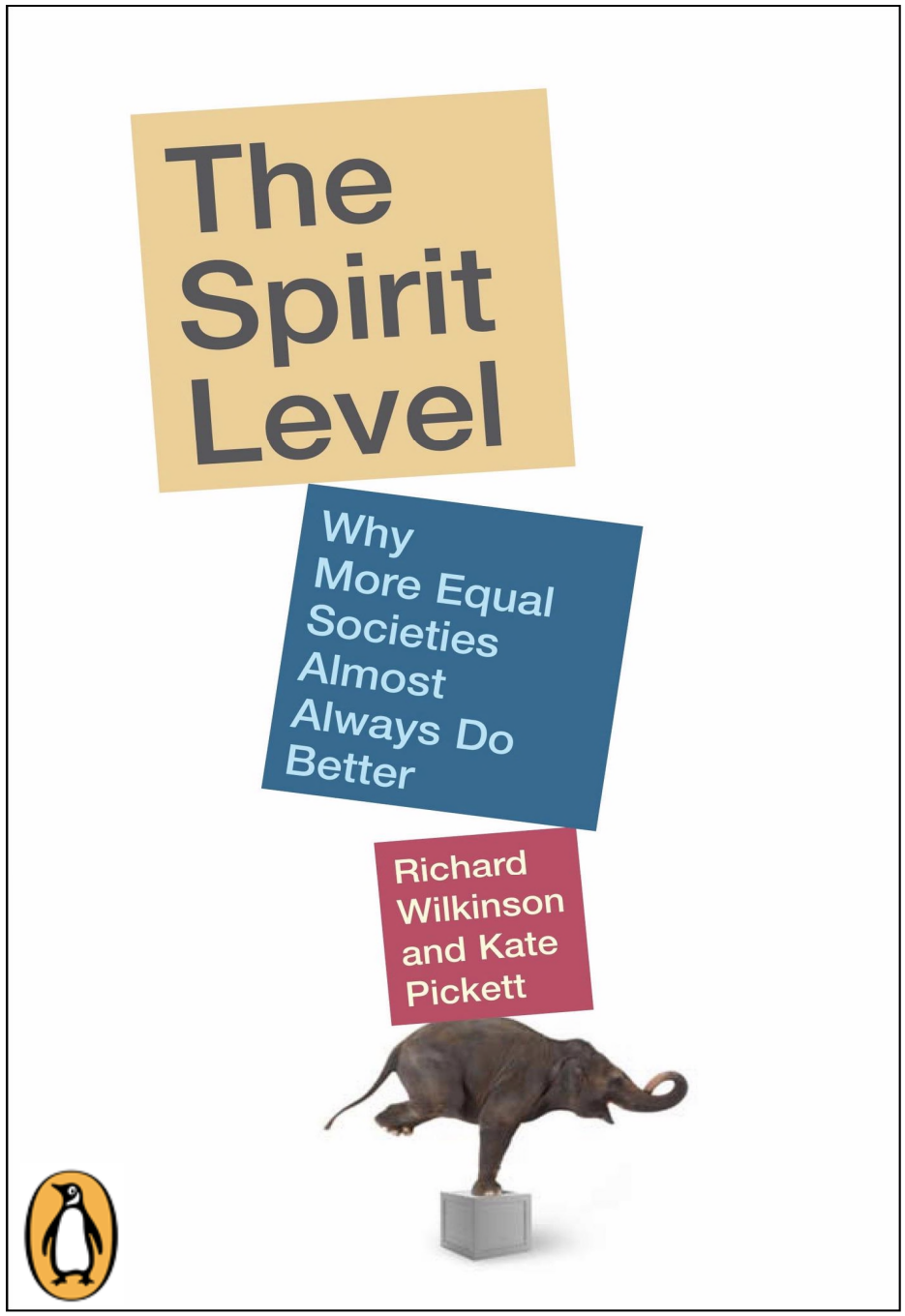


Inequality: a key source of social stress

Richard Wilkinson
Emeritus Professor of Social Epidemiology, University of Nottingham

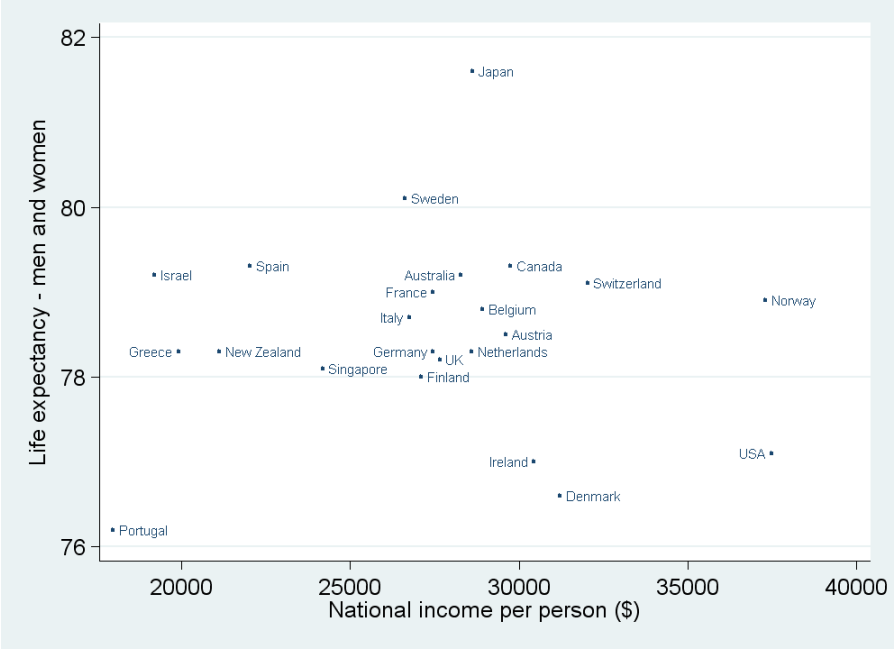
&

Kate Pickett
Professor of Epidemiology
University of York

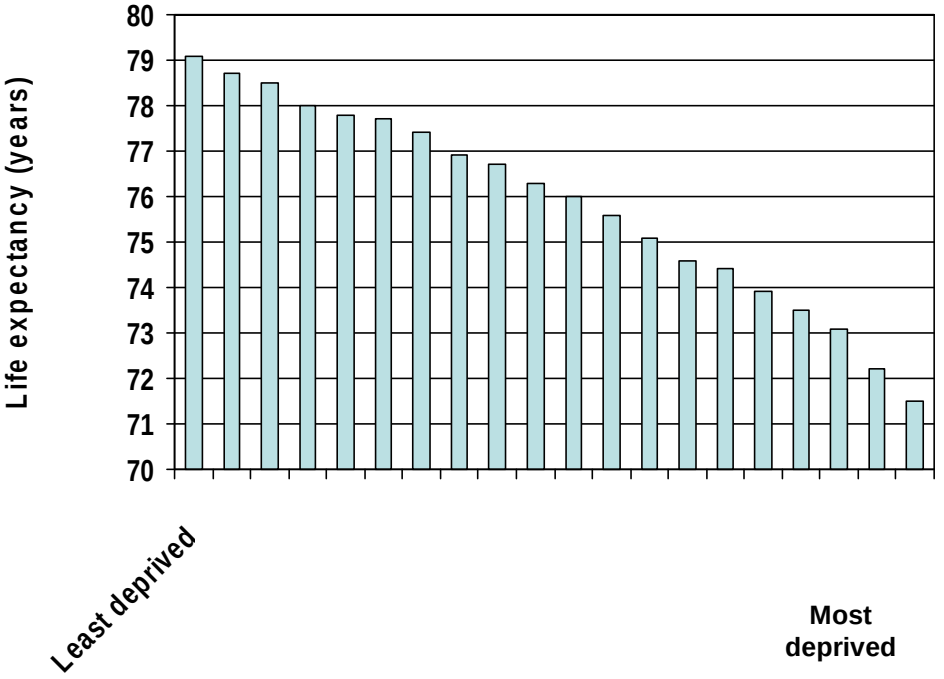
http://www.equalitytrust.org.uk

Health is related to income differences *within* rich societies but not to those *between* them

Between (rich) societies



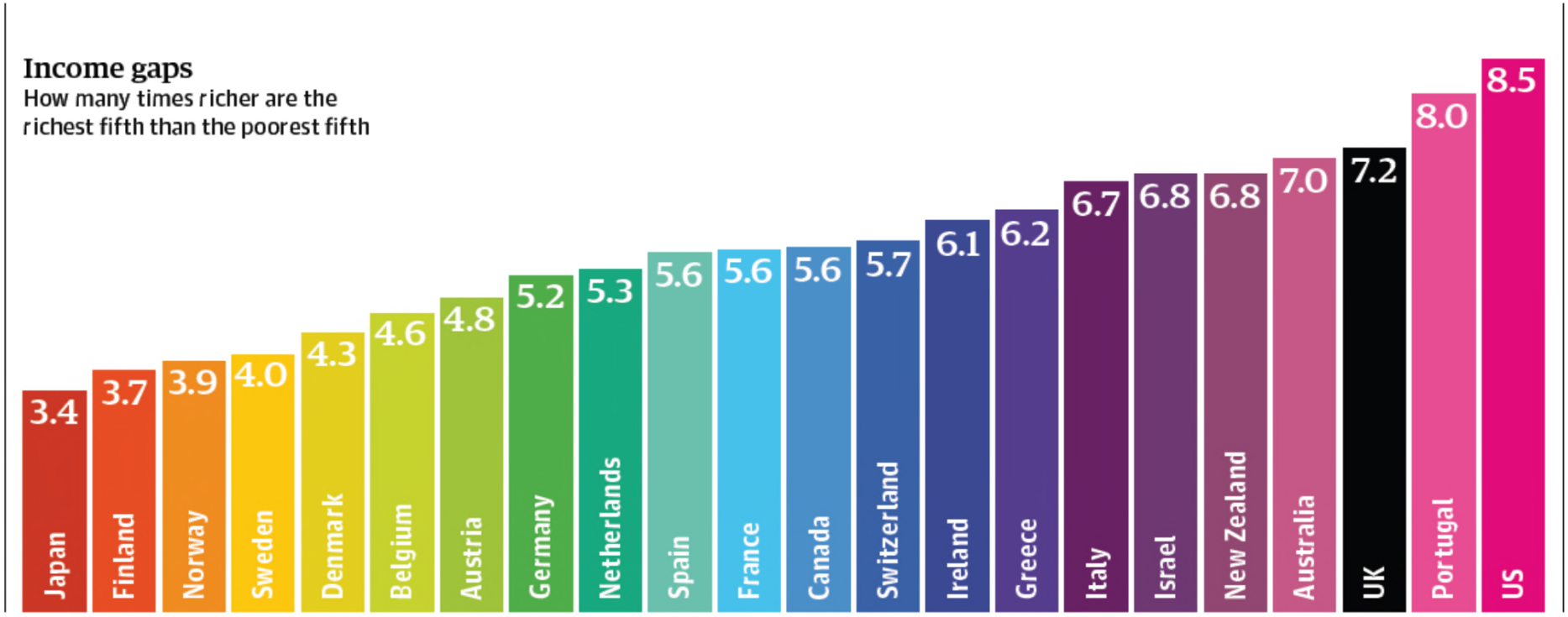
Within societies



Source: Wilkinson & Pickett, The Spirit Level (2009)

The Equality Trust

How much richer are the richest 20% than the poorest 20%?

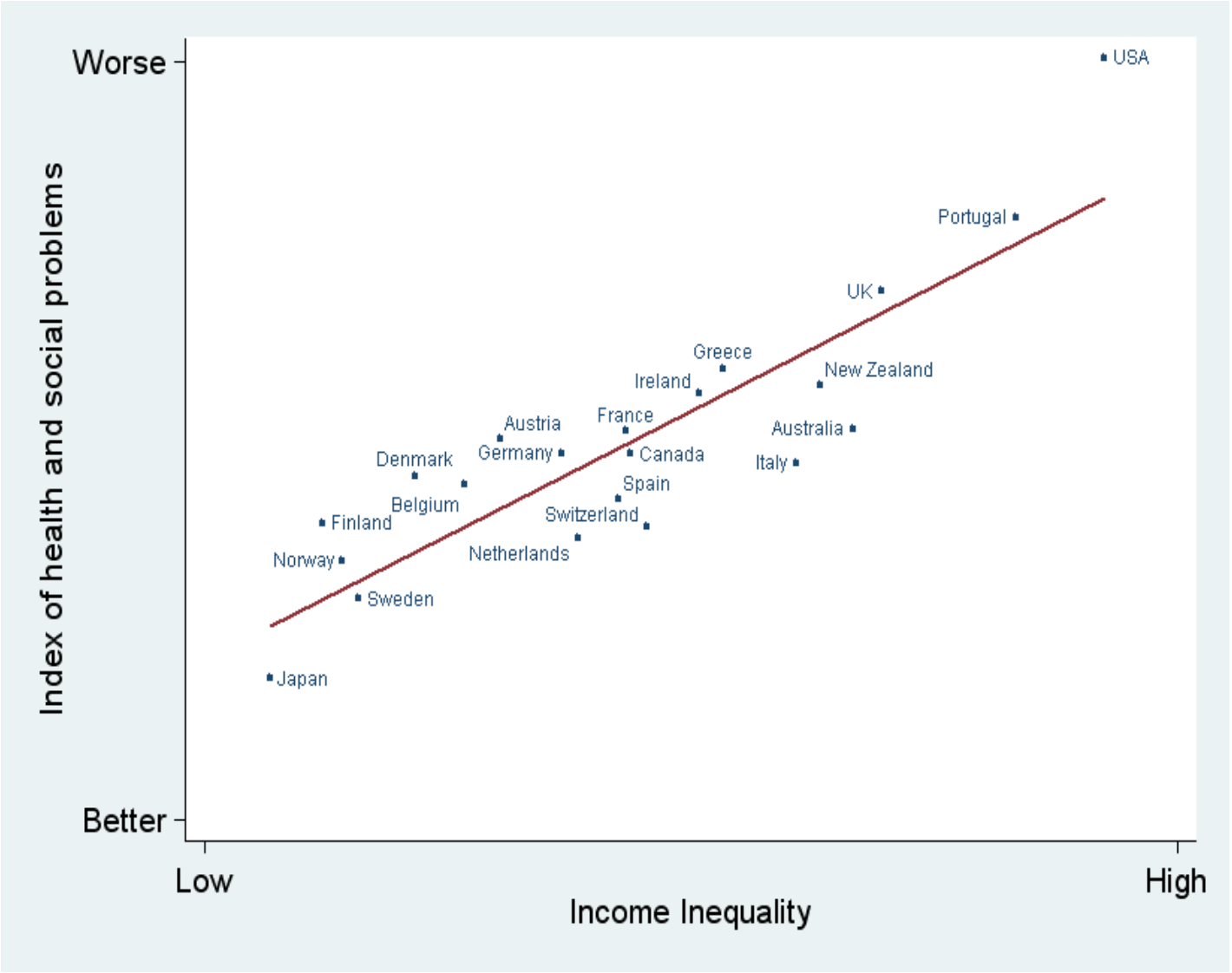


Source: Wilkinson & Pickett, The Spirit Level (2009)

Health and Social Problems are Worse in More Unequal Countries

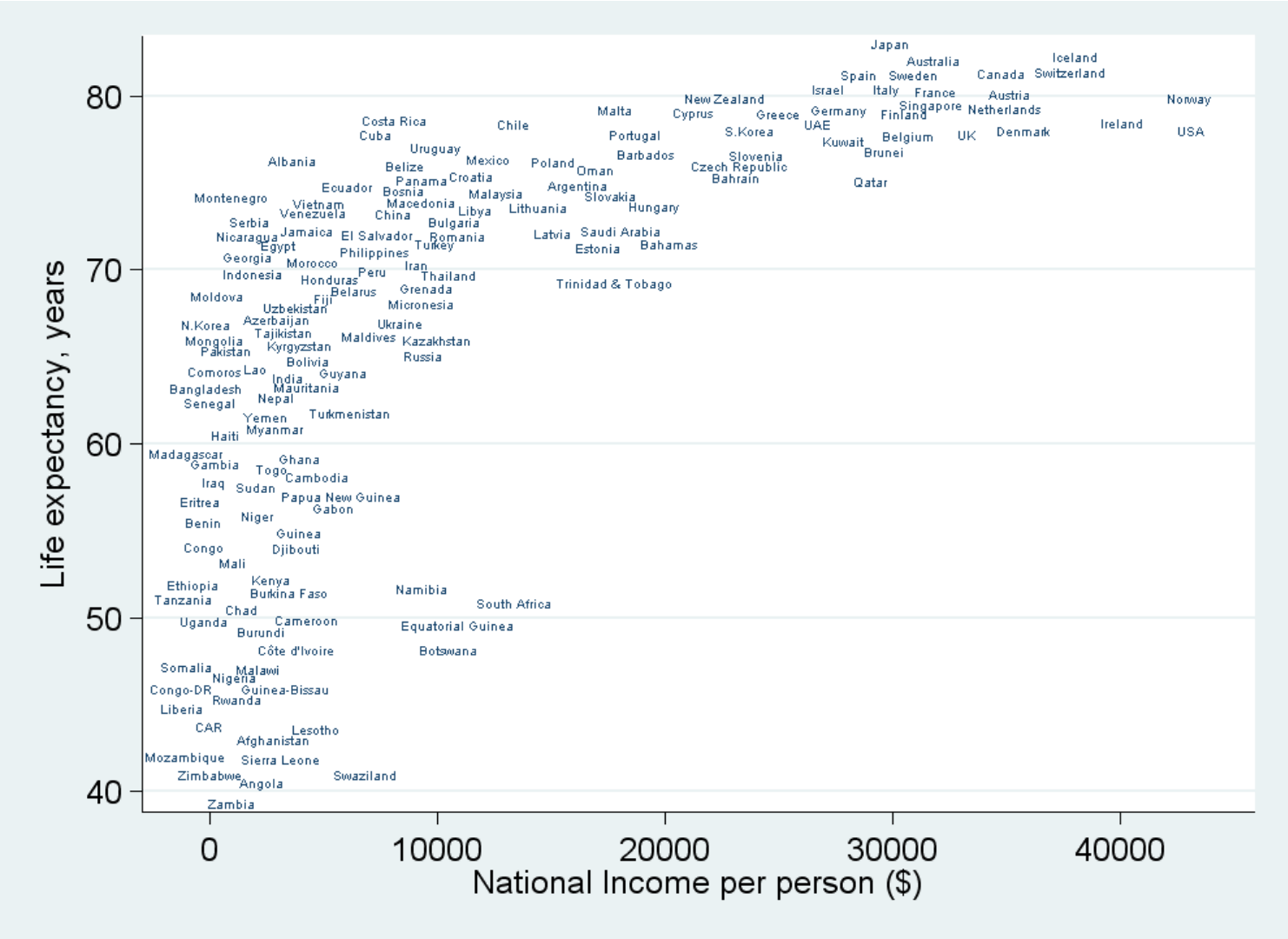
Index of:

- Life expectancy
- Math & Literacy
- Infant mortality
- Homicides
- Imprisonment
- Teenage births
- Trust
- Obesity
- Mental illness – incl. drug & alcohol addiction
- Social mobility



Source: Wilkinson & Pickett, The Spirit Level (2009)

Income per head and life-expectancy: rich & poor countries



Source: Wilkinson & Pickett, The Spirit Level (2009)

Health and Social Problems are not Related to Average Income in Rich Countries

Index of:

- Life expectancy
- Math & Literacy
- Infant mortality
- Homicides
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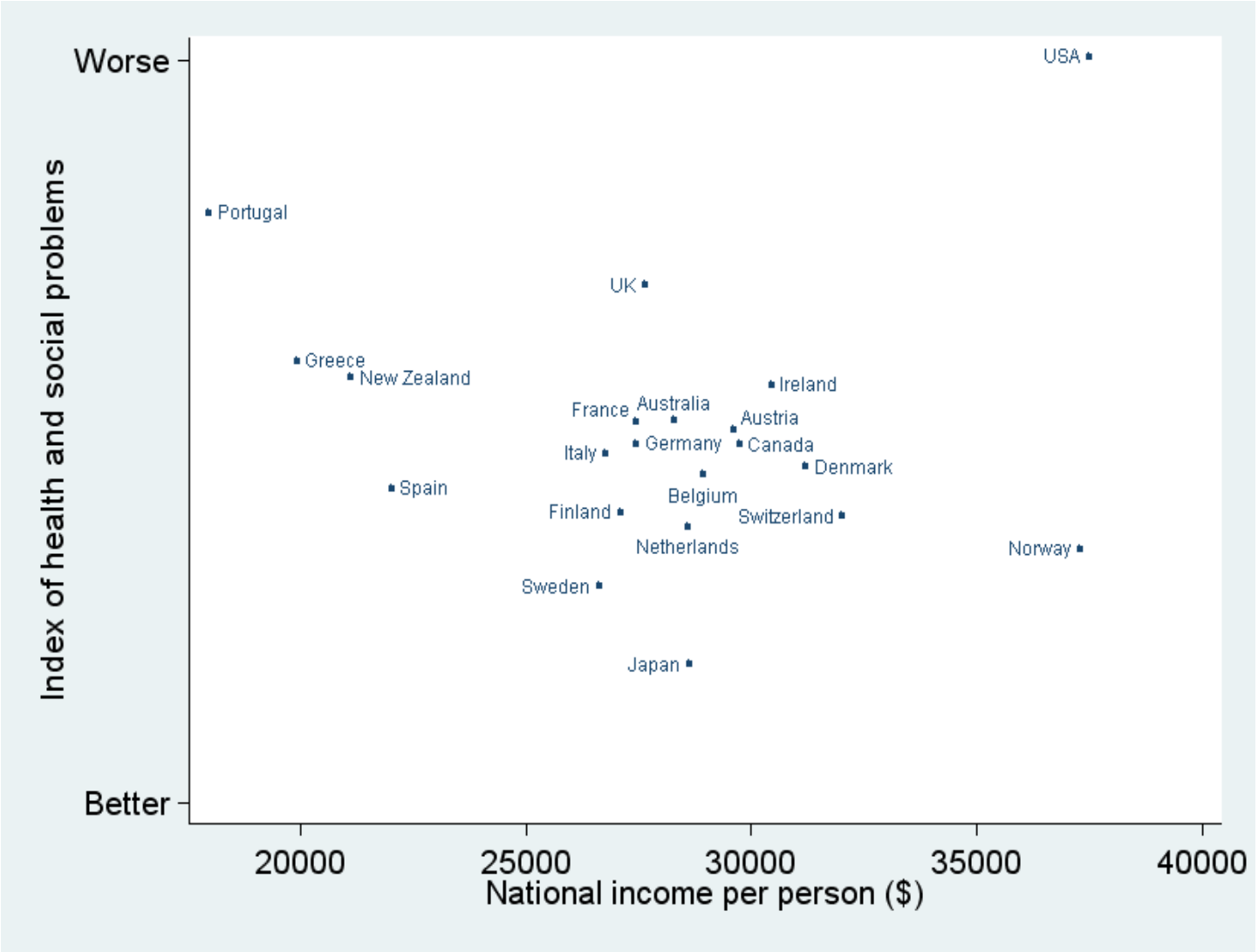
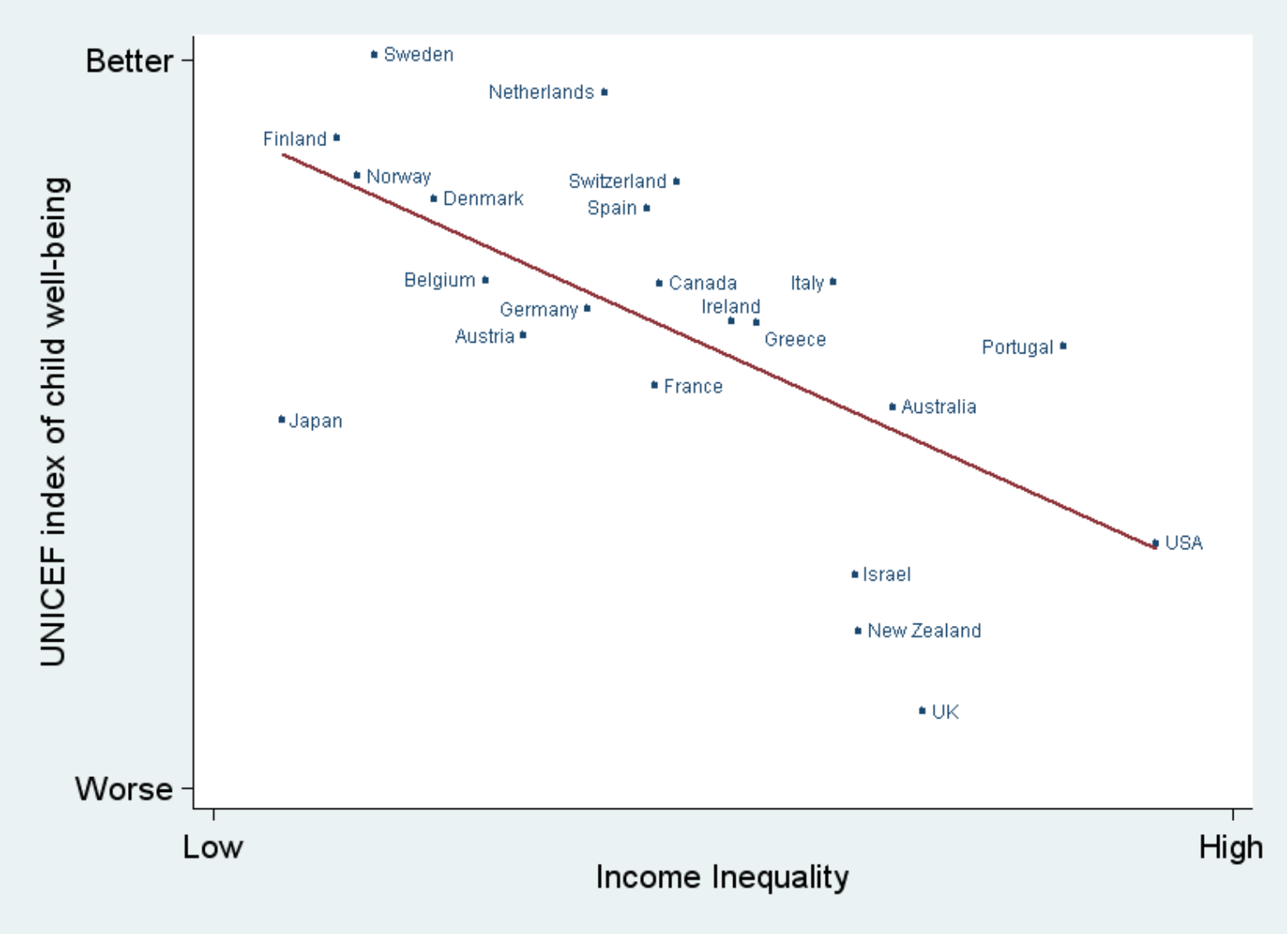
- Teenage births
- Trust
- Obesity
- Mental illness – incl. drug & alcohol addiction
- Social mobility



