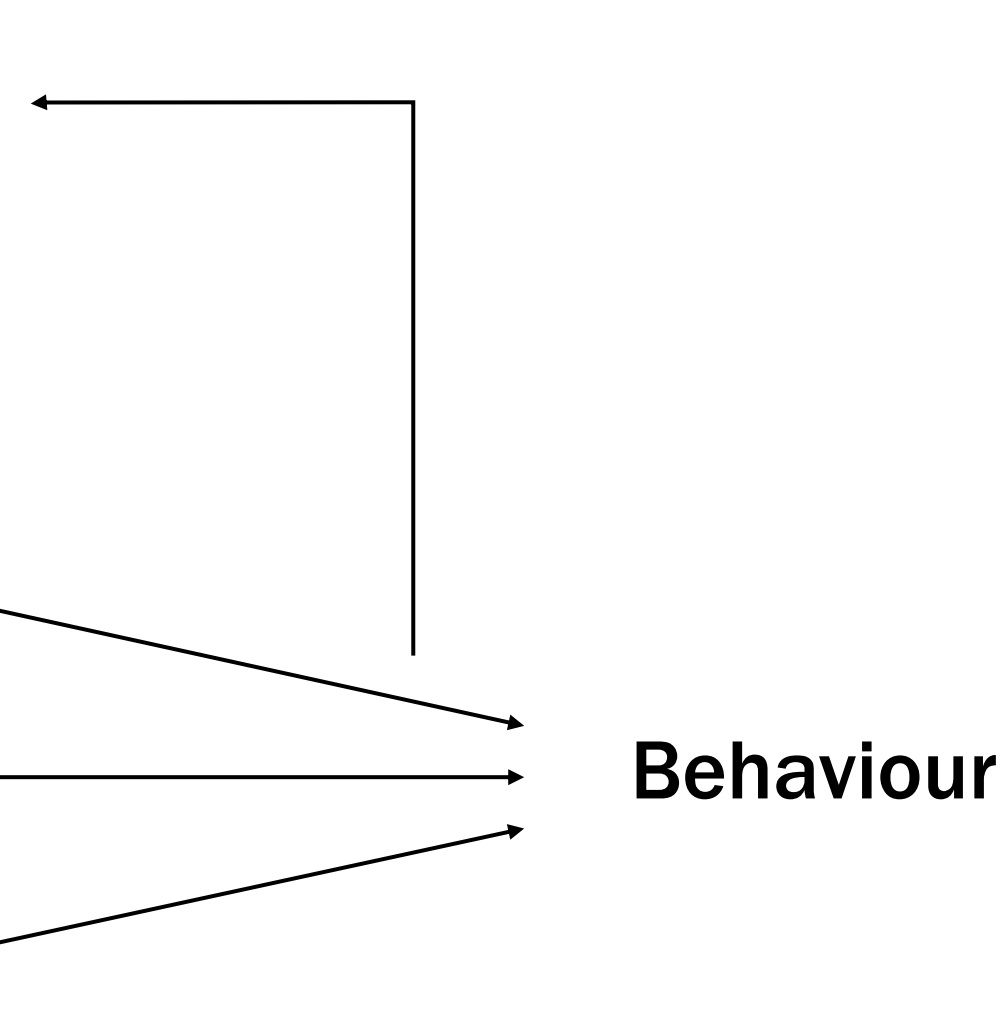
Theory

Socioeconomic determination of health

- Material
- Behavioural
- Psychosocial

Economics

- Constraints
- Preferences
- Beliefs



Theory

Education → Health ✓
Income → Health ✓
Wealth → Health ✓

Health → Education ✓
Health → Income ✓
Health → Wealth ✓

Genes, cognitive ability, personality, parental investment, time preferences
→ Health ✓
→ Education, Income & Wealth ✓

Evidence

Education → Health ?

Income → Adult Health ✗

Income → Infant/Child Health ✓

Wealth → Health ?

NBER WORKING PAPER SERIES

DOES INCOME AFFECT HEALTH? EVIDENCE FROM A RANDOMIZED CONTROLLED TRIAL OF A GUARANTEED INCOME

Sarah Miller
Elizabeth Rhodes
Alexander W. Bartik
David E. Broockman
Patrick K. Krause
Eva Vivalt

Working Paper 32711
http://www.nber.org/papers/w32711

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
July 2024, Revised September 2024

Does income affect health? (Miller et al. 2024)

Population:	lower-income, young adults (21-40 years), Illinois & Texas
Sample:	random; income ≤ 300% FPL; not on means-tested benefits; 29% uninsured, 27% forgo healthcare, majority SAH ≤ *good*
Treatment:	Unconditional $1000 /mo for 3 years (2020-23); n = 1000
Control:	Unconditional $50 /mo for 3 years; n = 2000
Outcomes:	physical health (SAH, limited activities, biomarkers [DM, BP, Chol, GlycA, CVD risk], mortality)
	mental health (emotional problems, mental distress, depression)
	healthcare (curative [hospital & office], preventive, forgone)
	health insurance & OOP spending
	health behaviour (exercise, alcohol, smoking, food, sleep)

Does income affect health? (Miller et al. 2024)

Results:	**physical health**	**Null**
	mental health	**↓ stress & mental distress in 1st year**
	healthcare	**↑ hospital care & emergency visits**
	OOP spending	**↑ $20 /mo**
	health behaviour	**Null**

Evidence

Education → Health	?
Income → Adult Health	✗
Income → Infant/Child Health	✓
Wealth → Health	?
Health → Education	✓
Health → Income	✓
Health → Wealth	✓

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Advance access publication 22 May 2025

How Important Is Health Inequality for Lifetime Earnings Inequality?

Roozbeh Hosseini
University of Georgia and FRB Atlanta
Karen Kopecky
FRB Cleveland and Emory University
and
Kai Zhao
University of Connecticut, USA

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Review of Economic Studies (2025) **92**, 1987–2026 https://doi.org/10.1093/restud/rdae080
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Advance access publication 9 August 2024

The Lifetime Costs of Bad Health

Mariacristina De Nardi
University of Minnesota, Federal Reserve Bank of Minneapolis, CEPR, and NBER, USA
Svetlana Pashchenko
University of Georgia, USA
and
Ponpoje Porapakkarm
National Graduate Institute for Policy Studies, Japan

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How important is health for economic inequality among US males?

Life-cycle models of labour supply & consumption as functions of health dynamics

Health dynamics = fixed health types + persistent shocks + transitory shocks

Health impacts thru' productivity, preferences, disability insurance, medical expenses & mortality

At age 55, eliminating health inequality → 28% ↓ lifetime earnings inequality

At age 65 (& high school grad.), median wealth of healthy is 65% > unhealthy counterpart

- Earnings mechanism more important than medical expenses
- Large residual explained if low-health types have stronger time preference

What do we know about the causes of health inequality?

	Theory	Evidence
Education → Health	✓	?
Income → Adult Health	✓	✗
Income → Infant/Child Health	✓	✓
Wealth → Health	✓	?
Health → Education	✓	✓
Health → Income	✓	✓
Health → Wealth	✓	✓

What can we know about the causes of health inequality?

Why not stronger, more consistent evidence of socioeconomic determination of health?

Measures & contexts matter → heterogeneity in evidence expected

Data inadequate: effects materialize with lags > observation period

Theory incorrect

Education, income & wealth $\not\rightarrow$ health

(in high-income countries with social safety net)

Level of *each* of education, income & wealth ≠ relevant socioeconomic exposures

Socioeconomic position (SEP) → Health

Hypothesis: position within society → health

Testable?

SEP not precisely defined construct, so difficult to conceive of *its* causal effect

If SEP measured as a composite, then multiple routes to given ΔSEP

- Limited scope to infer from any estimated *effect* of ΔSEP

Difficult to identify causal effect of change in *relative* position

- Change my position → change yours

SEP = Somebody Else's Problem

Stay clear of the SEP field

Estimate effect of each separate, manipulable, absolute socioeconomic characteristic – education, income, wealth …

Sidestepping the SEP field and missing the action

Miss any effect of relative & cumulative deprivation in several socioeconomic dimensions that multiplicatively impact health

Stepping into the SEP field

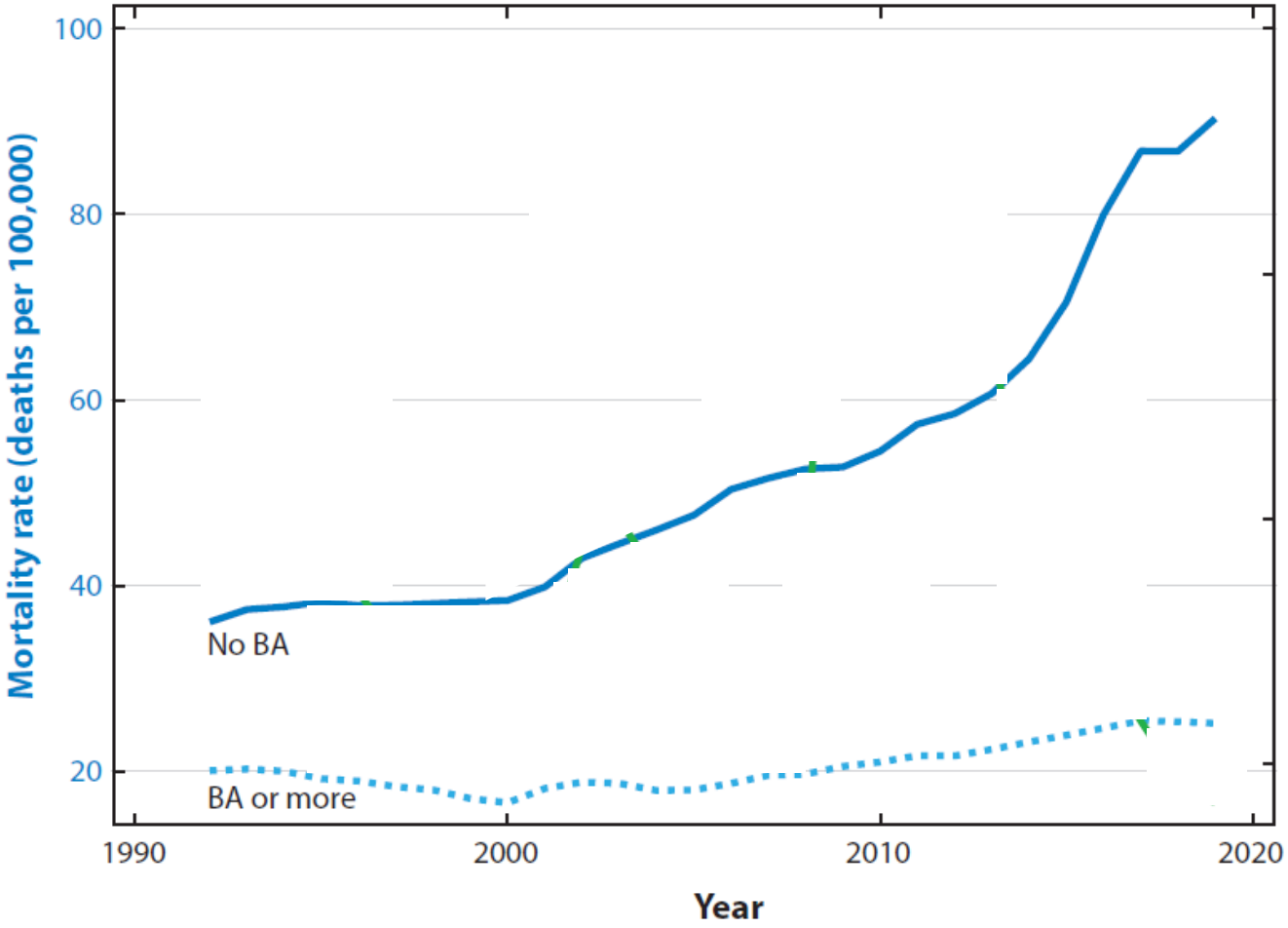
Cumulative disadvantage

Less educated: worsening life circumstances in multiple dimensions → loss of status

→ *deaths of despair* (Case & Deaton 2017, 2020)

Deaths of despair by education, U.S.

Age-adjusted 25-74 years mortality rates from drugs, alcohol & suicide



Case & Deaton *Annual Review of Economics* 2022

Stepping into the SEP field

Cumulative disadvantage

Less educated: worsening life circumstances in multiple dimensions → loss of status

→ *deaths of despair* (Case & Deaton 2017, 2020)

Work

Less educated: stagnant wages & falling labour force attachment

Family

Less educated: ↓ labour market opportunities → ↓ marriage & parenting (Autor 2018)

→ ↓ incentive to invest in health

Community

Less educated: ↓ political, union & religious participation → ↓ social support, ↑ social detachment

→ ↓ health resources & ↓ wellbeing → ↓ incentive to invest in health

What can we know about the causes of health inequality?

Causal inference identifies effect, within observation period, of a unidimensional, absolute socioeconomic exposure

Misses any (multiplicative) effects of multidimensional, relative exposures

Theory + piecemeal evidence → *causal narratives* of SEP → health

Causal inference may identify an effect forming part of a narrative

Does not tell the whole story

Fitting models to data may vouch for validity of a narrative, but will not clinch it

What do we need to know about the causes of health inequality?

What do we need to know about the causes of health inequality to reduce it?

Strategies to reduce health inequality

Improve socioeconomic circumstances of the disadvantaged

- Intervene to reduce disadvantage in socioeconomic domain
- Success contingent on causality: socioeconomics → health

Prioritise health of the disadvantaged

- Intervene to reduce disadvantage in health domain
- Success not contingent on causality: socioeconomics → health

Objections to this strategy

Ineffective

Inefficient

Inequitable

Infeasible

Objections to this strategy

Ineffective

Inefficient

Inequitable

Infeasible

Support for prioritisation of health of disadvantaged contingent on belief that socioeconomic circumstances → health

What do we need to know about the causes of health inequality to know whether we want to reduce it?

Is the motivation to reduce health inequality contingent on its causes?

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Contents lists available at ScienceDirect

Journal of Health Economics

journal homepage: www.elsevier.com/locate/jhe

Aversion to health inequality — Pure, income-related and income-caused

Matthew Robson [a,b,d,*], Owen O'Donnell [a,b,c,d], Tom Van Ourti [a,b,c,d,1]

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Study design

Online experiment with UK general public sample

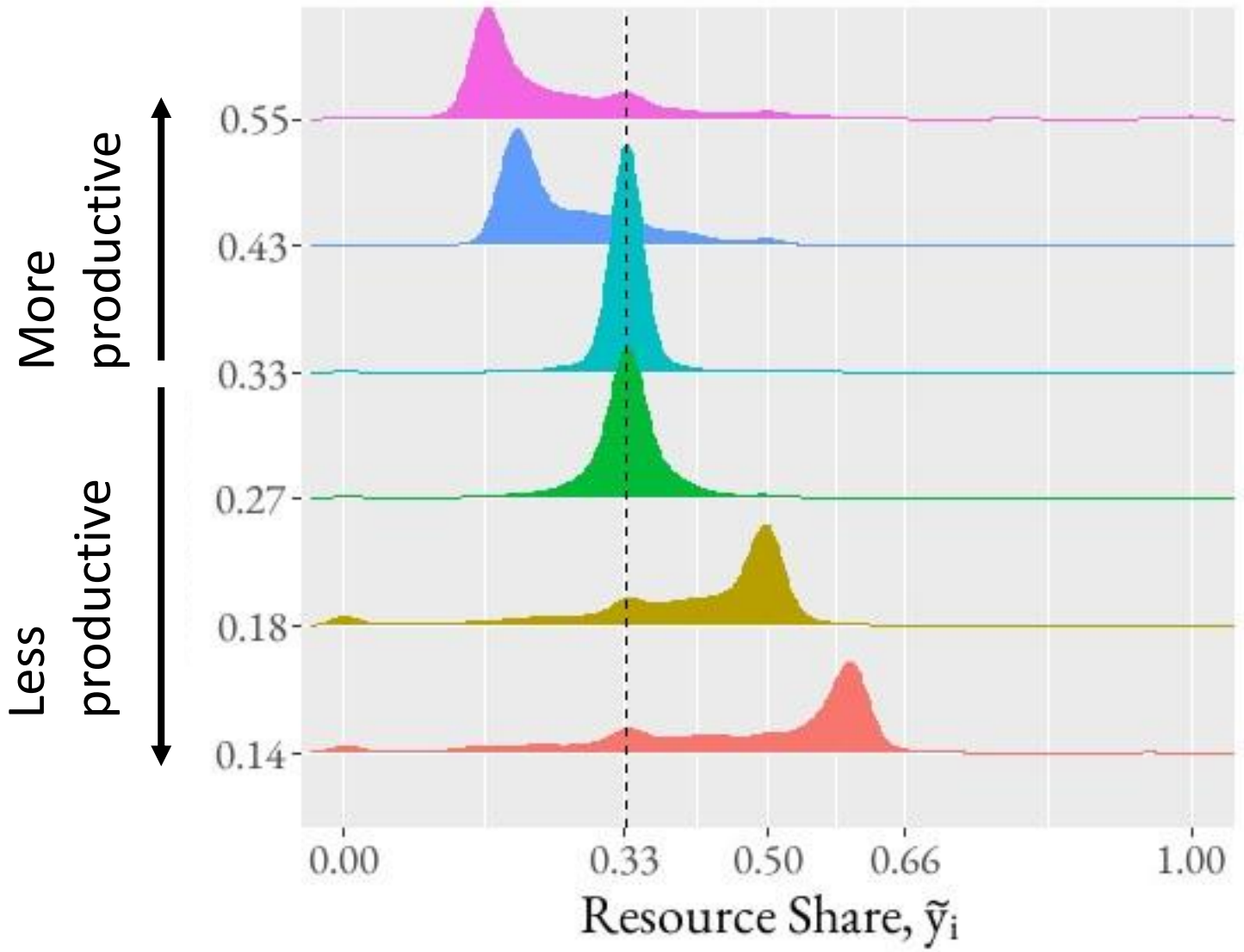
Participants allocate resources to determine health of individuals