Source: Wilkinson & Pickett, The Spirit Level (2009)

The Equality Trust

Child Well-being is Better in More Equal Rich Countries



Source: Wilkinson & Pickett, The Spirit Level (2009)

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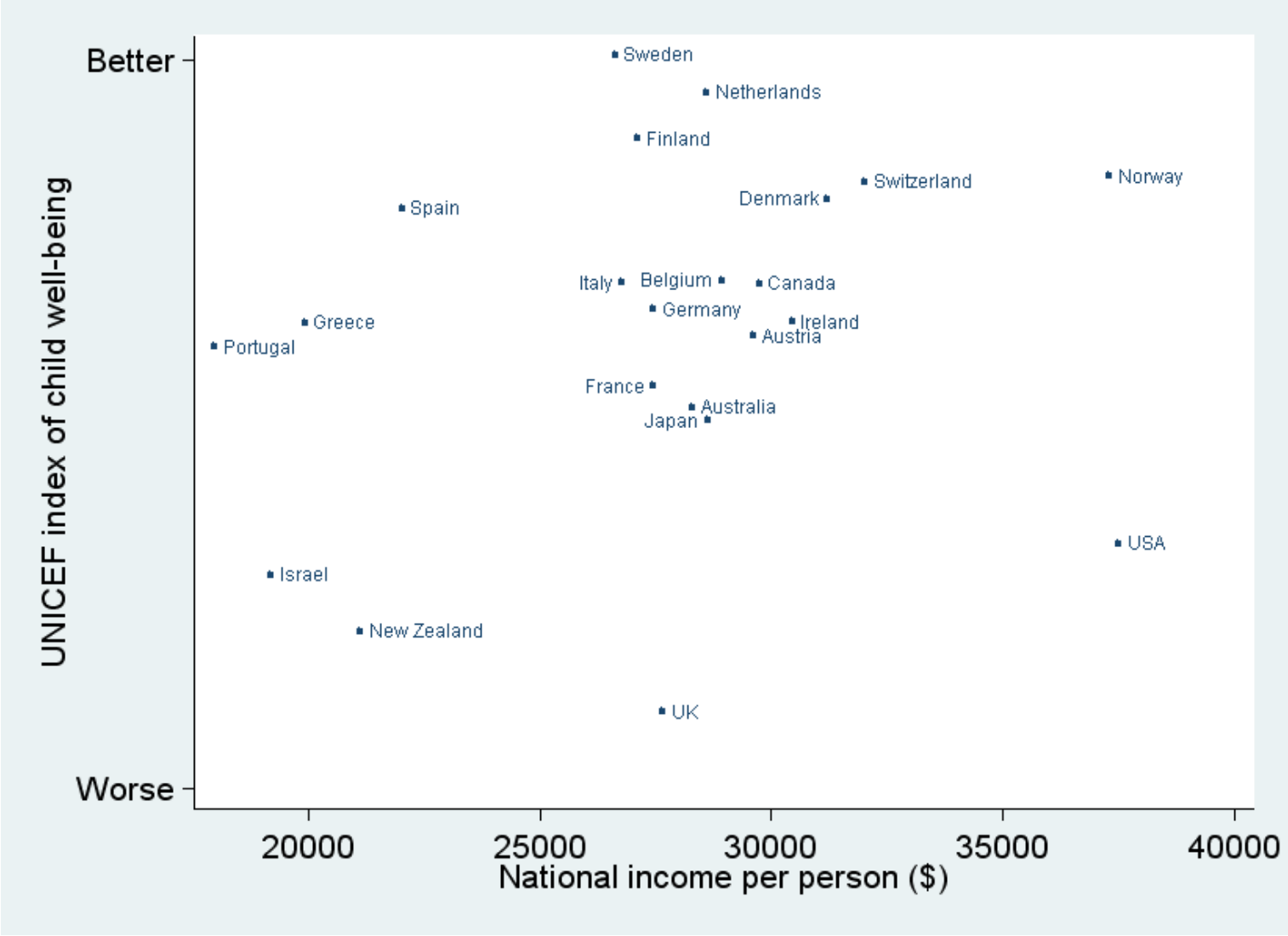
Child-Wellbeing is Unrelated to Average Incomes in Rich Countries



Source: Wilkinson & Pickett, The Spirit Level (2009)

The Equality Trust

Table 2 | Correlations of measures of child wellbeing with income inequality, and average income across the 50 US states (including District of Columbia)

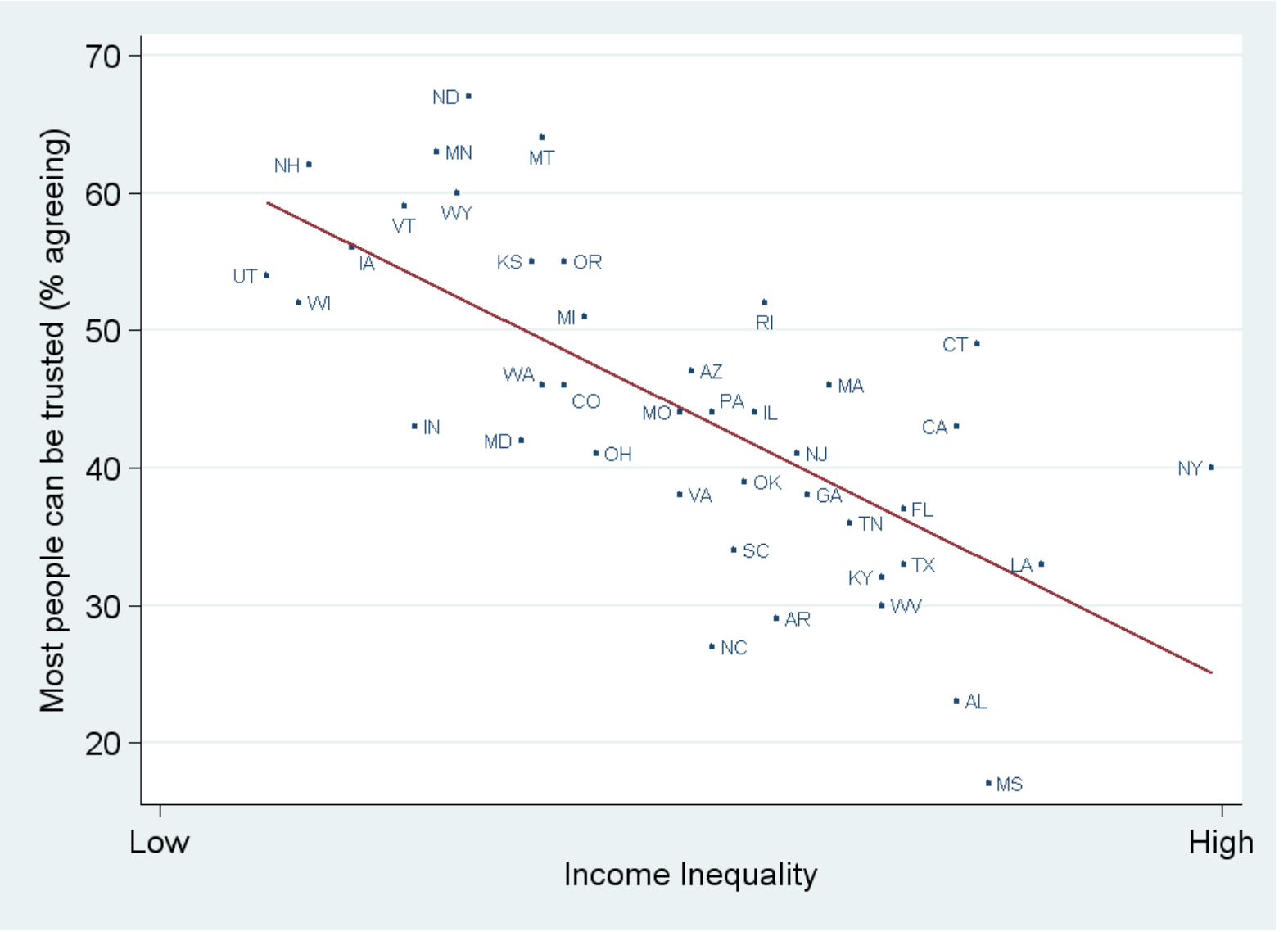
	Income inequality		Average income	
Measure of child wellbeing	*r*	P value	*r*	P value
Teenage births[12]	0.72	<0.001	−0.55	<0.001
Juvenile homicides[12]	0.31	0.03	0.00	0.99
Infant mortality*	0.55	<0.001	−0.20	0.15
Low birth weight*	0.65	<0.001	−0.01	0.99
Educational performance (combined maths and reading scores for 15 year olds)†[4]	−0.69	<0.001	0.08	0.58
Dropping out of high school†[4]	0.66	<0.001	−0.28	0.04
Overweight	0.64	<0.001	−0.07	0.63
Mental health problems	0.37	0.01	−0.14	0.33

*Similar findings have been reported elsewhere.[11 40]
†Similar findings have been reported elsewhere.[11]

Levels of Trust are Higher in More Equal Rich Countries

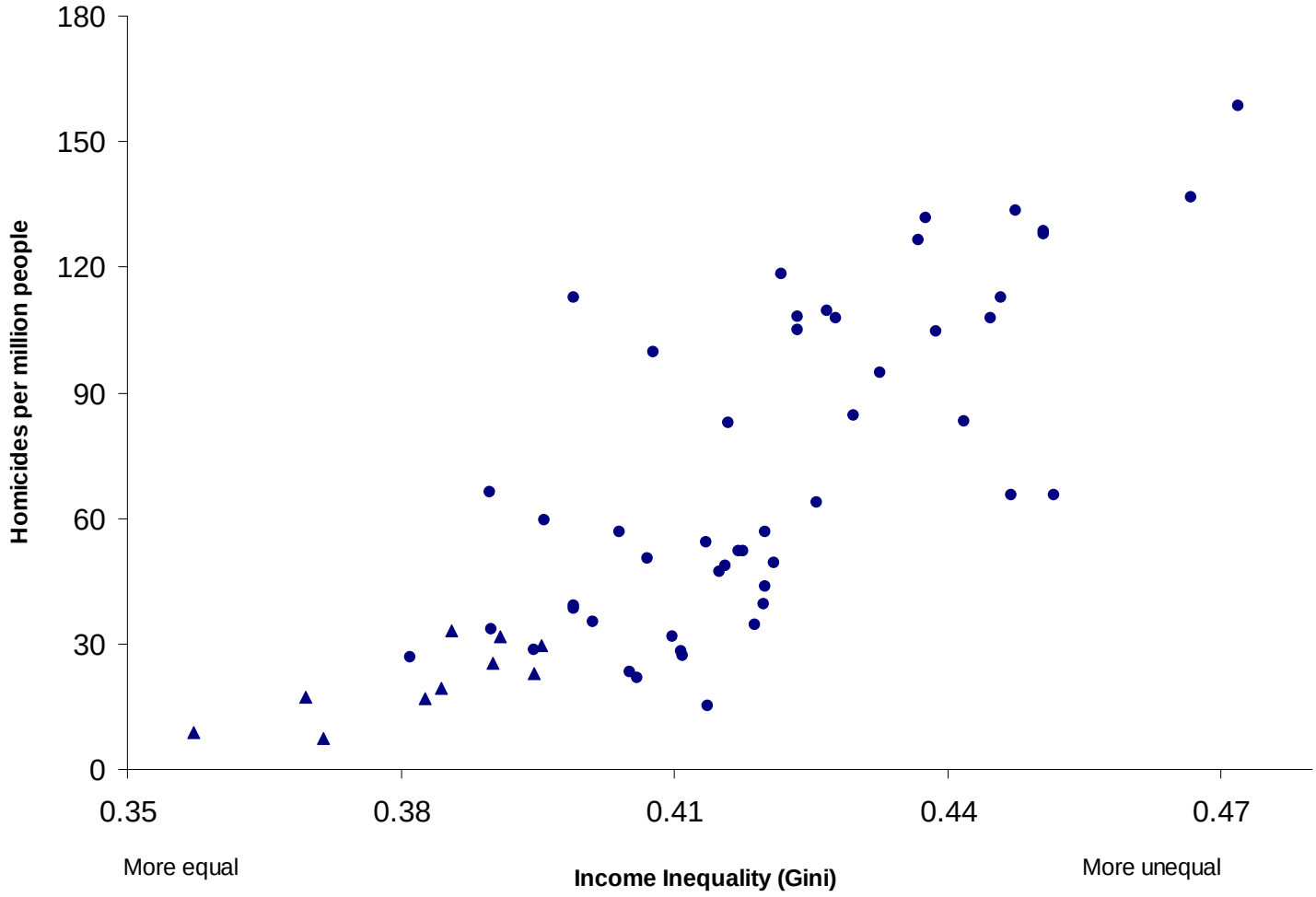
Source: Wilkinson & Pickett, The Spirit Level (2009)

Levels of Trust are Higher in More Equal US States



Source: Wilkinson & Pickett, The Spirit Level (2009)

Homicide and income inequality: US States and Canadian Provinces



Source: Daly M, Wilson M, Vasdev S. Income inequality and homicide rates in Canada and the United States. *Canadian Journal of Criminology* 2001; 43: 219-36.

Children Experience More Conflict in More Unequal Societies

11, 13 & 15 yr olds fighting, bullying, and finding peers not kind & helpful

Source: Wilkinson & Pickett, The Spirit Level (2009)

The Prevalence of Mental Illness is Higher in More Unequal Rich Countries

Source: Wilkinson & Pickett, The Spirit Level (2009)

Teenage Birth Rates are Higher in More Unequal Rich Countries

Source: Wilkinson & Pickett, The Spirit Level (2009)

Rates of Imprisonment are Higher in More Unequal Countries

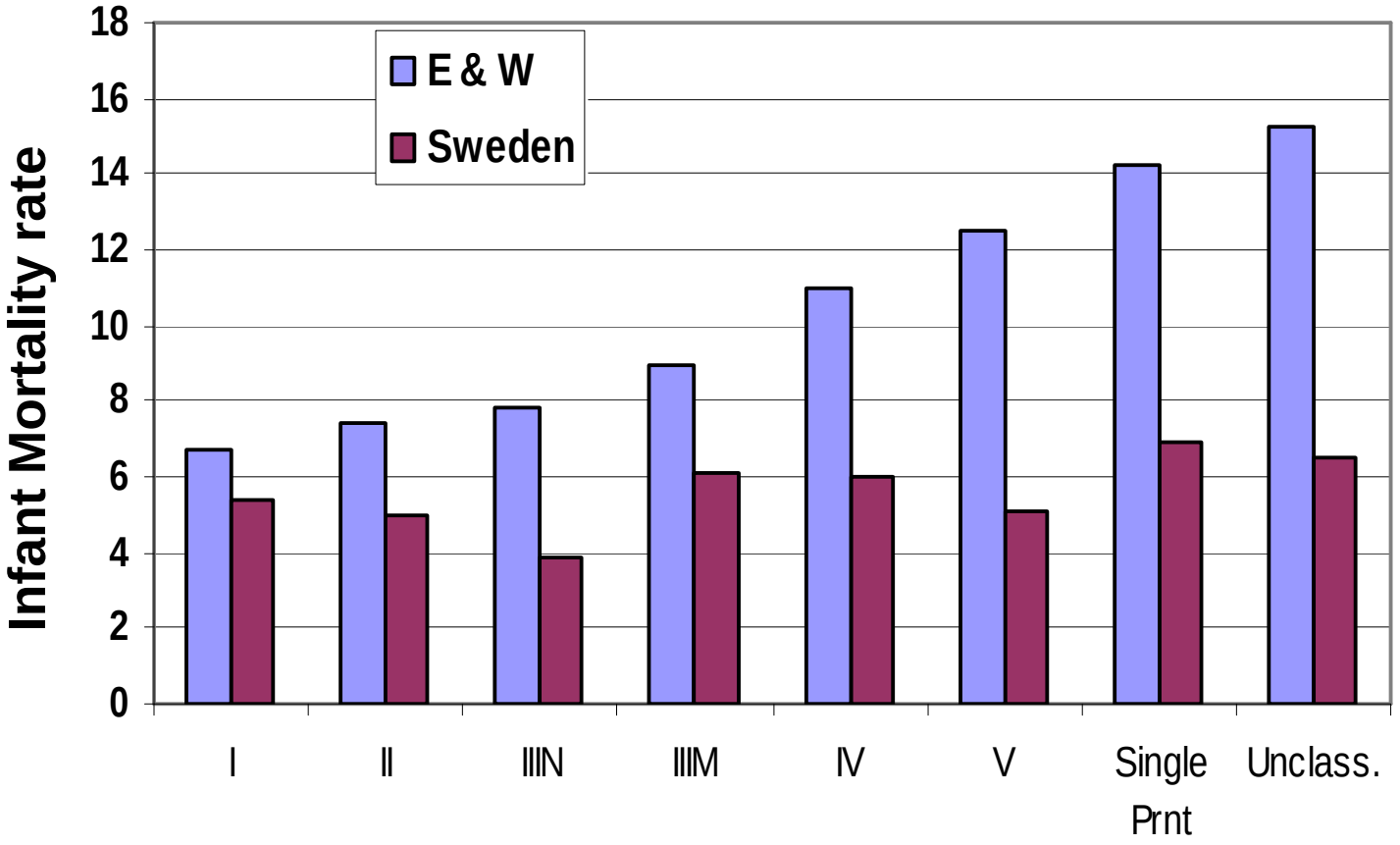
Source: Wilkinson & Pickett, The Spirit Level (2009)

The Equality Trust

Almost everyone benefits from greater equality.

Usually the benefits are greatest among the poor but extend to the majority of the population

Infant Mortality by Social Class: Sweden and England & Wales



Source: Leon DA, Vagero D, Olausson PO. BMJ 1992; 305; 687-91

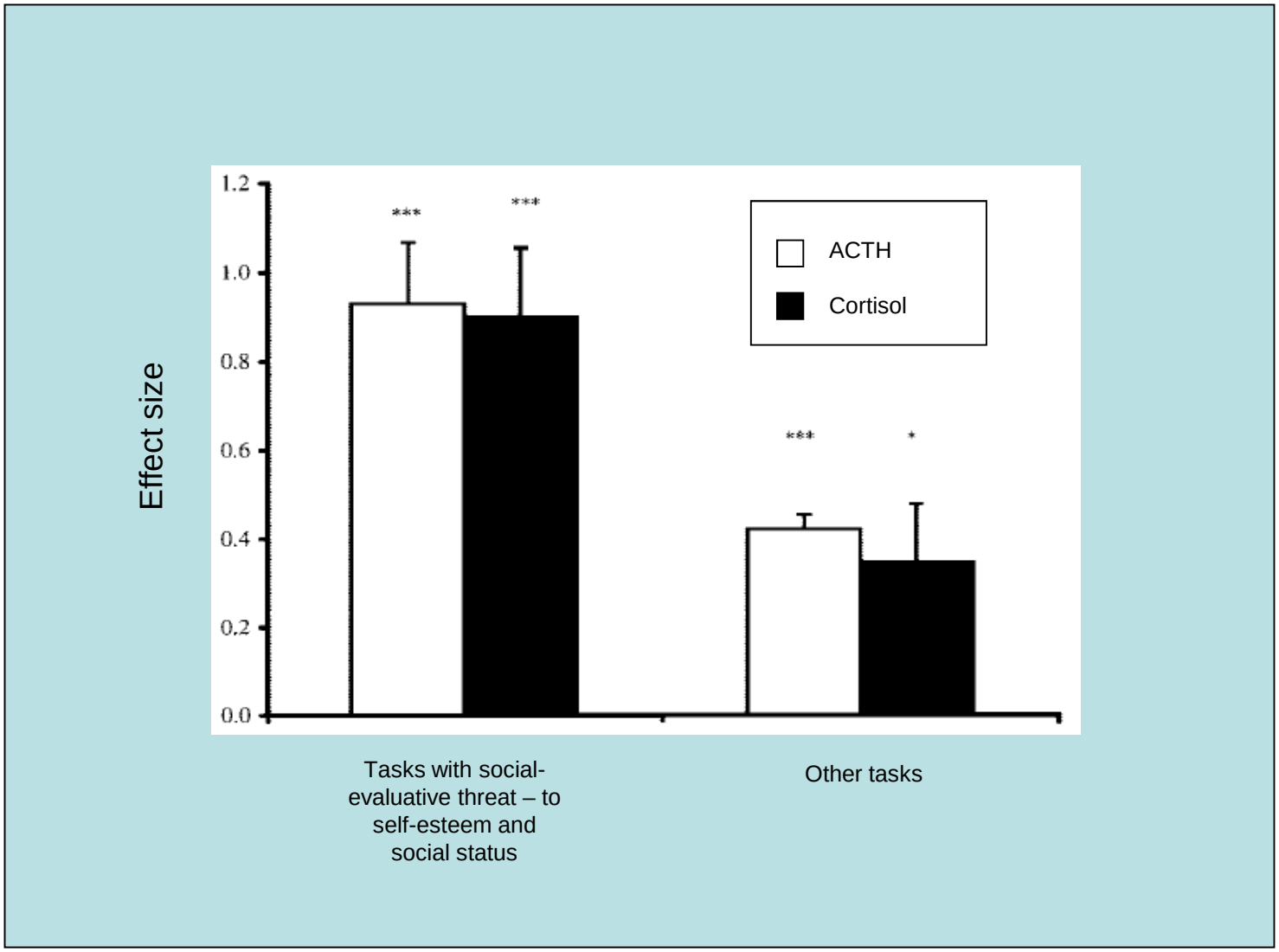
Why are we so sensitive to inequality?

Gilligan J. *Violence: Our Deadly Epidemic and its Causes.*
(G .P. Putnam 1996)

" ...the prison inmates I work with have told me repeatedly, when I asked them why they had assaulted someone, that it was because 'he disrespected me', or 'he disrespected my visit' (meaning 'visitor'). The word 'disrespect' is central in the vocabulary, moral value system, and psychodynamics of these chronically violent men that they have abbreviated it into the slang term, 'he dis'ed me." p.106

A few pages further on Gilligan continues:-
"I have yet to see a serious act of violence that was not provoked by the experience of feeling shamed and humiliated, disrespected and ridiculed, and that did not represent the attempt to prevent or undo this "loss of face " - no matter how severe the punishment, even if it includes death." p.110

What kind of stress most reliably raises cortisol levels?