Forced to trade off health maximisation vs equalisation

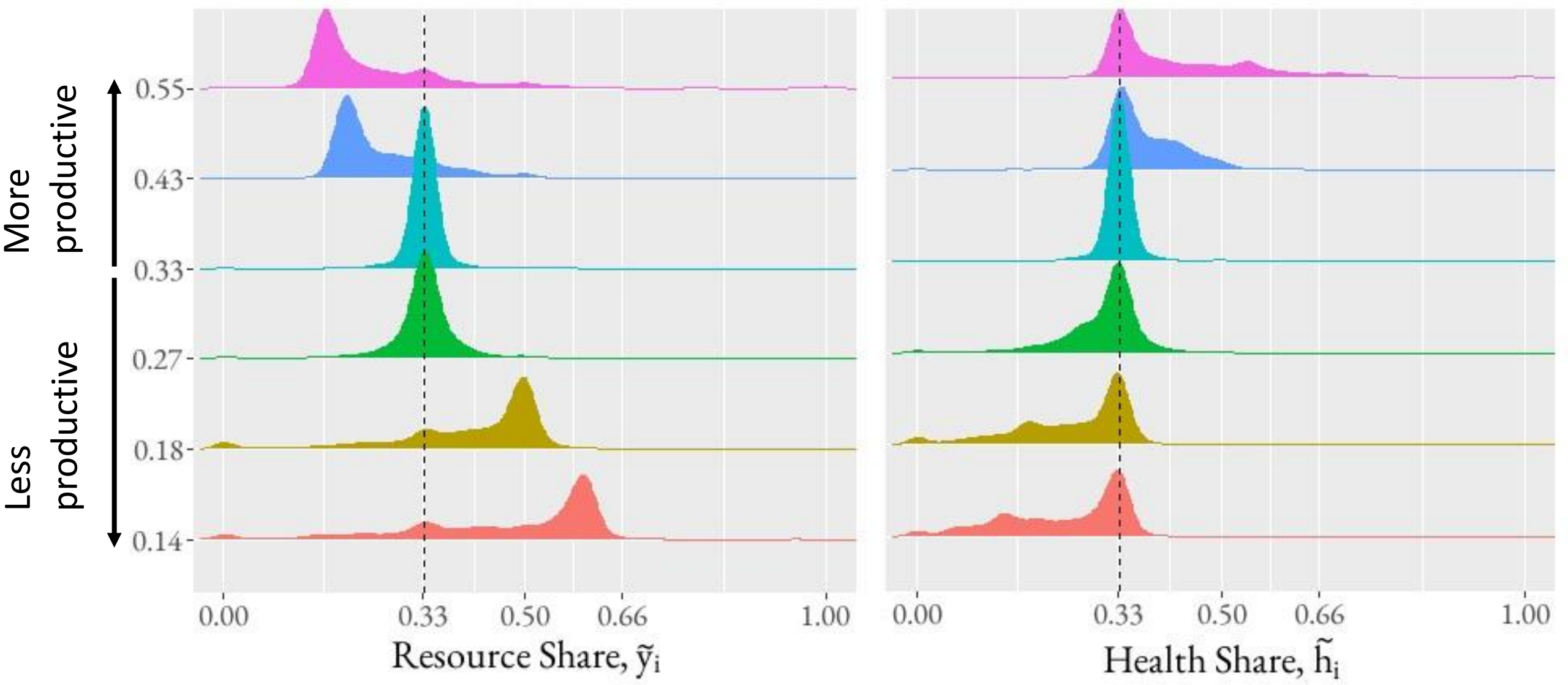
Treatment A: Anonymous individuals

Identifies aversion to pure health inequality

Equality-efficiency trade-off



Equality-efficiency trade-off



Study design

Online experiment with UK general public sample

Participants allocate resources to determine health of individuals

Forced to trade-off health maximisation vs equalisation

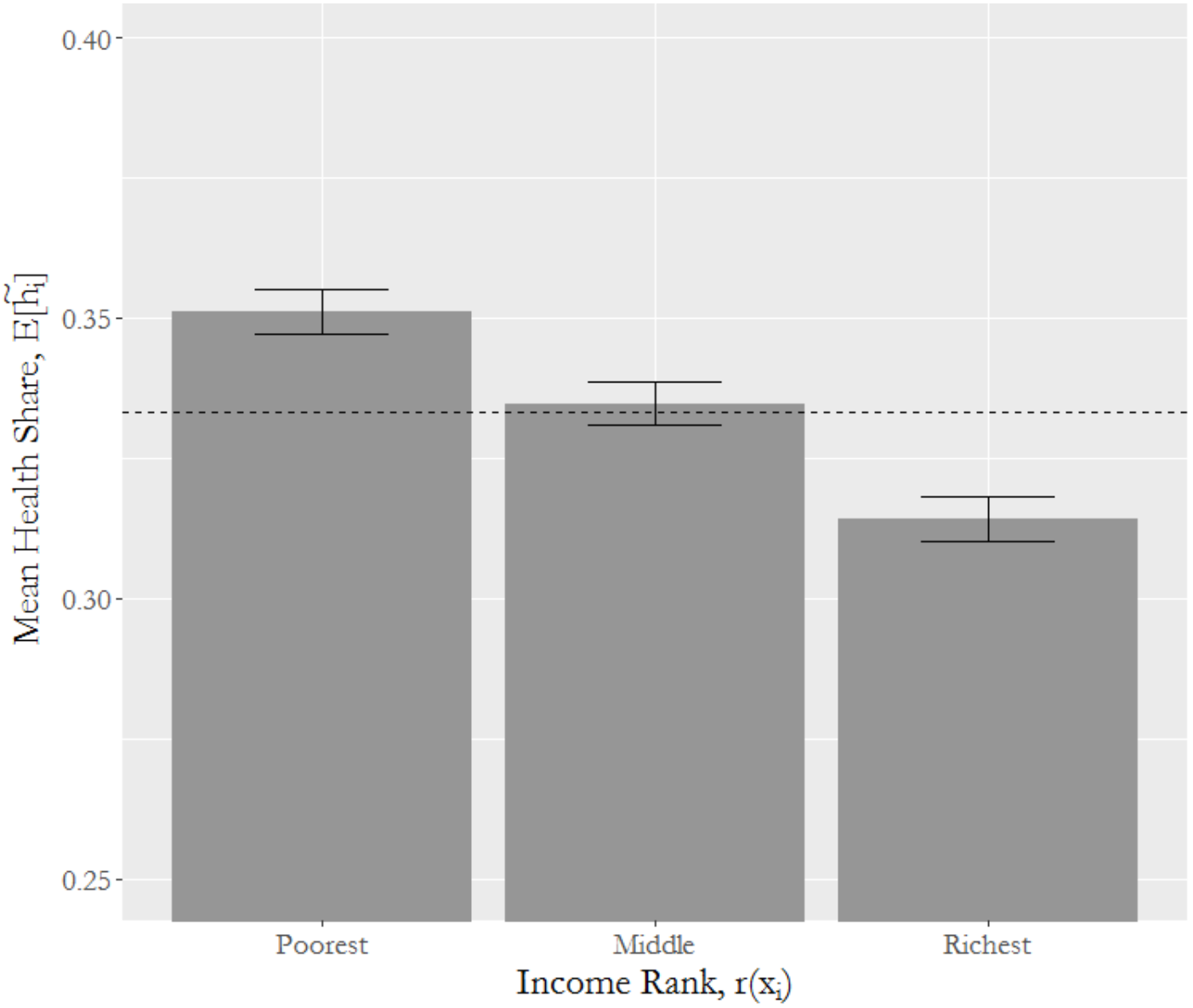
Treatment A: Anonymous individuals

Identifies aversion to pure health inequality

Treatment B: Information on individuals' incomes

Additionally, identifies prioritisation by income

Prioritisation of health of poorer individuals



What motivates prioritisation by income?

Concern about lower income causing worse health

- Correct unfair health distribution
- Contingent on belief of causality, income → health

Concern about inequality in wellbeing = f(health, income)

- Distribute health to compensate material disadvantage
- Not contingent on belief of causality, income → health

Study design

Online experiment with UK general public sample

Participants allocate resources to determine health of individuals

Forced to trade-off health maximisation vs equalisation

Treatment A: Anonymous individuals

Identifies aversion to pure health inequality

Treatment B: Information on individuals' incomes

Additionally, identifies prioritisation by income

Treatment C: Information on income → health

Prioritisation of poor insensitive to information on causality

Why?

Prioritisation motivated by aversion to inequality in wellbeing

Belief that people are responsible for their incomes

Responsibility-sensitive egalitarianism

Journal of Health Economics 102 (2025) 103018

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Journal of Health Economics

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Responsibility-sensitive welfare weights for health

Matthew Robson [a,*], Owen O'Donnell [b], Tom Van Ourti [c,1]

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How?

Extend online experiment with UK general public sample

Participants allocate resources to determine health of individuals

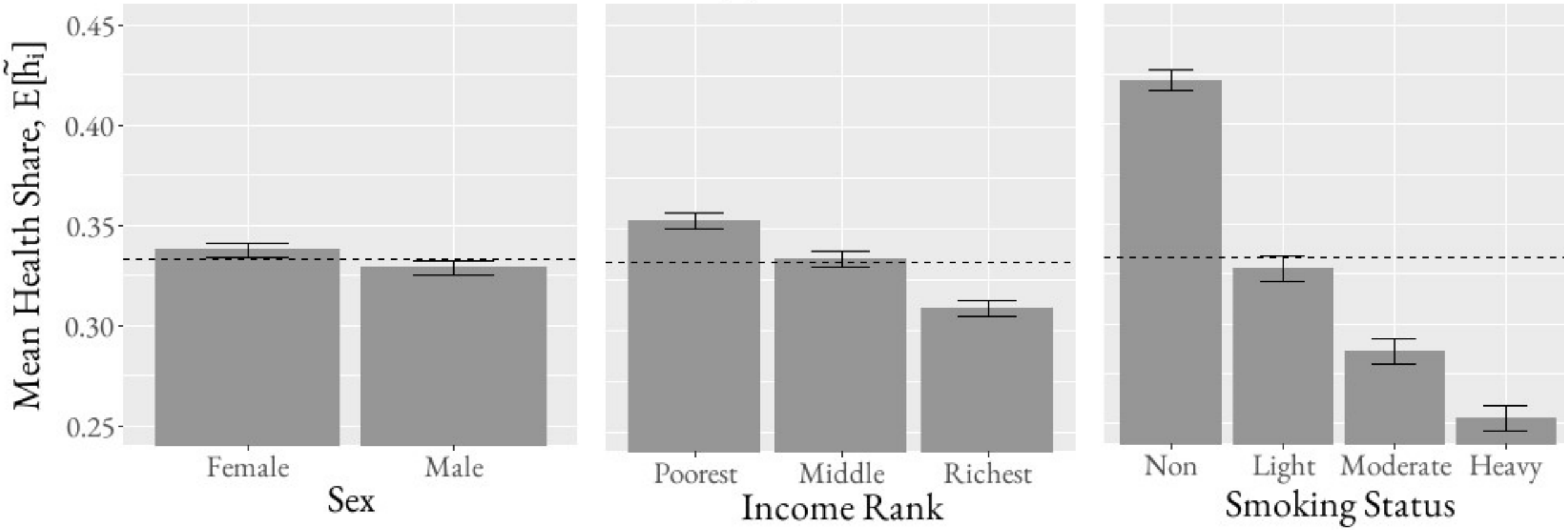
Forced to trade-off health maximisation vs equalisation

Treatment A: Anonymous individuals

Treatment B: Information on individuals' sex, incomes & smoking

Elicit beliefs about responsibility for income & smoking

Slight, moderate and strong prioritisation of health of females, poor and non-smokers



Distribution of beliefs about personal responsibility for income

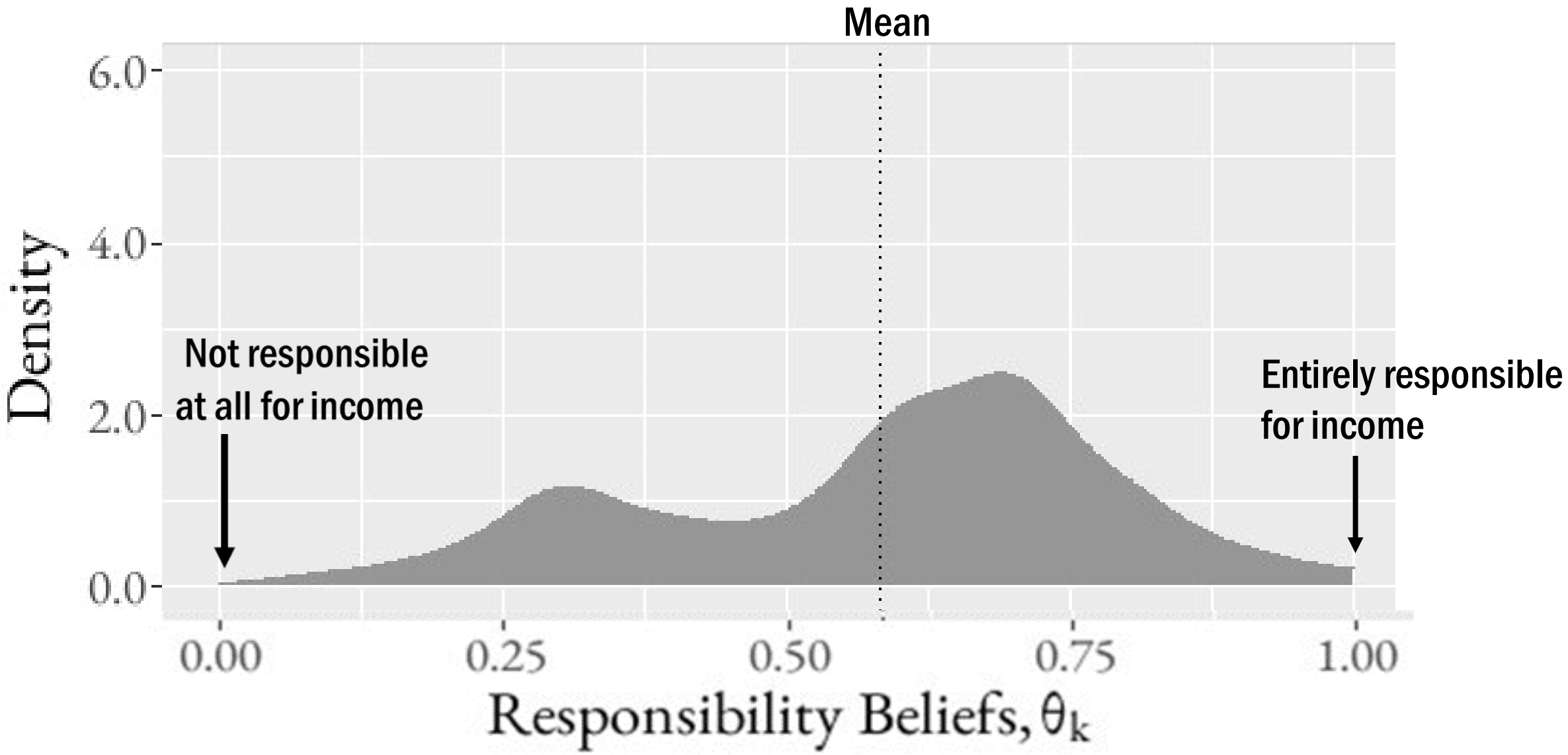


Figure 3: Distributions of Responsibility Beliefs and Health Shares by those Beliefs