Source: Dickerson SS & Kemeny ME. Psychological Bulletin 2004; 130(3): 355-91

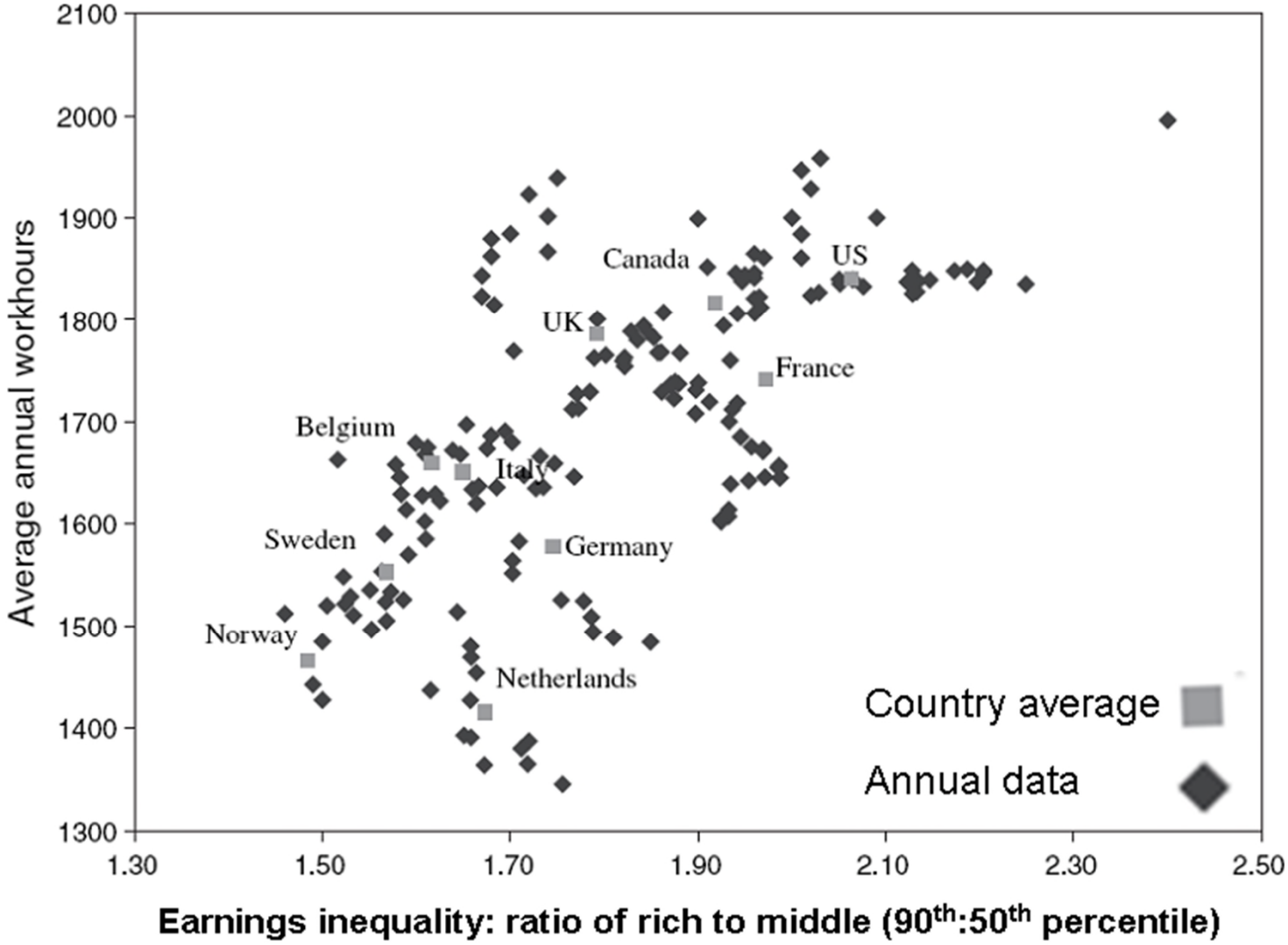
How inequality increases social stress

- **More status competition and status insecurity: consumerism, longer working hours**
- **More downward prejudice – racism, classism etc**
- **Weakening of community life**
- **Stronger social evaluative threat**
- **In general: effects of social stratification are intensified**

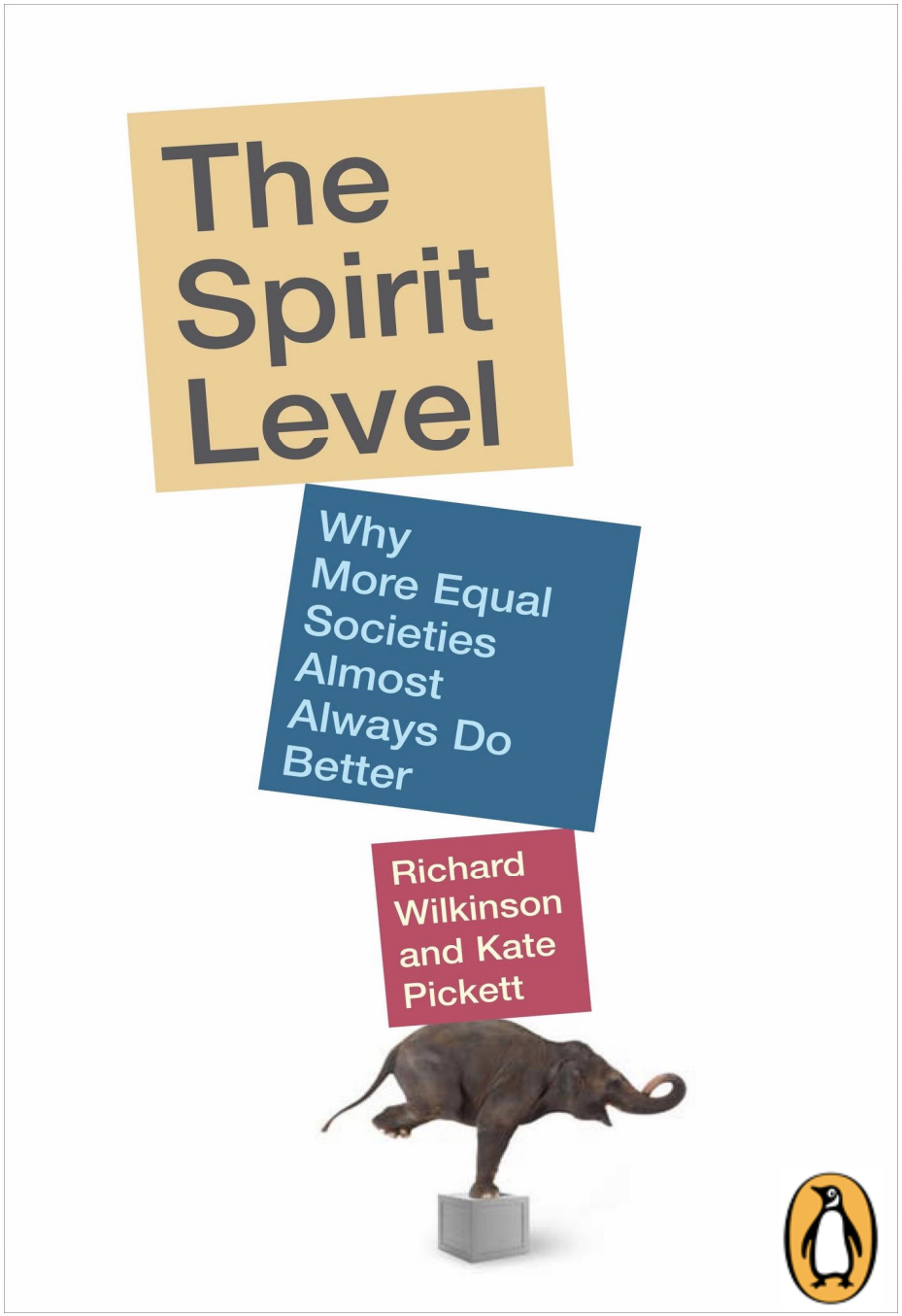
The effects of inequality - a two stage process

1. adult experience of inequality
2. passed on to children – epigenetics?

Working hours are longer in more unequal countries



Source: Bowles S, Park Y. Economic Journal 2005; 115 (507): F397–F412. 2005.



For more information:

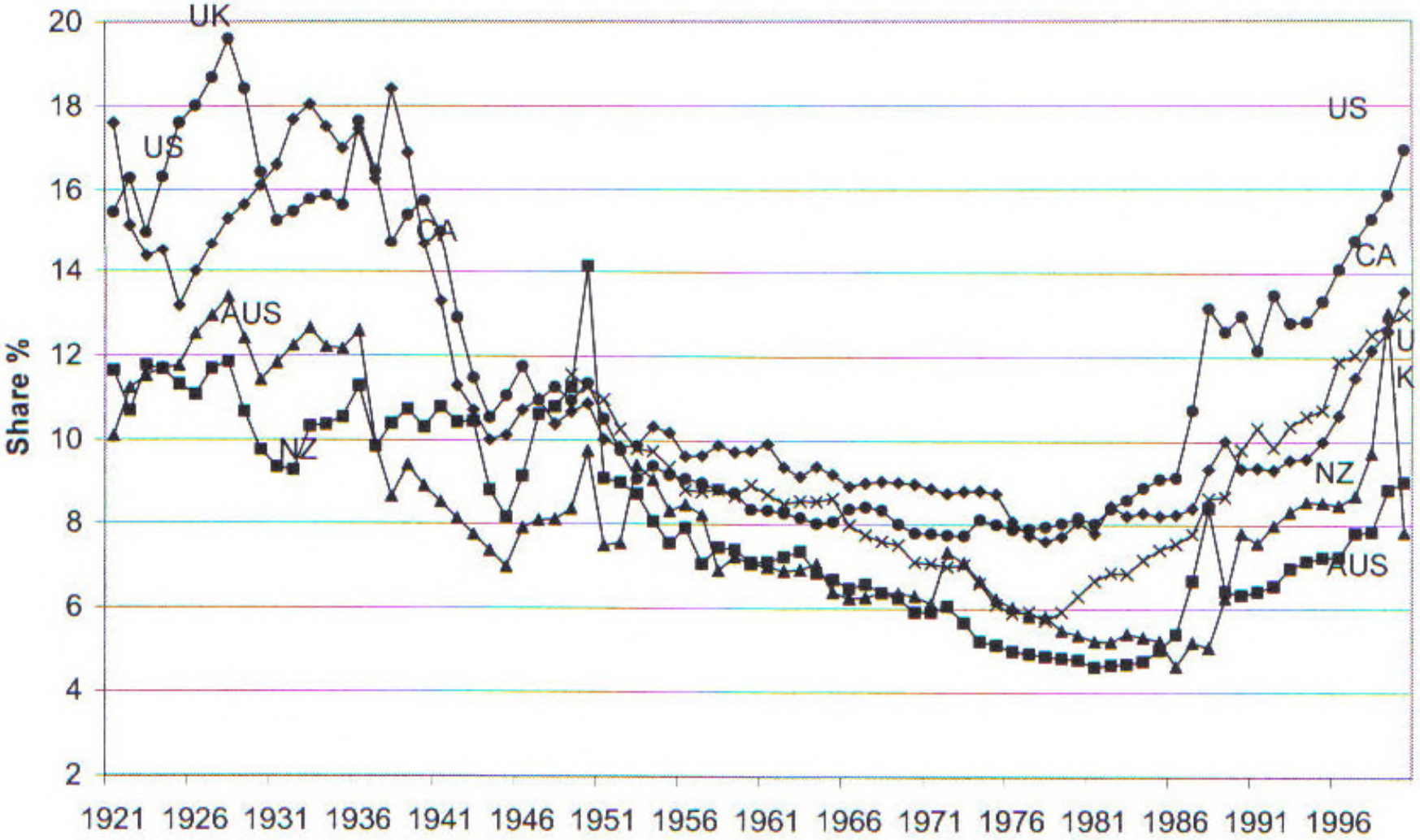
a book …

… and a website

The Equality Trust

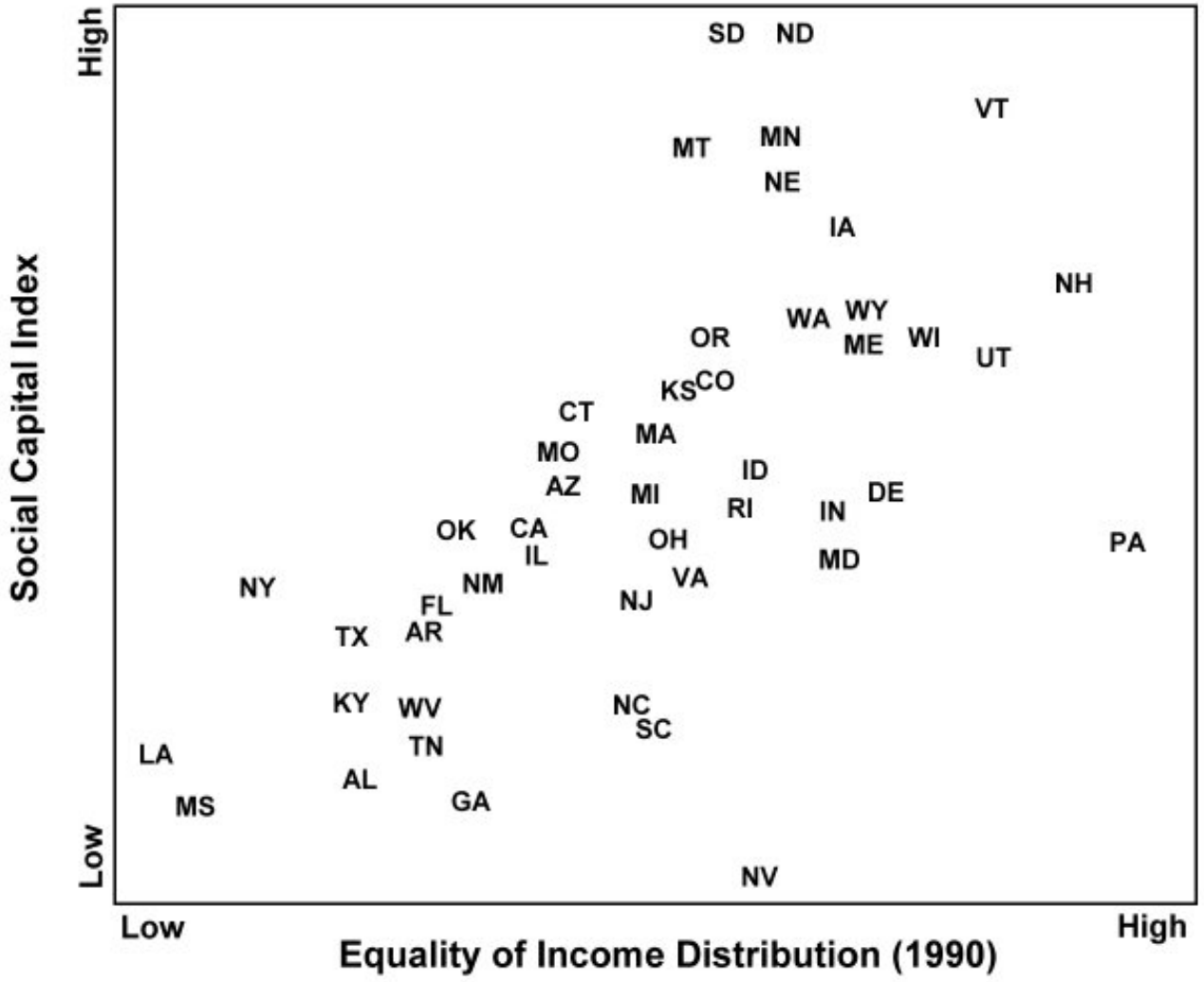
http://www.equalitytrust.org.uk

Income share of richest 1% in Anglo-Saxon countries 1921-2002



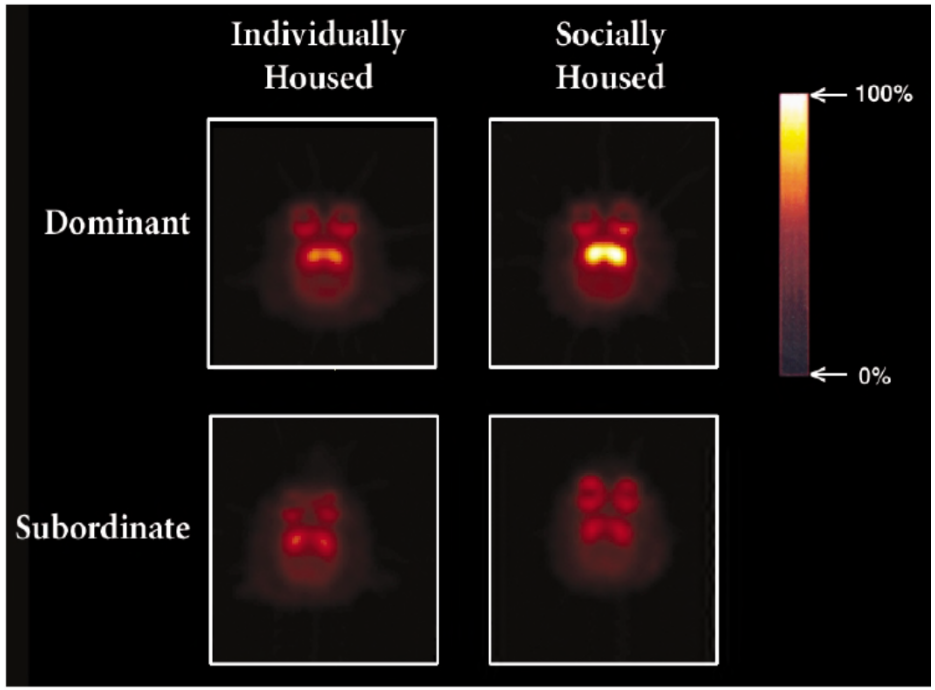
Source: Atkinson AB, Leigh A. (2004) Understanding the Distribution of Top Incomes in Anglo-Saxon Countries over the Twentieth Century

Social capital is higher where incomes are more equal



Source: RD Putnam. *Bowling Alone.* Simon & Schuster 2000. (p.361)

Social status affect brain chemistry and behaviour in monkeys

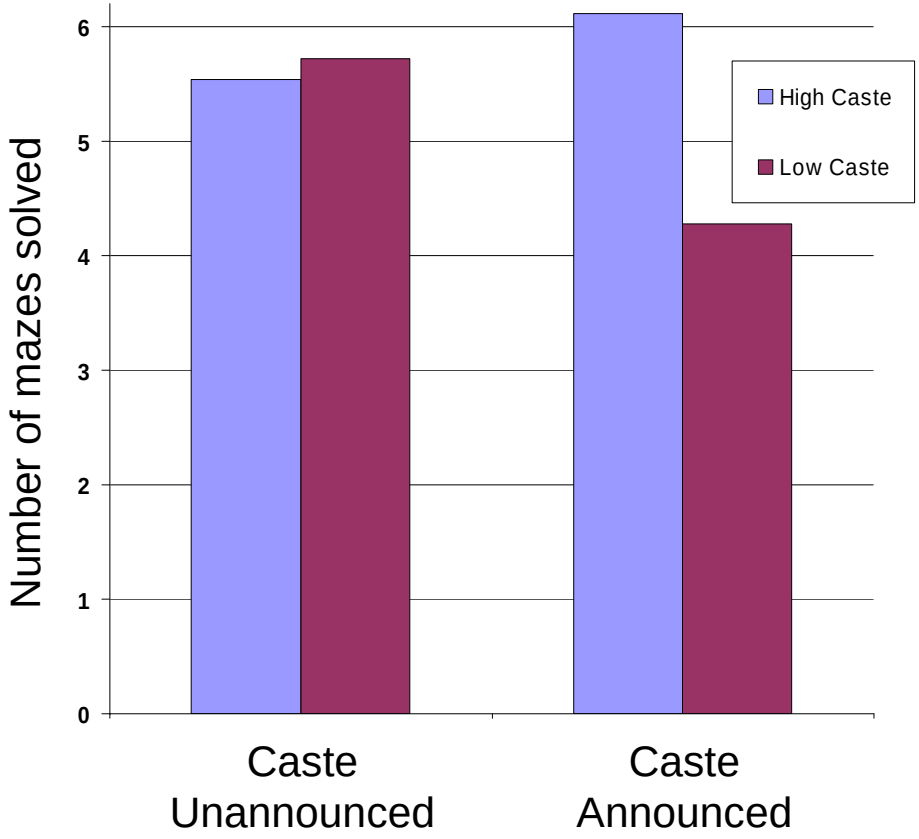


- Living in social groups increased “happy” brain chemicals in dominant monkeys but produced no change in subordinate monkeys.
- These neurobiological changes had an important behavioural influence
- When given access to cocaine, dominant monkeys took less than subordinates

Source: Morgan, D et al. Nature Neuroscience 2002; 5(2), 169-174.

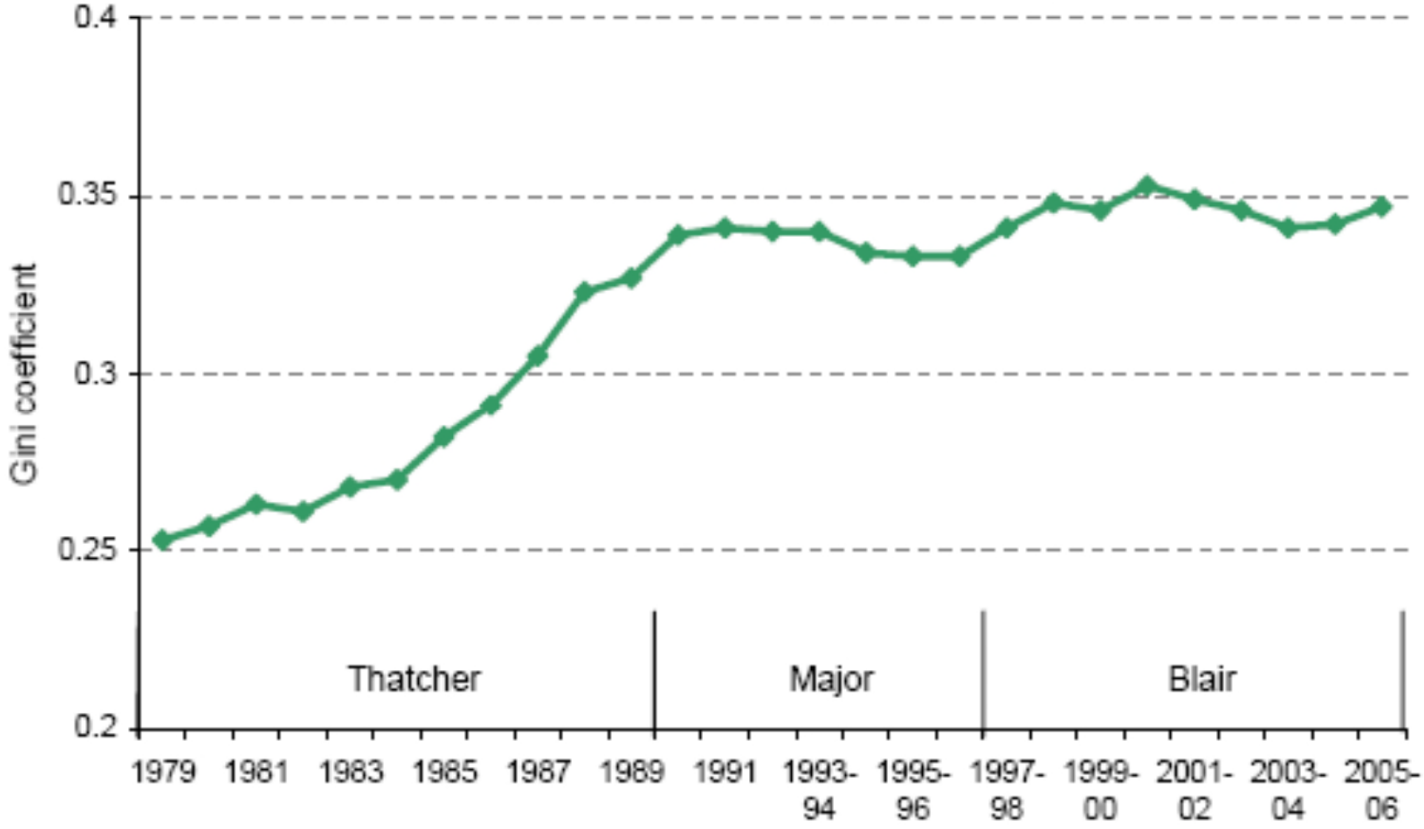
Stereotype Threat

The effect of caste identity on children's performance



Source: Hoff K, Pandey P, World Bank Policy Research Working Paper 3351, June 2004

Trends in income inequality 1979-2005/6 (Gini coefficient, Great Britain.)



Brewer M, Goodman A, Muriel A, Sibieta L. *Poverty and Inequality in the UK: 2007.* Institute of Fiscal Studies, London.