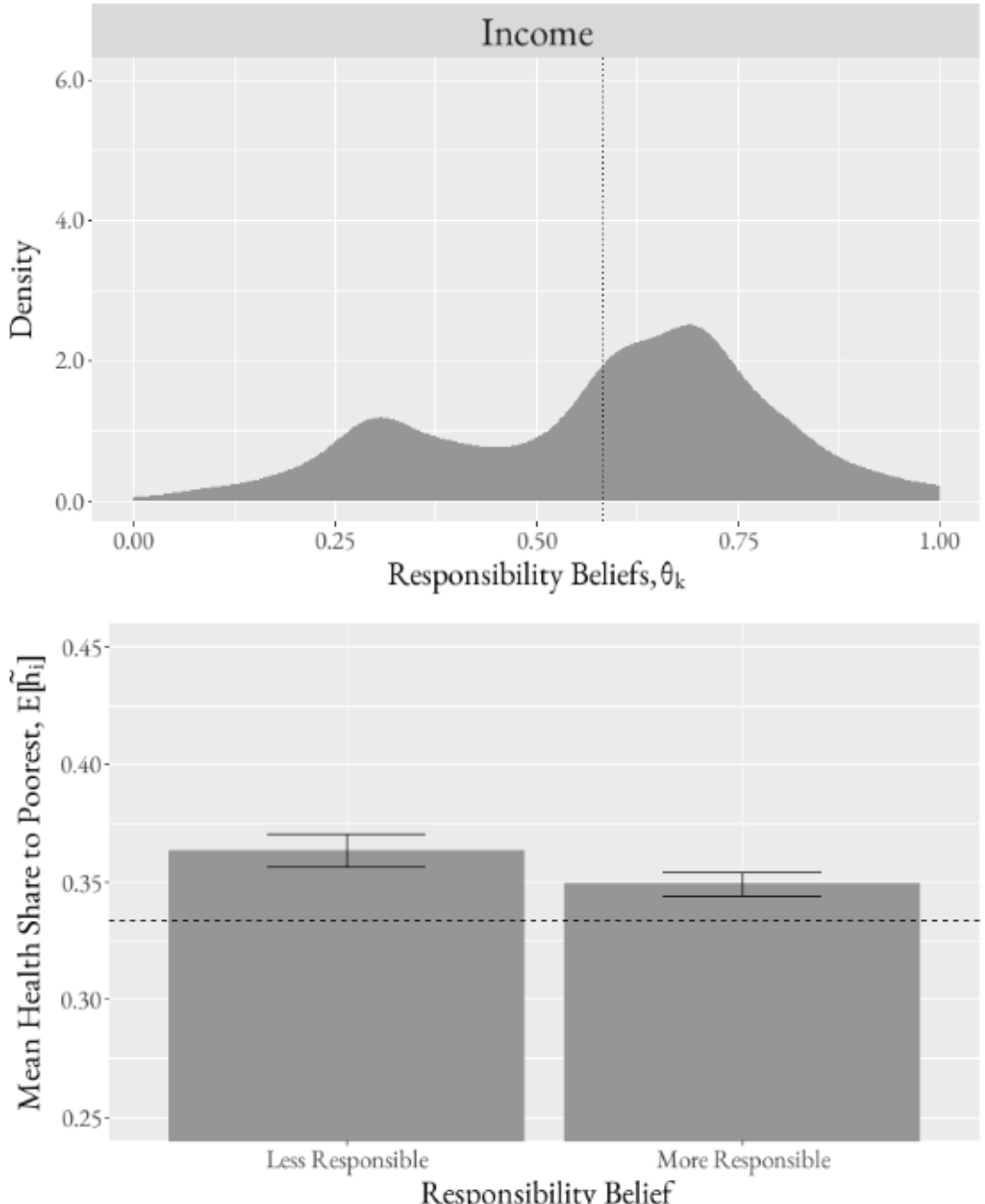
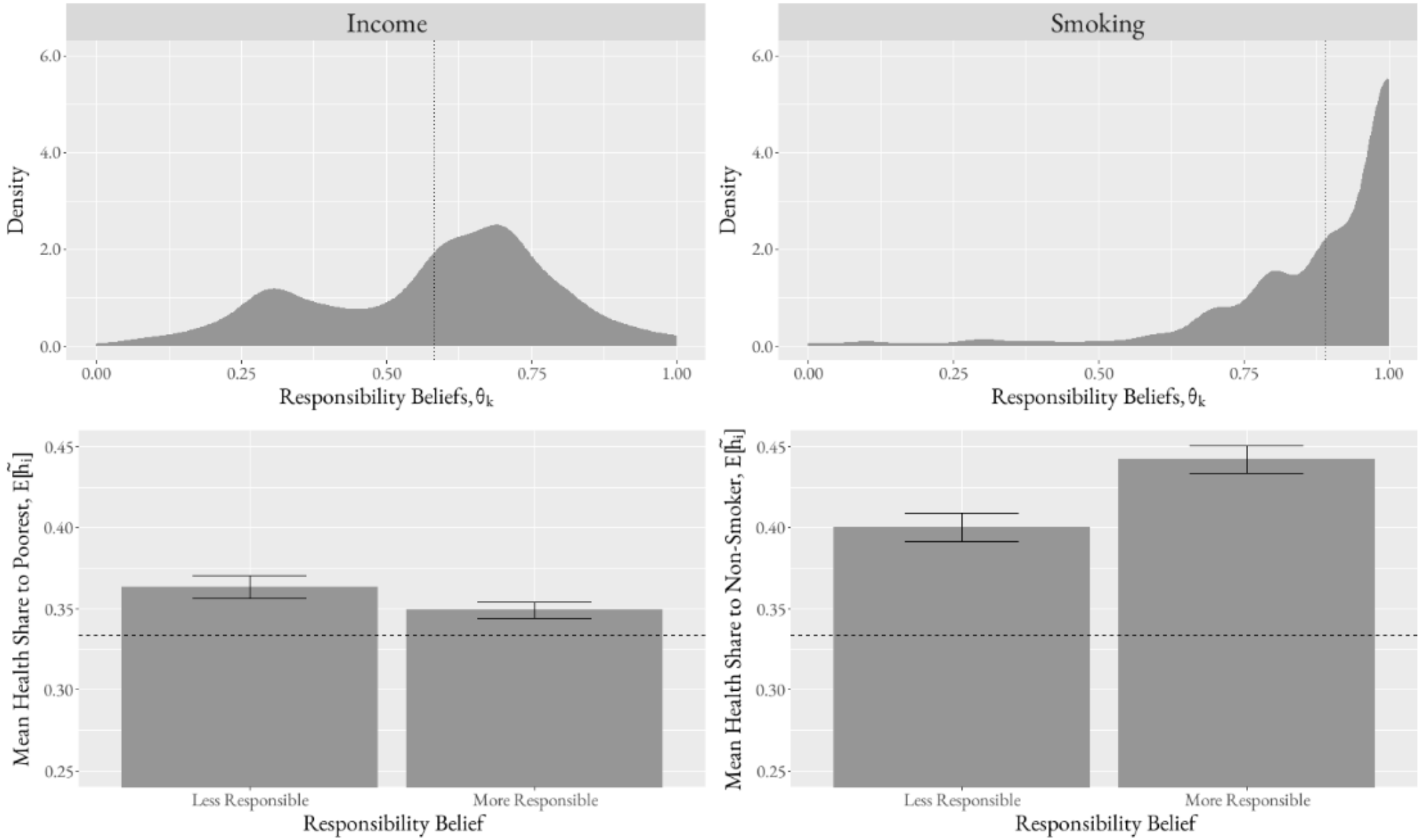


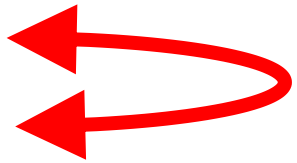
Figure 3: Distributions of Responsibility Beliefs and Health Shares by those Beliefs



Causes of health inequality

What do we know?

- Weak evidence of socioeconomic determination of health *within* adulthood
- Income in early-life → health in infanthood & childhood, and adulthood
- Health important determinant of socioeconomic outcomes
- Strong confounding through genes, cognition, time preference, …



What can we know?

- Limited if health effects arise from
  - long-run, dynamic processes
  - relative, multidimensional & multiplicative exposures

What do we need to know?

- Interventions that improve health of the socially disadvantaged
- Whether we want to prioritise those interventions
- Whether that depends on what causes worse health of the disadvantaged

Additional slides

Health - Education

Education → Health

	Effect	Mechanism / Explanation
Theory	+	1) ↑ knowledge & efficiency of health production
		2) ↑ human capital → ↑ wage → ↑ sickness cost → ↑ health investment
		3) ↑ earnings → ↑ wealth → ↓ (opportunity) cost of health investment
Confounding	+	Cognitive ability, parental investment, time preference
Evidence	?	Correlation weakens with controls
		Mixed findings from twins, IV & RDD designs

Health → Education

	Effect	Mechanism / Explanation
Theory	+	1) Childhood health → ↑ quantity of schooling
		2) ↑ Life expectancy → ↑ quantity of schooling
		3) Early-life health → cognitive development → ↑ quality schooling
Confounding	+	Cognitive ability, parental investment, time preference
Evidence	+	Early-life health (birthweight) → education outcomes

Health - Income

Income → Health

	Effect	Mechanism / Explanation
Theory	+	1) Relax income constraint → ↓ (opportunity) cost of investment in own & children's health [Constrained by non-market allocation of health determinants] 2) Relax liquidity constraint → ↓ variation in health-harming & health-improving consumption 3) If ↑ wage → ↑ income, then also ↑ (opportunity) cost of sickness → ↑ health investment
Confounding	+	Cognitive ability, personality, parental investment, time & risk preferences
Evidence	Null	Adult health: quasi-experimental & experimental studies
	+	Infant & child health: income transfers to low-income pregnant women & mothers

Health → Income

	Effect	Mechanism / Explanation
Theory	+	1) ↑ productivity → ↑ wage
		2) ↑ work capacity → ↑ work hours & employment
		3) ↓ discrimination → ↑ wage & employment
		4) ↓ disability insurance eligibility → ↑ return to work → ↑ employment
Confounding	+	Cognitive ability, personality, parental investment, time & risk preferences
Evidence	+	Health shocks → ↓ income, mainly through employment
		Stronger where social safety net lower

Health - Wealth

Wealth → Health

	Effect	Mechanism / Explanation
Theory	+	1) Relax wealth constraint → ↓ cost of health investment 2) ↑ financial (and human) capital → ↓ rate of run down of health capital
Confounding	+	Cognitive ability, personality, parental investment, time & risk preferences
Evidence	?	Adult health: null effect from lottery winning in Sweden; + effect from stock market fluctuations in US

Wealth → Health

	Effect	Mechanism / Explanation
Theory	+	1) ↑ lifetime earnings → ↑ wealth accumulation
		2) ↑ life expectancy & ↓ mortality risk → ↑ incentive to save → ↑ wealth
		3) ↓ medical expenses → ↓ wealth depletion
	-	4) ↓ medical expenses expectation & risk → ↓ incentive to save → ↓ wealth
	?	5) ↑ or ↓ marginal utility of consumption (MU_C) → ↑ or ↓ saving
Confounding	+	Cognitive ability, personality, parental investment, time & risk preferences
Evidence	+	Health shocks → ↓ wealth, with stronger where social safety net lower
		Health important determinant of wealth (inequality) in US

Does consistency hold for each socioeconomic characteristic separately?

Education

- Compulsory vs voluntary

Income

- Under rationality, source of income irrelevant to how spend it
- Many behave otherwise: mental accounting

Wealth

- Windfall vs inheritance vs investment

Dealing with dynamics

Health and economic outcome (say, income) potentially respond to

- past values
- accumulated values
- timing of changes in values
- path to current values

Complex dynamic processes

Challenging to identify causal effects using potential outcomes approach

But data getting richer and methods progressing

Strategies to prioritise health of the disadvantaged

- Universal health coverage
  - Pooled health financing with resources allocated in proportion to need
  - Redistributes to socioeconomically disadvantaged who are in greater need
  - More so if pursue ↓ (pure) health inequality, not just health maximisation
  - Implicit targeting of socioeconomically disadvantaged
- Progressive universalism
  - Explicit targeting of socioeconomically disadvantaged
  - Programme access conditional on socioeconomic disadvantage
  - Prioritise interventions disproportionately benefiting disadvantaged

Objection 1: Ineffective

Health inequalities persist in Europe despite ~75 years of UHC

Are inequalities really not smaller than they would have been?

US Medicaid & CHIP → short- & long-run effects on health & socioeconomic outcomes

(Brown et al. 2020; Cohodes et al. 2016; Currie & Gruber 1996ab; East et al. 2023; Finkelstein et al. 2012; Goldin et al. 2020; Goodman-Bacon 2021; Miller & Wherry 2019; Sommers et al. 2012; Thompson 2017; Wherry & Meyer 2016; Wherry et al. 2018)

Objection 2: Inefficient

Prevention better than cure

Yes, but consider efficiency losses from additional tax-cash transfer redistribution

- Already difficult policy problem
- With aversion to health inequality & income → health, becomes intractable?
- Could only compensate (known) ex ante health risk of low income
- Likely marginal concern relative to first-order effect income → consumption
- In-kind transfer through healthcare can relax incentive constraint

Objection 3: Inequitable

If low income threatens health, then justice demands elimination of that risk, not just repair of damage wrought

- Back to search for causal evidence of income → health
- Finding evidence may raise demand for income redistribution. But how much?
- Not just repairing damage, can also target prevention on disadvantaged

Prioritising health of disadvantaged undermines universalism

- Prioritisation can be indirect, through need
- Socially advantaged sometimes gain more from universal benefits

Objection 4: Infeasible

Support for prioritisation of health of disadvantaged contingent on belief that socioeconomic circumstances → health

Figure 3: Empirical distribution of health inequality aversion

What explains the variation?

$$W = \frac{1}{N}\sum_{i=1}^{N}\frac{h_i^{1-\varepsilon}-1}{1-\varepsilon}, \quad \varepsilon \geq 0$$

Do social preferences explain health inequality aversion?

Matthew Robson[†] Tim Doran[‡] Owen O'Donnell[§] Tom Van Ourti[¶]

June 12, 2025

Journal of Economic Inequality, forthcoming

Table 1: (Partial) Associations of health inequality aversion with raw preference measures

	(1)	(2)	(3)	(4)	(5)	(6)
X **from task**						
A. Advantaged	-0.1777***				-0.1619***	-0.1465***
	(0.038)				(0.046)	(0.046)
B. Disadvantaged		-0.0936***			-0.0352	-0.0364
		(0.035)			(0.043)	(0.043)
C. Risk preference			-0.0482		0.0685	0.0895*
			(0.040)		(0.046)	(0.048)
D. Impartial				-0.1360***	-0.0575	-0.0467
				(0.042)	(0.055)	(0.054)
Constant	0.6025***	0.5464***	0.5248***	0.5706***	0.6057***	0.7142***
	(0.023)	(0.019)	(0.022)	(0.023)	(0.028)	(0.129)
Observations	903	903	903	903	903	903
R^2	0.0243	0.0077	0.0016	0.0126	0.0281	0.0907

Note: OLS estimates of (partial) associations between rank of health inequality aversion from the main experiment, $rank(\hat{\varepsilon}_k)$, and raw preference measures, X, from each of the supplementary tasks A-D individually (columns (1)-(4)) and jointly (columns (5) and (6)). Column (6) controls for 42 covariates (full estimates in Table D9). All explanatory variables are normalised between 0 and 1. Observations with covariate item non-response imputed with Multiple Imputation by Chained Equations. Robust standard errors in parentheses. p-values: $^{*}\, p < 0.10$, $^{**}\, p < 0.05$, $^{***}\, p < 0.01$.