Health and Social Problems are Worse in More Unequal Countries

Index of:

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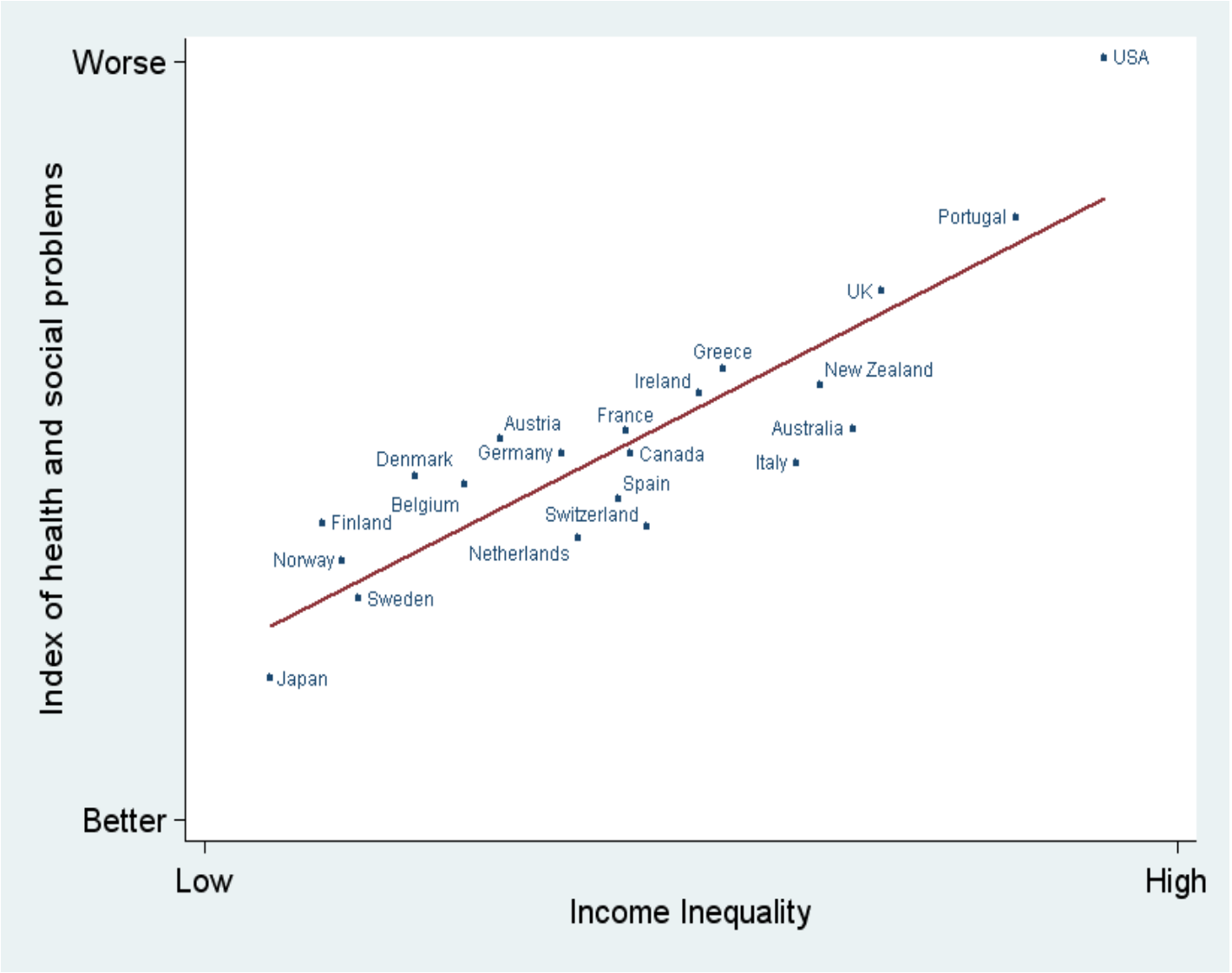
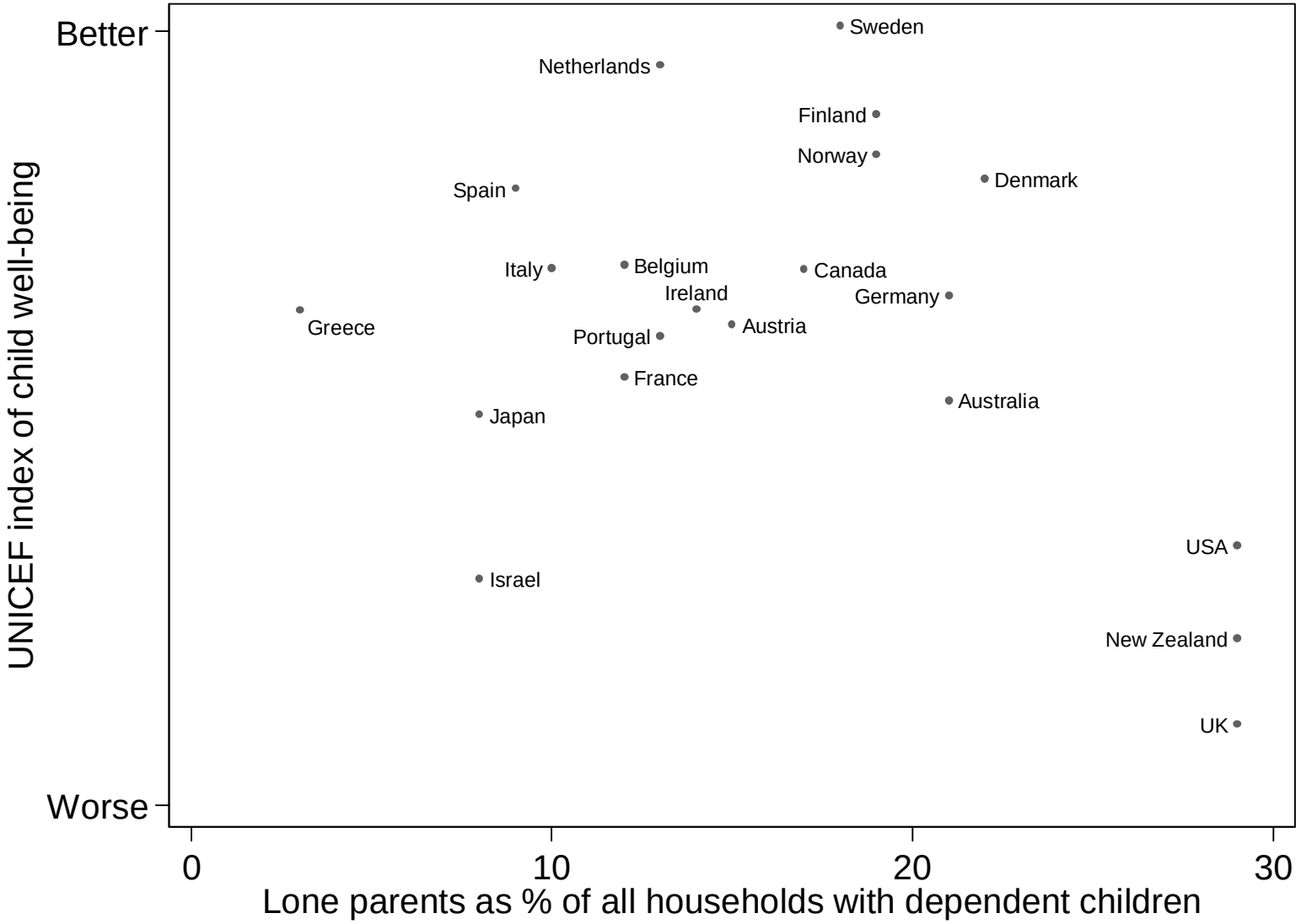
- Social mobility



Source: Wilkinson & Pickett, The Spirit Level (2009)

Single parents and child wellbeing



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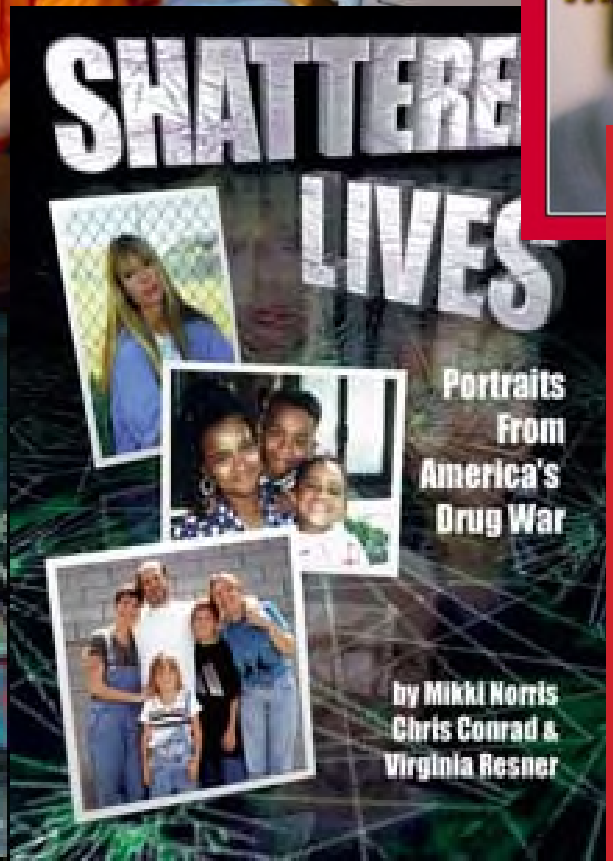
TIME
SPIES, SPIES EVERYWHERE
The U.S. Roundup Accelerates
Children Having Children
Teen Pregnancy In America

101

TIME
Is Jeff Gordon good for NASCAR?
JIM CRAMER on should you day trade
SPECIAL REPORT/SCHOOL VIOLENCE
HOW TO SPOT A TROUBLED KID
DEPRESSION: Do pills help or hurt?
How bad is the copycat problem?
The tide turns on guns

ANTI SOCIAL BEHAVIOUR


SHATTERED LIVES
Portraits From America's Drug War
by Mikki Norris
Chris Conrad &
Virginia Resner

APRIL 17, 2006
JOE KLEIN: HOW CONSULTANTS RUINED POLITICS
TIME
FLIGHT 93: THE MOVIE
EXCLUSIVE FIRST LOOK
SPECIAL REPORT
DROPOUT NATION
30% of America's high school students will leave without graduating. Here is what one town tells us about the crisis
BY NATHAN THORNBURGH
Christine Harden, 18, of Shelbyville, Ind.
www.time.com AOL Keyword: TIME

Inequality and Sustainability

Consumerism is one of the greatest threats to sustainability

Because inequality increases status competition, it also increases consumerism. People in more unequal societies work longer hours because money seems even more important.

Concern for the common good is a crucial resource if we are to reduce carbon emissions

Because inequality harms the quality of social relations (increasing violence, reducing trust, cohesion and involvement in community life), people become more self-interested, less public spirited, less concerned with the common good. This is shown in the amount of overseas aid countries give, in the proportion of waste recycled, in how countries score on the global peace index, and in how important business leaders think it is that their governments abide by international environmental agreements.

What kind of stress most reliably raises cortisol levels?

A meta-analysis of 208 laboratory studies of cortisol responses to acute stressors found that “Tasks that included social-evaluative threat (such as threats to self-esteem or social status), in which others could negatively judge performance, particularly when the outcome of the performance was uncontrollable, provoked larger and more reliable cortisol changes than stressors without these particular threats.” (p.377)

"Humans are driven to preserve the social self and are vigilant to threats that may jeopardize their social esteem or status.” (p.357)

Source: Dickerson SS, Kemeny ME. Acute stressors and cortisol responses: a theoretical integration and synthesis of laboratory research. *Psychological Bulletin* 2004; 130(3): 355-91

Psychosocial risk factors for ill health

- **Low social status**
- **Weak social affiliations**
- **Stress in early life (pre- and postnatally)**

Drug Use is More Common in More Unequal Countries

Index of use of: opiates, cocaine, cannabis, ecstasy, amphetamines

Source: Wilkinson & Pickett, The Spirit Level (2009)

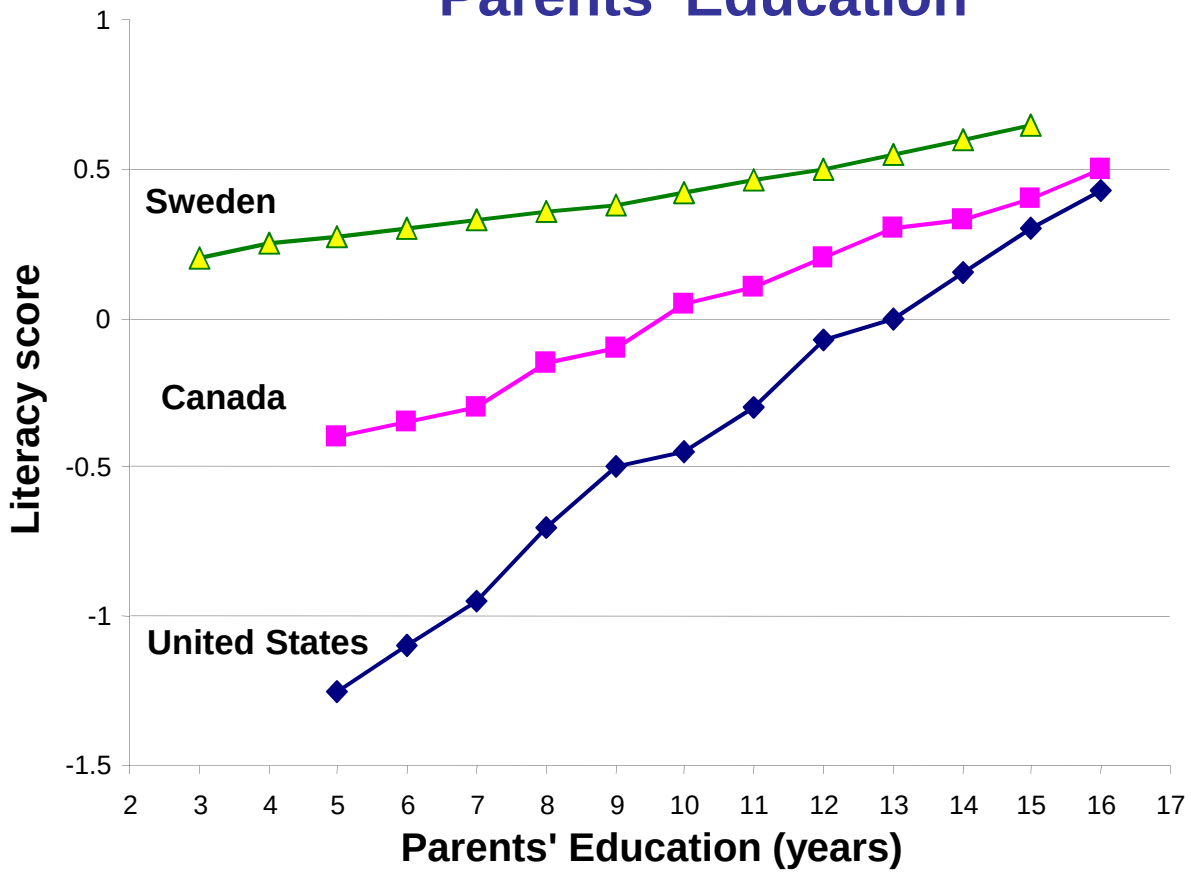
Infant Mortality Rates are Higher in More Unequal Countries

Source: Wilkinson & Pickett, The Spirit Level (2009)

More Adults are Obese in More Unequal Rich Countries

Source: Wilkinson & Pickett, The Spirit Level (2009)

Literacy Scores of 16-25 year olds by Parents' Education



Source: Willms JD. 1997. Data from OECD Programme for International Student Assessment.

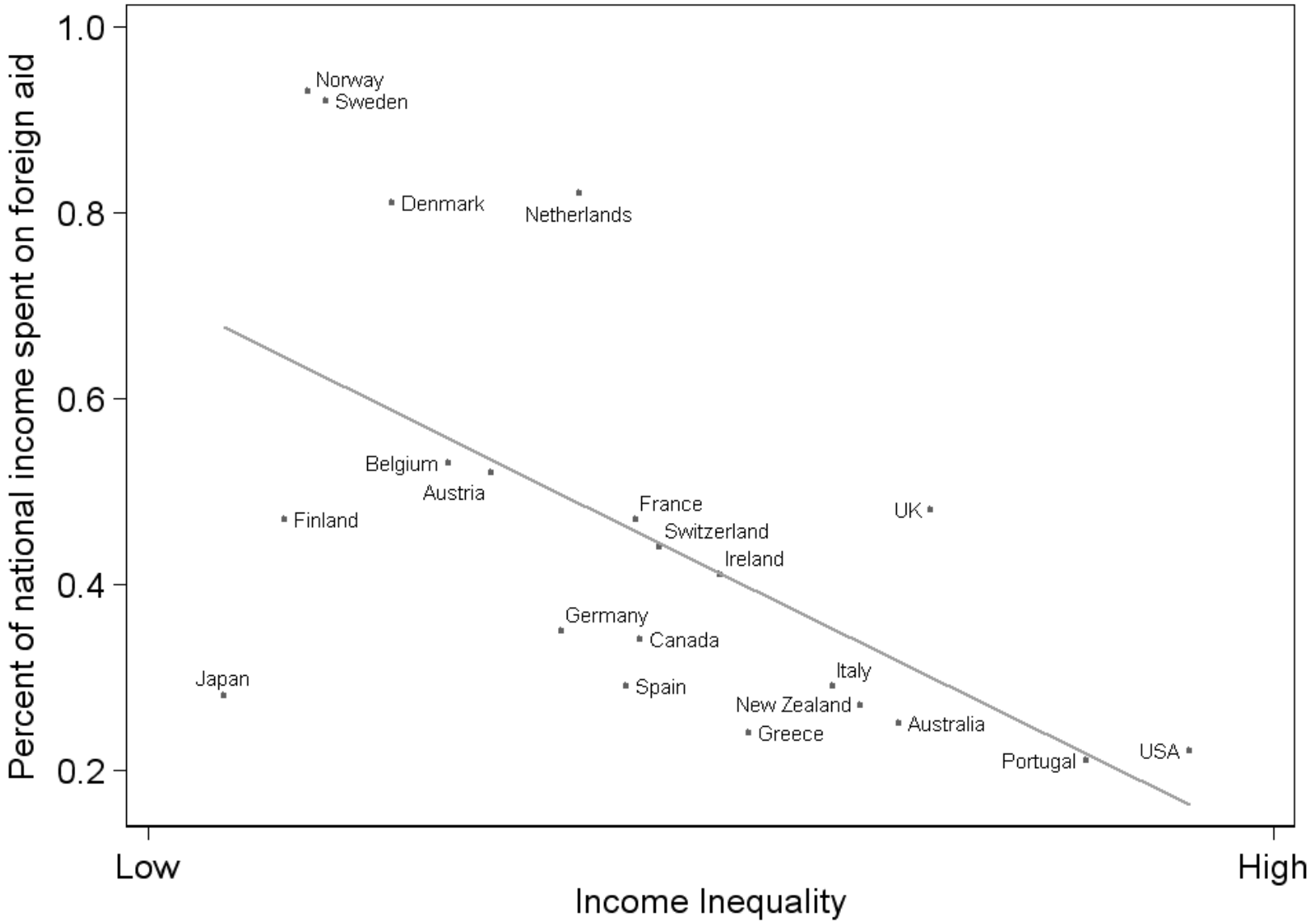
Causality?

- **Problems move together - a common cause?**
- **Bigger status differences increase problems related to social status?**
- **Reverse causality?**

  political ideology affects inequality, but social problems are unintended consequences
- **Many of the causal pathways are known**

More equal societies are more innovative

More equal countries are more generous foreign aid donors



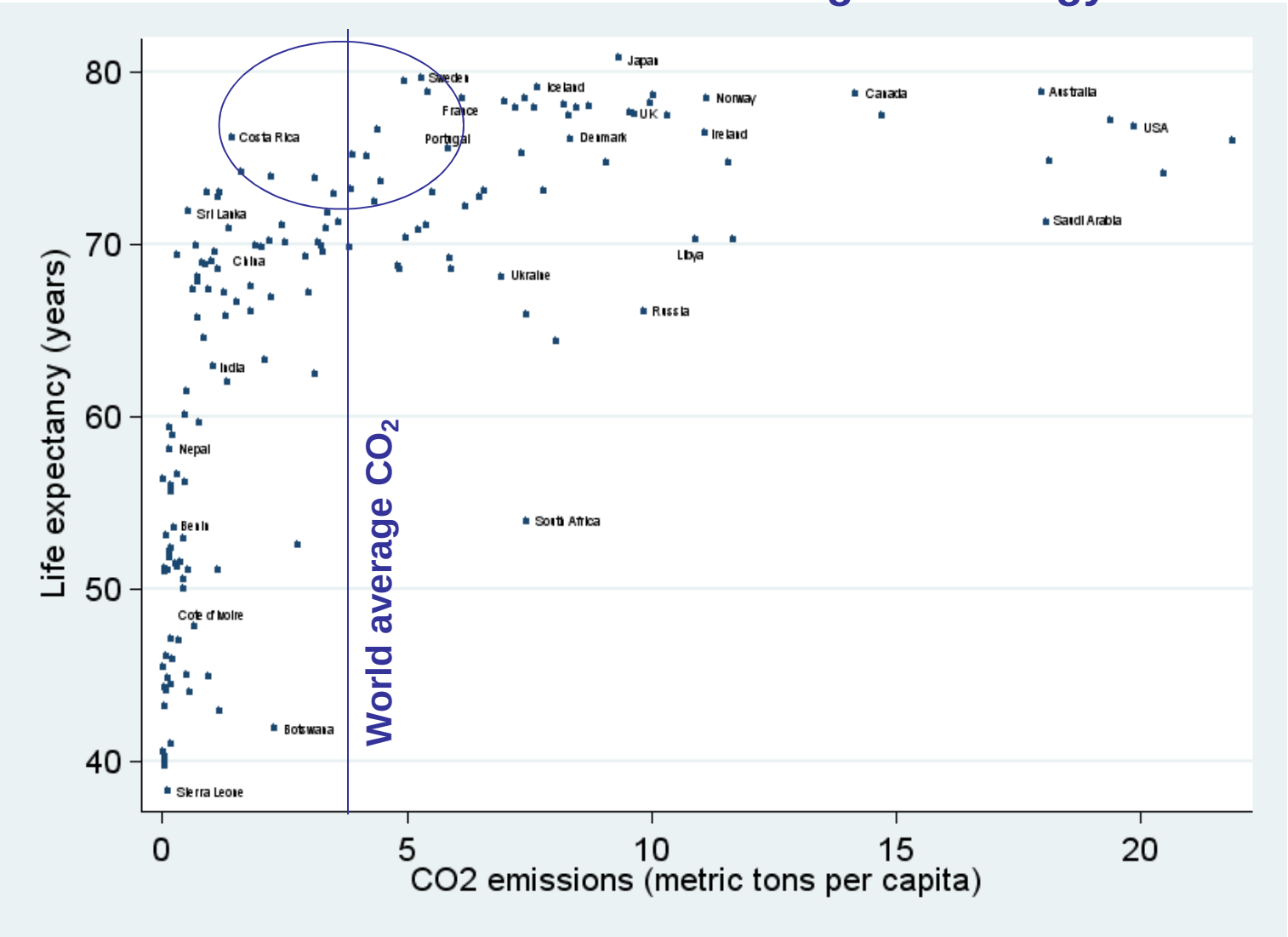
More Equal Countries Rank Better (1 is best) on Recycling

Source: Wilkinson & Pickett, The Spirit Level (2009)

In more equal countries business leaders give a higher priority to complying with international environmental agreements

With permission from R De Vogli & D Gimeno

If all countries converged on the world average CO_2 emissions, high life expectancy could be achieved for all - even on the basis of existing technology



Correlations & p-values: Index of Health & Social Problems

Indicator	International data		US data	
	r	*p-value*	*r*	*p-value*
Trust	-0.66	<0.01	-0.70	<0.01
Life expectancy	-0.44	0.04	-0.45	<0.01
Infant mortality	0.42	0.04	0.43	<0.01
Obesity	0.57	<0.01	0.47	<0.01
Mental illness	0.73	<0.01	0.18	0.12
Education score	-0.45	0.04	-0.47	.01
Teen birth rate	0.73	<0.01	0.46	<0.01
Homicides	0.47	0.02	0.42	<0.01
Imprisonment	0.75	<0.01	0.48	<0.01
Social mobility	0.93	<0.01	-	-
Index	0.87	<0.01	0.59	<0.01