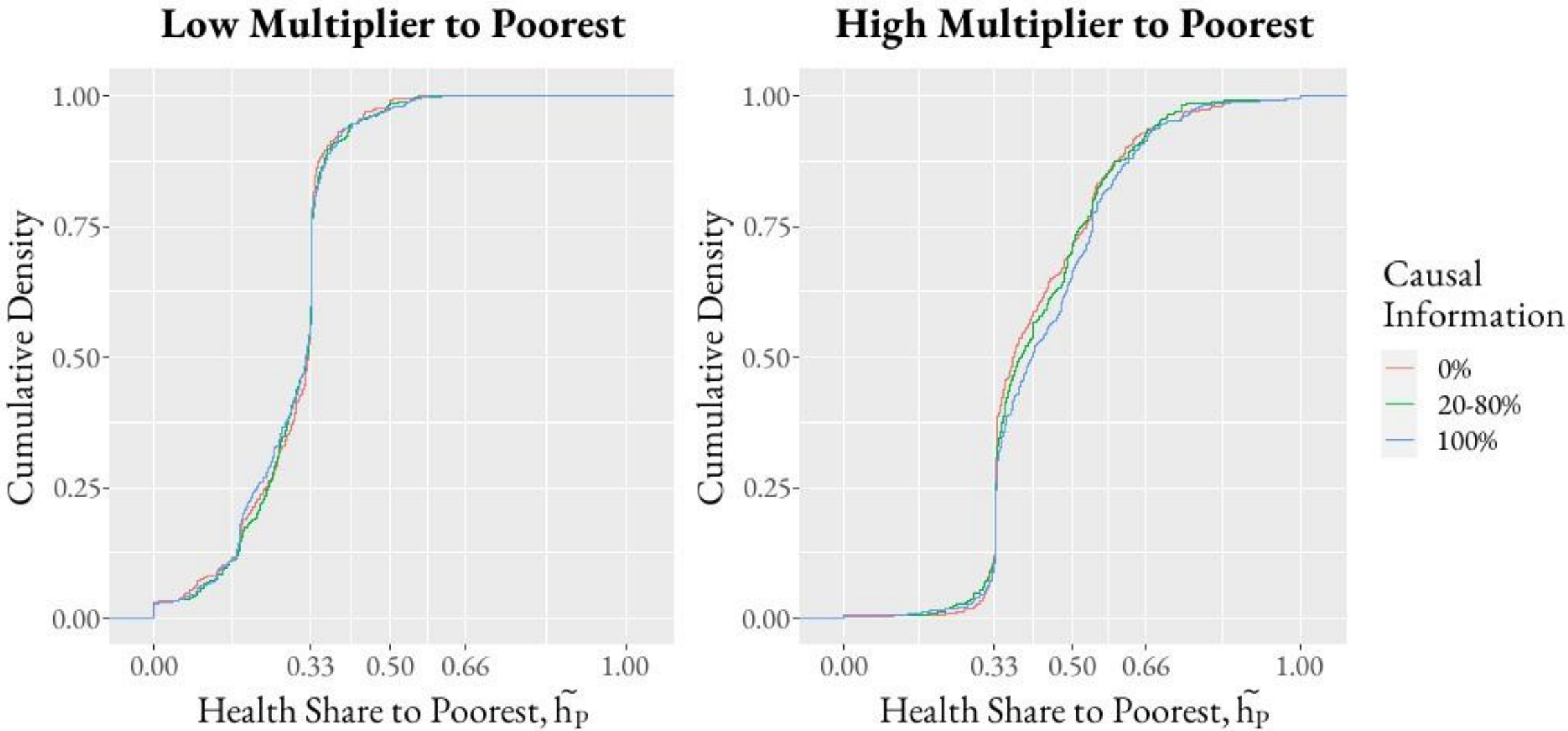
Table 2: Shapley-Owen decomposition of explained variation in health inequality aversion

	R^2 Decomposition (%)	
	Shapley	Owen
X from task		26.5
A. Advantaged	17.1	
B. Disadvantaged	2.7	
C. Risk preference	1.7	
D. Impartial	5.0	
Demographics		5.4
Age	0.6	
Female	0.4	
Married	1.3	
Born in UK	0.3	
White	0.1	
Household Size	2.4	
Children in household	0.3	
Education (ref. A-Level)		5.2
- Postgraduate	3.1	
- Undergraduate	0.7	
- Secondary/Primary	1.1	
Private School	0.3	
Employment (ref. Employed)		5.1
- Unemployed	0.8	
- Retired	0.8	
- Student	1.8	
- Other	1.8	
Occupation (ref. Intermediate)		6.1
- Manager/Professional	1.6	
- Never Worked	1.5	
- Other	3.0	
Income (£k)	0.7	0.7
Subjective SES	0.2	0.2

	R^2 Decomposition (%)	
	Shapley	Owen
Wealth		3.4
Own Home	1.8	
House value (£k)	0.4	
Savings (£k)	1.2	
Other Capital		5.7
Social - Mean	2.7	
Social - Count	2.0	
Cultural - Highbrow	0.5	
Cultural - Emerging	0.5	
Country (ref. England)		1.5
- N. Ireland	0.2	
- Scotland	1.2	
- Wales	0.1	
Health		12.3
Health: Likert 0-100	2.1	
Self-Assessed Health	0.9	
Subjective Life Expectancy	1.1	
Own chronic condition	6.1	
Family chronic condition	0.9	
Treated COVID-19	1.2	
Health Behaviour		5.5
Cigarettes Smoked Per Day	1.7	
Alcohol Units Per Week	1.6	
Exercise Hours Per Week	2.2	
Political Views		8.4
- Left-Right	7.7	
- Libertarian-Authoritarian	0.7	
QALE belief	14.1	14.1
N	903	
R-squared	0.0907	

Note: Decomposition of explained variation from OLS regression of $rank(\hat{\varepsilon}_k)$ on X from each supplementary task A-D and 42 covariates (as column (6) of Table 1, regression estimates in Table D9 Appendix D.4.3). SES = socioeconomic status. QALE belief = perception of quality-adjusted life expectancy in the UK.

Prioritisation of poor insensitive to information that income causes health (productivity)



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Responsibility-sensitive welfare weights for health

Matthew Robson [a,*], Owen O'Donnell [b], Tom Van Ourti [c,1]

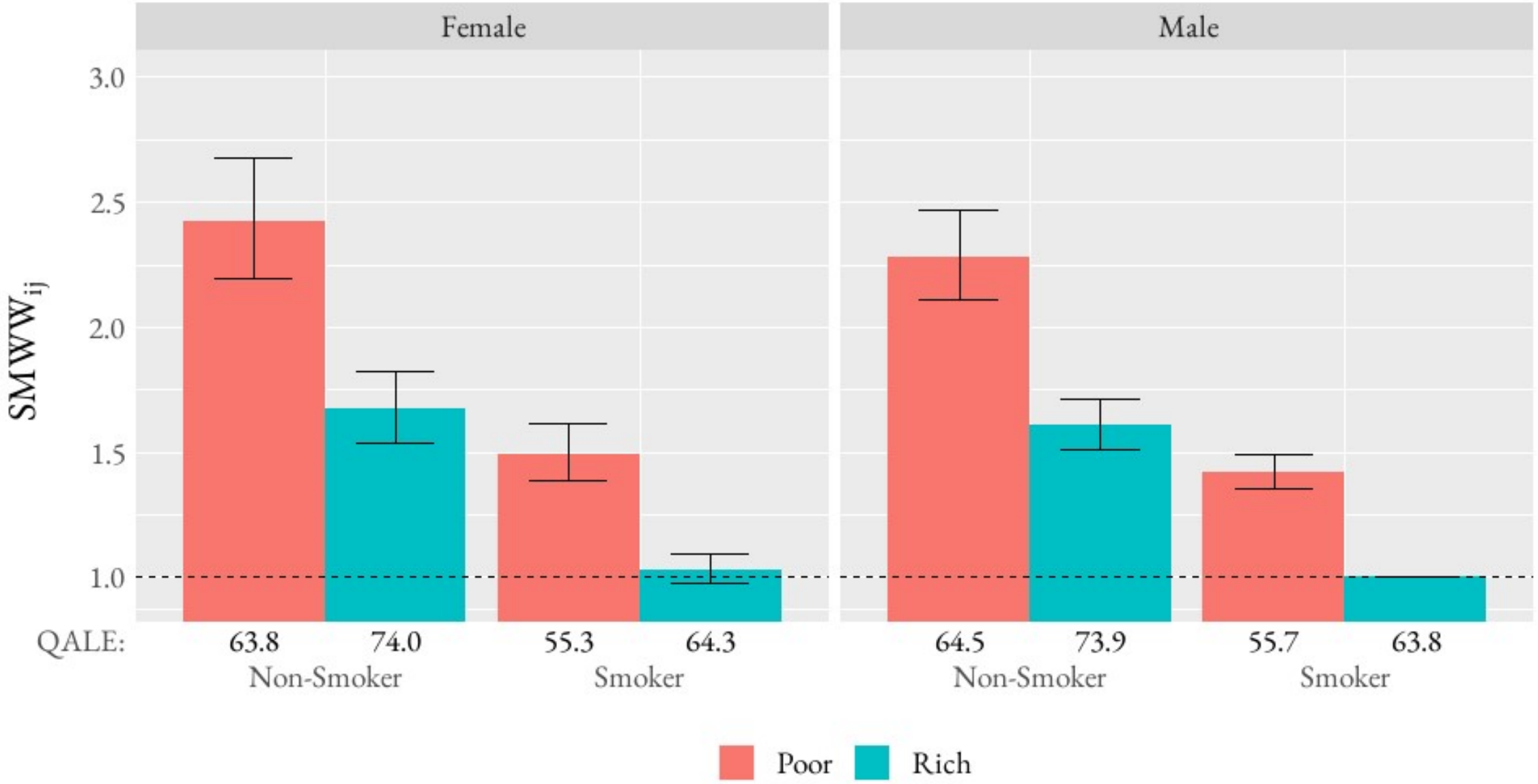
$$W = \frac{1}{N}\sum_{i=1}^{N} \omega_i U(h_i)\,, \quad 0 \leq \omega_i \leq 1,\ \sum_{i=1}^{N} \omega_i = 1$$

Pareto weights, ω_i, can vary by sex, income and smoking

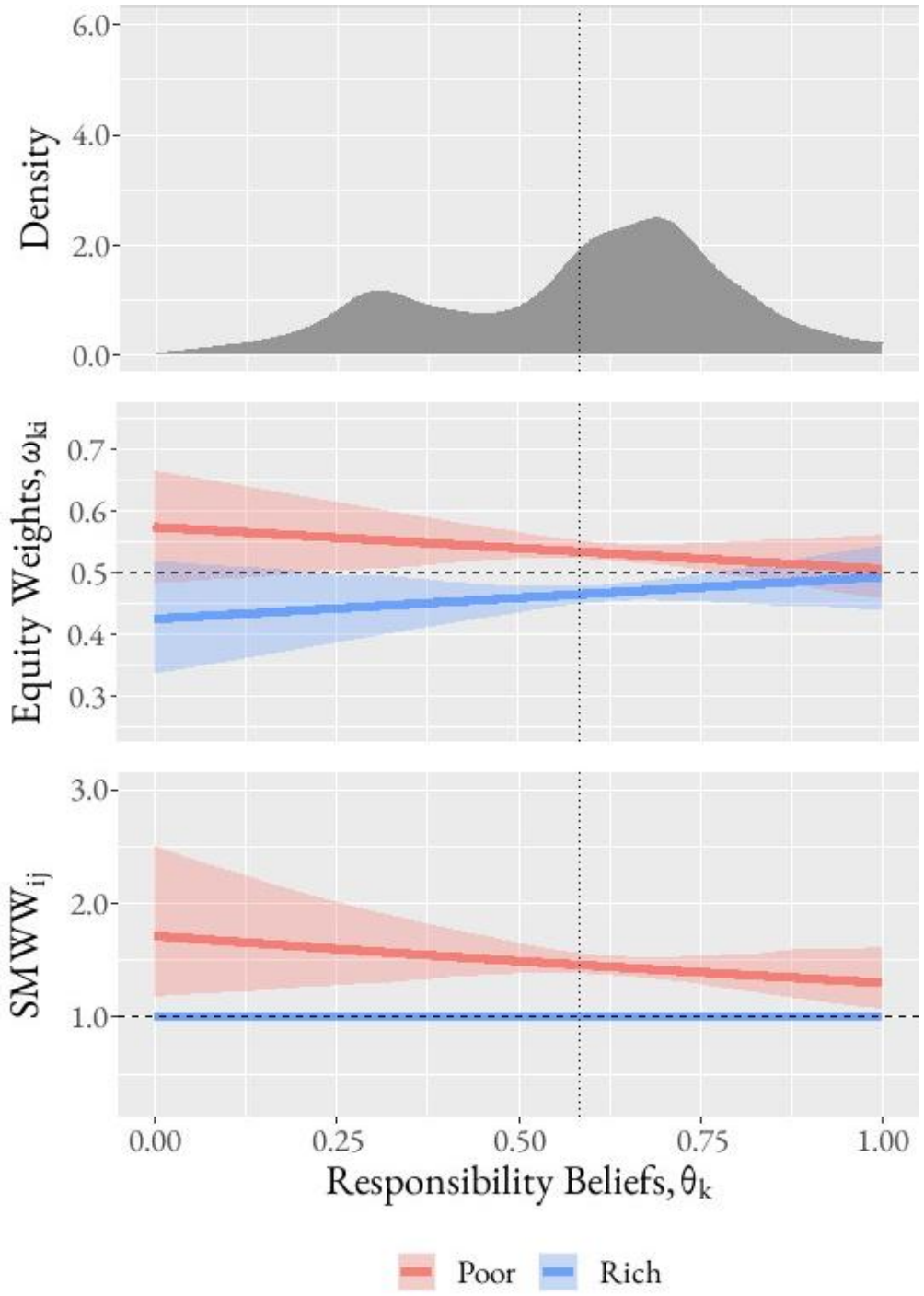
Weights by income and smoking can depend on responsibility

Welfare weights reflect both inequity aversion (ω_i) and inequality aversion (U concavity)

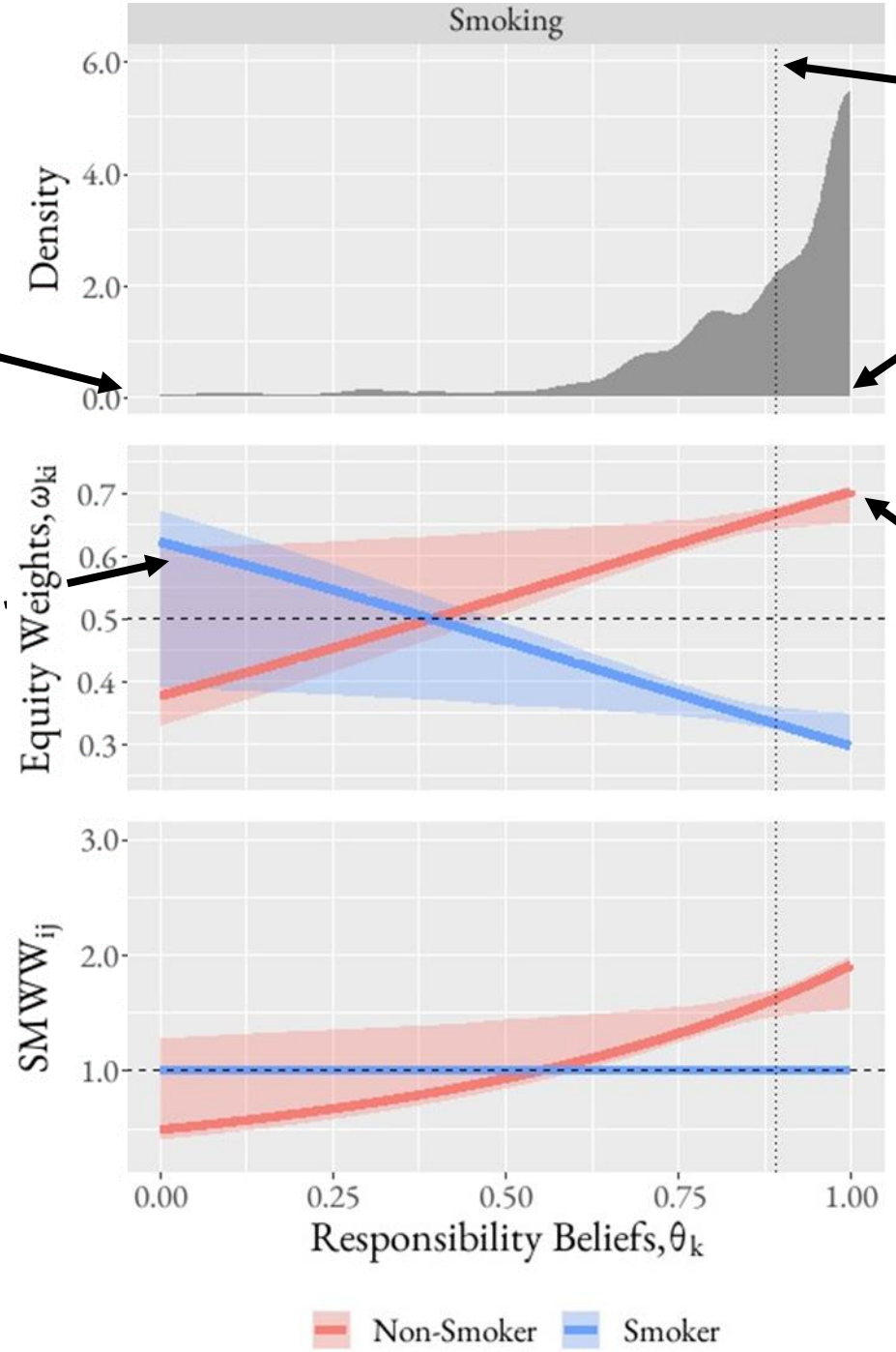
Prioritisation and inequality aversion determine welfare weights



Relative social marginal welfare weight on poor vs rich



Still greater weight on poor when full responsibility for income due to inequality aversion



Mean responsibility belief

Not responsible at all for smoking

Entirely responsible for smoking

Priority to health of smoker

Priority to health of non-smoker

Relative social marginal welfare weight on non-smoker vs smoker

Relative welfare weight on health of non-smoker rises with stronger belief that smoking is personal responsibility

Summing up concerns about health inequality

Strong aversion to pure health inequality

Willingness to prioritise by sex (slightly), income and smoking

Effects of these two motivations on welfare weights are contradictory for sex and smoking and reinforcing for income

Causation does not intensify aversion to health inequality by income

Ethical preferences consistent with responsibility-sensitive egalitarianism