Additional Correlations Coefficients & p-values

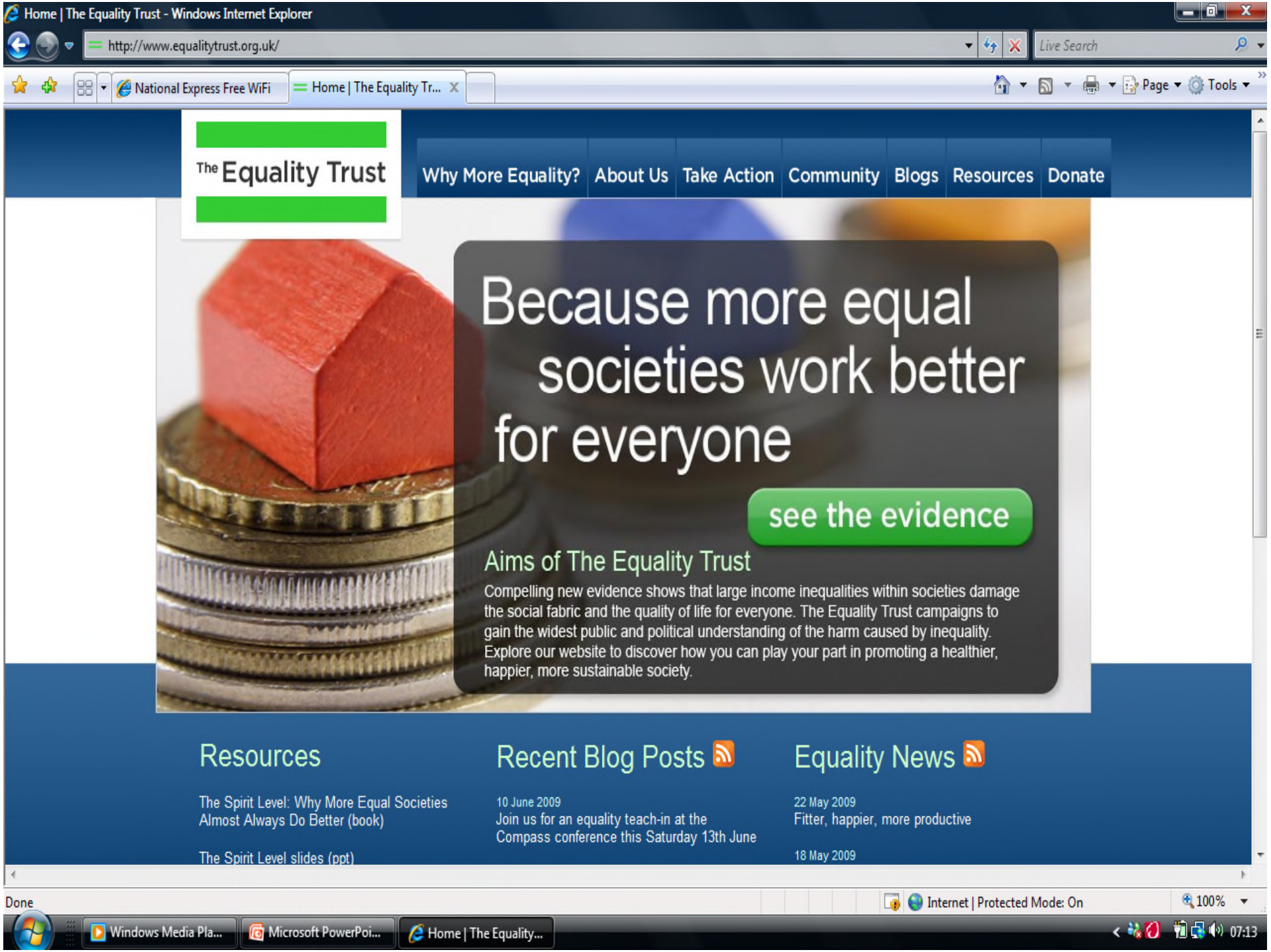
Indicator	International data		US data	
	r	*p-value*	*r*	*p-value*
Drugs index	0.63	<0.01		
Pugnacity			0.47	<0.01
Recycling	-0.82	<0.01		
Spending on foreign aid	-0.61	<0.01		
Peace index	-0.51	0.01		
Women's status	-0.44	0.04	-0.30	0.03
Child well-being	-0.71	<0.01	-0.51	<0.01
Overweight children	0.59	0.01	0.57	<0.01
Child mental illlness			0.36	0.01
Juvenile homicides			0.29	<0.05
Child conflict	0.62	<0.01		
High school drop-outs			0.79	<0.01
Public expend. health care	-0.54	0.01		
Social expenditure	-0.45	0.04		
Police	0.52	0.04		

Living conditions & Poverty: USA 2005

The poorest 12.6% (below Federal poverty line):-

- **80% have air conditioning**
- **78% have a VCR or DVD player**
- **73% own a car or truck**
- **31% own more than one car**
- **55% have two or more TVs**
- **36% have a dishwasher**
- **36% have a computer**
- **43% own their homes**
- **10% in mobile homes**
- **6% over-crowded (>1 per room)**

- **Children's protein intake: 100% above recommended**
- **Most vitamins & minerals: well over recommended**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Blogs
Resources
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Because more equal societies work better for everyone
see the evidence
Aims of The Equality Trust
Compelling new evidence shows that large income inequalities within societies damage the social fabric and the quality of life for everyone. The Equality Trust campaigns to gain the widest public and political understanding of the harm caused by inequality. Explore our website to discover how you can play your part in promoting a healthier, happier, more sustainable society.
Resources
The Spirit Level: Why More Equal Societies Almost Always Do Better (book)
The Spirit Level slides (ppt)
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Equality News
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Windows Media Pla...
Microsoft PowerPoi...
Home | The Equality...
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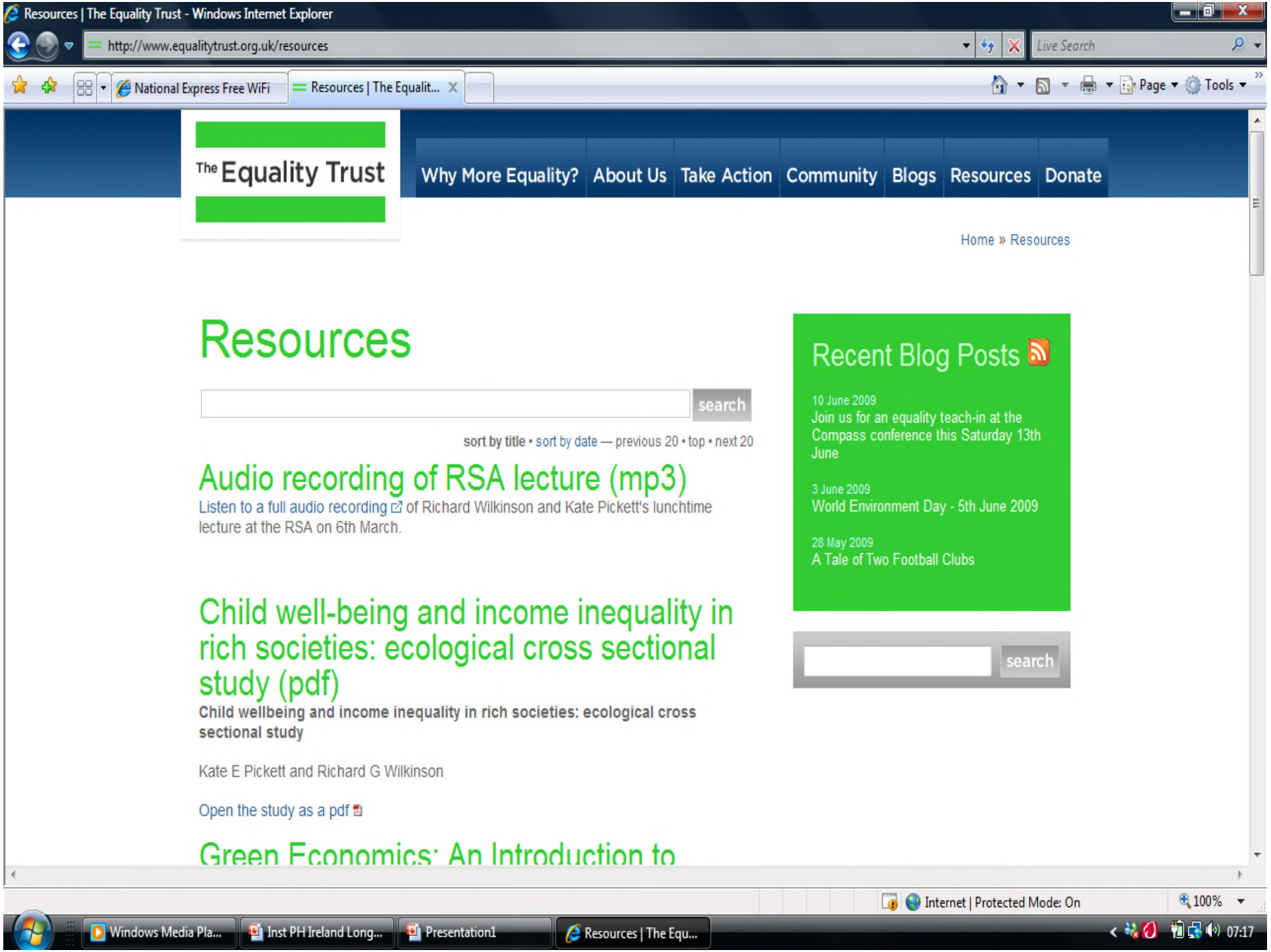
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Listen to a full audio recording of Richard Wilkinson and Kate Pickett's lunchtime lecture at the RSA on 6th March.
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Kate E Pickett and Richard G Wilkinson
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World Environment Day - 5th June 2009
28 May 2009
A Tale of Two Football Clubs
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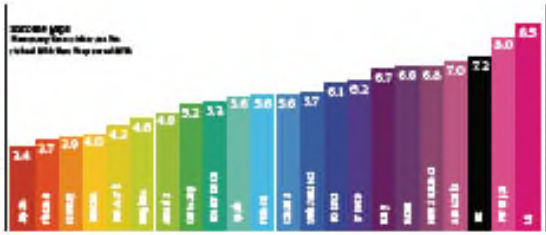
Presentation1
Resources | The Equ...
07:17

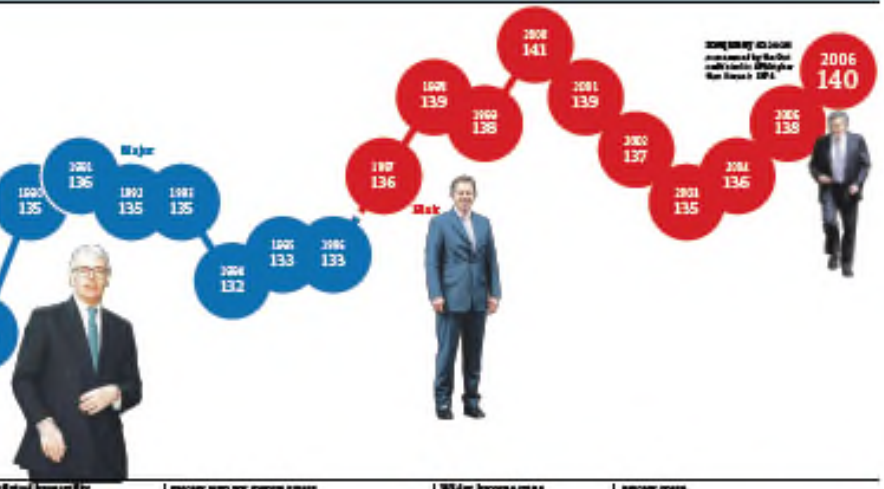
Inequality: mother of all evils?

More money won't fix broken Britain, but sharing the money could. That is the conclusion of The Spirit Level, a groundbreaking study which concludes inequality is at root of all society's problems, from violent crime to teenage pregnancy. On these pages Tom Clark presents the evidence so you can make up your own mind

1

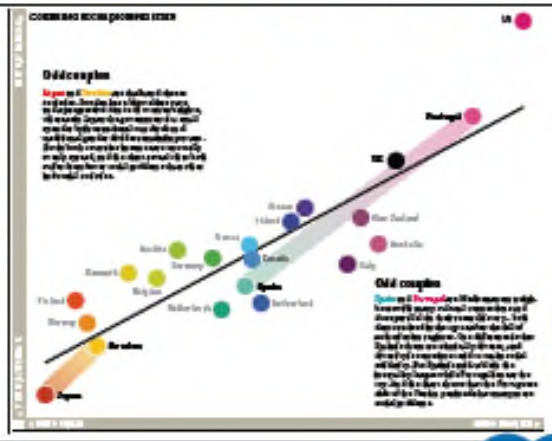
Income gap league table
UK nudging top

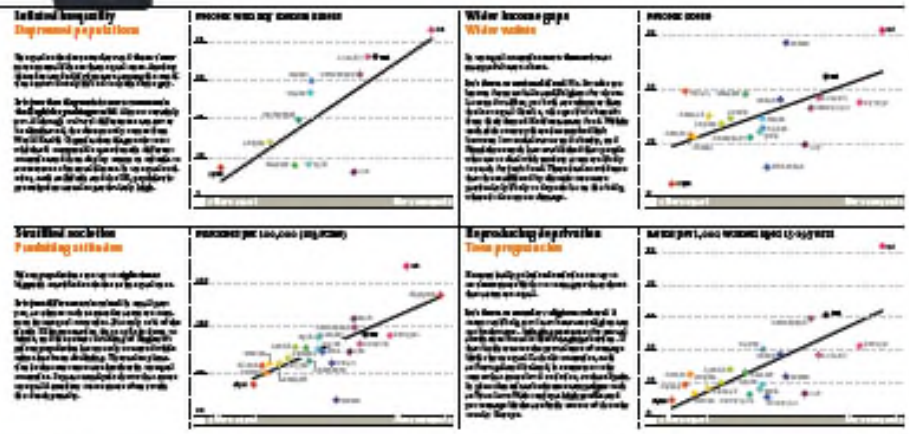




2

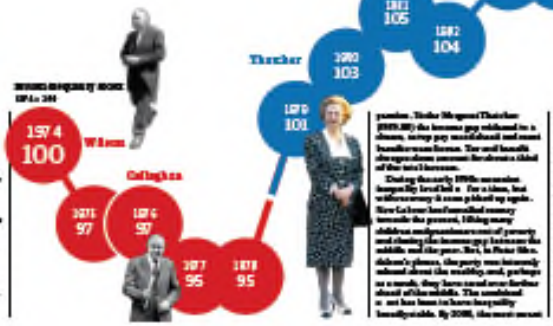
Economic divides
Social wounds





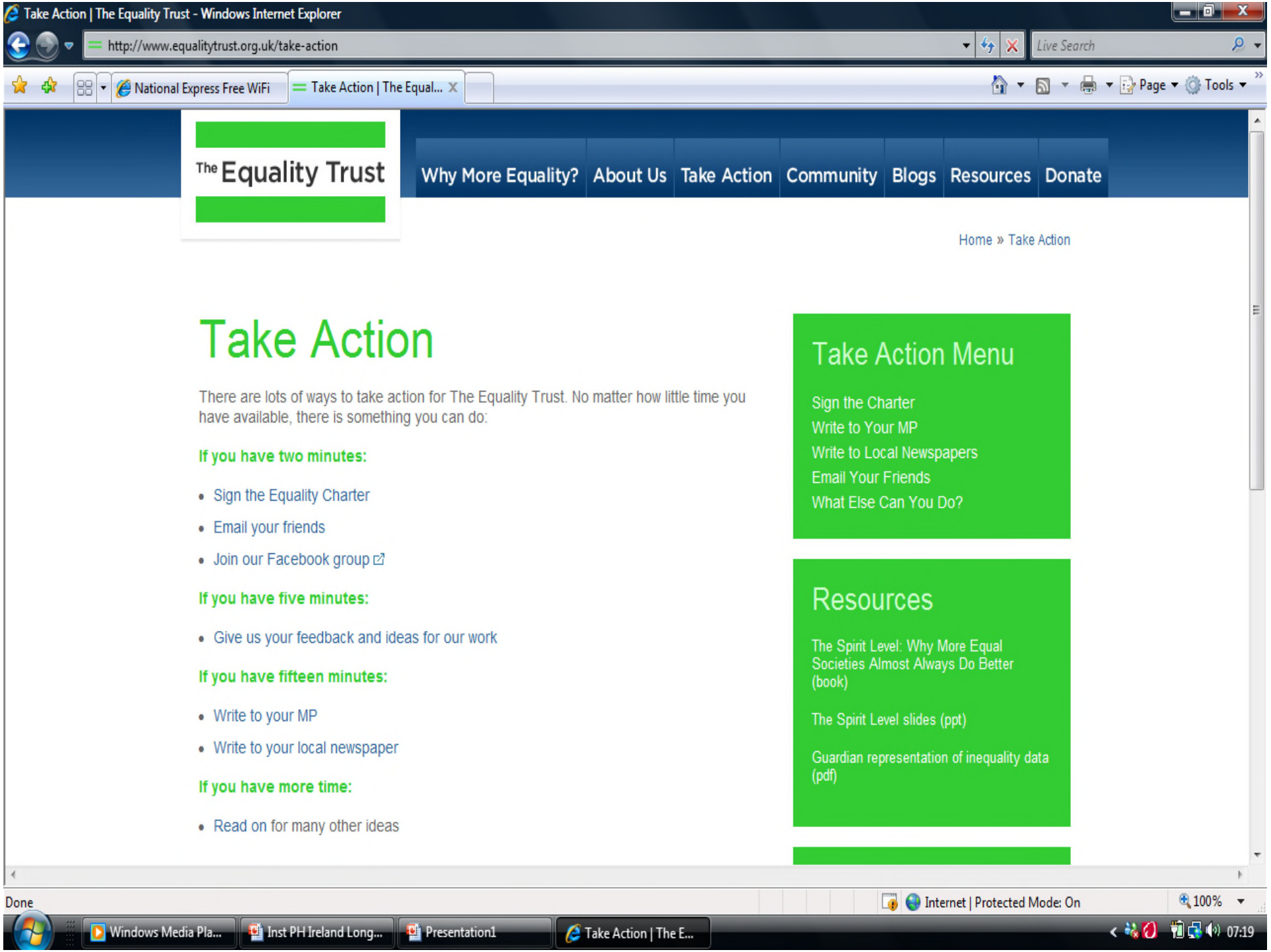
3

The widening gap
How the divide opened up



4

The price is paid by the middle class too


Take Action | The Equality Trust - Windows Internet Explorer
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Take Action | The Equal...
Page
Tools
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Why More Equality?
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Take Action
There are lots of ways to take action for The Equality Trust. No matter how little time you have available, there is something you can do:
If you have two minutes:
Sign the Equality Charter
Email your friends
Join our Facebook group
If you have five minutes:
Give us your feedback and ideas for our work
If you have fifteen minutes:
Write to your MP
Write to your local newspaper
If you have more time:
Read on for many other ideas
Take Action Menu
Sign the Charter
Write to Your MP
Write to Local Newspapers
Email Your Friends
What Else Can You Do?
Resources
The Spirit Level: Why More Equal Societies Almost Always Do Better (book)
The Spirit Level slides (ppt)
Guardian representation of inequality data (pdf)
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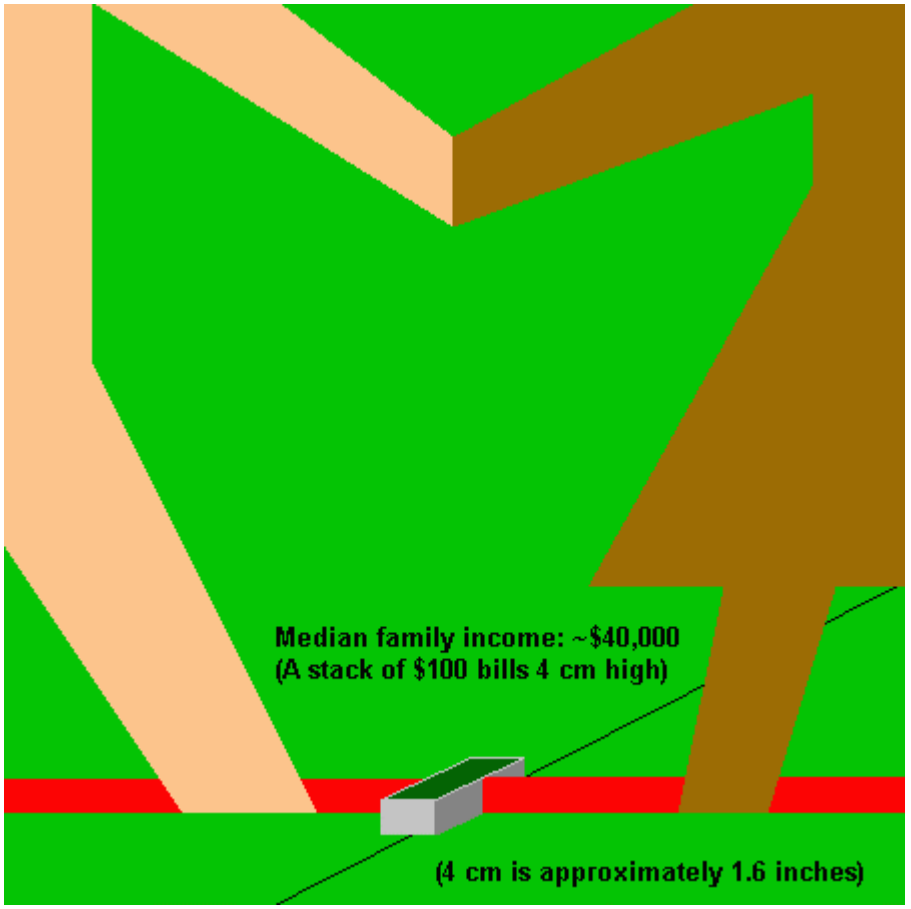
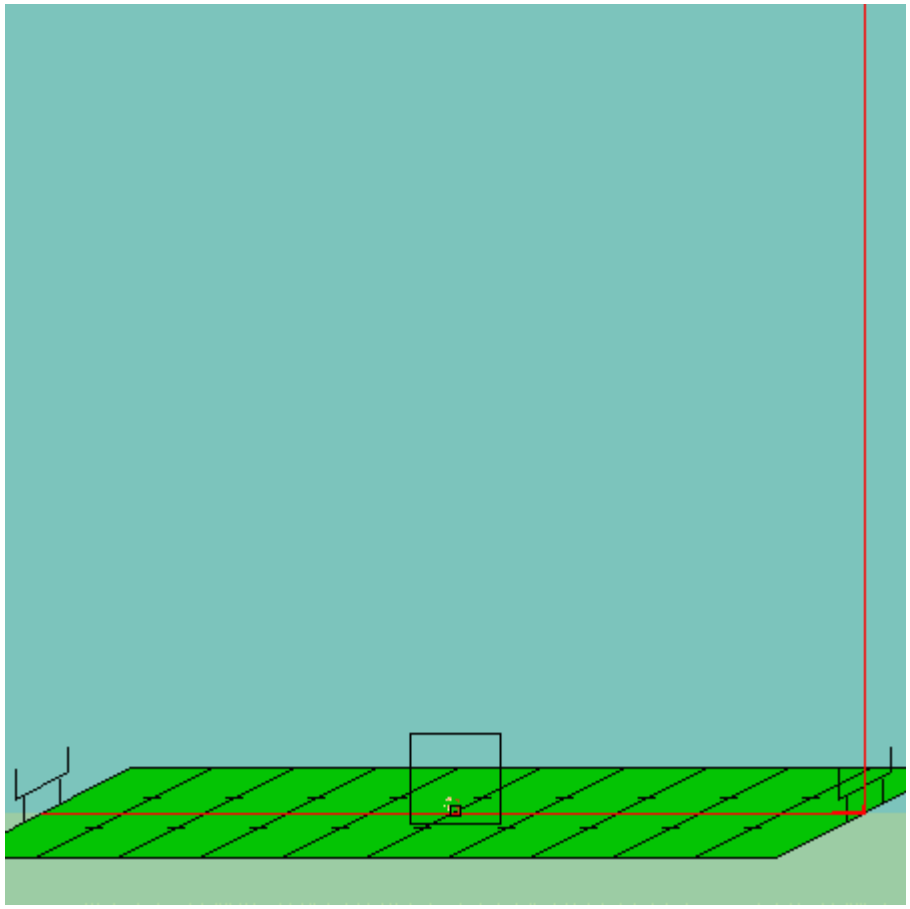
How does your pay compare with an MP?

The L-Curve: A graph of US income distribution by David Chandler



http://www.lcurve.org

The L-Curve: A graph of US income distribution by David Chandler



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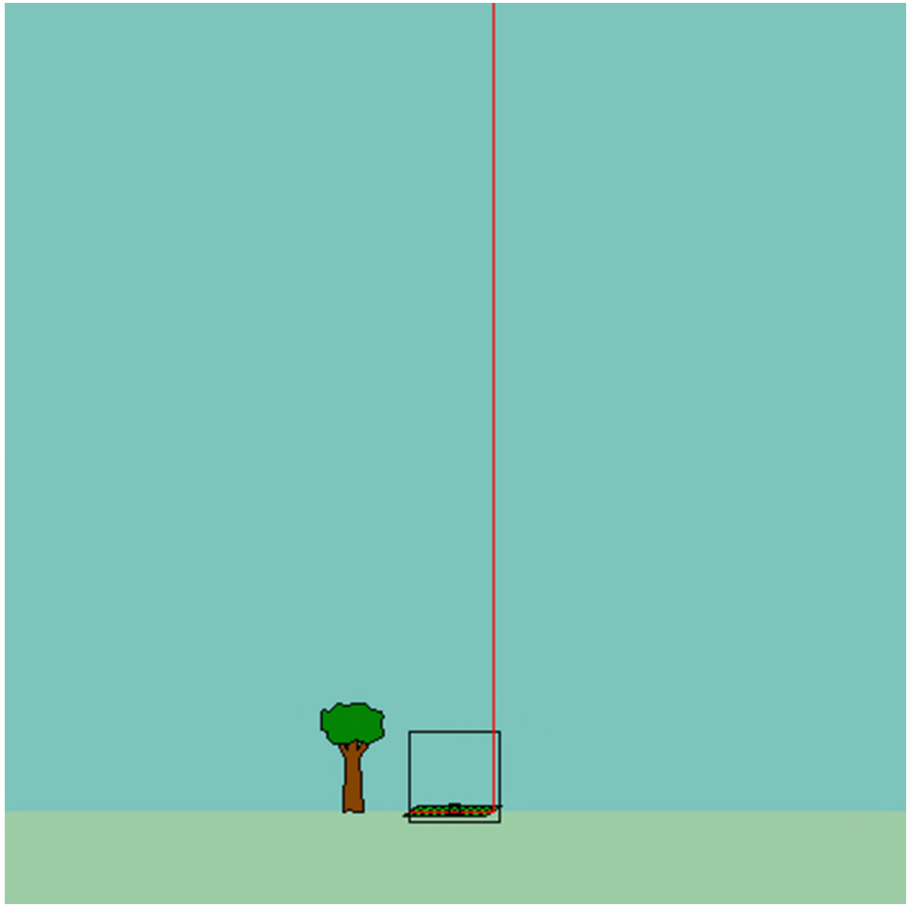
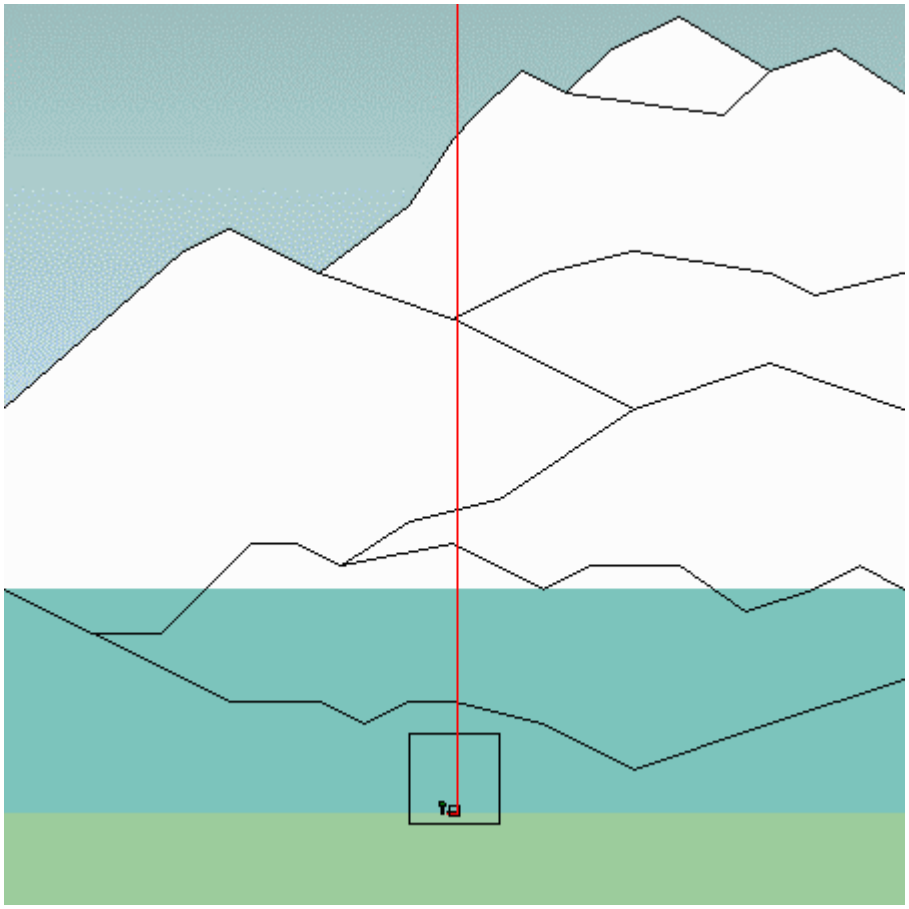
The L-Curve: A graph of US income distribution by David Chandler



http://www.lcurve.org

The L-Curve: A graph of US income distribution by David Chandler



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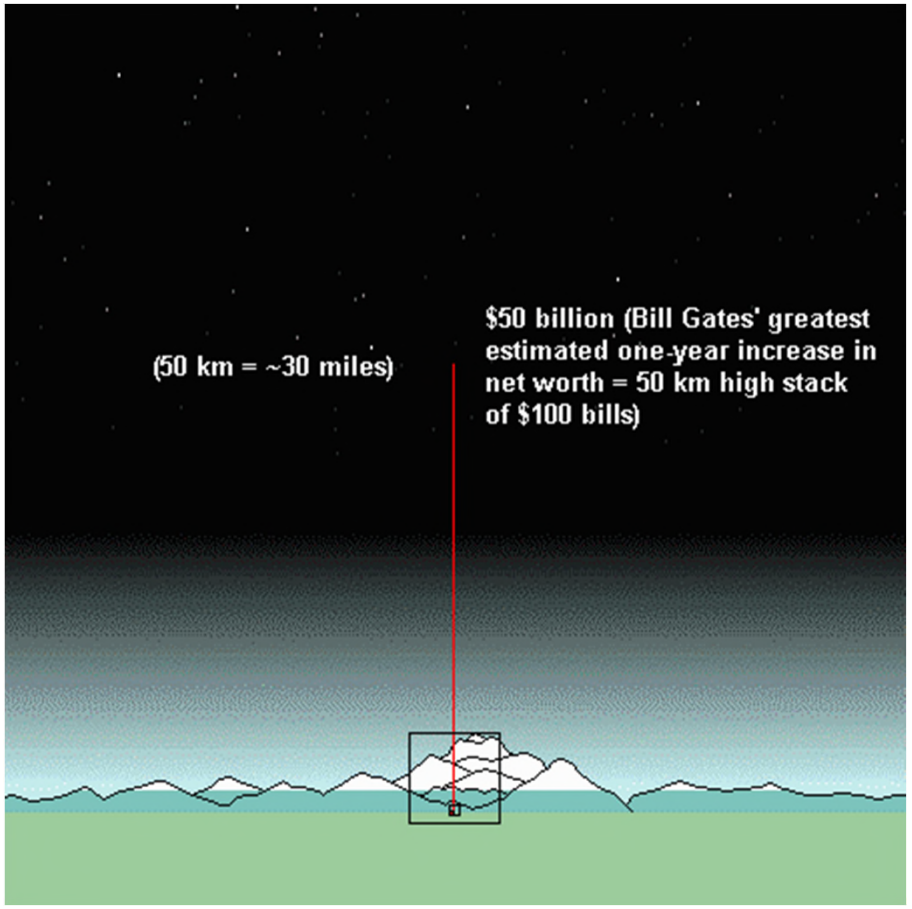

http://www.lcurve.org

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Sources of data for the Index of Health and Social problems

Component	International data	US state data
Trust	Percent of people who respond positively to the statement "most people can be trusted" 1999-2001 World Values Survey *Reverse-coded*	Percent of people who respond positively to the statement "most people can be trusted" 1999 General Social Survey *Reverse-coded*
Life expectancy	Life expectancy at birth for men and women 2004 United Nations Human Development Report *Reverse-coded*	Life expectancy at birth for men and women 2000 US Census Bureau, Population Division *Reverse-coded*
Infant mortality	Deaths in the first year of life per 1000 live births 2000 World Bank	Deaths in the first year of life per 1000 live births 2002 US National Center for Health Statistics
Obesity	Percentage of the population with BMI > 30, averaged for men and women 2002 International Obesity TaskForce	Percentage of the population with BMI > 30, averaged for men and women, 1999-2002 Estimates from Prof Ezzati, Harvard University, based on NHANES and BRFSS surveys
Mental health	Prevalence of mental illness 2001-2003 WHO	Average number of days in past month when mental health was not good 1993-2001, BRFSS
Education	Combined average of maths literacy and reading literacy scores of 15-year olds 2000 OECD PISA *Reverse-coded*	Combined average of maths and reading scores for 8th graders 2003 US Department of Education, National Center for Education Statistics *Reverse coded*
Teenage birth rate	Births per 1000 women aged 15-19 years 1998 UNICEF	Births per 1000 women aged 15-19 years 2000 US National Vital Statistics
Homicides	Homicide rate per 100,000 Period average for 1990-2000 United Nations	Homicide rate per 100,000 1999 FBI
Imprisonment	Log of prisoners per 100,000 United Nations	Prisoners per 100,000 1997-8, US Department of Justice
Social mobility	Correlation between father and son's income 30-year period data from 8 cohort studies London School of Economics	N/A

Health and social problems which are substantially worse in more unequal societies

Data available for countries and for states of the USA:-

- **Low birth weight**
- **Infant mortality**
- **Life expectancy**
- **Obesity**
- **Homicides**
- **Drug abuse**
- **Mental illness**
- **Imprisonment rates**
- **Teenage birth rates**
- **Maths & literacy scores**
- **Trust**
- **Social capital**

International data:

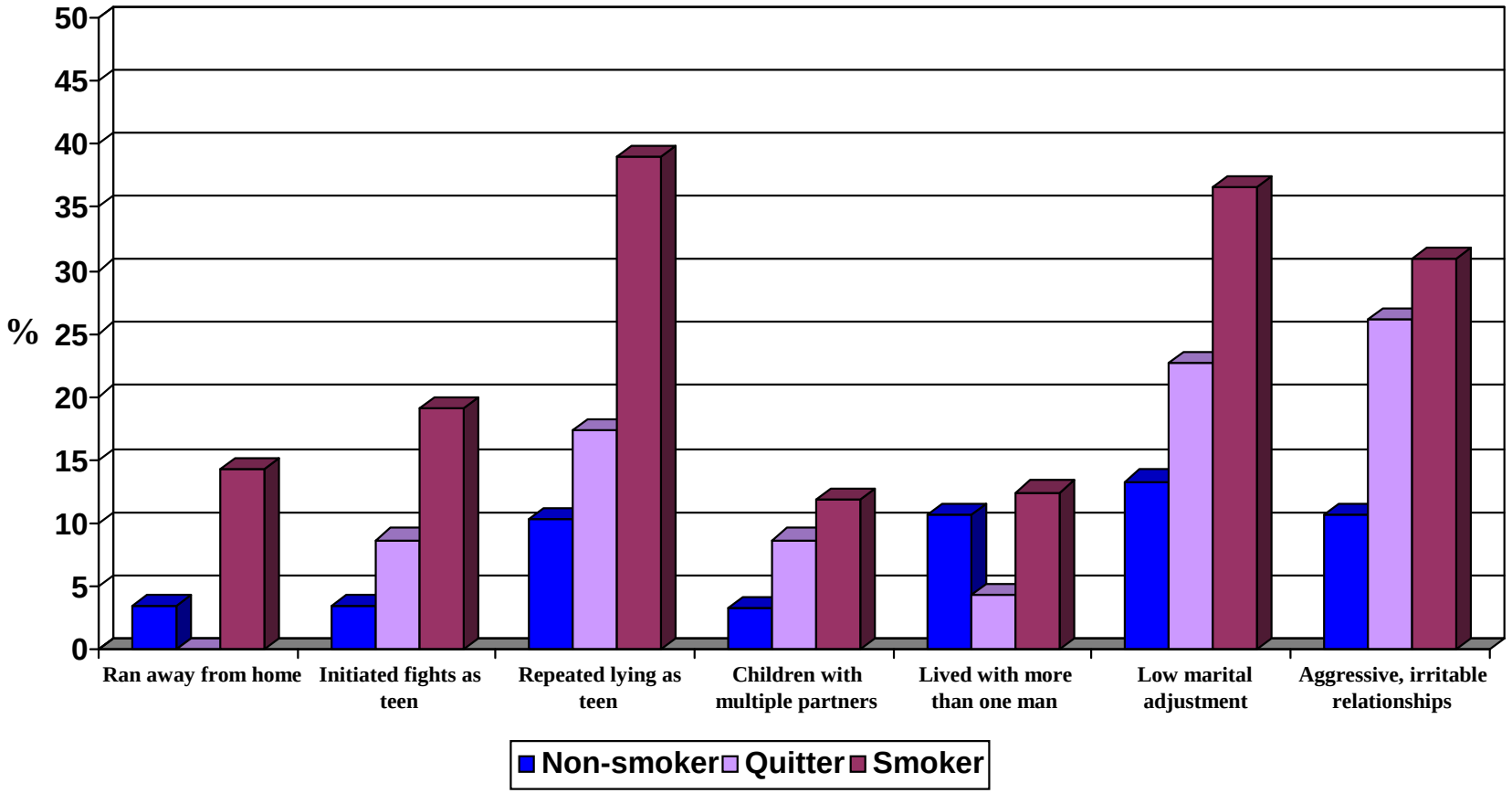
- **Social Mobility**
- **Hours worked**
- **Child conflict**
- **UNICEF Child well-being Index**

US states data:

- **High school drop-out rate**

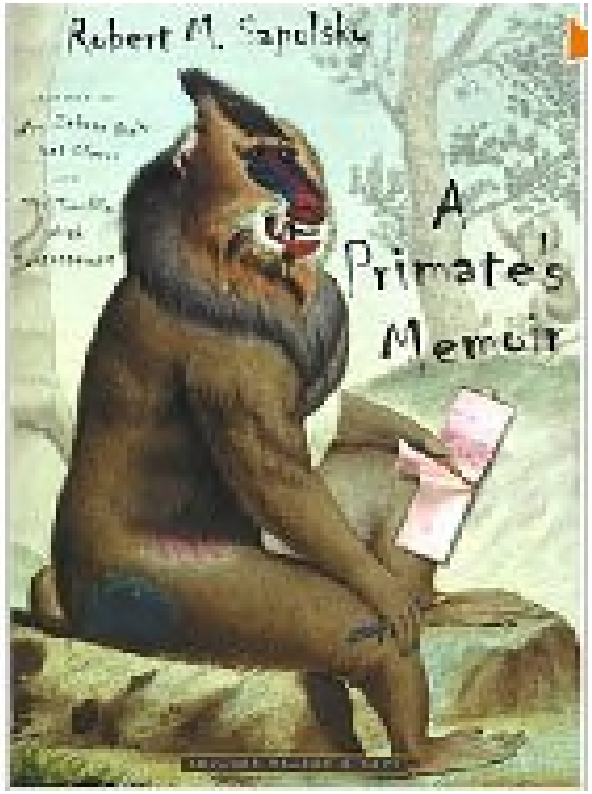
[Smoking and suicide are the only counter examples we have found]

Pregnancy smoking and personal problems



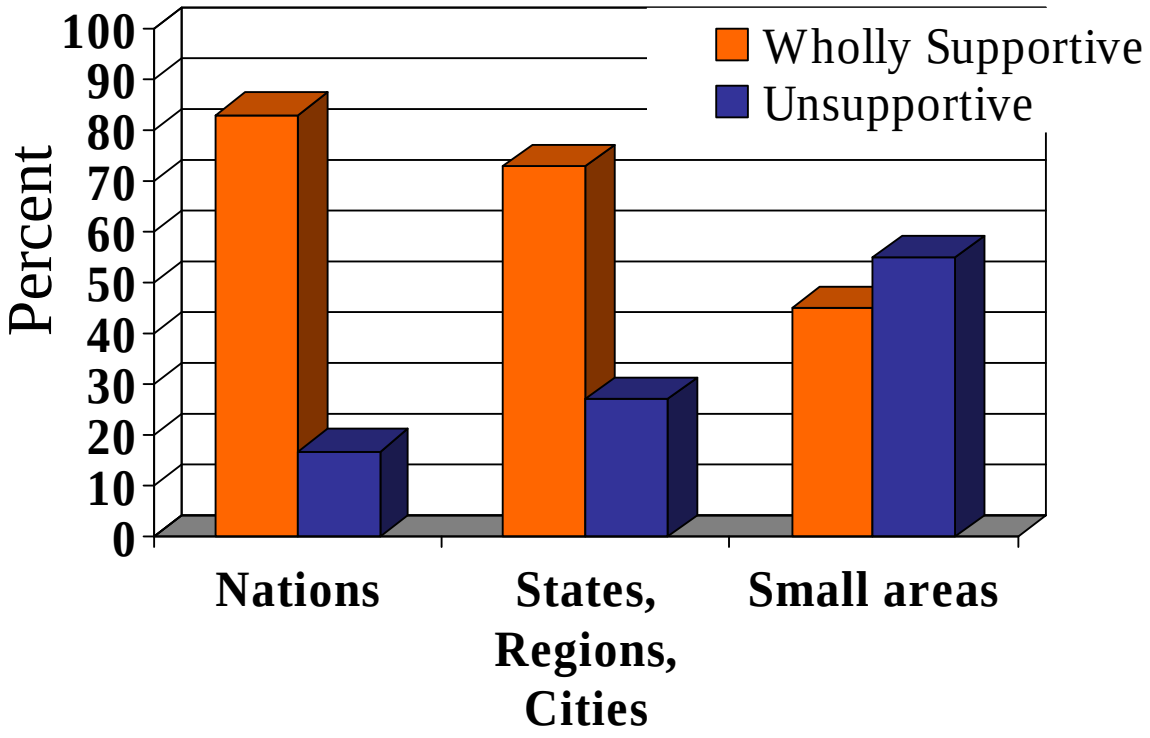
From: Pickett et al. Social Science and Medicine, 2003;56:2449-2460

Robert Sapolsky, A primate's memoir.



Fights (trials of strength? social comparisons?) tend to be between near neighbours in the ranking system, so number 7 will tend to conflict with 6 and 8 – not with numbers 1 or 20.

Review of 168 analyses of the relation between income inequality and health.

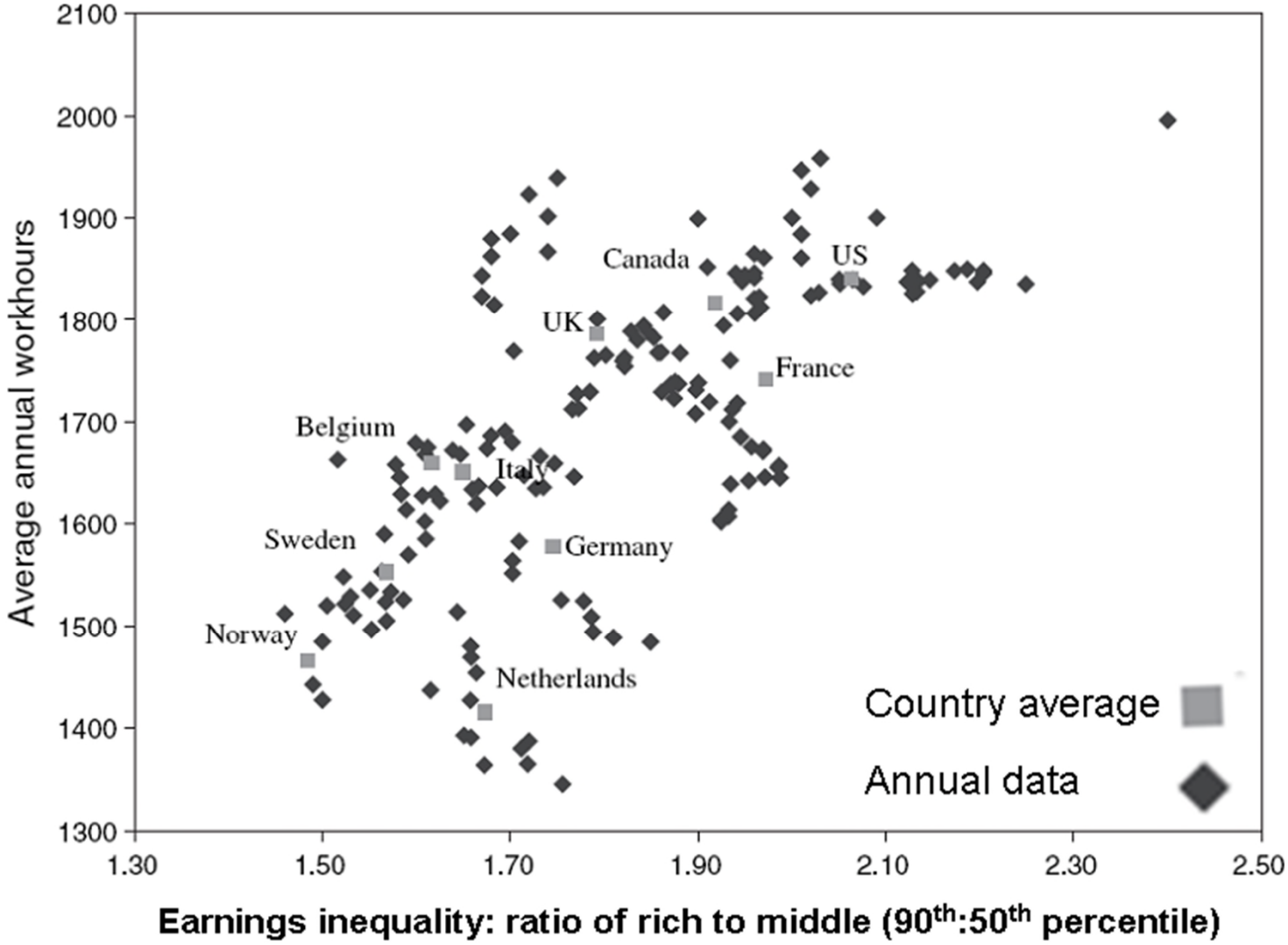


Wilkinson RG, Pickett KE. Income inequality and health: a review and explanation of the evidence. *Social Science and Medicine* 2006; 62: 1768-84.

Improvements in health and reductions in social problems if the UK were as equal as Japan, Sweden, Finland and Norway

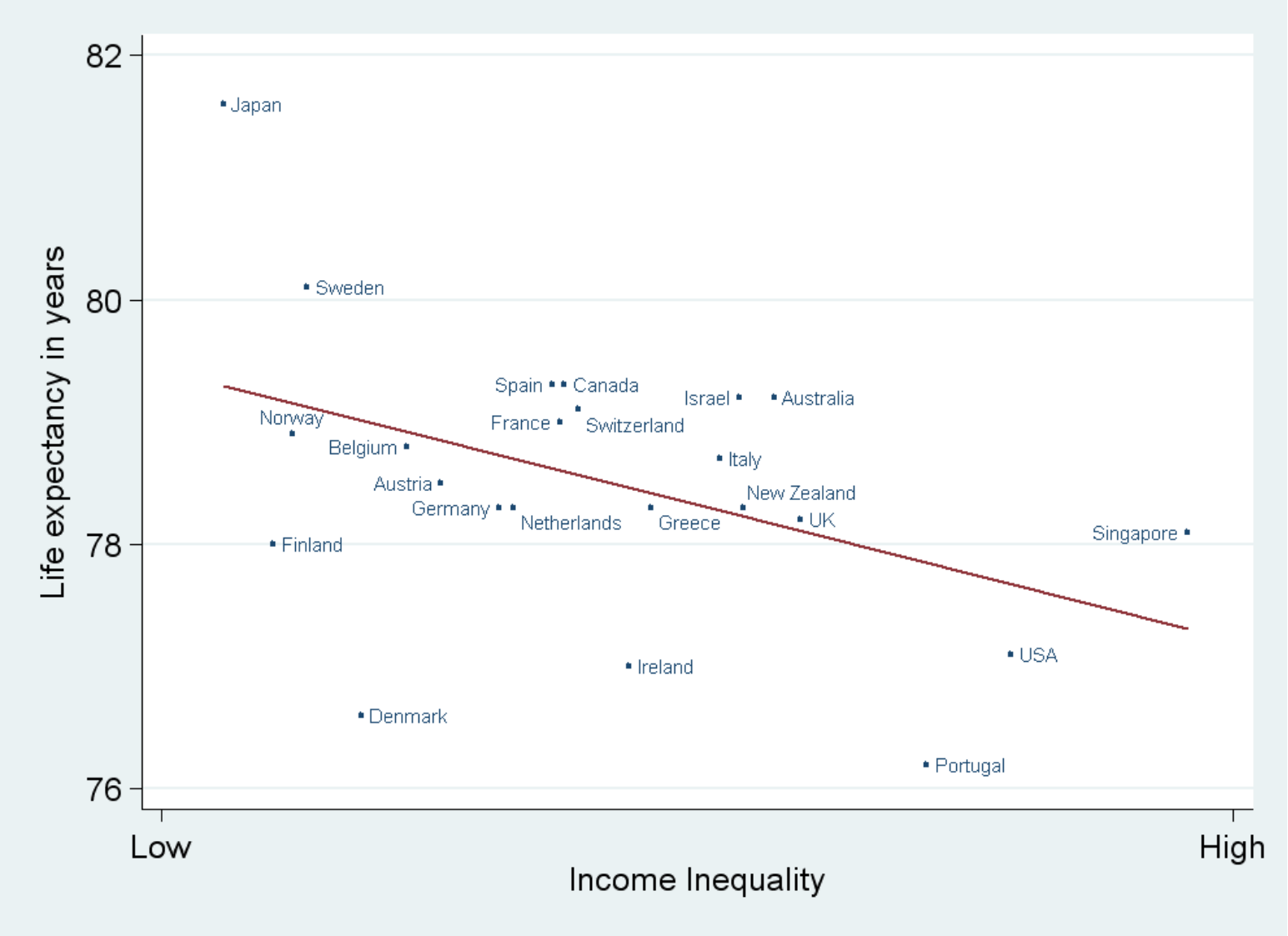
Health or Social Indicator	Current data for London	If inequality were halved…
Life expectancy (years)	80.1	80.9 +
Infant mortality per 1000	4.9	4.0
Obesity (%)	18.3	9.0
Mental illness (%)	17.9	5.6
Teenage births per 1000	27.8	7.5
Homicides per million	22.4	11.5
Trust (% who trust others)	23.0	42.6 +

Working hours are longer in more unequal countries



Source: Bowles S, Park Y. Economic Journal 2005; 115 (507): F397–F412. 2005.

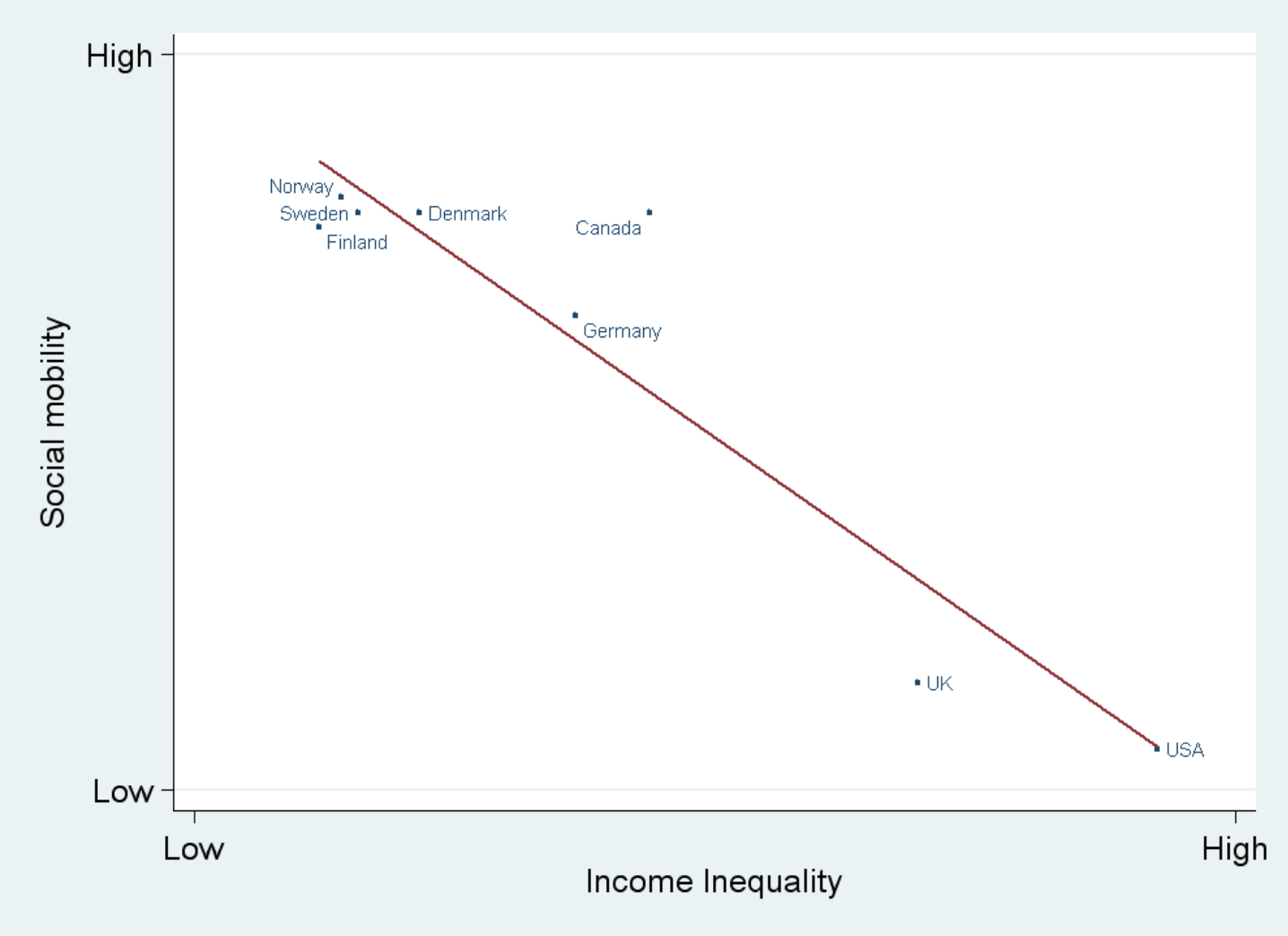
Life Expectancy is Longer in More Equal Rich Countries



Source: Wilkinson & Pickett, The Spirit Level (2009)

The Equality Trust

Social Mobility is Higher in More Equal Rich Countries



Source: Wilkinson & Pickett, The Spirit Level (2009)

The Equality Trust

More Equal Countries Rank Better (1 is best) on Recycling

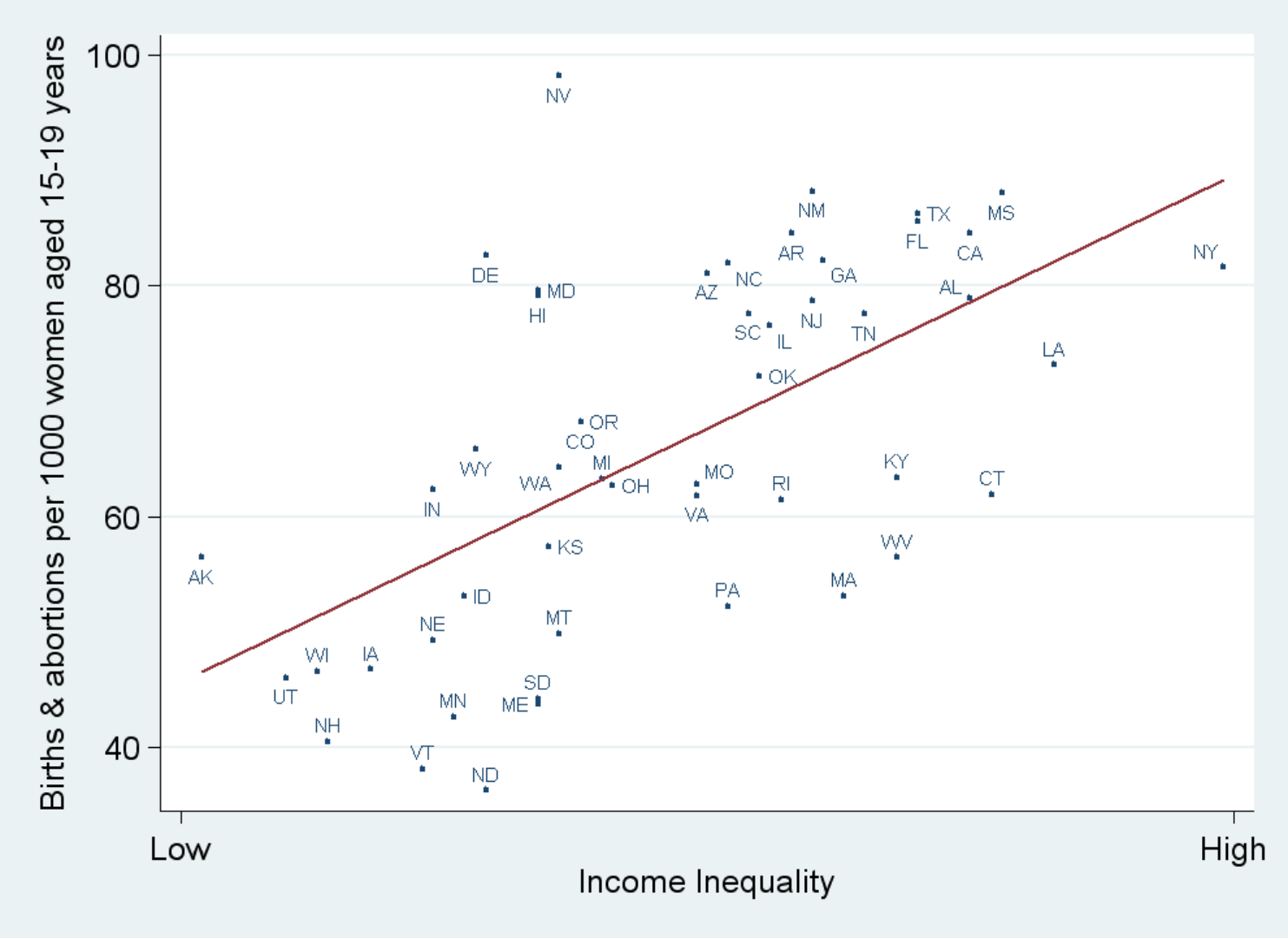
Source: Wilkinson & Pickett, The Spirit Level (2009)

More Children Drop Out of High School in More Unequal US States

Source: Wilkinson & Pickett, The Spirit Level (2009)

The Equality Trust

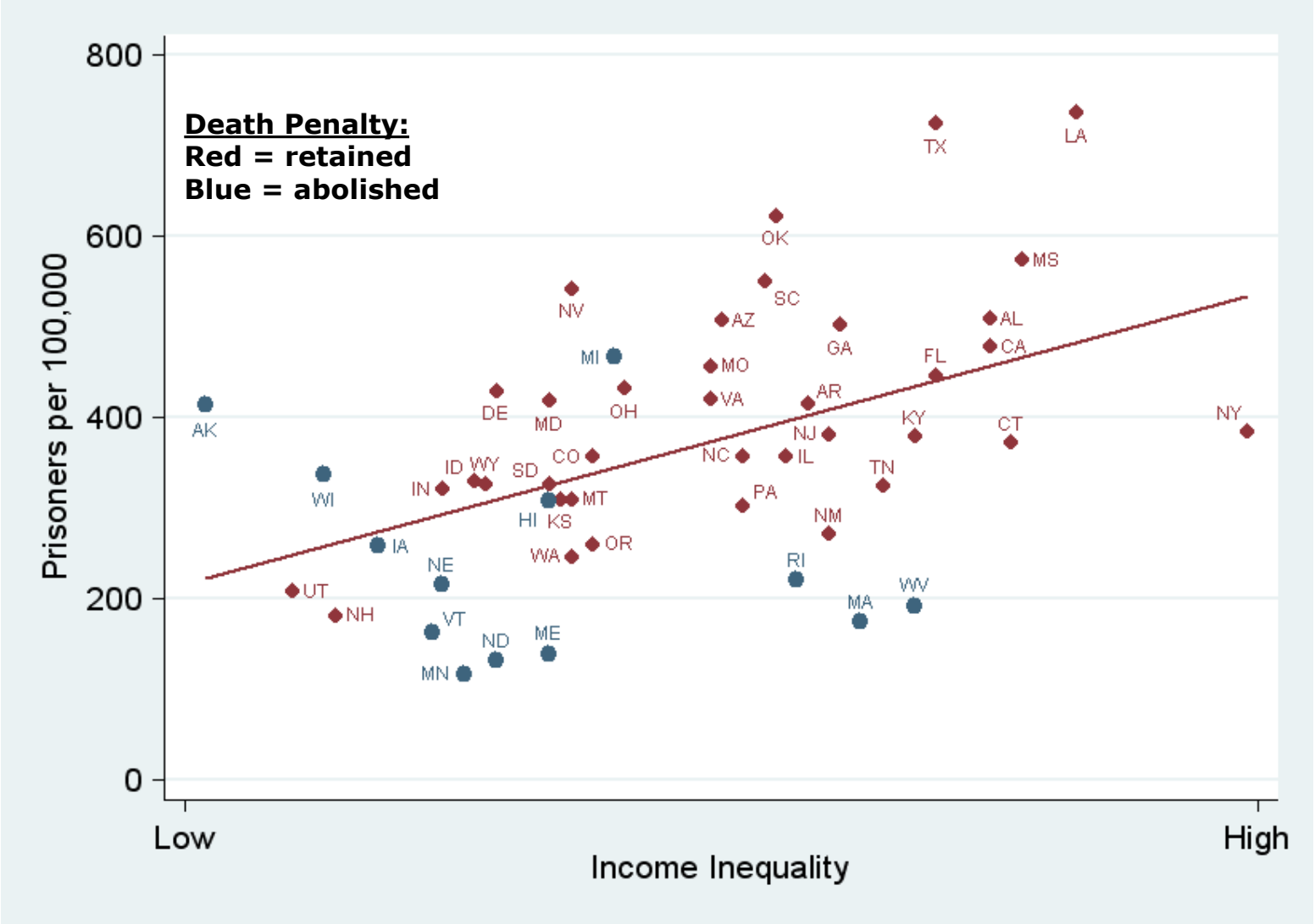
Teen Pregnancy Rates are Higher in More Unequal US States



Source: Wilkinson & Pickett, The Spirit Level (2009)

The Equality Trust

Rate of Imprisonment are Higher in More Unequal US States



Source: Wilkinson & Pickett, The Spirit Level (2009)

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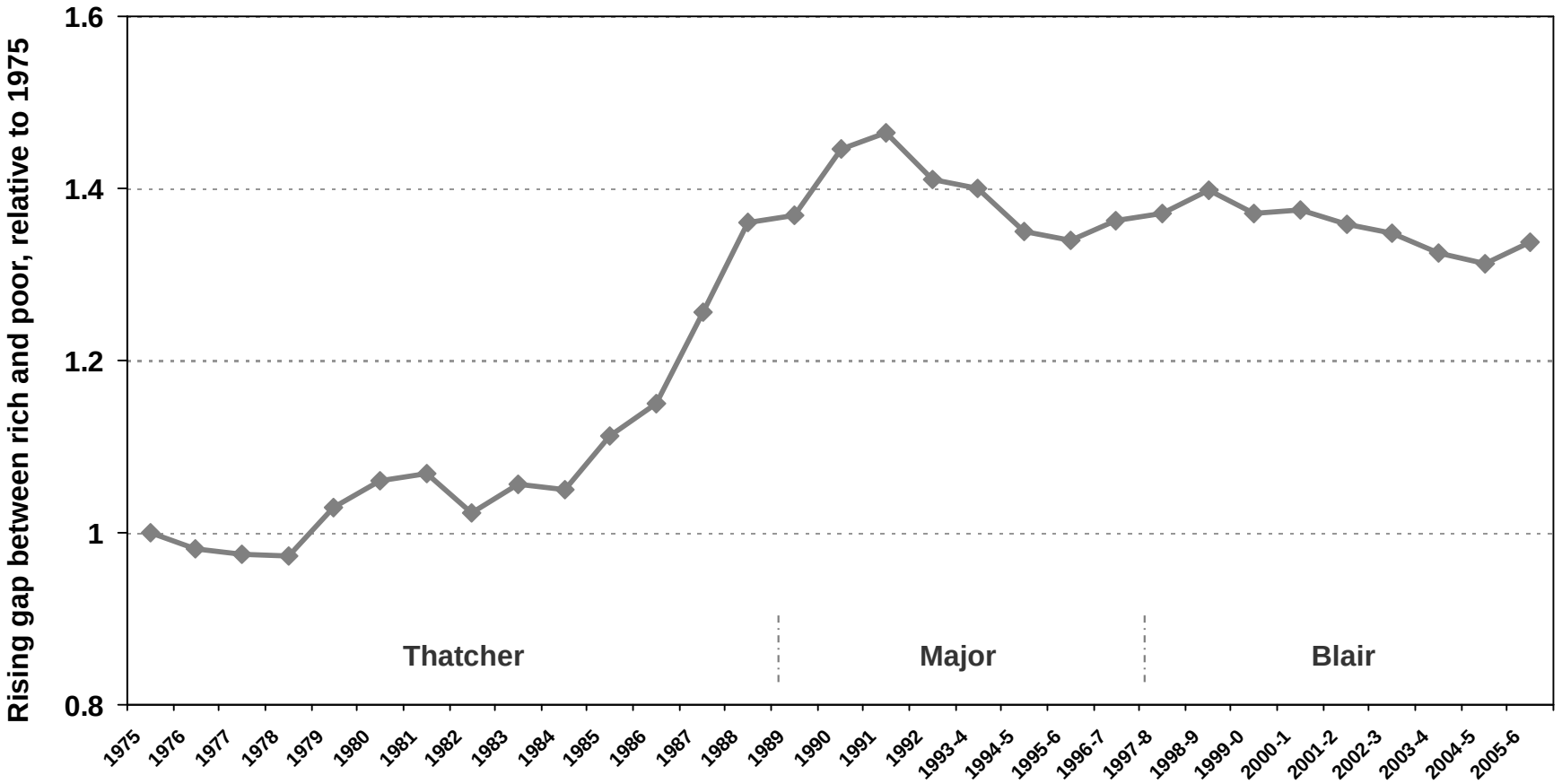
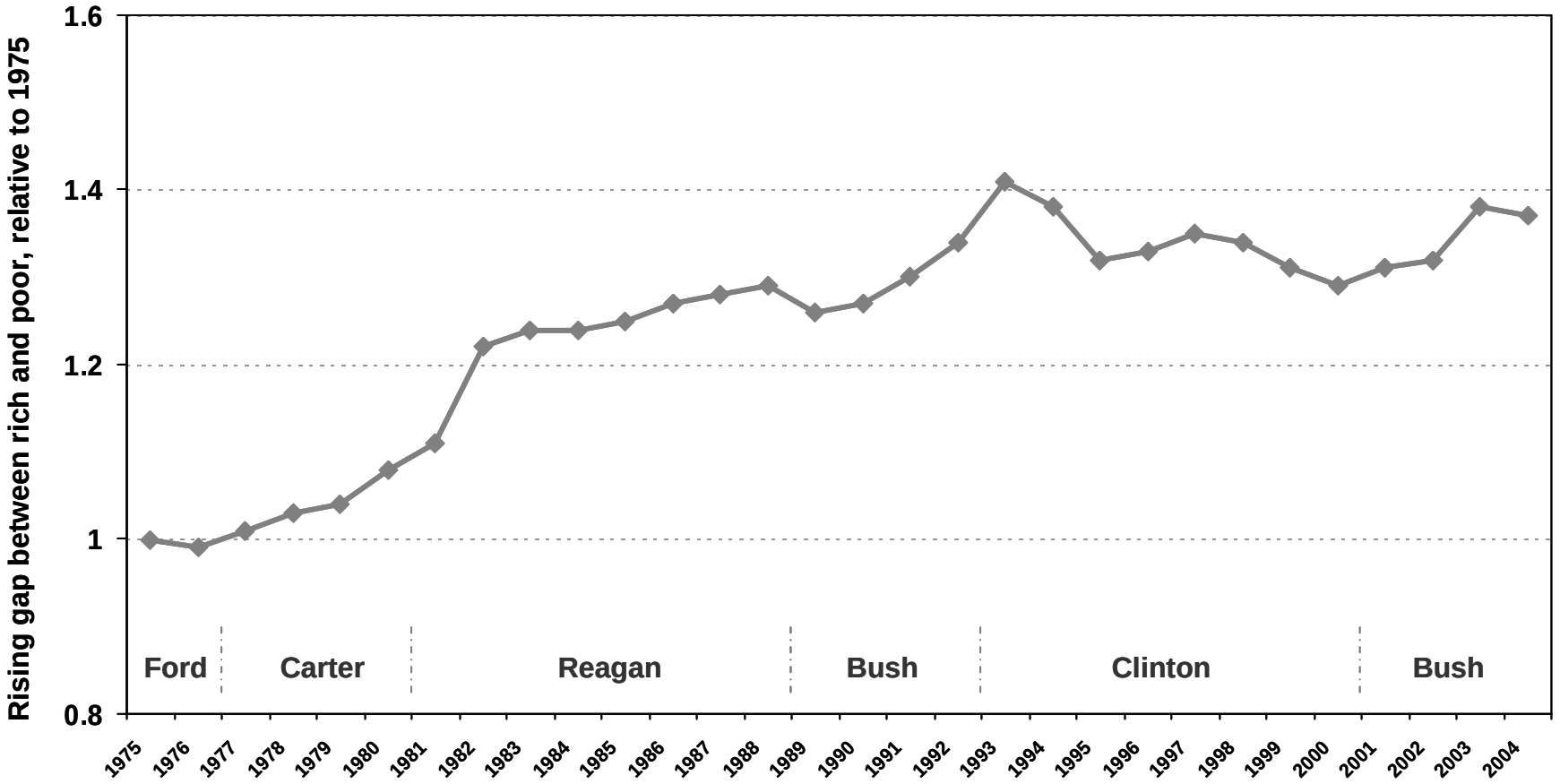
Trends in UK income inequality 1979-2005/6



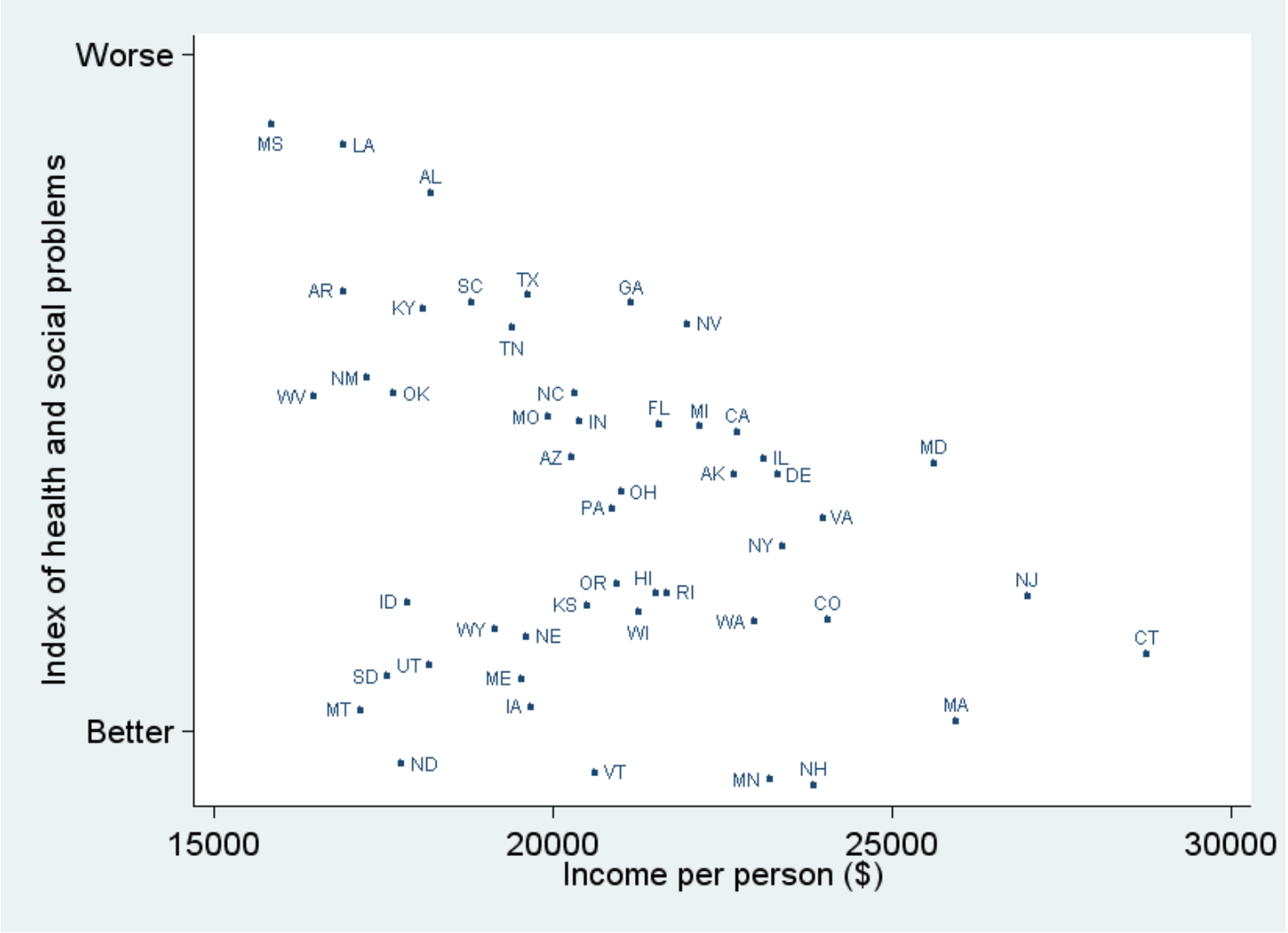
Source: Wilkinson & Pickett, The Spirit Level (2009)

Trends in US income inequality 1975-2005



Source: Wilkinson & Pickett, The Spirit Level (2009)

Health & Social Problems are Only Weakly Related to Average Income in US States



Source: Wilkinson & Pickett, The Spirit Level (2009)

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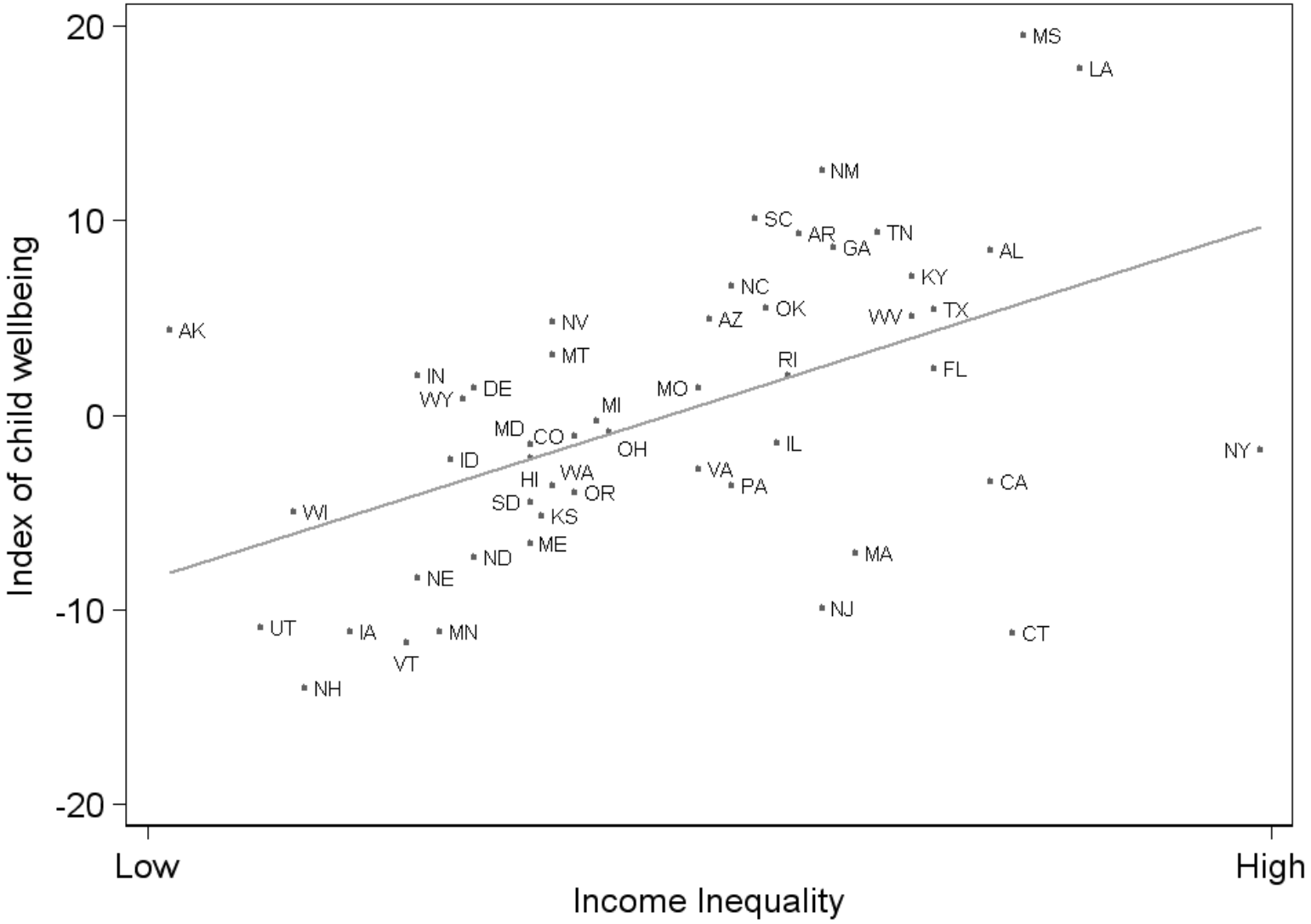
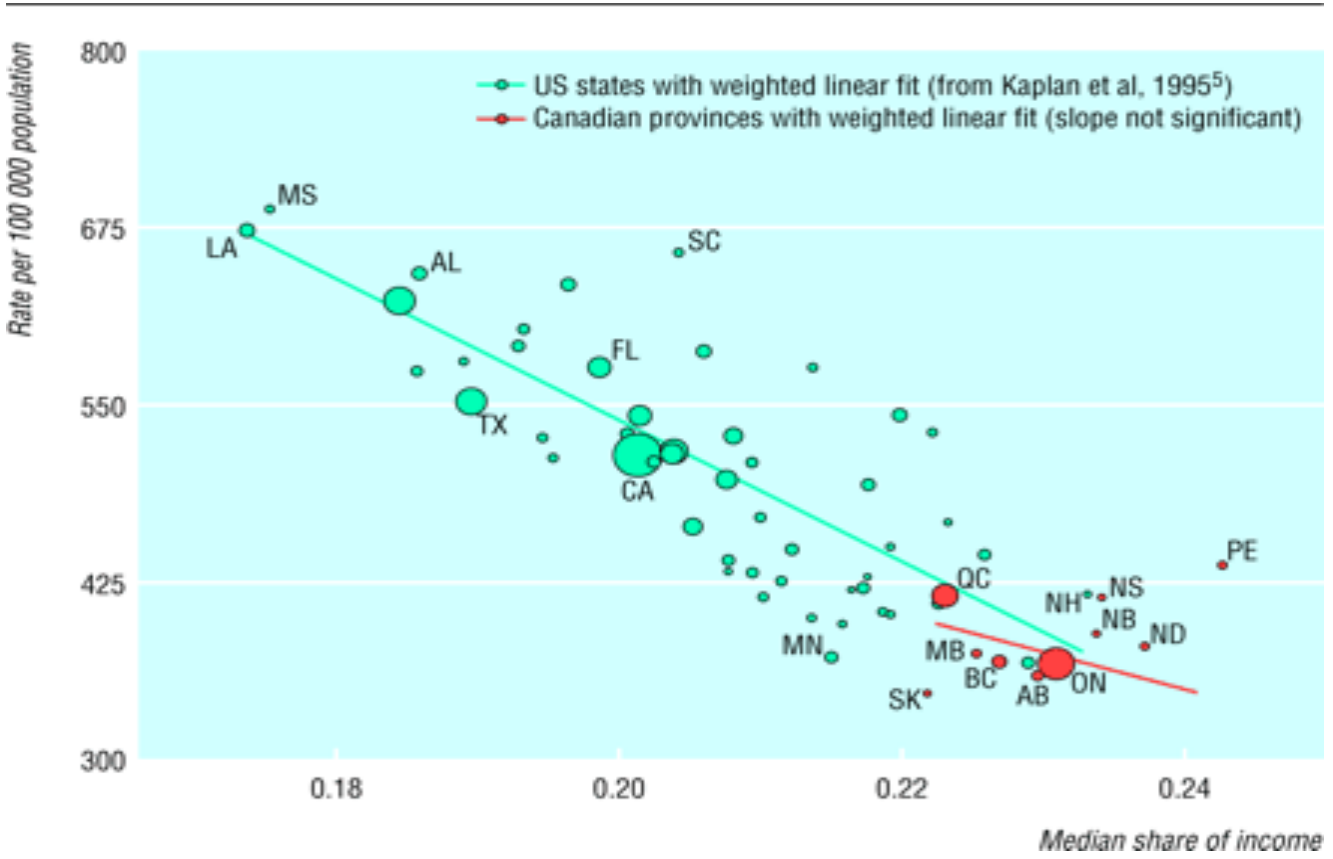
Child wellbeing and income inequality in US States



Kids Count 10 Item Index of Child Wellbeing

Male mortality (25-64 yrs) and income inequality in US states and Canadian provinces.



Source: Ross NA, Wolfson MC, Dunn JR, Berthelot JM, Kaplan GA, Lynch JW. *British Medical Journal* 2000;320:898-902

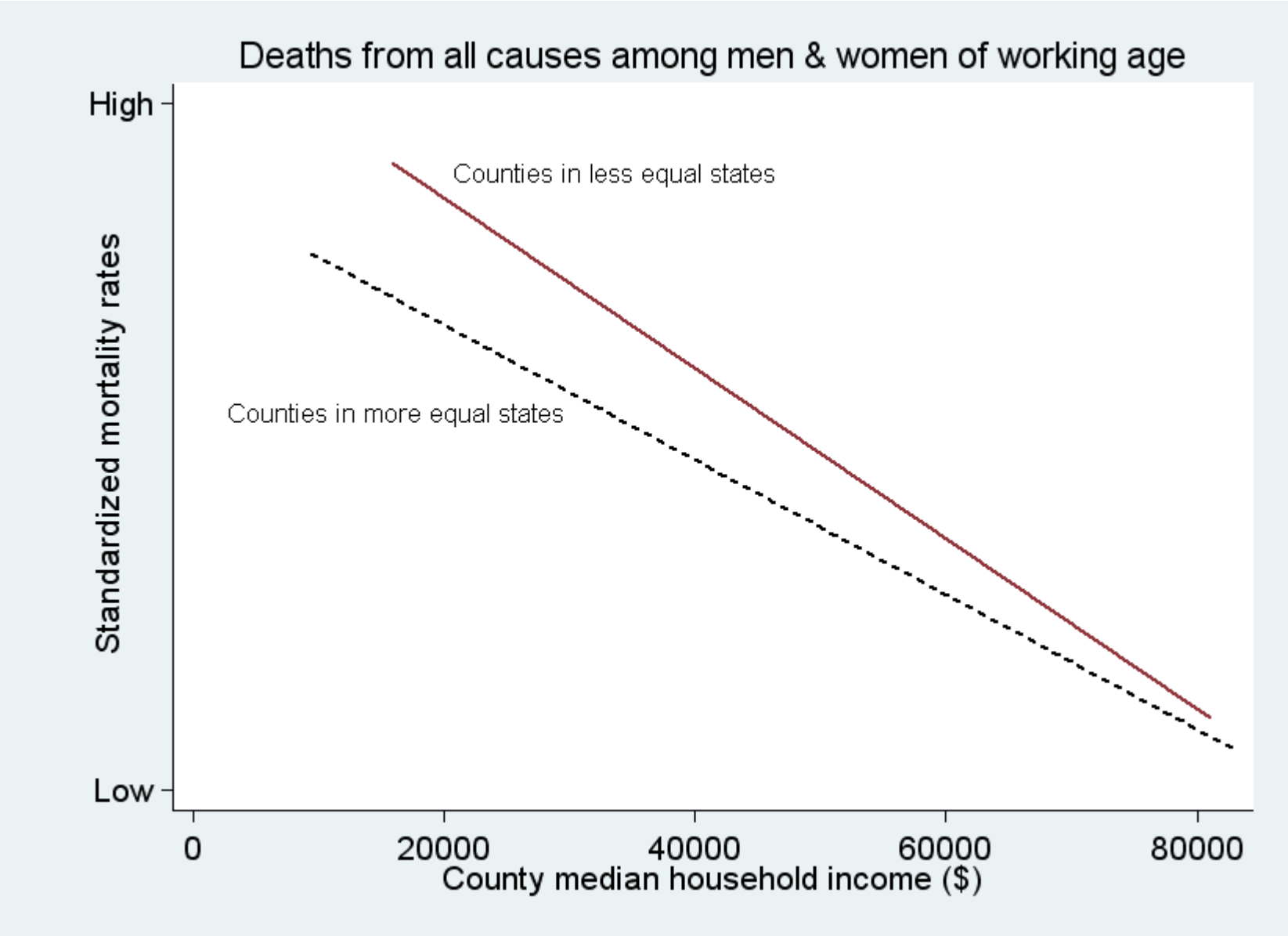
Dropping out of high school & inequality

Source: Wilkinson & Pickett, The Spirit Level (2009)

Educational Scores are Higher in More Equal Rich Countries

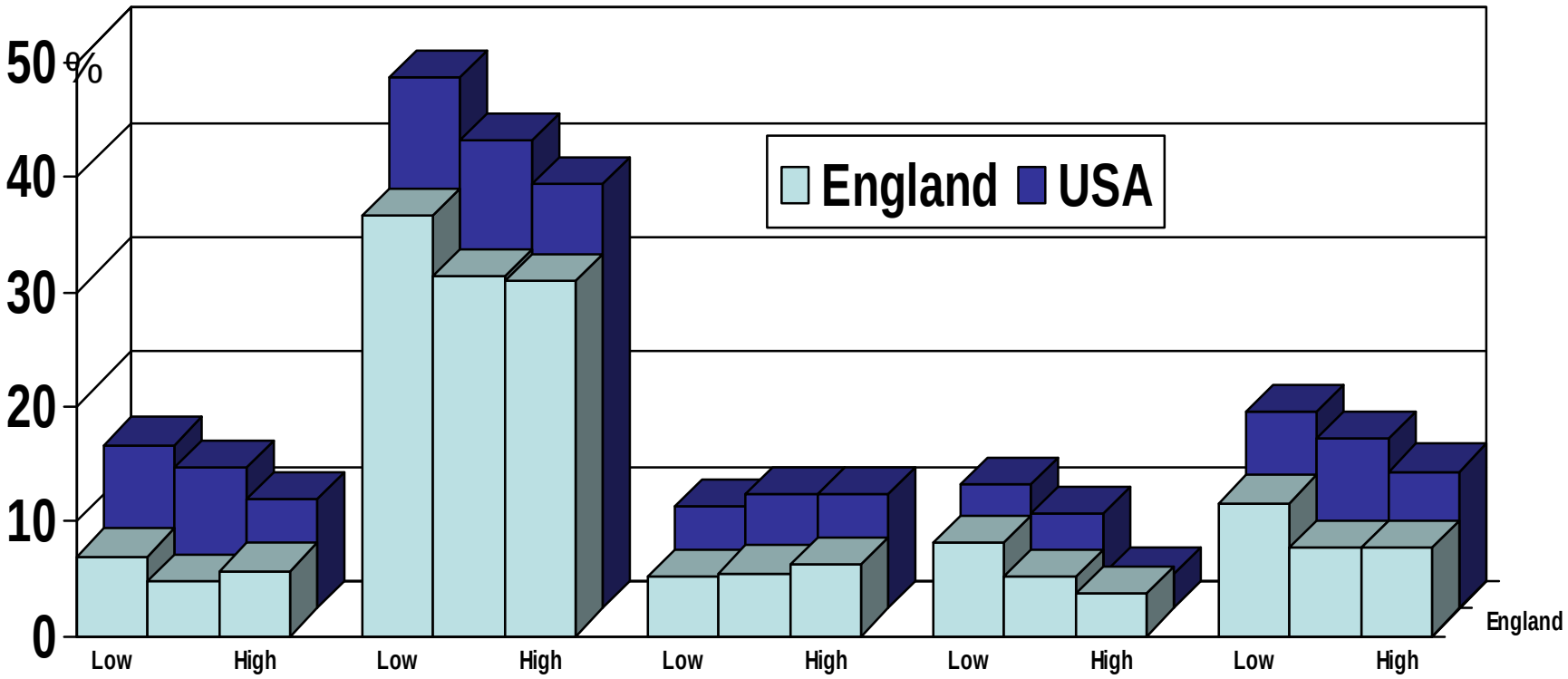
Source: Wilkinson & Pickett, The Spirit Level (2009)

The Equality Trust



Source: Wilkinson & Pickett, The Spirit Level (2009)

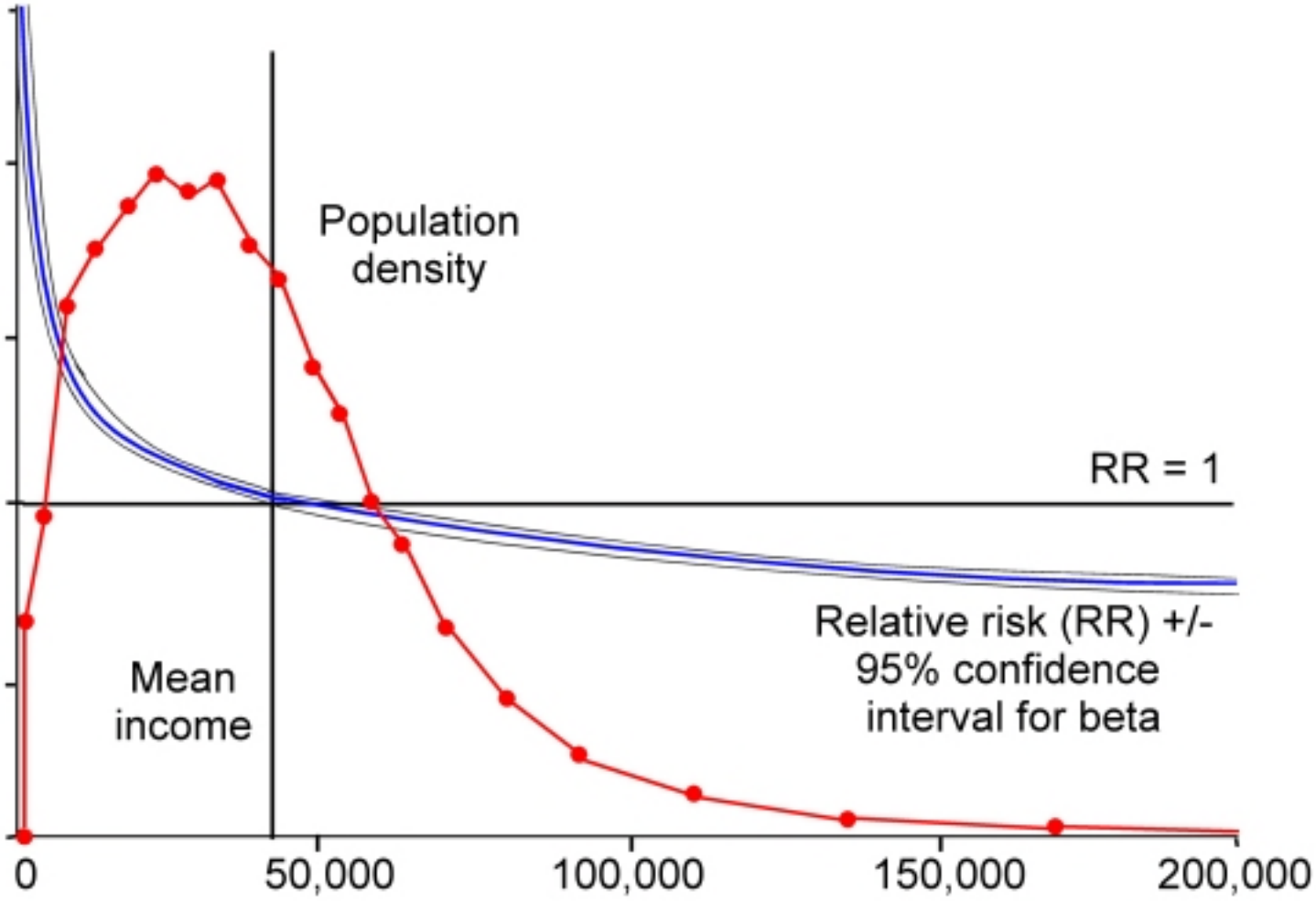
Self-reported prevalence of illness by education



Diabetes Hypertension Cancer Lung disease Heart disease

Source: Banks et al. JAMA 2006; 295: 2037-2045

Distribution of household income (US 1990) and Relative risk of dying at each level of income

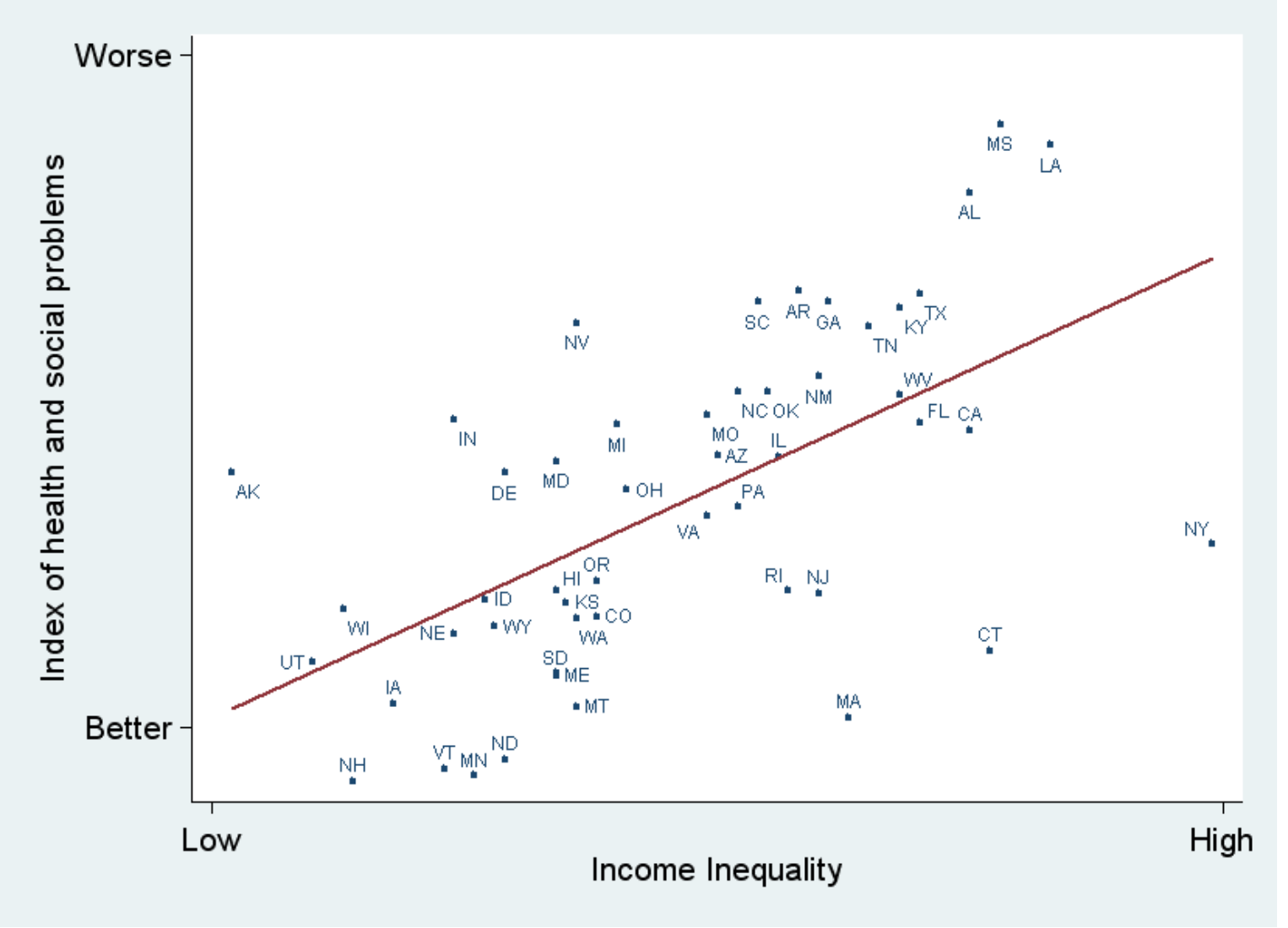


Wolfson M, Kaplan G, Lynch J, Ross N, Backlund E. *BMJ*; 1999. 319:953-955

Recycling and Inequality

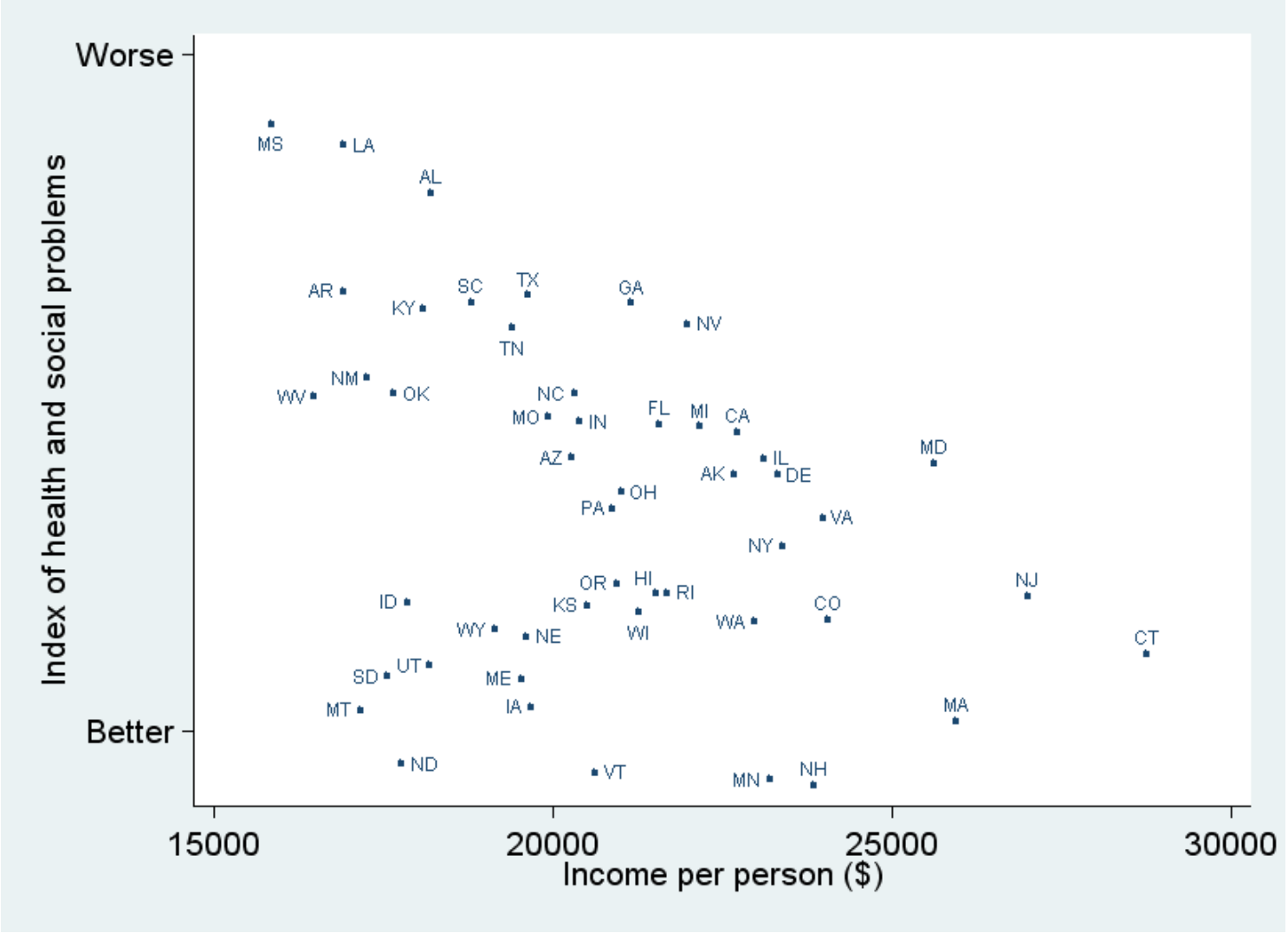
Source: Wilkinson & Pickett, The Spirit Level (2009)

Index of Health and Social Problems and inequality among US states



Source: Wilkinson & Pickett, The Spirit Level (2009)

Index of Health & Social Problems and average income in US states



Source: Wilkinson & Pickett, The Spirit Level (2009)